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===========================================================================
=               Adaptec Ultra320 Family Manager Set                       =
=                                                                          =
=                           README for                                     =
=                     The Linux Operating System                          =
===========================================================================
```

The following information is available in this file:

```
  1. Supported Hardware
  2. Version History
  3. Command Line Options
  4. Additional Notes
  5. Contacting Adaptec
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1. Supported Hardware

   The following Adaptec SCSI Host Adapters are supported by this
   driver set.

Ultra320 ASIC	Description
AIC-7901A	Single Channel 64-bit PCI-X 133MHz to Ultra320 SCSI ASIC
AIC-7901B	Single Channel 64-bit PCI-X 133MHz to Ultra320 SCSI ASIC with Retained Training
AIC-7902A4	Dual Channel 64-bit PCI-X 133MHz to Ultra320 SCSI ASIC
AIC-7902B	Dual Channel 64-bit PCI-X 133MHz to Ultra320 SCSI ASIC with Retained Training

Ultra320 Adapters	Description	ASIC
Adaptec SCSI Card 39320	Dual Channel 64-bit PCI-X 133MHz to Ultra320 SCSI Card (one external 68-pin, two internal 68-pin)	7902A4/7902B
Adaptec SCSI Card 39320A	Dual Channel 64-bit PCI-X 133MHz to Ultra320 SCSI Card (one external 68-pin, two internal 68-pin)	7902B
Adaptec SCSI Card 39320D	Dual Channel 64-bit PCI-X 133MHz to Ultra320 SCSI Card (two external VHDC and one internal 68-pin)	7902A4
Adaptec SCSI Card 39320D	Dual Channel 64-bit PCI-X 133MHz to Ultra320 SCSI Card (two external VHDC and one internal 68-pin) based on the AIC-7902B ASIC	7902A4
Adaptec SCSI Card 29320	Single Channel 64-bit PCI-X 133MHz to Ultra320 SCSI Card (one external 68-pin, two internal 68-pin, one internal 50-pin)	7901A
Adaptec SCSI Card 29320A	Single Channel 64-bit PCI-X 133MHz to Ultra320 SCSI Card (one external 68-pin, two internal 68-pin, one internal 50-pin)	7901B
Adaptec SCSI Card 29320LP	Single Channel 64-bit Low Profile	7901A

aic79xx.txt

                              PCI-X 133MHz to Ultra320 SCSI Card
                              (One external VHDC, one internal
                              68-pin)
Adaptec SCSI Card 29320ALP   Single Channel 64-bit Low Profile   7901B
                              PCI-X 133MHz to Ultra320 SCSI Card
                              (One external VHDC, one internal
                              68-pin)

2. Version History

    3.0   (December 1st, 2005)
            - Updated driver to use SCSI transport class infrastructure
            - Upported sequencer and core fixes from adaptec released
              version 2.0.15 of the driver.

    1.3.11 (July 11, 2003)
            - Fix several deadlock issues.
            - Add 29320ALP and 39320B Id's.

    1.3.10 (June 3rd, 2003)
            - Align the SCB_TAG field on a 16byte boundary. This avoids
              SCB corruption on some PCI-33 busses.
            - Correct non-zero luns on Rev B. hardware.
            - Update for change in 2.5.X SCSI proc FS interface.
            - When negotiation async via an 8bit WDTR message, send
              an SDTR with an offset of 0 to be sure the target
              knows we are async. This works around a firmware defect
              in the Quantum Atlas 10K.
            - Implement controller suspend and resume.
            - Clear PCI error state during driver attach so that we
              don't disable memory mapped I/O due to a stray write
              by some other driver probe that occurred before we
              claimed the controller.

    1.3.9 (May 22nd, 2003)
            - Fix compiler errors.
            - Remove S/G splitting for segments that cross a 4GB boundary.
              This is guaranteed not to happen in Linux.
            - Add support for scsi_report_device_reset() found in
              2.5.X kernels.
            - Add 7901B support.
            - Simplify handling of the packetized lun Rev A workaround.
            - Correct and simplify handling of the ignore wide residue
              message. The previous code would fail to report a residual
              if the transaction data length was even and we received
              an IWR message.

