```
**********************************************************
    7475 Sat Jan 11 13:13:26 2020
new/usr/src/man/man7d/audio.7d
11641 spelling mistakes in section 7d of the manual
**********************************************************
'\" te
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.\" fields enclosed by brackets "[]" replaced with your own identifying informat
.TH AUDIO 7D "Jan 10, 2020"
.TH AUDIO 7D "Aug 3, 2009"
.SH NAME
audio \- common audio framework
.SH DESCRIPTION
.sp
.LP
The \fBaudio\fR driver provides common support routines for audio devices in
Solaris.
.sp
.LP
The audio framework supports multiple \fBpersonalities\fR, allowing for devices
to be accessed with different programming interfaces.
.sp
.LP
The audio framework also provides a number of facilities, such as mixing of
audio streams, and data format and sample rate conversion.
.SS "Overview"
.sp
.LP
The audio framework provides a software mixing engine (audio mixer) for all
audio devices, allowing more than one process to play or record audio at the
same time.
.SS "Multi-Stream Codecs"
.sp
.LP
The audio mixer supports multi-stream Codecs. These devices have DSP engines
that provide  sample rate conversion, hardware mixing, and other features. The
use of such hardware features is opaque to applications.
.SS "Backward Compatibility"
.sp
.LP
It is not possible to disable the mixing function. Applications must not assume
that they have exclusive access to the audio device.
.SS "Audio Formats"
.sp
.LP
Digital audio data represents a quantized approximation of an analog audio
signal waveform. In the simplest case, these quantized numbers represent the
amplitude of the input waveform at particular sampling intervals. To achieve
the best approximation of an input signal, the highest possible sampling
frequency and precision should be used. However, increased accuracy comes at a
cost of increased data storage requirements. For instance, one minute of
monaural audio recorded in u-Law format (pronounced \fBmew-law\fR) at 8 KHz
requires nearly 0.5 megabytes of storage, while the standard Compact Disc audio
format (stereo 16-bit linear PCM data sampled at 44.1 KHz) requires
approximately 10 megabytes per minute.
.sp
.LP
An audio data format is characterized in the audio driver by four parameters:
sample Rate, encoding, precision, and channels. Refer to the device-specific
manual pages for a list of the audio formats that each device supports. In
addition to the formats that the audio device supports directly, other formats
provide higher data compression. Applications can convert audio data to and
from these formats when playing or recording.
.SS "Sample Rate"
```



```
.sp
.LP
Sample rate is a number that represents the sampling frequency (in samples per
second) of the audio data.
.sp
.LP
The audio mixer always configures the hardware for the highest possible sample
rate for both play and record. This ensures that none of the audio streams
require compute-intensive low pass filtering. The result is that high sample
rate audio streams are not degraded by filtering.
.sp
.LP
Sample rate conversion can be a compute-intensive operation, depending on the
Sample rate conversion can be a compute-intensive operation, dependingon the
number of channels and a device's sample rate. For example, an 8KHz signal can
be easily converted to 48KHz, requiring a low cost up sampling by 6. However,
converting from 44.1KHz to 48KHz is computer intensive because it must be up
sampled by 160 and then down sampled by 147. This is only done using integer
multipliers.
.sp
.LP
Applications can greatly reduce the impact of sample rate conversion by
carefully picking the sample rate. Applications should always use the highest
sample rate the device supports. An application can also do its own sample rate
conversion (to take advantage of floating point and accelerated instructions)
or use small integers for up and down sampling.
.sp
.LP
All modern audio devices run at 48 kHz or a multiple thereof, hence just using
48 kHz can be a reasonable compromise if the application is not prepared to
select higher sample rates.
.SS "Encodings"
.sp
.LP
An encoding parameter specifies the audiodata representation. u-Law encoding
corresponds to CCITT G.711, and is the standard for voice data used by
telephone companies in the United States, Canada, and Japan. A-Law encoding is
also part of CCITT G.711 and is the standard encoding for telephony elsewhere
in the world. A-Law and u-Law audio data are sampled at a rate of 8000 samples
per second with 12-bit precision, with the data compressed to 8-bit samples.
The resulting audio data quality is equivalent to that of stan dard analog
telephone service.
.sp
.LP
Linear Pulse Code Modulation (PCM) is an uncompressed, signed audio format in
which sample values are directly proportional to audio signal voltages. Each
sample is a 2's complement number that represents a positive or negative
amplitude.
.SS "Precision"
.sp
.LP
Precision indicates the number of bits used to store each audio sample. For
instance, u-Law and A-Law data are stored with 8-bit precision. PCM data can be
stored at various precisions, though 16-bit is the most common.
.SS "Channels"
.sp
.LP
Multiple channels of audio can be interleaved at sample boundaries. A sample
frame consists of a single sample from each active channel. For example, a
sample frame of stereo 16-bit PCM data consists of 2 16-bit samples,
corresponding to the left and right channel data. The audio mixer sets the
hardware to the maximum number of channels supported. If a mono signal is
played or recorded, it is mixed on the first two (usually the left and right)
channel only. Silence is mixed on the remaining channels.
.SS "Supported Formats"
.sp
```

```
.LP
The audio mixer supports the following audio formats:
.sp
.in +2
.nf
Encoding            Precision  Channels
Signed Linear PCM   32-bit     Mono or Stereo
Signed Linear PCM   16-bit     Mono or Stereo
Signed Linear PCM   8-bit      Mono or Stereo
u-Law               8-bit      Mono or Stereo
A-Law               8-bit      Mono or Stereo
.fi
.in -2
.sp

.sp
.LP
The audio mixer converts all audio streams to 24-bit Linear PCM before mixing.
After mixing, conversion is made to the best possible Codec format. The
conversion process is not compute intensive and audio applications can choose
the encoding format that best meets their needs.
.sp
.LP
The mixer discards the low order 8 bits of 32-bit Signed Linear PCM in order to
perform mixing. (This is done to allow for possible overflows to fit into
32-bits when mixing multiple streams together.) Hence, the maximum effective
precision is 24-bits.
.SH FILES
.sp
.ne 2
.na
\fB\fB/kernel/drv/audio\fR\fR
.ad
.RS 29n
32-bit kernel driver module
.RE

.sp
.ne 2
.na
\fB\fB/kernel/drv/amd64/audio\fR\fR
.ad
.RS 29n
Device driver (x86)
64-bit x86 kernel driver module
.RE

.sp
.ne 2
.na
\fB\fB/kernel/drv/sparcv9/audio\fR\fR
.ad
.RS 29n
Device driver (SPARC)
64-bit SPARC kernel driver module
.RE

.sp
.ne 2
.na
\fB\fB/kernel/drv/audio.conf\fR\fR
.ad
.RS 29n
Driver configuration file
\fBaudio\fR configuration file
.RE
```



```
.SH ATTRIBUTES
.sp
.LP
See \fBattributes\fR(5) for a description of the following attributes:
.sp

.sp
.TS
box;
l | l
l | l .
ATTRIBUTE TYPE  ATTRIBUTE VALUE
_
Architecture    SPARC, x86
_
Interface Stability     Uncommitted
.TE

.SH SEE ALSO
.sp
.LP
\fBioctl\fR(2), \fBattributes\fR(5), \fBaudio\fR(7I), \fBdsp\fR(7I)
```

```
**********************************************************
    3060 Sat Jan 11 13:13:26 2020
new/usr/src/man/man7d/bnxe.7d
11641 spelling mistakes in section 7d of the manual
**********************************************************
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.TH BNXE 7D "Jan 10, 2020"
.TH BNXE 7D "Jul 17, 2014"
.SH NAME
bnxe \- QLogic NetXtreme II 10 Gigabit Ethernet Device Driver

.SH SYNOPSIS
.na
/dev/bnxe*
.ad

.SH DESCRIPTION
.LP
The
.B bnxe
Ethernet driver is a multi-threaded, loadable,
clonable, GLDv3-based driver supporting the Data Link Provider Interface,
.BR dlpi (7P),
over QLogic NetXtreme II 10 Gigabit Ethernet controllers.  Multiple
NetXtreme II controllers installed within the system are supported by
the driver.

The
.B bnxe
driver provides support for the NetXtreme II 10 Gigabit line of devices.
Functions include chip initialization, frame transmit and receive,
multicast and promiscuous support, error recovery and reporting. These
devices provide 10/100/1000/2500/10000 Mbps networking interfaces.

.SH DRIVER CONFIGURATION

The primary methods of configuration are via modification of the
.I /kernel/drv/bnxe.conf
file or execution of the
.BR dladm (1M)
utility. There are many configuration items available and all are thoroughly
documented in the
.I /kernel/drv/bnxe.conf
file. Note that for
changes to this file to take affect the driver must be reloaded or the system
rebooted. In order to reload the driver with new configuration changes all
.B bnxe
interfaces must be first unplumbed and then the
.BR update_drv (1M)
tool must be executed. For the configuration items that do not require a
driver reload the
.BR dladm (1M)
tool can be used to dynamically change the option.
```



```
.SH DEBUGGING

.SS kstat

There are many statistics exposed via
.B kstat
by
.BR bnxe .

The main groups are:
.TP
"intr"
for interrupts stats
.TP
"l2chip"
for layer 2 chip stats,
.TP
"l2driver"
for layer 2 driver stats,
.TP
"l2stats"
for general layer 2 stats,
.TP
"link"
for detailed link status,
.TP
"mac"
for GLDv3 MAC layer stats,
.TP
"rxq#"
for Rx ring stats,
.TP
"txq#"
for Tx ring stats, and
.TP
"stats"
for general driver stats and version info.
.LP
**To get a list of all the individual statistics in these groups run:**
*To get a list of all the individual statistics in these goups run:*
.na
% kstat -m bnxe -i 0 -l
.ad

.SH FILES
.ne 2
.na
/dev/bnxe[instance]
.ad
.RS 16n
.B bnxe
Character special device
.RE

.sp
.ne 2
.na
/kernel/drv/bnxe.conf
.ad
.RS 16n
**Driver configuration file**
*Driver configuration file.*
.RE

.sp
.ne 2
```

```
 124 .na
 126 /kernel/drv/bnxe
 127 .ad
 128 .RS 16n
 129 32-bit i386 driver binary.
 130 .RE

 132 .sp
 133 .ne 2
 134 .na
 125 /kernel/drv/amd64/bnxe
 126 .ad
 127 .RS 16n
 128 Device driver (x86)
 138 64-bit i386 driver binary.
 129 .RE

 131 .sp
 132 .ne 2
 133 .na
 134 /kernel/drv/sparcv9/bnxe
 135 .ad
 136 .RS 16n
 137 Device driver (SPARC)
 147 SPARC driver binary.
 138 .RE

 140 .SH SEE ALSO
 141 .BR dladm (1M),
 142 .BR netstat (1M),
 143 .BR ifconfig (1M),
 144 .BR driver.conf (4),
 145 .BR gld (7P)
 146 .LP
 147 .I QLogic NetXtreme II 10 Gigabit Adapter Driver Installation Notes
 148 .LP
 149 .I Writing Device Drivers
 150 .LP
 151 .I STREAMS Programming Guide
 152 .LP
 153 .I Network Interfaces Guide
```

****
1486 Sat Jan 11 13:13:26 2020
new/usr/src/man/man7d/coretemp.7d
11641 spelling mistakes in section 7d of the manual
****

```
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.\"
.\"
.\" Copyright 2019, Joyent, Inc.
.\"
.Dd January 10, 2020
.Dd March 20, 2019
.Dt CORETEMP 7D
.Os
.Sh NAME
.Nm coretemp
.Nd Intel core-family temperature sensor driver
.Sh SYNOPSIS
.Pa /dev/sensors/temperature/cpu/*
.Sh DESCRIPTION
The
.Nm
driver provides the system with a means of reading the per-core and,
when available, per-package digital temperature sensors on Intel CPUs.
