



Error Log and syslogd

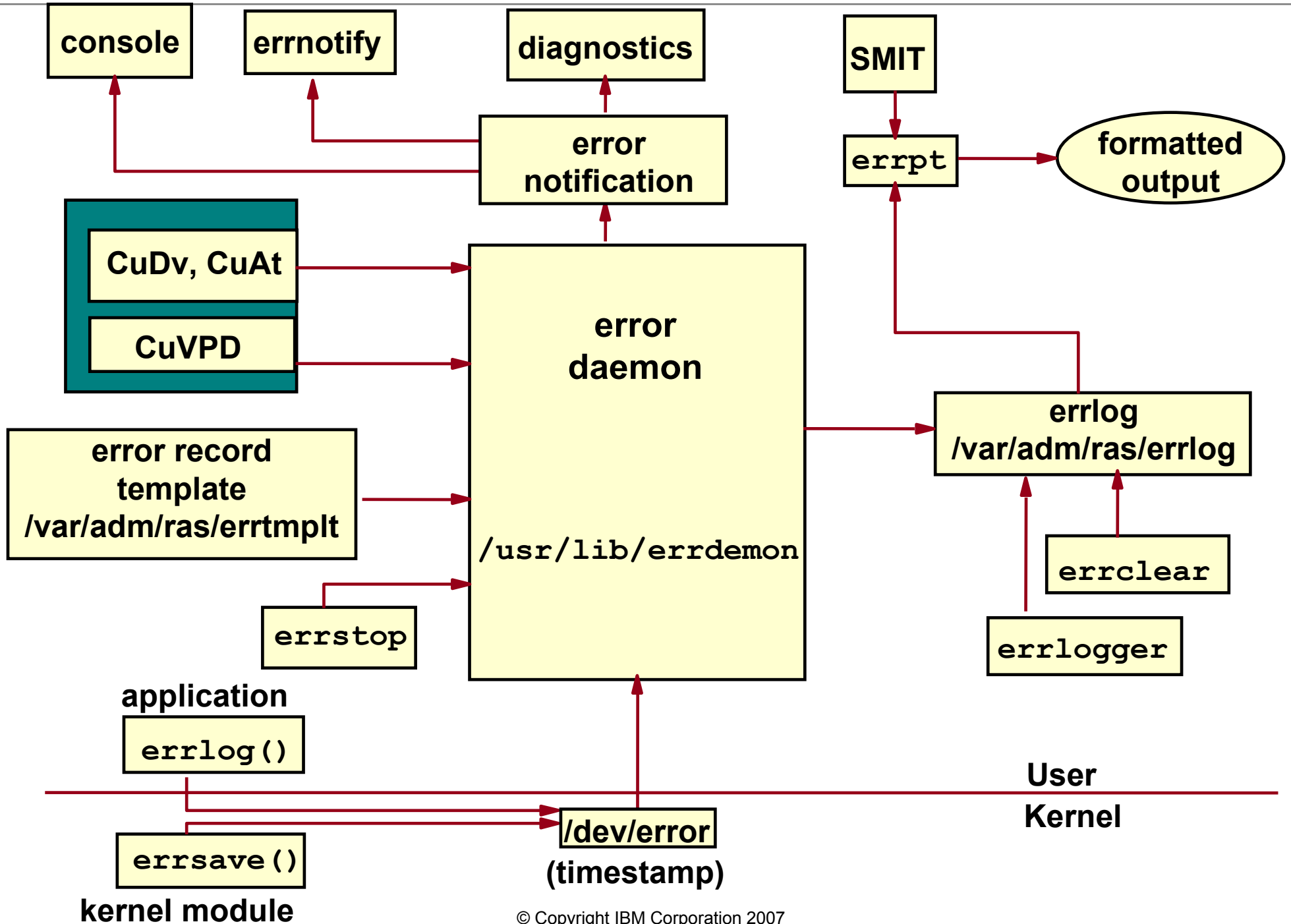


Unit Objectives

After completing this unit, you should be able to:

- Analyze error log entries
- Identify and maintain the error logging components
- Describe different error notification methods
- Log system messages using the `syslogd` daemon

Error Logging Components



Generating an Error Report Using SMIT

smit errpt

Generate an Error Report

```
...
CONCURRENT error reporting?          no
Type of Report                        summary          +
Error CLASSES      (default is all)  []            +
Error TYPES        (default is all)  []            +
Error LABELS       (default is all)  []            +
Error ID's         (default is all)  []            +X
Resource CLASSES  (default is all)  []
Resource TYPES    (default is all)  []
Resource NAMES    (default is all)  []
SEQUENCE numbers  (default is all)  []
STARTING time interval                []
ENDING time interval                  []
Show only Duplicated Errors           [no]
Consolidate Duplicated Errors         [no]
LOGFILE                               [/var/adm/ras/errlog]
TEMPLATE file                          [/var/adm/ras/errtmpl]
MESSAGE file                            []
FILENAME to send report to (default is stdout) []
...
```