    1.3.8 (April 29th, 2003)
            - Fix types accessed via the command line interface code.
            - Perform a few firmware optimizations.
            - Fix "Unexpected PKT busfree" errors.
            - Use a sequencer interrupt to notify the host of
              commands with bad status. We defer the notification
              until there are no outstanding selections to ensure
              that the host is interrupted for as short a time as
              possible.
            - Remove pre-2.2.X support.

- Add support for new 2.5.X interrupt API.
- Correct big-endian architecture support.

1.3.7 (April 16th, 2003)
- Use del_timer_sync() to ensure that no timeouts
  are pending during controller shutdown.
- For pre-2.5.X kernels, carefully adjust our segment
  list size to avoid SCSI malloc pool fragmentation.
- Cleanup channel display in our /proc output.
- Workaround duplicate device entries in the mid-layer
  device list during add-single-device.

1.3.6 (March 28th, 2003)
- Correct a double free in the Domain Validation code.
- Correct a reference to free'ed memory during controller
  shutdown.
- Reset the bus on an SE->LVD change. This is required
  to reset our transceivers.

1.3.5 (March 24th, 2003)
- Fix a few register window mode bugs.
- Include read streaming in the PPR flags we display in
  diagnostics as well as /proc.
- Add PCI hot plug support for 2.5.X kernels.
- Correct default precompensation value for RevA hardware.
- Fix Domain Validation thread shutdown.
- Add a firmware workaround to make the LED blink
  brighter during packetized operations on the H2A4.
- Correct /proc display of user read streaming settings.
- Simplify driver locking by releasing the io_request_lock
  upon driver entry from the mid-layer.
- Cleanup command line parsing and move much of this code
  to aiclib.

1.3.4 (February 28th, 2003)
- Correct a race condition in our error recovery handler.
- Allow Test Unit Ready commands to take a full 5 seconds
  during Domain Validation.

1.3.2 (February 19th, 2003)
- Correct a Rev B. regression due to the GEM318
  compatibility fix included in 1.3.1.

1.3.1 (February 11th, 2003)
- Add support for the 39320A.
- Improve recovery for certain PCI-X errors.
- Fix handling of LQ/DATA/LQ/DATA for the
  same write transaction that can occur without
  interveining training.
- Correct compatibility issues with the GEM318
  enclosure services device.
- Correct data corruption issue that occurred under
  high tag depth write loads.
- Adapt to a change in the 2.5.X daemonize() API.
- Correct a "Missing case in ahd_handle_scsiint" panic.

1.3.0 (January 21st, 2003)
    - Full regression testing for all U320 products completed.
    - Added abort and target/lun reset error recovery handler and
      interrupt coalescing.

1.2.0 (November 14th, 2002)
    - Added support for Domain Validation
    - Add support for the Hewlett-Packard version of the 39320D
      and AIC-7902 adapters.
   Support for previous adapters has not been fully tested and should
   only be used at the customer's own risk.

1.1.1 (September 24th, 2002)
    - Added support for the Linux 2.5.X kernel series

1.1.0 (September 17th, 2002)
    - Added support for four additional SCSI products:
      ASC-39320, ASC-29320, ASC-29320LP, AIC-7901.

1.0.0 (May 30th, 2002)
    - Initial driver release.

2.1. Software/Hardware Features
    - Support for the SPI-4 "Ultra320" standard:
      - 320MB/s transfer rates
      - Packetized SCSI Protocol at 160MB/s and 320MB/s
      - Quick Arbitration Selection (QAS)
      - Retained Training Information (Rev B. ASIC only)
    - Interrupt Coalescing
    - Initiator Mode (target mode not currently
      supported)
    - Support for the PCI-X standard up to 133MHz
    - Support for the PCI v2.2 standard
    - Domain Validation

2.2. Operating System Support:
    - Redhat Linux 7.2, 7.3, 8.0, Advanced Server 2.1
    - SuSE Linux 7.3, 8.0, 8.1, Enterprise Server 7
    - only Intel and AMD x86 supported at this time
    - >4GB memory configurations supported.

   Refer to the User's Guide for more details on this.

3. Command Line Options

      WARNING: ALTERING OR ADDING THESE DRIVER PARAMETERS
               INCORRECTLY CAN RENDER YOUR SYSTEM INOPERABLE.
               USE THEM WITH CAUTION.