Currently, the
.Nm
driver supports Intel Core family processors after Penryn
microarchitecture and Intel Atom processors starting with the Silvermont
microarchitecture.
microarchitecure.
.Pp
Temperature information is available to the system via the fault
management architecture
.Pq FMA .
The file system location and programming interface to the
.Nm
driver are considered
.Sy Volatile ,
subject to change without notice, and should not be used directly.
Raw temperature information can be dumped through the FMA developer
utility fmtopo.
.Sh SEE ALSO
.Xr fmadm 1M
.Rs
.%A Intel Corporation
.%B Intel 64 and IA-32 Architectures Software Developer’s Manual
.%V Volume 3 (3A, 3B, 3C & 3D): System Programming Guide
.Re
```

```
**********************************************************
    7877 Sat Jan 11 13:13:26 2020
new/usr/src/man/man7d/ehci.7d
11641 spelling mistakes in section 7d of the manual
**********************************************************
'\" te
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.TH EHCI 7D "Jan 10, 2020"
.TH EHCI 7D "May 13, 2017"
.SH NAME
ehci \- Enhanced host controller driver
.SH SYNOPSIS
.LP
.nf
\fBusb@unit-address\fR
.fi

.SH DESCRIPTION
.LP
The \fBehci\fR driver is a USBA (Solaris USB Architecture) compliant nexus
driver that supports the Enhanced Host Controller Interface Specification 2.0,
an industry standard developed by Intel.
.sp
.LP
A USB 2.0 host controller includes one high-speed host controller and zero or
more USB 1.1 host controllers. The high-speed host controller implements an
EHCI (Enhanced Host Controller Interface) that is used for all high-speed
communications to high-speed-mode devices.
.sp
.LP
All USB 2.0 devices connected to the root ports of the USB 2.0 host
controller and all devices connected to a high-speed-mode hub should be routed
to the EHCI host controller.
.sp
.LP
All full- and low-speed devices connected to the root ports of the USB 2.0 host
controller should be routed to the companion USB 1.1 host controllers. (OHCI or
UHCI host controller).
.sp
.LP
The \fBehci\fR supports bulk, interrupt, control and isochronous transfers
The \fBehci\fR supports bulk, interrupt, control and iso chronous transfers
(on USB1.\fIx\fR devices behind a USB2.0 hub).
.SH FILES
.ne 2
.na
\fB\fB/kernel/drv/ehci\fR\fR
.ad
.RS 28n
32-bit ELF 86 kernel module
.RE

.sp
.ne 2
.na
\fB\fB/kernel/drv/sparcv9/ehci\fR\fR
.ad
.RS 28n
Device driver (SPARC)
64-bit SPARC ELF kernel module
.RE

.sp
```



```
.ne 2
.na
\fB\fB/kernel/drv/amd64/ehci\fR\fR
.ad
.RS 28n
Device driver (x86)
64-bit x86 ELF kernel module
.RE

.sp
.ne 2
.na
\fB\fB/kernel/drv/ehci.conf\fR\fR
.ad
.RS 28n
Driver configuration file
.RE

.SH ATTRIBUTES
.LP
See \fBattributes\fR(5) for descriptions of the following attributes:
.sp

.sp
.TS
box;
c | c
l | l .
ATTRIBUTE TYPE  ATTRIBUTE VALUE
_
Architecture    SPARC, x86, PCI-based systems
.TE

.SH SEE ALSO
.LP
\fBadd_drv\fR(1M), \fBprtconf\fR(1M), \fBrem_drv\fR(1M), \fBupdate_drv\fR(1M),
\fBattributes\fR(5), \fBhubd\fR(7D), \fBuhci\fR(7D), \fBohci\fR(7D),
\fBusba\fR(7D)
.sp
.LP
\fIWriting Device Drivers\fR
.sp
.LP
\fIUniversal Serial Bus Specification 2.0\fR
.sp
.LP
\fIEnhanced Host Controller Interface Specification 1.0\fR
.sp
.LP
\fISystem Administration Guide: Basic Administration\fR
.sp
.LP
\fIhttp://www.usb.org\fR
.sp
.LP
\fIhttp://www.intel.com/technology/usb/ehcispec.htm\fR
.SH DIAGNOSTICS
.LP
In addition to being logged, the following messages may appear on the system
console. All messages are formatted in the following manner:
.sp
.in +2
.nf
WARNING: <device path> (ehci<instance number>): Message...
.fi
.in -2
```

```
110 .sp

112 .sp
113 .ne 2
114 .na
115 \fBUnrecoverable USB hardware error.\fR
116 .ad
117 .sp .6
118 .RS 4n
119 There was an unrecoverable USB hardware error reported by the \fBehci\fR
120 controller. Reboot the system. If this problem persists, contact your system
121 vendor.
122 .RE

124 .sp
125 .ne 2
126 .na
127 \fBNo SOF interrupts.\fR
128 .ad
129 .br
130 .na
131 \fB\fR
132 .ad
133 .sp .6
134 .RS 4n
135 No SOF interrupts have been received. This USB EHCI controller is unusable.
136 .RE

138 .sp
139 .ne 2
140 .na
141 \fBError recovery failure: Please hotplug the 2.0 hub at <device path>.\fR
142 .ad
143 .sp .6
144 .RS 4n
145 The driver failed to clear 2.0 hub's TT buffer. Remove and reinsert the
146 external USB2.0 hub.
147 .RE

149 .sp
150 .ne 2
151 .na
152 \fBRevision<xx> is not supported.\fR
153 .ad
154 .sp .6
155 .RS 4n
156 High speed USB devices prior to revision 0.95 are not supported.
157 .RE

159 .sp
160 .LP
161 The following messages may be entered into the system log. They are formatted
162 in the following manner:
163 .sp
164 .in +2
165 .nf
166 <device path> (ehci<instance number>): Message...
167 .fi
168 .in -2
169 .sp

171 .sp
172 .ne 2
173 .na
174 \fBUnable to take control from BIOS. Failure is ignored.\fR
175 .ad
```



```
176 .sp .6
177 .RS 4n
178 The driver was unable to take control of the EHCI hardware from the system's
179 BIOS. This failure is ignored. To abort the attach on this take-over failure,
180 comment out a property in ehci.conf. (x86 only).
181 .RE

183 .sp
184 .ne 2
185 .na
186 \fBUnable to take control from BIOS.\fR
187 .ad
188 .sp .6
189 .RS 4n
190 The driver is unable to take control of the EHCI hardware from the
191 system's BIOS and aborts the attach. High speed (USB 2.0) support is disabled.
192 In this case, all USB devices run at full/low speed. Contact your system vendor
193 or your system administrator for possible changes in BIOS settings. You can
207 or your system administror for possible changes in BIOS settings. You can
194 disable a property in \fBehci.conf\fR to ignore this failure. (x86 only.)
195 .RE

197 .sp
198 .ne 2
199 .na
200 \fBLow speed device is not supported.\fR
201 .ad
202 .br
203 .na
204 \fBFull speed device is not supported.\fR
205 .ad
206 .sp .6
207 .RS 4n
208 The driver detected a low or full speed device on its root hub port. Per USB
209 2.0 specification, the device should be routed to a companion host controller
210 (OHCI or UHCI). However, no attached companion host controller appears to be
211 available. Therefore, low and full speed devices are not supported.
212 .RE

214 .sp
215 .ne 2
216 .na
217 \fBLow speed endpoint's poll interval of <n> ms is below threshold. Rounding up
218 to 8 ms.\fR
219 .ad
220 .sp .6
221 .RS 4n
222 Low speed endpoints are limited to polling intervals between 8 ms and 255 ms.
223 If a device reports a polling interval that is less than 8 ms, the driver uses
224 8 ms instead.
225 .RE

227 .sp
228 .ne 2
229 .na
230 \fBLow speed endpoint's poll interval is greater than 255 ms.\fR
231 .ad
232 .sp .6
233 .RS 4n
234 The low speed device's polling interval is out of range. The host controller
235 does not allocate bandwidth for this device. This device is not usable.
236 .RE

238 .sp
239 .ne 2
240 .na
```

```
241 \fBFull speed endpoint’s poll interval must be between 1 and 255 ms.\fR
242 .ad
243 .sp .6
244 .RS 4n
245 The full speed device’s polling interval is out of range. The host controller
246 does not allocate bandwidth for this device. This device is not usable.
247 .RE

249 .sp
250 .ne 2
251 .na
252 \fBHigh speed endpoint’s poll interval must be between 1 and 16 units.\fR
253 .ad
254 .sp .6
255 .RS 4n
256 The high speed device’s polling interval is out of range. The host controller
257 will not allocate bandwidth for this device. This device will not be usable.
258 Refer to the USB specification, revision 2.0 for the unit definition.
259 .RE

261 .sp
262 .ne 2
263 .na
264 \fBehci_modify_qh_status_bit: Failed to halt qh=<address>.\fR
265 .ad
266 .sp .6
267 .RS 4n
268 Error recovery failed. Please disconnect and reinsert all devices or reboot.
269 .RE

271 .LP
272 Note -
273 .sp
274 .RS 2
275 Due to recently discovered incompatibilities with this USB controller,
276 USB2.\fIx\fR transfer support has been disabled. However, this device continues
277 to function as a USB1.\fIx\fR controller. Information on enabling USB2.x
278 support is provided in this man page.
279 .LP
280 VIA chips may not be compatible with this driver. To bind \fBehci\fR
281 specifically to the chip and eliminate the warnings, and to enable USB2.x
282 support, a new, more specific driver alias (refer to \fBadd_drv\fR(1M) and
283 \fBupdate_drv\fR(1M)) must be specified for \fBehci\fR. By default, the
284 \fBehci\fR alias is ’pciclass,0c0320.’ The compatible names in the
285 \fBprtconf\fR(1M) output provides additional aliases. For example:
286 .RE
287 .sp
288 .in +2
289 .nf
290    # prtconf -vp | grep pciclass,0c0320
291         compatible: ’pci1106,3104.1106.3104.2063’ +
292 \&’pci1106,3104.1106.3104’ + ’pci1106,3104’ +
293  pci1106,3104.2063’ + ’pci1106,3104’ + ’pciclass,0c0320’ +
294 \&’pciclass,0c03’
295          ....


298        A more specific alias is ’pci1106,3104.’ Perform the follow-
299        ing step to add this alias, then reboot the system:


302        # update_drv -a -i ’"pci1106,3104"’ ehci

304        # reboot
305 .fi
306 .in -2
```



```
308 .sp
309 .LP
310 After you apply the above workaround, the following message is displayed in
311 your system log:
312 .sp
313 .LP
314 Applying VIA workarounds.
```

****
3272 Sat Jan 11 13:13:26 2020
new/usr/src/man/man7d/elxl.7d
11641 spelling mistakes in section 7d of the manual
****

```
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.\"
.Dd "Jan 10, 2020"
.Dd "Aug 7, 2014"
.Dt ELXL 7D
.Os
.Sh NAME
.Nm elxl
.Nd 3Com Etherlink XL device driver
.Sh SYNOPSIS
.Pa /dev/elxl
.Sh DESCRIPTION
The
.Nm
driver provides support for the 3Com Etherlink XL
family of Ethernet and Fast Ethernet PCI controllers.
These are often known by their part numbers, most often 3c905 or 3c900 variants.
.Lp
The 3c905 devices generally support some form of 100 Mbps Ethernet,
whereas the 3c900 devices usually only support 10 Mbps.
Some devices support legacy media such as 10BASE-15, 10BASE-2, and even
10BASE-FL.
.
Where applicable, the devices support auto-negotiation, both full and
half duplex, etc.
