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NAME  ap – alternate pathing librarian driver, /dev/ap

SYNOPSIS  ap

DESCRIPTION  The AP driver provides a pseudo-driver interface to the kernel Alternate Pathing (AP) Librarian features.

FILES  /kernel/drv/ap
        AP driver module
/kernel/drv/ap.conf  AP driver configuration file

SEE ALSO  Sun Enterprise Server Alternate Pathing User’s Guide
ap(1M), ap_daemon(1M)
NAME       ap_dmd – AP disk meta-driver

SYNOPSIS   ap_dmd@target,lun:partition

DESCRIPTION The ap_dmd driver works with the AP software to support Alternate Pathing for physical devices handled by the ssd SCSI disk driver. See ssd(7) in man Pages(7): Device and Network Interfaces of the SunOS Reference Manual.

The AP feature lets you configure alternate SCSI paths to a physical device. These paths are associated with a meta-disk device, which is one of the file system special nodes associated with a particular meta-driver.

ap_dmd allows the AP Librarian, ap(7), to configure or unconfigure physical paths to a SCSI device via an interface that allows APSET, APUNSET, and APSWITCH commands. These commands are issued by ap(7) at the behest of the user-invoked AP commands and AP daemon. To change the SCSI path information associated with a particular ap_dmd device, use apconfig(1M), apdb(1M) and apdisk(1M). For more information, see the Sun Enterprise Server Alternate Pathing User’s Guide.

All device operations supported by the ssd driver are also valid on ap_dmd devices that have been created via AP commands. See the other AP commands for details regarding other components of AP software, and ssd(7) man page for information about block/character file accesses, I/O requests, disk partitioning schemes, CD-ROM support, and ioctls.

ERRORS   ENXIO       No physical SCSI path to the target device exists.
          Other       For information on other errors, see sd(7).

FILES      apdmd.conf       driver configuration file
           /dev/ap/dsk/mcntudnssn   block files
           /dev/ap/rdsk/mcntudnssn   raw files

where m identifies the device as a meta-device and:
   cn     Controller number
   tn     Target number
   dn     Logical unit number
   sn     Slice (partition) number


SEE ALSO Sun Enterprise Server Alternate Pathing User’s Guide
apconfig(1M), apdb(1M), apdisk(1M), apnet(1M), ap_daemon(1M), ap(7), ap_nmd(7) in this reference manual
ssd(7) in man Pages(7): Device and Network Interfaces of the SunOS Reference Manual
### NAME

ap_nmd, mhme, mle, mnf, mqe, mqfe, mvge – AP network meta-driver group

### SYNOPSIS

```
/devices/pseudo/clone@0:mhme
/devices/pseudo/clone@0:mle
/devices/pseudo/clone@0:mnf
/devices/pseudo/clone@0:mqe
/devices/pseudo/clone@0:mqfe
/devices/pseudo/clone@0:mvge
```

### DESCRIPTION

**ap_nmd** is a group of multi-threaded, loadable, clonable, STREAMS meta-network device drivers that support the connectionless Data Link Provider Interface, **dlpi**(7), for **hme**(7) (Sun FastEthernet 2.0), **le**(7) (Lance Ethernet), **nf**(7) (FDDI 5.x), **qe**(7) (Quad Ether-net), **qfe** (Quad FastEthernet), and **vge** (Sun Gigabit Ethernet).

**Note:** SunOS man pages that describe drivers for optional packages, such as FDDI and Sun FastEthernet, are available only on systems that have those packages installed.

**ap_nmd** works with the AP software to support Alternate Pathing for physical network devices.

Device operations of **ap_nmd** are an extension of the operations of the underlying network drivers. **ap_nmd** normally operates as a transparent pass-through module; it neither interprets nor modifies any of the STREAMS DLPI type messages. However, it does intercept and modify the DL_ATTACH_REQ and DL_INFO_ACK messages.

DL_ATTACH_REQ messages are captured and used to drive the initial connection between logical and physical devices. DL_INFO_ACK messages are captured and responded to with a prebuilt response to eliminate the possibility of the message response timing out due to induced message delays.

The cloning character-special device **/dev/mxx** is used to access all device-specific instances of the **ap_nmd** within the system.

### ap_nmd and AP

The **ap_nmd** driver provides an interface to support Alternate Pathing. The APSET interface allows a user to provide a mapping between physical path and logical path. The APUNSET provides an interface to remove a physical-to-logical path mapping and APSWITCH provide a mechanism to switch a logical path from its existing physical path to a new physical path. For a more complete description of the AP capability, see the **Sun Enterprise Server Alternate Pathing User’s Guide**.

### ap_nmd and DLPI

The **ap_nmd** driver is a "style 2" Data Link Service provider. All DLPI processing is handled by the underlying physical device driver. See the man page that corresponds to each underlying driver.

### ERRORS

**EBUSY** An attempt was made to unload a busy device, or to APUNSET an active device
EEXIST  An attempt was made to APSET an existing logical-to-physical mapping and a logical path when the system was out of memory

EIO   An attempt to switch between physical devices failed

ENODEV No physical mapping exists

ENOMEM System memory was exhausted during an attempt to create a mapping between a physical path and a logical path

---

FILES

- mhme.conf  Driver configuration file
- mle.conf  Driver configuration file
- mnf.conf  Driver configuration file
- mqe.conf  Driver configuration file
- mqfe.conf  Driver configuration file
- mvge.conf  Driver configuration file

- /dev/mhme  hme special character device
- /dev/mle  le special character device
- /dev/mnf  nf special character device
- /dev/mqe  qe special character device
- /dev/mqfe  qfe special character device
- /dev/mvge  vge special character device

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DIAGNOSTICS

See le(7) and qe(7) in man Pages(7): Device and Network Interfaces of the SunOS Reference Manual.

SEE ALSO

Sun Enterprise Server Alternate Pathing User’s Guide

ap_daemon(1M), apconfig(1M), apdb(1M), apnet(1M), ap(7), ap_dmd(7), in this reference manual


man Pages(7): Device and Network Interfaces of the SunOS Reference Manual and other optional reference manuals (for example, FDDI Reference Manual), as appropriate