Edit the file "modprobe.conf" in the directory /etc and add/edit a
line containing 'options aic79xx aic79xx=[command[,command...]]' where
'command' is one or more of the following:

      Option: verbose
   Definition: enable additional informative messages during
           driver operation.

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    Possible Values: This option is a flag
       Default Value: disabled
_____
             Option: debug:[value]
         Definition: Enables various levels of debugging information
                     The bit definitions for the debugging mask can
                     be found in drivers/scsi/aic7xxx/aic79xx.h under
                     the "Debug" heading.
    Possible Values: 0x0000 = no debugging, 0xffff = full debugging
       Default Value: 0x0000
_____
             Option: no_reset
         Definition: Do not reset the bus during the initial probe
                     phase
    Possible Values: This option is a flag
       Default Value: disabled
_____
             Option: extended
         Definition: Force extended translation on the controller
    Possible Values: This option is a flag
       Default Value: disabled
_____
             Option: periodic_otag
         Definition: Send an ordered tag periodically to prevent
                     tag starvation.  Needed for some older devices
    Possible Values: This option is a flag
       Default Value: disabled
_____
             Option: reverse_scan
         Definition: Probe the scsi bus in reverse order, starting
                     with target 15
    Possible Values: This option is a flag
       Default Value: disabled
_____
             Option: global_tag_depth
         Definition: Global tag depth for all targets on all busses.
                     This option sets the default tag depth which
                     may be selectively overridden vi the tag_info
                     option.
    Possible Values: 1 - 253
       Default Value: 32
_____
             Option: tag_info:{{value[,value...]}[,{value[,value...]}...]}
         Definition: Set the per-target tagged queue depth on a
                     per controller basis.  Both controllers and targets
                     may be ommitted indicating that they should retain
                     the default tag depth.
           Examples: tag_info:{{16,32,32,64,8,8,,32,32,32,32,32,32,32,32,32}
                     On Controller 0
                       specifies a tag depth of 16 for target 0
                       specifies a tag depth of 64 for target 3
                       specifies a tag depth of 8 for targets 4 and 5
                       leaves target 6 at the default
                       specifies a tag depth of 32 for targets 1,2,7-15
                     All other targets retain the default depth.
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                  tag_info:{{},{32,,32}}
                     On Controller 1
                        specifies a tag depth of 32 for targets 0 and 2
                     All other targets retain the default depth.

   Possible Values: 1 - 253
     Default Value: 32
_____
              Option: rd_strm: {rd_strm_bitmask[,rd_strm_bitmask...]}
          Definition: Enable read streaming on a per target basis.
                      The rd_strm_bitmask is a 16 bit hex value in which
                      each bit represents a target.  Setting the target's
                      bit to '1' enables read streaming for that
                      target.  Controllers may be ommitted indicating that
                      they should retain the default read streaming setting.
             Example: rd_strm:{0x0041}
                         On Controller 0
                           enables read streaming for targets 0 and 6.
                           disables read streaming for targets 1-5,7-15.
                         All other targets retain the default read
                         streaming setting.
             Example: rd_strm:{0x0023,,0xFFFF}
                         On Controller 0
                           enables read streaming for targets 1,2, and 5.
                           disables read streaming for targets 3,4,6-15.
                         On Controller 2
                           enables read streaming for all targets.
                         All other targets retain the default read
                         streaming setting.

   Possible Values: 0x0000 - 0xffff
     Default Value: 0x0000
_____
              Option: dv: {value[,value...]}
          Definition: Set Domain Validation Policy on a per-controller basis.
                      Controllers may be ommitted indicating that
                      they should retain the default read streaming setting.
             Example: dv:{-1,0,,1,1,0}
                         On Controller 0 leave DV at its default setting.
                         On Controller 1 disable DV.
                         Skip configuration on Controller 2.
                         On Controllers 3 and 4 enable DV.
                         On Controller 5 disable DV.