They also support full size MTUs (1500 bytes), even when used with VLANs.
.
.Lp
The device driver supports the
.Xr ieee802.3 5
properties, which can be configured with
.Xr dladm 1M .
.Lp
In addition, for devices with multiple external media ports, the driver
supports a driver-specific
.Xr dladm 1M
property called
.Sy media ,
which can take one of the following values, depending on the available
media options on the device:
.Lp
```



```
.Bl -tag -compact -offset indent -width Sy
.It Sy mii
Media Independent Interface (MII), also 100BASE-TX
Media Indendent Interface (MII), also 100BASE-TX
.It Sy tp-hdx
10 Mbps twisted pair, half-duplex
.It Sy tp-fdx
10 Mbps twisted pair full-duplex
.It Sy fx-hdx
100BASE-FX (fiber), half-duplex
.It Sy fx-hdx
100BASE-FX (fiber), full-duplex
.It Sy bnc
10BASE-2
.Pq BNC, aka Dq thin-net
.It Sy aui
10BASE-15
.Pq aka Dq thick-net
.It Sy fl-hdx
10BASE-FL (fiber), half-duplex
.It Sy fl-fdx
10BASE-FL (fiber), full-duplex
.El
.Lp
The specific media options available can be queried with the
device-specific
.Sy available_media
.Xr dladm 1M
property.
.Sh FILES
.Bl -tag -width /dev/elxl
.It Pa /dev/elxl
Special character device.
.El
.Sh SEE ALSO
.Xr dladm 1M ,
.Xr ifconfig 1M ,
.Xr pci 4 ,
.Xr ieee802.3 5 ,
.Xr dlpi 7P
.Rs
.%T IEEE 802.3: Ethernet
.%Q IEEE Standards Association
.Re
```

```
***********************************************************
    7871 Sat Jan 11 13:13:26 2020
new/usr/src/man/man7d/i40e.7d
11641 spelling mistakes in section 7d of the manual
***********************************************************
.\"
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.\" Common Development and Distribution License ("CDDL"), version 1.0.
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.\"
.\" Copyright (c) 2018 Joyent, Inc.
.\"
.Dd Jan 10, 2020
.Dd May 23, 2018
.Dt I40E 7D
.Os
.Sh NAME
.Nm i40e
.Nd Intel 710/722 Ethernet Device Driver
.Sh SYNOPSIS
.Pa /dev/net/i40e*
.Sh DESCRIPTION
The
.Nm
driver is a GLDv3, multi-threaded, clonable, loadable device driver that
supports the Data Link Provider Interface,
.Xr dlpi 7P .
The
.Nm
driver supports the Intel 710 and 722 Ethernet Controller families of
networking interface cards which come in 1 GbE, 10 GbE, 25 GbE, and 40
GbE variants.
.Pp
In addition to basic device initialization and the sending and receiving
of frames, it supports the following features:
.Bl -dash -offset indent
.It
Jumbo frames up to 9710 bytes.
.It
Promiscuous access via
.Xr snoop 1M and
.Xr dlpi 7P
.It
IPv4 Checksum Offload
.It
TCP, UDP, and SCTP checksum offload
.El
.Pp
At this time, the
.Nm
driver does not enable the use of energy efficient Ethernet (EEE) or
support the use of flow control through hardware pause frames.
.Sh APPLICATION PROGRAMMING INTERFACE
For each device supported by the
.Nm
installed in the system, a character-special file will be created.
This file supports the Data Link Provider Interface (DLPI) which is documented
in
.Xr dlpi 7P .
For most consumers, the use of
```



```
.Xr libdlpi 3LIB ,
is recommended.
.Pp
Each instance is assigned a unique ascending integer identifier.
A device which has multiple ports may appear to the system as separate
instances.
The system does not provide a guarantee on how these will be presented.
The system does not provide a guarnatee on how these will be presented.
Using this instance identifier, one can determine the exact character-special
file to open.
For example, the first instance enumerated in the system, with id 0, would be
named
.Sy i40e0 .
It exists in the file system at
.Pa /dev/net/i40e0 .
.Sh CONFIGURATION
The
.Nm
driver always performs auto-negotiation and depending on the model may
negotiate to 40 Gbps, 25 Gbps, 10 Gbps, or 1 Gbps.
At this time, the driver requires the use of auto-negotiation.
.Pp
The
.Nm
driver is managed by the
.Xr dladm 1M
utility.
.Xr dladm 1M
is the preferred interface for setting all properties.
While
.Xr driver.conf 4
based configuration is possible,
.Xr dladm 1M
is recommended.
The
.Nm
driver may be joined into an aggregation based on the link aggregation
control protocol (LACP) through
.Xr dladm 1M .
.Sh PROPERTIES
The device supports the following properties which may be tuned through
its driver.conf file,
.Pa /kernel/drv/i40e.conf .
Most of these properties cannot be changed after the device has been started.
The device is started in response to a DLPI consumer opening the device and
binding to it.
This happens when an IP interfaces is plumbed or another
.Xr dlpi 7P
consumer such as
.Xr snoop 1M
or an LLDP daemon is started.
.Pp
Some properties may be tuned at runtime with the
.Xr dladm 1M
utility.
Properties that can be will have the name of the dladm property called out
explicitly.
.Pp
These properties are not considered stable at this time.
They may change and should not be relied on.
They are considered
.Sy Volatile .
It is not expected that administrators of the system will have to tune
these values.
.Bl -hang -width Ds
.It Sy default_mtu
```

```
.Bd -filled -compact
Minimum:
.Sy 1500 |
Maximum:
.Sy 9710 |
Runtime Property:
.Sy mtu
.Ed
.Bd -filled
The
.Sy default_mtu
property determines the starting MTU of the various device instances.
Note that the device's MTU also determines the upper bound of the MTU of
all VNICs created over the device.
The default MTU is
.Sy 1500 .
.Ed
.It Sy mr_enable
.Bd -filled -compact
Minimum:
.Sy 0 |
Maximum:
.Sy 1
.Ed
.Bd -filled
The
.Sy mr_enable
property determines whether or not support for multiple rings is enabled
proeprty determines whether or not support for multiple rings is enabled
for the device.
The default is always to enable them.
It is not recommended to to disable them.
.Ed
.It Sy rx_ring_size
.Bd -filled -compact
Minimum:
.Sy 64 |
Maximum:
.Sy 4096
.Ed
.Bd -filled
The
.Sy rx_ring_size
property determines the number of descriptors that will be used in each
receive ring on the card.
Administrators should not normally need to tune this value.
Hardware requires that the ring size be a multiple of 32.
The system will round up the set value to the nearest multiple of 32.
.Ed
.It Sy tx_ring_size
.Bd -filled -compact
Minimum:
.Sy 64 |
Maximum:
.Sy 4096
.Ed
.Bd -filled
The
.Sy tx_ring_size
property determines the number of descriptors that will be used in each
transmit ring on the card.
Administrators should not normally need to tune this value.
Hardware requires that the ring size be a multiple of 32.
The system will round up the set value to the nearest multiple of 32.
.Ed
.It Sy tx_resched_threshold
```



```
.Bd -filled -compact
Minimum:
.Sy 8 |
Maximum:
.Sy Variable
.Ed
.Bd -filled
The
.Sy tx_resched_threshold
property determines the number of descriptors that must be available for
a frame to be transmitted.
The maximum is variable.
It is dependent on the value of the
.Sy tx_ring_size
property.
At least eight descriptors must be available for the device to function
correctly.
.Ed
.It Sy rx_limit_per_intr
.Bd -filled -compact
Minimum:
.Sy 16 |
Maximum:
.Sy 4096
.Ed
.Bd -filled
The
.Sy rx_limit_per_intr
property determines the maximum number of packets that will be processed
on a given ring during a single interrupt.
This is done to try and guarantee some amount of liveness in the system.
It is not expected that administrators will have to tune this value.
.Ed
.It Sy tx_hcksum_enable
.Bd -filled -compact
Minimum:
.Sy 0 |
Maximum:
.Sy 1
.Ed
.Bd -filled
The
.Sy tx_hcksum_enable
property controls whether or not the device enables support for hardware
checksumming of outgoing packets.
checksuming of outgoing packets.
The default is to always enable support for this.
Turning it off will increase latency and decrease throughput when transmitting
packets, but should be done if a hardware bug is suspected.
.Ed
.It Sy rx_hcksum_enable
.Bd -filled -compact
Minimum:
.Sy 0 |
Maximum:
.Sy 1
.Ed
.Bd -filled
The
.Sy rx_hcksum_enable
property controls whether or not the device enables support for hardware
checksumming of incoming packets.
checksuming of incoming packets.
The default is to always enable support for this.
Turning it off will increase latency and decrease throughput when receiving
packets, but should be done if a hardware bug is suspected.
```

```
.Ed
.It Sy rx_dma_threshold
.Bd -filled -compact
Minimum:
.Sy 0 |
Maximum:
.Sy INT32_MAX |
Runtime Property:
.Sy _rx_dma_threshold
.Sy _rx_dma_treshold
.Ed
.Bd -filled
The
.Sy rx_dma_threshold
.Sy rx_dma_treshold
indicates the size in bytes of a received frame, including all of its
headers, at which the driver should not copy the frame but instead bind
DMA memory.
By setting this property to its minimum, all frames will be processed with DMA
binding.
By setting this property to its maximum, all frames will be processed by copying
the frame.
.Ed
.It Sy tx_lso_enable
.Bd -filled -compact
Minimum:
.Sy 0 |
Maximum:
.Sy 1
.Ed
.Bd -filled
The
.Sy tx_lso_enable
property controls whether or not the device enables support for Large Segment
Offloand (LSO) when transmitting packets.
The default is to always enable support for this.
Turning it off will decrease throughput when transmitting packets, but should
be done if a hardware bug is suspected.
.Ed
.El
.Sh ARCHITECTURE
The
.Nm
driver is only supported on
.Sy x86
systems at this time.
.Sh FILES
.Bl -tag -width Pa
.It Pa /dev/net/i40e*
Per-instance character device.
.It Pa /kernel/drv/i40e
.It Pa /kernel/drv/amd64/i40e
.Device driver (x86)
.It Pa /kernel/drv/i40e.conf
.Driver configuration file
.El
.Sh SEE ALSO
.Xr dladm 1M ,
.Xr snoop 1M ,
.Xr driver.conf 4 ,
.Xr dlpi 7P
```

```
**********************************************************
    4925 Sat Jan 11 13:13:26 2020
new/usr/src/man/man7d/ixgbe.7d
11641 spelling mistakes in section 7d of the manual
**********************************************************
'\" te
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.\" the fields enclosed by brackets "[]" replaced with your own identifying info
.TH IXGBE 7D "Jan 10, 2020"
.TH IXGBE 7D "Apr 10, 2016"
.SH NAME
ixgbe \- Intel 10Gb PCI Express NIC Driver
.SH SYNOPSIS
.LP
.nf
\fB/dev/ixgbe*\fR
.fi

.SH DESCRIPTION
.LP
The \fBixgbe\fR 10 Gigabit Ethernet driver is a multi-threaded, loadable,
clonable, GLD-based STREAMS driver supporting the Data Link Provider Interface,
\fBdlpi\fR(7P), on Intel 10-Gigabit PCI Express Ethernet controllers.
.sp
.LP
The \fBixgbe\fR driver functions include controller initialization, frame
transmit and receive, promiscuous and multicast support, and error recovery and
reporting.
.sp
.LP
The \fBixgbe\fR driver supports the following Intel 10-Gigabit PCI Express Ether
.RS +4
.TP
.ie t \(bu
.el o
Intel Ethernet Controller 82598EB Family
.RE
.RS +4
.TP
.ie t \(bu
.el o
Intel Ethernet Controller 82599EB (X520) Family
.RE
.RS +4
.TP
.ie t \(bu
.el o
Intel Ethernet Controller X540 Family
.RE
.RS +4
.TP
.ie t \(bu
.el o
Intel Ethernet Controller X550 Family
.RE
.LP
The \fBixgbe\fR driver and hardware support auto-negotiation, a protocol
specified by the \fIIEEE 802.3ae\fR specification.
