

**NAME**

**ahd** - Adaptec PCI/PCI-X Ultra320 SCSI host adapter driver

**SYNOPSIS**

To compile this driver into the kernel, place the following lines in your kernel configuration file:

```
device pci
device scbus
device ahd
```

To compile in debugging code:

```
options AHD_DEBUG
options AHD_DEBUG_OPTS=<bitmask of options>
options AHD_REG_PRETTY_PRINT
```

To configure one or more controllers to assume the target role:

```
options AHD_TMODE_ENABLE=<bitmask of units>
```

Alternatively, to load the driver as a module at boot time, place the following line in loader.conf(5):

```
ahd_load="YES"
```

**DESCRIPTION**

This driver provides access to the SCSI bus(es) connected to Adaptec AIC79xx host adapter chips.

Driver features include support for narrow and wide busses, fast, ultra, ultra2, ultra160, and ultra320 synchronous transfers, packetized transfers, tagged queueing, 512 SCB's, and target mode.

The AHD\_DEBUG\_OPTS option is used to control which diagnostic messages are printed to the console when AHD\_DEBUG is enabled. Logically OR the following bits together:

<i>Value</i>	<i>Function</i>
0x0001	Show miscellaneous information
0x0002	Show sense data
0x0004	Show Serial EEPROM contents
0x0008	Show bus termination settings
0x0010	Show host memory usage
0x0020	Show SCSI protocol messages
0x0040	Show mode pointer of the chip register window
0x0080	Show selection timeouts

0x0100 Show FIFO usage messages  
0x0200 Show Queue Full status  
0x0400 Show SCB queue status  
0x0800 Show inbound packet information  
0x1000 Show S/G list information  
0x2000 Enable extra diagnostic code in the firmware

The `AHD_REG_PRETTY_PRINT` option compiles in support for human-readable bit definitions for each register that is printed by the debugging code. However, it also bloats the compiled size of the driver by approximately 215KB.

Individual controllers may be configured to operate in the target role through the `AHD_TMODE_ENABLE` configuration option. The value assigned to this option should be a bitmap of all units where target mode is desired. For example, a value of 0x25 would enable target mode on units 0, 2, and 5. Note that target mode is only supported for ultra160 speeds and below.

Per target configuration performed in the SCSI-Select menu, accessible at boot, is honored by this driver. This includes synchronous/asynchronous transfers, maximum synchronous negotiation rate, wide transfers, disconnection, and the host adapter's SCSI ID.

## HARDWARE

The **ahd** driver supports the following:

- ◆ Adaptec AIC7901 host adapter chip
- ◆ Adaptec AIC7901A host adapter chip
- ◆ Adaptec AIC7902 host adapter chip
- ◆ Adaptec 29320 host adapter
- ◆ Adaptec 39320 host adapter
- ◆ Many motherboards with on-board SCSI support

## SEE ALSO

ahc(4), cd(4), da(4), sa(4), scsi(4)

## HISTORY

The **ahd** driver first appeared in FreeBSD 4.7.

## AUTHORS

The **ahd** driver, the AIC7xxx sequencer-code assembler, and the firmware running on the aic79xx chips was written by Justin T. Gibbs. This manual page is based on the ahc(4) manual page.

**BUGS**

The current generation of 79xx chips do not support target mode in Ultra320 mode. Target mode in general has not been well tested in this driver.