   Possible Values: < 0 Use setting from serial EEPROM.
                     0 Disable DV
                     > 0 Enable DV
     Default Value: DV Serial EEPROM configuration setting.
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              Option: seltime:[value]
          Definition: Specifies the selection timeout value
   Possible Values: 0 = 256ms, 1 = 128ms, 2 = 64ms, 3 = 32ms
     Default Value: 0
_____

  *** The following three options should only be changed at ***
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                *** the direction of a technical support representative.   ***

              Option: precomp: {value[,value...]}
          Definition: Set IO Cell precompensation value on a per-controller
                      basis.
                      Controllers may be ommitted indicating that
                      they should retain the default precompensation setting.
             Example: precomp:{0x1}
                      On Controller 0 set precompensation to 1.
             Example: precomp:{1,,7}
                      On Controller 0 set precompensation to 1.
                      On Controller 2 set precompensation to 8.

      Possible Values: 0 - 7
        Default Value: Varies based on chip revision

              Option: slewrate: {value[,value...]}
          Definition: Set IO Cell slew rate on a per-controller basis.
                      Controllers may be ommitted indicating that
                      they should retain the default slew rate setting.
             Example: slewrate:{0x1}
                      On Controller 0 set slew rate to 1.
             Example: slewrate :{1,,8}
                      On Controller 0 set slew rate to 1.
                      On Controller 2 set slew rate to 8.

      Possible Values: 0 - 15
        Default Value: Varies based on chip revision

              Option: amplitude: {value[,value...]}
          Definition: Set IO Cell signal amplitude on a per-controller basis.
                      Controllers may be ommitted indicating that
                      they should retain the default read streaming setting.
             Example: amplitude:{0x1}
                      On Controller 0 set amplitude to 1.
             Example: amplitude :{1,,7}
                      On Controller 0 set amplitude to 1.
                      On Controller 2 set amplitude to 7.

      Possible Values: 1 - 7
        Default Value: Varies based on chip revision

    Example: 'options aic79xx aic79xx=verbose,rd_strm:{{0x0041}}'
        enables verbose output in the driver and turns read streaming on
        for targets 0 and 6 of Controller 0.

4. Additional Notes

    4.1. Known/Unresolved or FYI Issues

        * Under SuSE Linux Enterprise 7, the driver may fail to operate
          correctly due to a problem with PCI interrupt routing in the
          Linux kernel. Please contact SuSE for an updated Linux
          kernel.

4.2. Third-Party Compatibility Issues

* Adaptec only supports Ultra320 hard drives running
  the latest firmware available. Please check with
  your hard drive manufacturer to ensure you have the
  latest version.

4.3. Operating System or Technology Limitations

* PCI Hot Plug is untested and may cause the operating system
  to stop responding.
* Luns that are not numbered contiguously starting with 0 might not
  be automatically probed during system startup. This is a limitation
  of the OS. Please contact your Linux vendor for instructions on
  manually probing non-contiguous luns.
* Using the Driver Update Disk version of this package during OS
  installation under RedHat might result in two versions of this
  driver being installed into the system module directory. This
  might cause problems with the /sbin/mkinitrd program and/or
  other RPM packages that try to install system modules. The best
  way to correct this once the system is running is to install
  the latest RPM package version of this driver, available from
  http://www.adaptec.com.

5. Adaptec Customer Support

A Technical Support Identification (TSID) Number is required for
Adaptec technical support.
 - The 12-digit TSID can be found on the white barcode-type label
   included inside the box with your product. The TSID helps us
   provide more efficient service by accurately identifying your
   product and support status.

Support Options
 - Search the Adaptec Support Knowledgebase (ASK) at
   http://ask.adaptec.com for articles, troubleshooting tips, and
   frequently asked questions about your product.
 - For support via Email, submit your question to Adaptec's
   Technical Support Specialists at http://ask.adaptec.com/.

North America
 - Visit our Web site at http://www.adaptec.com/.
 - For information about Adaptec's support options, call
   408-957-2550, 24 hours a day, 7 days a week.
 - To speak with a Technical Support Specialist,
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      Monday to Friday, 3:00 am to 5:00 pm, PDT.
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  – Visit our web site at http://www.adaptec.co.jp/.
  – To speak with a Technical Support Specialist, call
    +81 3 5308 6120, Monday-Friday, 9:00 a.m. to 12:00 p.m.,
    1:00 p.m. to 6:00 p.m.

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