.SH APPLICATION PROGRAMMING INTERFACE
.LP
The cloning character-special device, \fB/dev/ixgbe\fR, is used to access all
Intel 10-Gigabit PCI Express Ethernet devices installed within the system.
```



```
.sp
.LP
The \fBixgbe\fR driver is managed by the \fBdladm\fR(1M) command line utility,
which allows VLANs to be defined on top of \fBixgbe\fR instances and for
\fBixgbe\fR instances to be aggregated. See \fBdladm\fR(1M) for more details.
.sp
.LP
You must send an explicit DL_ATTACH_REQ message to associate the opened stream
with a particular device (PPA). The PPA ID is interpreted as an unsigned
integer data type and indicates the corresponding device instance (unit)
number. The driver returns an error (DL_ERROR_ACK) if the PPA field value does
not correspond to a valid device instance number for the system. The device is
initialized on first attach and de-initialized (stopped) at last detach.
.sp
.LP
The values returned by the driver in the DL_INFO_ACK primitive in response to
your DL_INFO_REQ are:
.RS +4
.TP
.ie t \(bu
.el o
Maximum SDU for Intel 82598EB is 16366.
.RE
.RS +4
.TP
.ie t \(bu
.el o
Maximum SDU for Intel 82599EB, X540 and X550 is 15500.
.RE
.RS +4
.TP
.ie t \(bu
.el o
Minimum SDU is 0.
.RE
.RS +4
.TP
.ie t \(bu
.el o
DLSAP address length is 8.
.RE
.RS +4
.TP
.ie t \(bu
.el o
MAC type is DL_ETHER.
.RE
.RS +4
.TP
.ie t \(bu
.el o
SAP (Service Access Point) length value is -2, meaning the physical address
component is followed immediately by a 2-byte SAP component within the DLSAP
address.
.RE
.RS +4
.TP
.ie t \(bu
.el o
Broadcast address value is the Ethernet/IEEE broadcast address
(FF:FF:FF:FF:FF:FF).
.sp
Once in the DL_ATTACHED state, you must send a DL_BIND_REQ to associate a
particular SAP with the stream.
.RE
.SH CONFIGURATION
```

```
127 .LP
124 By default, the \fBixgbe\fR driver performs auto-negotiation to select the link
125 speed and mode. Link speed and mode can only be 10000 Mbps full-duplex for fiber
126 \fIIEEE802.3\fR standard for more information.
127 .SH FILES
128 .ne 2
129 .na
130 \fB\fB/dev/ixgbe*\fR\fR
131 .ad
132 .RS 29n
133 Special character device.
134 .RE

136 .sp
137 .ne 2
138 .na
143 \fB\fB/kernel/drv/ixgbe\fR\fR
144 .ad
145 .RS 29n
146 32-bit device driver (x86).
147 .RE

149 .sp
150 .ne 2
151 .na
139 \fB\fB/kernel/drv/amd64/ixgbe\fR\fR
140 .ad
141 .RS 29n
142 Device driver (x86)
155 64-bit device driver (x86).
143 .RE

145 .sp
146 .ne 2
147 .na
148 \fB\fB/kernel/drv/sparcv9/ixgbe\fR\fR
149 .ad
150 .RS 29n
151 Device driver (SPARC)
164 64-bit device driver (SPARC).
152 .RE

154 .sp
155 .ne 2
156 .na
157 \fB\fB/kernel/drv/ixgbe.conf\fR\fR
158 .ad
159 .RS 29n
160 Driver configuration file
173 Configuration file.
161 .RE

163 .SH ATTRIBUTES
177 .LP
164 See \fBattributes\fR(5) for descriptions of the following attributes:
165 .sp

167 .sp
168 .TS
169 box;
170 c | c
171 l | l .
172 ATTRIBUTE TYPE  ATTRIBUTE VALUE
173 _
174 Architecture    SPARC, x86
175 _
```



```
176 Interface Stability     Committed
177 .TE

179 .SH SEE ALSO
194 .LP
180 \fBdladm\fR(1M), \fBnetstat\fR(1M), \fBdriver.conf\fR(4), \fBattributes\fR(5),
181 \fBstreamio\fR(7I), \fBdlpi\fR(7P)
182 .sp
183 .LP
184 \fIWriting Device Drivers\fR
185 .sp
186 .LP
187 \fISTREAMS Programming Guide\fR
188 .sp
189 .LP
190 \fINetwork Interfaces Programmer’s Guide\fR
191 .sp
192 .LP
193 \fIIEEE 802.3ae Specification\fR, IEEE - 2002
208 \fIIEEE 802.3ae Specificiation\fR, IEEE - 2002
```

```
**********************************************************
    2123 Sat Jan 11 13:13:27 2020
new/usr/src/man/man7d/pchtemp.7d
11641 spelling mistakes in section 7d of the manual
**********************************************************
```

```
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.\" http://www.illumos.org/license/CDDL.
.\"
.\"
.\" Copyright 2019 Joyent, Inc.
.\"
.Dd January 10, 2020
.Dd April 26, 2019
.Dt PCHTEMP 7D
.Os
.Sh NAME
.Nm pchtemp
.Nd Intel platform controller hub temperature sensor driver
.Sh SYNOPSIS
.Pa /dev/sensors/temperature/pch/*
.Sh DESCRIPTION
The
.Nm
driver provides the system the ability to read the digital temperature
sensor found on several Intel platform controller hub (PCH) chipsets.
The following chipsets are supported which cover most Intel Core family
The following chipsets are supported which cover most Intel Core familiy
(non-Atom) CPUs starting with the Haswell generation:
.Bl -dash
.It
Intel 8 Series / C220 Series Chipset Platform Controller Hub
.It
Intel 9 Series Chipset Family Platform Controller Hub
.It
Intel C610 Series Chipset and X99 Chipset Platform Controller Hub
.It
Intel 100 Series Chipset Family Platform Controller Hub
.It
Intel C620 Series Chipset Platform Controller Hub
.It
Intel 200 and Z370 Series Chipset Families Platform Controller Hub
.It
Intel 7th/8th Generation Processor Family U/Y Platforms
.It
Intel 300 Series and Intel C240 Series Chipset Family Platform
Controller Hub
.El
.Pp
Temperature information is available to the system via the fault
management architecture
.Pq FMA .
The file system location and programming interface to the
.Nm
driver are considered
.Sy Volatile ,
subject to change without notice, and should not be used directly.
Raw temperature information can be dumped through the FMA developer
utility
.Sy fmtopo .
```



```
.Sh SEE ALSO
.Xr fmadm 1M
.Rs
.%A Intel Corporation
.%B Intel 300 Series and Intel C240 Series Chipset Family Platform Controller Hu
.%D March 2019
.%O Document Number 337347-005
.%V 1
.%U https://www.intel.com/content/dam/www/public/us/en/documents/datasheets/300-
.Re
```

```
**********************************************************
    4794 Sat Jan 11 13:13:27 2020
new/usr/src/man/man7d/pcn.7d
11641 spelling mistakes in section 7d of the manual
**********************************************************
```

```
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  27 .TH "PCN" "7D" "Jan 10, 2020"
  27 .TH "PCN" "7D" "Sep 16, 2011"
  28 .
  29 .SH "NAME"
  30 \fBpcn\fR \- PCnet Ethernet device driver
  31 .SH "SYNOPSIS"
  32 .LP
  32 .nf
  33 \fB/dev/pcn\fR
  34 .fi

  36 .SH "DESCRIPTION"
  38 .sp
  39 .LP
  37 The \fBpcn\fR driver is a multi\-threaded, loadable, clonable GLDv3\-based
  38 STREAMS driver supporting the Data Link Provider Interface \fBdlpi\fR(7P) for
  39 the AMD PCnet family of Ethernet controllers.
  42 the AMD PCnet family of Ethernet controllers\.
  40 .SH "APPLICATION PROGRAMMING INTERFACE"
  41 The \fBpcn\fR driver can be used as either a "style 1" or a "style 2" Data Link
  42 Service Provider. Physical points of attachment (PPAs) are interpreted as the
  45 Service Provider\. Physical points of attachment (PPAs) are interpreted as the
  43 instance number of the \fBpcn\fR controller as assigned by the
  44 operating environment.
  47 operating environment\.
  45 .sp
  46 .LP
  47 The values returned by the driver in the \fBDL_INFO_ACK\fR response are:
  48 .RS +4
  49 .TP
  50 .ie t \(bu
  51 .el o
  52 Maximum SDU is 1500.
  55 Maximum SDU is 1500\.
  53 .RE
```



```
  54 .RS +4
  55 .TP
  56 .ie t \(bu
  57 .el o
  58 Minimum SDU is 0.
  61 Minimum SDU is 0\.
  59 .RE
  60 .RS +4
  61 .TP
  62 .ie t \(bu
  63 .el o
  64 The dlsap address length is 8.
  67 The dlsap address length is 8\.
  65 .RE
  66 .RS +4
  67 .TP
  68 .ie t \(bu
  69 .el o
  70 MAC type is \fBDL_ETHER\fR.
  73 MAC type is \fBDL_ETHER\fR\.
  71 .RE
  72 .RS +4
  73 .TP
  74 .ie t \(bu
  75 .el o
  76 SAP length is \-2. The 6\-byte physical address is immediately followed by a
  77 2\-byte SAP.
  79 SAP length is \-2\. The 6\-byte physical address is immediately followed by a
  80 2\-byte SAP\.
  78 .RE
  79 .RS +4
  80 .TP
  81 .ie t \(bu
  82 .el o
  83 Service mode is \fBDL_CLDLS\fR.
  86 Service mode is \fBDL_CLDLS\fR\.
  84 .RE
  85 .RS +4
  86 .TP
  87 .ie t \(bu
  88 .el o
  89 The broadcast address is the 6\-byte Ethernet broadcast address
  90 (\fBff:ff:ff:ff:ff:ff\fR).
  93 (\fBff:ff:ff:ff:ff:ff\fR)\.
  91 .SH "CONFIGURATION"
  95 .sp
  96 .LP
  92 The \fBpcn\fR driver performs auto-negotiation to select the link speed and
  93 mode.  Link speed may be 100Mbps full\-duplex, 100Mbps half\-duplex,
  98 mode\.  Link sped may be 100Mbps full\-duplex, 100Mbps half\-duplex,
  94 10Mbps full\-duplex, or 10Mbps half\-duplex, depending on the hardware
  95 adapter type.  See the \fIIEEE802.3\fR standard for more information.
 100 adapter type\.  See the \fIIEEE802.3\fR standard for more information\.
  96 .sp
  97 .LP
  98 The capabilities advertised by the \fBpcn\fR device can be set using
  99 \fBdladm\fR(1m).  The driver supports a number of parameters whose names
 100 begin with \fBen_\fR (see below).  Each of these parameters contains a
 101 boolean value that determines if the device advertises that mode of
 102 operations.  The \fBadv_autoneg_cap\fR parameter controls whether
 103 auto-negotiation is performed.  If \fBadv_autoneg_cap\fR is set to 0, the
 104 \fBdladm\fR(1m)\.  The driver supports a number of parameters whose names
 105 being with \fBen_\fR (see below)\.  Each of these parameters contains a
 106 boolean value that determines if the devices advertises that mode of
 107 operations\.  The \fBadv_autoneg_cap\fR parameter controls whether
 108 auto-negotioation is performed\.  If \fBadv_autoneg_cap\fR is set to 0, the
```

```
driver forces the mode of operation selected by the first non-zero
parameter in priority order as shown below:
.sp
.in +2
.nf
                           (highest priority/greatest throughput)
        en_100fdx_cap           100Mbps full duplex
        en_10fdx_cap            10Mbps full duplex
                         (lowest priority/least throughput)
.fi
.in -2

.sp
.LP
All capabilities default to enabled.  Note that changing any capability
parameter causes the link to go down while the link partners renegotiate
the link speed/duplex using the newly changed capabilities.
All capabilities default to enabled\.  Note that changing any capability
parameter causes te link to go down while the link partners renegotiate
the link speed/duplex using the newly changed capabilities\.
.SH "ATTRIBUTES"
.sp
.LP
See \fBattributes\fR(5) for a description of the following attributes:
.sp

.sp
.TS
box;
c | c
l | l .
ATTRIBUTE TYPE  ATTRIBUTE VALUE
_
Architecture    x86
_
Interface Stability     Committed
.TE

.SH "FILES"
.sp
.ne 2
.na
\fB/dev/pcn\fR
\fB\fB/dev/pcn\fR\fR
.ad
.sp .6
.RS 4n
Special character device.
Special character device\.
.RE

.sp
.ne 2
.na
\fB/kernel/drv/amd64/pcn\fR
\fB\fB/kernel/drv/pcn\fR\fR
.ad
.sp 6
.RS 4n
32\-bit driver binary\.
.RE

.sp
.ne 2
.na
\fB\fB/kernel/drv/amd64/pcn\fR\fR
```



```
.ad
.sp .6
.RS 4n
Device driver (x86)
64\-bit driver binary (x86)\.
.RE

.SH "SEE ALSO"
.sp
.LP
\fBattributes\fR(5), \fBstreamio\fR(7I), \fBdlpi\fR(7p)
.sp
.LP
\fIIEEE 802.3\fR \(em Institute of Electrical and Electronics Engineers, 2002
```

```
**********************************************************
   12367 Sat Jan 11 13:13:27 2020
new/usr/src/man/man7d/poll.7d
11641 spelling mistakes in section 7d of the manual
**********************************************************
   1 '\" te
   2 .\" Copyright (c) 2007 Sun Microsystems, Inc.  All Rights Reserved.
   3 .\" The contents of this file are subject to the terms of the Common Development
   4 .\" You can obtain a copy of the license at usr/src/OPENSOLARIS.LICENSE or http:
   5 .\" When distributing Covered Code, include this CDDL HEADER in each file and in
   6 .TH POLL 7D "January 10, 2020"
   6 .TH POLL 7D "April 9, 2016"
   7 .SH NAME
   8 poll \- driver for fast poll on many file descriptors
   9 .SH SYNOPSIS
  10 .LP
  10 .nf
  11 \fB#include <sys/devpoll.h>
  12 int fd = open("/dev/poll", O_RDWR);
  13 ssize_t n = write(int fd, struct pollfd buf[], int bufsize);
  14 int n = ioctl(int fd, DP_POLL, struct dvpoll* arg);
  15 int n = ioctl(int fd, DP_ISPOLLED, struct pollfd* pfd);\fR
  16 .fi

  18 .SH PARAMETERS
  19 .ne 2
  20 .na
  21 \fB\fIfd\fR \fR
  22 .ad
  23 .RS 12n
  24 Open file descriptor that refers to the  \fB/dev/poll\fR driver.
  25 .RE

  27 .sp
  28 .ne 2
  29 .na
  30 \fB\fIpath\fR \fR
  31 .ad
  32 .RS 12n
  33 \fB/dev/poll\fR
  34 .RE

  36 .sp
  37 .ne 2
  38 .na
  39 \fB\fIbuf\fR \fR
  40 .ad
  41 .RS 12n
  42 Array of  \fBpollfd\fR structures.
  43 .RE

  45 .sp
  46 .ne 2
  47 .na
  48 \fB\fIbufsize\fR \fR
  49 .ad
  50 .RS 12n
  51 Size of  \fIbuf\fR in bytes.
  52 .RE

  54 .sp
  55 .ne 2
  56 .na
  57 \fB\fIarg\fR \fR
  58 .ad
  59 .RS 12n
```



```
  60 Pointer to  \fBpollcall\fR structure.
  61 .RE

  63 .sp
  64 .ne 2
  65 .na
  66 \fB\fIpfd\fR \fR
  67 .ad
  68 .RS 12n
  69 Pointer to \fBpollfd\fR structure.
  70 .RE

  72 .SH DESCRIPTION
  74 .LP
  73 The  \fB/dev/poll\fR driver is a special driver that enables you to monitor
  74 multiple sets  of polled file descriptors. By using the  \fB/dev/poll\fR
  75 driver, you can efficiently poll large numbers of file descriptors. Access to
  76 the \fB/dev/poll\fR driver is provided through \fBopen\fR(2), \fBwrite\fR(2),
  77 and  \fBioctl(2)\fR system calls.
  78 .sp
  79 .LP
  80 Writing an array of  \fBpollfd\fR struct to the  \fB/dev/poll\fR driver has the
  81 effect of  adding these file descriptors to the monitored \fBpoll\fR file
  82 descriptor set  represented by the \fIfd\fR. To monitor multiple file
  83 descriptor sets, open the \fB/dev/poll\fR driver multiple times. Each \fBfd\fR
  84 corresponds to one set. For each \fBpollfd\fR struct entry (defined in
  85 \fBsys/poll.h\fR):
  86 .sp
  87 .in +2
  88 .nf
  89  struct pollfd {
  90     int  fd;
  91     short events;
  92     short revents;
  93  }
  94 .fi
  95 .in -2

  97 .sp
  98 .LP
  99 The  \fBfd\fR field specifies the file descriptor being polled. The
 100 \fBevents\fR field indicates the interested \fBpoll\fR \fBevents\fR on the file
 101 descriptor. If a \fBpollfd\fR array contains multiple \fBpollfd\fR entries with
 102 the same \fBfd\fR field, the "events" field in each \fBpollfd\fR entry is
 103 OR'ed. A special \fBPOLLREMOVE\fR event in the \fBevents\fR field of the
 104 \fBpollfd\fR structure removes the \fBfd\fR from the monitored set. The
 105 \fBrevents\fR field is not used. Write returns the  number of bytes written
 106 successfully or \fB-1\fR when write fails.
 107 .sp
 108 .LP
 109 The \fBDP_POLL\fR ioctl is used to retrieve returned \fBpoll\fR \fBevents\fR
 110 occurred on the  polled file descriptors in the monitored set represented by
 111 \fIfd\fR. \fIarg\fR \fIs\fR \fIa\fR pointer to the devpoll structures which
 112 are defined as follows:
 113 .sp
 114 .in +2
 115 .nf
 116  struct dvpoll {
 117      struct pollfd* dp_fds;
 118      int dp_nfds;
 119      int dp_timeout;
 120  }
 121 .fi
 122 .in -2

 124 .sp
```

```
125 .LP
126 The  \fBdp_fds\fR points to a buffer that holds an array of returned
127 \fBpollfd\fR structures. The \fBdp_nfds\fR field specifies the size of the
128 buffer in terms of the  number of \fBpollfd\fR entries it contains. The
129 \fBdp_nfds\fR field also indicates the maximum number of file descriptors from
130 which poll information can be obtained. If there is no interested  \fBevents\fR
131 on any of the polled file descriptors, the \fBDP_POLL\fR ioctl call will wait
132 \fBdp_timeout\fR milliseconds before returning. If \fBdp_timeout\fR is
133 \fB0\fR, the ioctl call returns immediately. If \fBdp_timeout\fR is \fB-1\fR,
134 the call blocks until an interested \fBpoll\fR \fBevents\fR is available or the
135 call is interrupted. Upon return, if the ioctl call has failed, \fB-1\fR is
136 returned. The memory content pointed by \fBdp_fds\fR is not modified. A return
137 value \fB0\fR means the ioctl is timed out. In this case, the memory content
138 pointed by  \fBdp_fds\fR is not modified. If the call is successful, it returns
139 the number of valid \fBpollfd\fR entries in  the array pointed by \fBdp_fds\fR;
140 the contents of the rest of the buffer is undefined. For each valid
141 \fBpollfd\fR entry, the \fBfd\fR field indicates the file descriptor on which
143 \fBpollfd\fR entry, the \fBfd\fR field indicates the file desciptor on which
142 the polled \fBevents\fR happened. The  \fBevents\fR field is the user specified
143 \fBpoll\fR \fBevents\fR. The \fBrevents\fR field contains the  \fBevents\fR
144 occurred. \fB-1\fR is returned if the  call fails.
145 .sp
146 .LP
147 \fBDP_ISPOLLED\fR ioctl allows you to query if a file descriptor is already in
148 the  monitored set represented by  \fBfd\fR. The \fBfd\fR field of the
149 \fBpollfd\fR structure indicates the file descriptor of interest. The
150 \fBDP_ISPOLLED\fR ioctl returns  \fB1\fR if the file descriptor is in the set.
151 The \fBevents\fR field contains  \fB0\fR. The \fBrevents\fR field contains the
152 currently polled \fBevents\fR. The ioctl returns  \fB0\fR if the file
153 descriptor is not in the set. The  \fBpollfd\fR structure pointed by  \fIpfd\fR
154 is not modified. The ioctl returns a  \fB-1\fR if the call fails.
155 .SH EXAMPLES
158 .LP
156 The following example shows how  \fB/dev/poll\fR may be used.
157 .sp
158 .in +2
159 .nf
160 {
161         ...
162         /*
163          * open the driver
164          */
165         if ((wfd = open("/dev/poll", O_RDWR)) < 0) {
166                 exit(-1);
167         }
168         pollfd = (struct pollfd* )malloc(sizeof(struct pollfd) * MAXBUF);
169         if (pollfd == NULL) {
170                 close(wfd);
171                 exit(-1);
172         }
173         /*
174          * initialize buffer
175          */
176         for (i = 0; i < MAXBUF; i++) {
177                 pollfd[i].fd = fds[i];
178                 pollfd[i].events = POLLIN;
179                 pollfd[i].revents = 0;
180         }
181         if (write(wfd, &pollfd[0], sizeof(struct pollfd) * MAXBUF) !=
182                         sizeof(struct pollfd) * MAXBUF) {
183                 perror("failed to write all pollfds");
184                 close (wfd);
185                 free(pollfd);
186                 exit(-1);
187         }
188         /*
```



```
189          * read from the devpoll driver
190          */
191         dopoll.dp_timeout = -1;
192         dopoll.dp_nfds = MAXBUF;
193         dopoll.dp_fds = pollfd;
194         result = ioctl(wfd, DP_POLL, &dopoll);
195         if (result < 0) {
196                 perror("/dev/poll ioctl DP_POLL failed");
197                 close (wfd);
198                 free(pollfd);
199                 exit(-1);
200         }
201         for (i = 0; i < result; i++) {
202                 read(dopoll.dp_fds[i].fd, rbuf, STRLEN);
203         }
204  ...
205 }
206 .fi
207 .in -2

209 .sp
210 .LP
211 The following example is part of a test program which shows how
212 \fBDP_ISPOLLED()\fR ioctl may be used.
213 .sp
214 .in +2
215 .nf
216 {
217         ...

219         loopcnt = 0;
220         while (loopcnt < ITERATION) {
221                 rn = random();
222                 rn %= RANGE;
223                 if (write(fds[rn], TESTSTRING, strlen(TESTSTRING)) !=
224                                 strlen(TESTSTRING)) {
225                         perror("write to fifo failed.");
226                         close (wfd);
227                         free(pollfd);
228                         error = 1;
229                         goto out1;
230                 }
231                 dpfd.fd = fds[rn];
232                 dpfd.events = 0;
233                 dpfd.revents = 0;
234                 result = ioctl(wfd, DP_ISPOLLED, &dpfd);
235                 if (result < 0) {
236                         perror("/dev/poll ioctl DP_ISPOLLED failed");
237                         printf("errno = %d\en", errno);
238                         close (wfd);
239                         free(pollfd);
240                         error = 1;
241                         goto out1;
242                 }
243                 if (result != 1) {
244                         printf("DP_ISPOLLED returned incorrect result: %d.\en",
245                                 result);
246                         close (wfd);
247                         free(pollfd);
248                         error = 1;
249                         goto out1;
250                 }
251                 if (dpfd.fd != fds[rn]) {
252                         printf("DP_ISPOLLED returned wrong fd %d, expect %d\en",
253                                 dpfd.fd, fds[rn]);
254                         close (wfd);
```

```
                        free(pollfd);
                        error = 1;
                        goto out1;
 }
                if (dpfd.revents != POLLIN) {
                        printf("DP_ISPOLLED returned unexpected revents %d\en",
                                dpfd.revents);
                        close (wfd);
                        free(pollfd);
                        error = 1;
                        goto out1;
                }
                if (read(dpfd.fd, rbuf, strlen(TESTSTRING)) !=
                                strlen(TESTSTRING)) {
                        perror("read from fifo failed");
                        close (wfd);
                        free(pollfd);
                        error = 1;
                        goto out1;
                }
                loopcnt++;
        }

.fi
.in -2

.SH ERRORS
.ne 2
.na
\fB\fBEACCES\fR \fR
.ad
.RS 11n
A process does not have permission to access the content cached in
\fB/dev/poll\fR.
.RE

.sp
.ne 2
.na
\fB\fBEINTR\fR \fR
.ad
.RS 11n
A signal was caught during the execution of the \fBioctl\fR(2) function.
.RE

.sp
.ne 2
.na
\fB\fBEFAULT\fR \fR
.ad
.RS 11n
The request argument requires a data transfer to or from a buffer pointed to by
\fIarg\fR, but \fIarg\fR points to an illegal address.
.RE

.sp
.ne 2
.na
\fB\fBEINVAL\fR \fR
.ad
.RS 11n
The request or \fIarg\fR parameter is not valid for  this device, or field of
the dvpoll struct pointed by \fIarg\fR is not valid  (for example, when using
write/pwrite dp_nfds is greater than {OPEN_MAX}, or when using the DPPOLL ioctl
dp_nfds is greater than or equal to {OPEN_MAX}}.
.RE
```



```
.sp
.ne 2
.na
\fB\fBENXIO\fR \fR
.ad
.RS 11n
The \fBO_NONBLOCK\fR flag is set, the named file is a FIFO, the \fBO_WRONLY\fR
flag is set, and no process has the file open for reading; or the named file is
a character special or block special file and the device associated with this
special file does not exist.
.RE

.SH ATTRIBUTES
.LP
See \fBattributes\fR(5) for a description of the following attributes:
.sp

.sp
.TS
box;
l l
l l .
ATTRIBUTE TYPE  ATTRIBUTE VALUE
Architecture    SPARC, x86
Interface Stability     Obsolete
MT-Level        Safe
.TE

.SH SEE ALSO
.LP
\fBopen\fR(2), \fBpoll\fR(2), \fBwrite\fR(2), \fBattributes\fR(5)
.SH NOTES
.LP
The \fB/dev/poll\fR API is particularly beneficial to applications that poll a
large number of file descriptors repeatedly.  Applications will exhibit the
best performance gain if the polled file descriptor list rarely change.
.sp
.LP
When using the \fB/dev/poll\fR driver, you should remove a closed file
descriptor from a monitored poll set. Failure to do so may result in a
\fBPOLLNVAL\fR \fBrevents\fR being returned for the closed file descriptor.
When a file descriptor is closed but not removed from the monitored set, and is
reused in subsequent open of a different device, you will be polling the device
associated with the reused file descriptor. In a multithreaded application,
careful coordination among threads doing close and \fBDP_POLL\fR ioctl is
recommended for consistent results.
.sp
.LP
The \fB/dev/poll\fR driver caches a list of polled file descriptors, which are
specific to a process. Therefore, the  \fB/dev/poll\fR file descriptor of a
process will be inherited by its child process, just like any other file
descriptors. But the child process will have very limited access through this
inherited \fB/dev/poll\fR file descriptor. Any attempt to write or do ioctl by
the child process will result in an \fBEACCES\fR error. The child process
should close the inherited  \fB/dev/poll\fR file descriptor and open its own if
desired.
.sp
.LP
The  \fB/dev/poll\fR driver does not yet support polling. Polling on a
\fB/dev/poll\fR file descriptor will result in \fBPOLLERR\fR being returned in
the \fBrevents\fR field of \fBpollfd\fR structure.
```

```
**********************************************************
    2674 Sat Jan 11 13:13:27 2020
new/usr/src/man/man7d/qede.7d
11641 spelling mistakes in section 7d of the manual
**********************************************************
```

```
.\"
.\" This file and its contents are supplied under the terms of the
.\" Common Development and Distribution License ("CDDL"), version 1.0.
.\" You may only use this file in accordance with the terms of version
.\" 1.0 of the CDDL.
.\"
.\" A full copy of the text of the CDDL should have accompanied this
.\" source.  A copy of the CDDL is also available via the Internet at
.\" http://www.illumos.org/license/CDDL.
.\"
.\"
.\" Copyright (c) 2014 QLogic Corporation. All Rights Reserved
.\"
.Dd January 10, 2020
.Dd August 28, 2017
.Dt QEDE 7D
.Os
.Sh NAME
.Nm qede
.Nd QLogic FastLinQ QL45xxx 10/25/40/50/100 Gigabit Ethernet Driver
.Sh SYNOPSIS
.Pa /dev/net/qede*
.Sh DESCRIPTION
The
.Nm
Ethernet driver is a multi-threaded, loadable, clonable, GLDv3-based
driver supporting the Data Link Provider Interface,
.Xr dlpi 7P ,
over QLogic FastLinQ QL45xxx 10/25/40/50/100 Gigabit Ethernet
controllers.
Multiple QLogic FastLinQ controllers installed within the system are
supported by the driver.
.Pp
The
.Nm
driver provides support for the QLogic QL45xxx line of devices.
Functions include chip initialization, frame transmit and receive,
multicast and promiscuous support, error recovery and reporting.
These devices provide 10000/25000/40000/50000/100000 Mbps networking
interfaces.
.Sh DRIVER CONFIGURATION
The primary methods of configuration are via modification of the
.Pa /kernel/drv/qede.conf
file or execution of the
.Xr dladm 1M
utility.
There are many configuration items available and all are thoroughly
documented in the
.Pa /kernel/drv/qede.conf
file.
Note that for changes to this file to take affect the driver must be
reloaded or the system rebooted.
In order to reload the driver with new configuration changes all
.Nm
interfaces must be first unplumbed and then the
.Xr update_drv 1M
tool must be executed.
For the configuration items that do not require a driver reload the
.Xr dladm 1M
tool can be used to dynamically change the option.
Use of
```



```
.Xr dladm 1M
is the preferred method.
.Sh DEBUGGING
.Ss kstat
There are many statistics exposed via
.Xr kstat 1M
by the
.Nm
driver.
The main groups are:
.Bl -tag -width Em
.It Em intr
for interrupts stats
.It Em l2chip
for layer 2 chip stats
.It Em l2driver
for layer 2 driver stats
.It Em l2stats
for general layer 2 stats
.It Em link
for detailed link status
.It Em mac
for GLDv3 MAC layer stats
.It Em rxq#
for Rx ring stats
.It Em txq#
for Tx ring stats
.It Em stats
for general driver stats and version info.
.El
.Pp
To get a list of all the individual statistics in these groups run:
To get a list of all the individual statistics in these goups run:
.Bd -literal -offset indent
# kstat -m qede -i 0 -l
.Ed
.Sh SEE ALSO
.Xr dladm 1M ,
.Xr ifconfig 1M ,
.Xr driver.conf 4 ,
.Xr dlpi 7P
```

```
**********************************************************
   17761 Sat Jan 11 13:13:27 2020
new/usr/src/man/man7d/sd.7d
11641 spelling mistakes in section 7d of the manual
**********************************************************
   1 '\" te
   2 .\" Copyright (c) 2009 Sun Microsystems, Inc.  All Rights Reserved.
   3 .\" The contents of this file are subject to the terms of the Common Development
   4 .\"  See the License for the specific language governing permissions and limitat
   5 .\" with the fields enclosed by brackets "[]" replaced with your own identifying
   6 .TH SD 7D "Jan 10, 2020"
   6 .TH SD 7D "May 13, 2017"
   7 .SH NAME
   8 sd \- SCSI disk and ATAPI/SCSI CD-ROM device driver
   9 .SH SYNOPSIS
  10 .LP
  10 .nf
  11 \fBsd@target,lun:partition\fR
  12 .fi

  14 .SH DESCRIPTION
  16 .LP
  15 To open a device without checking if the vtoc is valid, use the O_NDELAY flag.
  16 When the device is opened using O_NDELAY, the first read or write to the device
  17 that happens after the open results in the label being read if the label is not
  18 currently valid. Once read, the label remains valid until the last close of the
  19 device. Except for reading the label, O_NDELAY has no impact on the driver.
  20 .SS "SPARC"
  23 .LP
  21 The \fBsd\fR \fBSCSI\fR and \fBSCSI/ATAPI\fR driver supports embedded
  22 \fBSCSI\fR-2 and \fBCCS\fR-compatible \fBSCSI\fR disk and CD-ROM drives,
  23 \fBATAPI \fR 2.6 (SFF-8020i)-compliant CD-ROM drives, SFF-8090-compliant
  24 \fBSCSI/ATAPI\fR DVD-ROM drives, IOMEGA \fBSCSI/ATAPI\fR ZIP drives, \fBSCSI
  25 JAZ\fR drives, and USB mass storage devices (refer to \fBscsa2usb\fR(7D)).
  26 .sp
  27 .LP
  28 To determine the disk drive type, use the \fBSCSI/ATAPI\fR inquiry command and
  29 read the volume label stored on block 0 of the drive. (The volume label
  30 describes the disk geometry and partitioning and must be present for the disk
  31 to be mounted by the system.) A volume label is not required for removable,
  32 re-writable or read-only media.
  33 .SS "x86 Only"
  34 The \fBsd\fR driver supports embedded \fBSCSI\fR-2 and \fBCCS\fR-compatible
  37 .LP
  38 The \fBsd\fRdriver supports embedded \fBSCSI\fR-2 and \fBCCS\fR-compatible
  35 \fBSCSI \fRdisk and CD-ROM drives, \fBATAPI \fR2.6 (SFF-8020i)-compliant CD-ROM
  36 drives, SFF-8090-compliant \fBSCSI/ATAPI\fR DVD-ROM drives, IOMEGA
  37 \fBSCSI/ATAPI\fR ZIP drives\fB, and SCSI JAZ\fR drives.
  38 .sp
  39 .LP
  40 The x86 BIOS legacy requires a master boot record (MBR) and \fBfdisk\fR table
  41 in the first physical sector of the bootable media. If the x86 hard disk
  42 contains a Solaris disk label, it is located in the second 512-byte sector of
  43 the FDISK partition.
  44 .SH DEVICE SPECIAL FILES
  49 .LP
  45 Block-files access the disk using normal buffering mechanism and are read-from
  46 and written-to without regard to physical disk records. A \fBraw\fR interface
  47 enables direct transmission between the disk and the user's read or write
  48 buffer. A single \fBread\fR or \fBwrite\fR call usually results in a single I/O
  49 operation, therefore raw I/O is more efficient when many bytes are transmitted.
  50 Block files names are found in \fB/dev/dsk\fR; raw file names are found in
  51 \fB/dev/rdsk\fR.
  52 .sp
  53 .LP
  54 I/O requests to the raw device must be aligned on a 512-byte (\fBDEV_BSIZE\fR)
```



```
  55 boundary and all I/O request lengths must be in multiples of 512 bytes.
  56 Requests that do not meet these requirements will trigger an \fBEINVAL\fR
  57 error. There are no alignment or length restrictions on I/O requests to the
  58 block device.
  59 .SH CD-ROM DRIVE SUPPORT
  65 .LP
  60 A CD-ROM disk is single-sided and contains approximately 640 megabytes of data
  61 or 74 minutes of audio. When the CD-ROM is opened, the eject button is disabled
  62 to prevent manual removal of the disk until the last \fBclose()\fR is called.
  63 No volume label is required for a CD-ROM. The disk geometry and partitioning
  64 information are constant and never change. If the CD-ROM contains data recorded
  65 in a Solaris-aware file system format, it can be mounted using the appropriate
  66 Solaris file system support.
  67 .SH DVD-ROM DRIVE SUPPORT
  74 .LP
  68 DVD-ROM media can be single or double-sided and can be recorded upon using a
  69 single or double layer structure. Double-layer media provides parallel or
  70 opposite track paths. A DVD-ROM can hold from between 4.5 Gbytes and 17 Gbytes
  71 of data, depending on the layer structure used for recording and if the DVD-ROM
  72 is single or double-sided.
  73 .sp
  74 .LP
  75 When the DVD-ROM is opened, the eject button is disabled to prevent the manual
  76 removal of a disk until the last \fBclose()\fR is called. No volume label is
  77 required for a DVD-ROM. If the DVD-ROM contains data recorded in a
  78 Solaris-aware file system format, it can be mounted using the appropriate
  79 Solaris file system support.
  80 .SH ZIP/JAZ DRIVE SUPPORT
  88 .LP
  81 \fBZIP/JAZ\fR media provide varied data capacity points; a single \fBJAZ
  82 \fRdrive can store up to 2 GBytes of data, while a ZIP-250 can store up to
  83 250MBytes of data. \fBZIP/JAZ\fR drives can be read-from or written-to using
  84 the appropriate drive.
  85 .sp
  86 .LP
  87 When a \fBZIP/JAZ\fR drive is opened, the eject button is disabled to prevent
  88 the manual removal of a disk until the last \fBclose()\fR is called. No volume
  89 label is required for a \fBZIP/JAZ\fR drive. If the \fBZIP/JAZ\fR drive
  90 contains data recorded in a Solaris-aware file system format, it can be mounted
  91 using the appropriate Solaris file system support.
  92 .SH DEVICE STATISTICS SUPPORT
 101 .LP
  93 Each device maintains I/O statistics for the device and for partitions
  94 allocated for that device. For each device/partition, the driver accumulates
  95 reads, writes, bytes read, and bytes written. The driver also initiates
  96 hi-resolution time stamps at queue entry and exit points to enable monitoring
  97 of residence time and cumulative residence-length product for each queue.
  98 .sp
  99 .LP
 100 Not all device drivers make per-partition IO statistics available for
 101 reporting. \fBsd\fR and \fBssd\fR(7D) per-partition statistics are enabled by
 102 default but may be disabled in their configuration files.
 111 default but may disabled in their configuration files.
 103 .SH IOCTLS
 113 .LP
 104 Refer to \fBdkio\fR(7I), and \fBcdio\fR(7I)
 105 .SS "ERRORS"
 106 .ne 2
 107 .na
 108 \fB\fBEACCES\fR\fR
 109 .ad
 110 .RS 10n
 111 Permission denied
 112 .RE

 114 .sp
```

```
.ne 2
.na
\fB\fBEBUSY\fR\fR
.ad
.RS 10n
The partition was opened exclusively by another thread
.RE

.sp
.ne 2
.na
\fB\fBEFAULT\fR\fR
.ad
.RS 10n
The argument features a bad address
.RE

.sp
.ne 2
.na
\fB\fBEINVAL\fR\fR
.ad
.RS 10n
Invalid argument
.RE

.sp
.ne 2
.na
\fB\fBENOTTY\fR\fR
.ad
.RS 10n
The device does not support the requested ioctl function
.RE

.sp
.ne 2
.na
\fB\fBENXIO\fR\fR
.ad
.RS 10n
During opening, the device did not exist. During close, the drive unlock failed
.RE

.sp
.ne 2
.na
\fB\fBEROFS\fR\fR
.ad
.RS 10n
The device is read-only
.RE

.sp
.ne 2
.na
\fB\fBEAGAIN\fR\fR
.ad
.RS 10n
Resource temporarily unavailable
.RE

.sp
.ne 2
.na
\fB\fBEINTR\fR\fR
```



```
.ad
.RS 10n
A signal was caught during the execution of the \fBioctl()\fR function
.RE

.sp
.ne 2
.na
\fB\fBENOMEM\fR\fR
.ad
.RS 10n
Insufficient memory
.RE

.sp
.ne 2
.na
\fB\fBEPERM\fR\fR
.ad
.RS 10n
Insufficient access permission
Insufficent access permission
.RE

.sp
.ne 2
.na
\fB\fBEIO\fR\fR
.ad
.RS 10n
An I/O error occurred. Refer to notes for details on copy-protected DVD-ROM
media.
.RE

.SH CONFIGURATION
.LP
The \fBsd\fR driver can be configured by defining properties in the
\fBsd.conf\fR file. The \fBsd\fR driver supports the following properties:
.sp
.ne 2
.na
\fB\fBenable-partition-kstats\fR\fR
.ad
.RS 27n
The default value is 1, which causes partition IO statistics to be maintained.
Set this value to zero to prevent the driver from recording partition
statistics. This slightly reduces the CPU overhead for IO, mimimizes the amount
of \fBsar\fR(1) data collected and makes these statistics unavailable for
reporting by \fBiostat\fR(1M) even though the \fB-p\fR/\fB-P\fR option is
specified. Regardless of this setting, disk IO statistics are always
maintained.
.RE

.sp
.ne 2
.na
\fB\fBqfull-retries\fR\fR
.ad
.RS 27n
The supplied value is passed as the \fBqfull-retries\fR capability value of the
HBA driver. See \fBscsi_ifsetcap\fR(9F) for details.
.RE

.sp
.ne 2
.na
```

```
\fB\fBqfull-retry-interval\fR\fR
.ad
.RS 27n
The supplied value is passed as the \fBqfull-retry interval\fR capability value
of the HBA driver. See \fBscsi_ifsetcap\fR(9F) for details.
.RE

.sp
.ne 2
.na
\fB\fBallow-bus-device-reset\fR\fR
.ad
.RS 27n
The default value is 1, which allows resetting to occur. Set this value to
\fB0\fR (zero) to prevent the \fBsd\fR driver from calling \fBscsi_reset\fR(9F)
with a second argument of \fBRESET_TARGET\fR when in error-recovery mode. This
\fBscsi_reset\fR(9F) call may prompt the HBA driver to send a SCSI Bus Device
Reset message. The \fBscsi_reset\fR(9F) call with a second argument of
\fBRESET_TARGET\fR may result from an explicit request via the \fBUSCSICMD\fR
\fBioctl\fR. Some high-availability multi-initiator systems may wish to
prohibit the Bus Device Reset message; to do this, set the
\fBallow-bus-device-reset\fR property to \fB0\fR.
.RE

.sp
.ne 2
.na
\fBoptical-device-bind\fR
.ad
.RS 27n
Controls the binding of the driver to non self-identifying SCSI target optical
devices. (See \fBscsi\fR(4)). The default value is 1, which causes \fBsd\fR to
bind to DTYPE_OPTICAL devices (as noted in \fBscsi\fR(4)).  Setting this value
to 0 prevents automatic binding. The default behavior for the SPARC-based
\fBsd\fR driver prior to Solaris 9 was not to bind to optical devices.
.RE

.sp
.ne 2
.na
\fB\fBpower-condition\fR\fR
.ad
.RS 27n
Boolean type, when set to \fBFalse\fR, it indicates that the disk does not
support \fBpower condition\fR field in the \fBSTART STOP UNIT\fR command.
.RE

.sp
.LP
In addition to the above properties, some device-specific tunables can be
configured in \fBsd.conf\fR using the \fBsd-config-list\fR global property. The
value of this property is a list of duplets. The formal syntax is:
.sp
.in +2
.nf
sd-config-list = <duplet> [, <duplet> ]* ;

where

<duplet>:= "<vid+pid>" , "<tunable-list>"

and

<tunable-list>:= <tunable>  [, <tunable> ]*;
<tunable> = <name> : <value>
```



```
The <vid+pid> is the string that is returned by the target device
on a SCSI inquiry command.

The <tunable-list> contains one or more tunables to apply to
all target devices with the specified <vid+pid>.

Each <tunable> is a <name> : <value> pair. Supported
tunable names are:

   delay-busy: when busy, nsecs of delay before retry.

   retries-timeout: retries to perform on an IO timeout.
.fi
.in -2

.sp
.ne 2
.na
\fB\fBmmc-gesn-polling\fR\fR
.ad
.RS 20n
For optical drives compliant with \fBMMC-3\fR and supporting the \fBGET EVENT
STATUS NOTIFICATION\fR command, this command is used for periodic media state
polling, usually initiated by the \fBDKIOCSTATE\fR \fBdkio\fR(7I) ioctl. To
disable the use of this command, set this boolean property to \fBfalse\fR. In
that case, either the \fBTEST UNIT READY\fR or zero-length \fBWRITE(10)\fR
command is used instead.
.RE

.SH EXAMPLES
.in +2
.nf
The following is an example of a global sd-config-list property:

   sd-config-list =
      "SUN     T4", "delay-busy:600, retries-timeout:6",
      "SUN     StorEdge_3510", "retries-timeout:3";
.fi
.in -2

.SH FILES
.ne 2
.na
\fB\fB/kernel/drv/sd.conf\fR\fR
.ad
.RS 23n
Driver configuration file
.RE

.sp
.ne 2
.na
\fB\fB/dev/dsk/cntndnsn\fR\fR
.ad
.RS 23n
Block files
.RE

.sp
.ne 2
.na
\fB\fB/dev/rdsk/cntndnsn\fR\fR
.ad
.RS 23n
Raw files
.RE
```

```
.sp
.LP
Where:
.sp
.ne 2
.na
\fBcn\fR
.ad
.RS 6n
controller n
.RE

.sp
.ne 2
.na
\fBtn\fR
.ad
.RS 6n
SCSI target id n (0-6)
.RE

.sp
.ne 2
.na
\fBdn\fR
.ad
.RS 6n
SCSI LUN n (0-7 normally; some HBAs support LUNs to 15 or 32. See the specific
manpage for details)
.RE

.sp
.ne 2
.na
\fBsn\fR
.ad
.RS 6n
partition n (0-7)
.RE

.SS "x86 Only"
.ne 2
.na
\fB\fB/dev/rdsk/cntndnpn\fR\fR
.ad
.RS 22n
raw files
.RE

.sp
.LP
Where:
.sp
.ne 2
.na
\fBpn\fR
.ad
.RS 6n
Where \fIn\fR=0 the node corresponds to the entire disk.
.RE

.SH SEE ALSO
.LP
\fBsar\fR(1), \fBcfgadm_scsi\fR(1M), \fBfdisk\fR(1M), \fBformat\fR(1M),
\fBiostat\fR(1M), \fBclose\fR(2), \fBioctl\fR(2), \fBlseek\fR(2),
```



```
\fBread\fR(2), \fBwrite\fR(2), \fBdriver.conf\fR(4), \fBscsi\fR(4),
\fBfilesystem\fR(5), \fBscsa2usb\fR(7D), \fBssd\fR(7D), \fBhsfs\fR(7FS),
\fBpcfs\fR(7FS), \fBudfs\fR(7FS), \fBcdio\fR(7I), \fBdkio\fR(7I),
\fBscsi_ifsetcap\fR(9F), \fBscsi_reset\fR(9F)
.sp
.LP
\fIANSI Small Computer System Interface-2 (SCSI-2)\fR
.sp
.LP
\fIATA Packet Interface for CD-ROMs, SFF-8020i\fR
.sp
.LP
\fIMt.Fuji Commands for CD and DVD, SFF8090v3\fR
.SH DIAGNOSTICS
.in +2
.nf
Error for Command:\fI<command name>\fR
Error Level: Fatal
Requested Block: \fI<n>\fR
Error  Block: \fI<m>\fR
Vendor:'\fI<vendorname>\fR\&'
Serial Number:'\fI<serial number>\fR\&'
Sense Key:\fI<sense key name>\fR
.fi
.in -2
.sp

.sp
.ne 2
.na
\fBASC: 0x<a> (<ASC name>), ASCQ: 0x<b>, FRU: 0x<c>\fR
.ad
.sp .6
.RS 4n
The command indicated by <command name> failed. The Requested Block is the
block where the transfer started and the Error Block is the block that caused
the error. Sense Key, \fBASC\fR, and \fBASCQ\fR information is returned by the
target in response to a request sense command.
.RE

.sp
.ne 2
.na
\fBCaddy not inserted in drive\fR
.ad
.sp .6
.RS 4n
The drive is not ready because no caddy has been inserted.
.RE

.sp
.ne 2
.na
\fBCheck Condition on REQUEST SENSE\fR
.ad
.sp .6
.RS 4n
A REQUEST SENSE command completed with a check condition. The original command
will be retried a number of times.
.RE

.sp
.ne 2
.na
\fBLabel says <m> blocks Drive says <n> blocks\fR
.ad
```

```
.sp .6
.RS 4n
There is a discrepancy between the label and what the drive returned on the
\fBREAD CAPACITY\fR command.
.RE

.sp
.ne 2
.na
\fBNot enough sense information\fR
.ad
.sp .6
.RS 4n
The request sense data was less than expected.
.RE

.sp
.ne 2
.na
\fBRequest Sense couldn’t get sense data\fR
.ad
.sp .6
.RS 4n
The \fBREQUEST SENSE\fR command did not transfer any data.
.RE

.sp
.ne 2
.na
\fBReservation Conflict\fR
.ad
.sp .6
.RS 4n
The drive was reserved by another initiator.
.RE

.sp
.ne 2
.na
\fBSCSI transport failed: reason \fB\&’xxxx’\fR: {retrying|giving up}\fR
.ad
.sp .6
.RS 4n
The host adapter has failed to transport a command to the target for the reason
stated. The driver will either retry the command or, ultimately, give up.
.RE

.sp
.ne 2
.na
\fBUnhandled Sense Key<\fIn\fR>\fR
.ad
.sp .6
.RS 4n
The REQUEST SENSE data included an invalid sense.
.RE

.sp
.ne 2
.na
\fBUnit not ready. Additional sense code 0x\fR
.ad
.sp .6
.RS 4n
\fI<n>\fR The drive is not ready.
.RE
```



```
.sp
.ne 2
.na
\fBCan’t do switch back to mode 1\fR
.ad
.sp .6
.RS 4n
A failure to switch back to read mode 1.
.RE

.sp
.ne 2
.na
\fBCorrupt label - bad geometry\fR
.ad
.sp .6
.RS 4n
The disk label is corrupted.
.RE

.sp
.ne 2
.na
\fBCorrupt label - label checksum failed\fR
.ad
.sp .6
.RS 4n
The disk label is corrupted.
.RE

.sp
.ne 2
.na
\fBCorrupt label - wrong magic number\fR
.ad
.sp .6
.RS 4n
The disk label is corrupted.
.RE

.sp
.ne 2
.na
\fBDevice busy too long\fR
.ad
.sp .6
.RS 4n
The drive returned busy during a number of retries.
.RE

.sp
.ne 2
.na
\fBDisk not responding to selection\fR
.ad
.sp .6
.RS 4n
The drive is powered down or died
.RE

.sp
.ne 2
.na
\fBFailed to handle UA\fR
.ad
```

```
.sp .6
.RS 4n
A retry on a Unit Attention condition failed.
.RE

.sp
.ne 2
.na
\fBI/O to invalid geometry\fR
.ad
.sp .6
.RS 4n
The geometry of the drive could not be established.
.RE

.sp
.ne 2
.na
\fBIncomplete read/write - retrying/giving up\fR
.ad
.sp .6
.RS 4n
There was a residue after the command completed normally.
.RE

.sp
.ne 2
.na
\fBNo bp for direct access device format geometry\fR
.ad
.sp .6
.RS 4n
A bp with consistent memory could not be allocated.
.RE

.sp
.ne 2
.na
\fBNo bp for disk label\fR
.ad
.sp .6
.RS 4n
A bp with consistent memory could not be allocated.
.RE

.sp
.ne 2
.na
\fBNo bp for fdisk\fR
.ad
.sp .6
.RS 4n
A bp with consistent memory could not be allocated.
.RE

.sp
.ne 2
.na
\fBNo bp for rigid disk geometry\fR
.ad
.sp .6
.RS 4n
A bp with consistent memory could not be allocated.
.RE

.sp
```



```
.ne 2
.na
\fBNo mem for property\fR
.ad
.sp .6
.RS 4n
Free memory pool exhausted.
.RE

.sp
.ne 2
.na
\fBNo memory for direct access device format geometry\fR
.ad
.sp .6
.RS 4n
Free memory pool exhausted.
.RE

.sp
.ne 2
.na
\fBNo memory for disk label\fR
.ad
.sp .6
.RS 4n
Free memory pool exhausted.
.RE

.sp
.ne 2
.na
\fBNo memory for rigid disk geometry\fR
.ad
.sp .6
.RS 4n
The disk label is corrupted.
.RE

.sp
.ne 2
.na
\fBNo resources for dumping\fR
.ad
.sp .6
.RS 4n
A packet could not be allocated during dumping.
.RE

.sp
.ne 2
.na
\fBOffline\fR
.ad
.sp .6
.RS 4n
Drive went offline; probably powered down.
.RE

.sp
.ne 2
.na
\fBRequeue of command fails\fR
.ad
.sp .6
.RS 4n
```

```
772 Driver attempted to retry a command and experienced a transport error.
773 .RE

775 .sp
776 .ne 2
777 .na
778 \fBsdrestart transport failed()\fR
779 .ad
780 .sp .6
781 .RS 4n
782 Driver attempted to retry a command and experienced a transport error.
783 .RE

785 .sp
786 .ne 2
787 .na
788 \fBTransfer length not modulo\fR
789 .ad
790 .sp .6
791 .RS 4n
792 Illegal request size.
793 .RE

795 .sp
796 .ne 2
797 .na
798 \fBTransport of request sense fails()\fR
799 .ad
800 .sp .6
801 .RS 4n
802 Driver attempted to submit a request sense command and failed.
803 .RE

805 .sp
806 .ne 2
807 .na
808 \fBTransport rejected()\fR
809 .ad
810 .sp .6
811 .RS 4n
812 Host adapter driver was unable to accept a command.
813 .RE

815 .sp
816 .ne 2
817 .na
818 \fBUnable to read label\fR
819 .ad
820 .sp .6
821 .RS 4n
822 Failure to read disk label.
823 .RE

825 .sp
826 .ne 2
827 .na
828 \fBUnit does not respond to selection\fR
829 .ad
830 .sp .6
831 .RS 4n
832 Drive went offline; probably powered down.
833 .RE

835 .SH NOTES
848 .LP
836 DVD-ROM media containing DVD-Video data may follow/adhere to the requirements
```



```
837 of content scrambling system or copy protection scheme. Reading of
838 copy-protected sector will cause I/O error. Users are advised to use the
839 appropriate playback software to view video contents on DVD-ROM media
840 containing DVD-Video data.
```

```
**********************************************************
    2730 Sat Jan 11 13:13:27 2020
new/usr/src/man/man7d/xhci.7d
11641 spelling mistakes in section 7d of the manual
**********************************************************
.\"
.\" This file and its contents are supplied under the terms of the
.\" Common Development and Distribution License ("CDDL"), version 1.0.
.\" You may only use this file in accordance with the terms of version
.\" 1.0 of the CDDL.
.\"
.\" A full copy of the text of the CDDL should have accompanied this
.\" source.  A copy of the CDDL is also available via the Internet at
.\" http://www.illumos.org/license/CDDL.
.\"
.\"
.\" Copyright 2016 Joyent, Inc.
.\"
.Dd January 10, 2020
.Dd October 17, 2016
.Dt XHCI 7D
.Os
.Sh NAME
.Nm xhci
.Nd Extensible Host Controller Interface Driver
.Sh SYNOPSIS
.Sy usb@unit-address
.Sh DESCRIPTION
The
.Nm
driver supports PCI devices that implement versions 1.0 and 1.1 of the
.Sy Extensible Host Controller Interface Specification.
.Sy Extensible Host Controller Inteface Specification.
These devices provide support for USB 3.0, USB 2.x, and USB 1.x devices and is
integrated into the broader illumos USB Architecture (USBA).
.Pp
The
.Nm
driver supports all four USB transfer types:
.Sy bulk transfers ,
.Sy control transfers ,
.Sy interrupt transfers ,
and
.Sy isochronous transfers .
.Pp
Administrators do not interact with the
.Nm
driver directly.
USB devices are managed with
.Xr cfgadm 1M .
See
.Xr cfgadm_usb 1M
for more information on how to specifically manage USB devices and how
they are laid out in the system.
.Xr cfgadm 1M
is only used to manage devices at a USB level.
For example, a USB NIC would still be managed with
.Xr dladm 1M
at a networking level.
.Pp
On some x86 systems USB ports may be routed to either an instance of the
.Nm
driver or an instance of the
.Xr ehci 7D
driver.
By default, all such ports are routed to the
```



```
.Nm
driver, allowing those devices to operate at USB 3.x speed by default.
This is most common on Intel platforms and chipsets.
While this is controlled with the
.Sy xhci-reroute
property discussed below, changing it may not be sufficient to change
the behavior.
The BIOS or ACPI data for many x86 systems may toggle this automatically.
.Sh PROPERTIES
The
.Nm
driver supports the following properties which may be tuned in the
.Nm
driver's
.Xr driver.conf 4
file.
.Bl -tag -width Sy
.It Sy xhci-reroute
The
.Sy xhci-reroute
property determines whether or not USB ports are re-routed to the
.Nm
driver.
The default behavior is to route such ports.
To disable this, the property should be set to
.Sy 0 .
Any other value, or the lack of the property, cause the default behavior
to take place.
.El
.Sh ARCHITECTURE
The
.Nm
driver is only supported on
.Sy x86
systems at this time.
.Sh FILES
.Bl -tag -width Pa
.It Pa /kernel/drv/xhci
32-bit device driver (x86).
.It Pa /kernel/drv/amd64/xhci
Device driver (x86)
64-bit device driver (x86).
.It Pa /kernel/drv/xhci.conf
Driver configuration file
Driver configuration file.
.El
.Sh SEE ALSO
.Xr cfgadm 1M ,
.Xr cfgadm_usb 1M ,
.Xr dladm 1M ,
.Xr driver.conf 4 ,
.Xr ehci 7D ,
.Xr usba 7D
```