The `errpt` Command

- Summary report:
`errpt`
- Intermediate report:
`errpt -A`
- Detailed report:
`errpt -a`
- Summary report of all hardware errors:
`errpt -d H`
- Detailed report of all software errors:
`errpt -a -d S`
- Concurrent error logging ("Real-time" error logging):
`errpt -c > /dev/console`

A Summary Report (errpt)

errpt

IDENTIFIER	TIMESTAMP	T	C	RESOURCE_NAME	DESCRIPTION
192AC071	1010130907	T	O	errdemon	ERROR LOGGING TURNED OFF
C6ACA566	1010130807	U	S	syslog	MESSAGE REDIRECTED FROM SYSLOG
A6DF45AA	1010130707	I	O	RMCdaemon	The daemon is started.
2BFA76F6	1010130707	T	S	SYSPROC	SYSTEM SHUTDOWN BY USER
9DBCfDEE	1010130707	T	O	errdemon	ERROR LOGGING TURNED ON
192AC071	1010123907	T	O	errdemon	ERROR LOGGING TURNED OFF
AA8AB241	1010120407	T	O	OPERATOR	OPERATOR NOTIFICATION
C6ACA566	1010120007	U	S	syslog	MESSAGE REDIRECTED FROM SYSLOG
2BFA76F6	1010094907	T	S	SYSPROC	SYSTEM SHUTDOWN BY USER
EAA3D429	1010094207	U	S	LVDD	PHYSICAL PARTITION MARKED STALE
EAA3D429	1010094207	U	S	LVDD	PHYSICAL PARTITION MARKED STALE
F7DDA124	1010094207	U	H	LVDD	PHYSICAL VOLUME DECLARED MISSING

Error Type:

- P: Permanent, Performance or Pending
- T: Temporary
- I: Informational
- U: Unknown

Error Class:

- H: Hardware
- S: Software
- O: Operator
- U: Undetermined

A Detailed Error Report (errpt -a)

LABEL: LVM_SA_PVMISS
IDENTIFIER: F7DDA124

Date/Time: Wed Oct 10 09:42:20 CDT 2007
Sequence Number: 113
Machine Id: 00C35BA04C00
Node Id: rt1s3vlp2
Class: H
Type: UNKN
WPAR: Global
Resource Name: LVDD
Resource Class: NONE
Resource Type: NONE
Location:

Description

PHYSICAL VOLUME DECLARED MISSING

Probable Causes

POWER, DRIVE, ADAPTER, OR CABLE FAILURE

Detail Data

MAJOR/MINOR DEVICE NUMBER

8000 0011 0000 0001

SENSE DATA

00C3 5BA0 0000 4C00 0000 0115 7F54 BF78 00C3 5BA0 7FCF 6B93 0000 0000 0000 0000

Types of Disk Errors

Error Label	Error Type	Recommendations
DISK_ERR1	P	Failure of physical volume media Action: Replace device as soon as possible
DISK_ERR2, DISK_ERR3	P	Device does not respond Action: Check power supply
DISK_ERR4	T	Error caused by bad block or occurrence of a recovered error Rule of thumb: If disk produces more than one DISK_ERR4 per week, replace the disk
SCSI_ERR* (SCSI_ERR10)	P	SCSI communication problem Action: Check cable, SCSI addresses, terminator

Error Types: P = Permanent
T = Temporary

LVM Error Log Entries

Error Label	Class and Type	Recommendations
LVM_BBEPOOL, LVM_BBERELMAX, LVM_HWFALL	S, P	No more bad block relocation. Action: Replace disk as soon as possible.
LVM_SA_STALEPP	S, P	Stale physical partition. Action: Check disk, synchronize data (syncvg).
LVM_SA_QUORCLOSE	H, P	Quorum lost, volume group closing. Action: Check disk, consider working without quorum.

Error Classes: H = Hardware
S = Software

Error Types: P = Permanent
T = Temporary

Maintaining the Error Log

```
# smit errdemon
```

```
Change / Show Characteristics of the Error Log
```

```
Type or select values in entry fields.
```

```
Press Enter AFTER making all desired changes.
```

```
LOGFILE                               [/var/adm/ras/errlog]
*Maximum LOGSIZE                       [1048576]           #
Memory Buffer Size                      [32768]            #
...
```

```
# smit errclear
```

```
Clean the Error Log
```

```
Type or select values in entry fields.
```

```
Press Enter AFTER making all desired changes.
```

```
Remove entries older than this number of days      [30]           #
Error CLASSES                                       [ ]            +
Error TYPES                                         [ ]            +
...
Resource CLASSES                                   [ ]            +
...
```

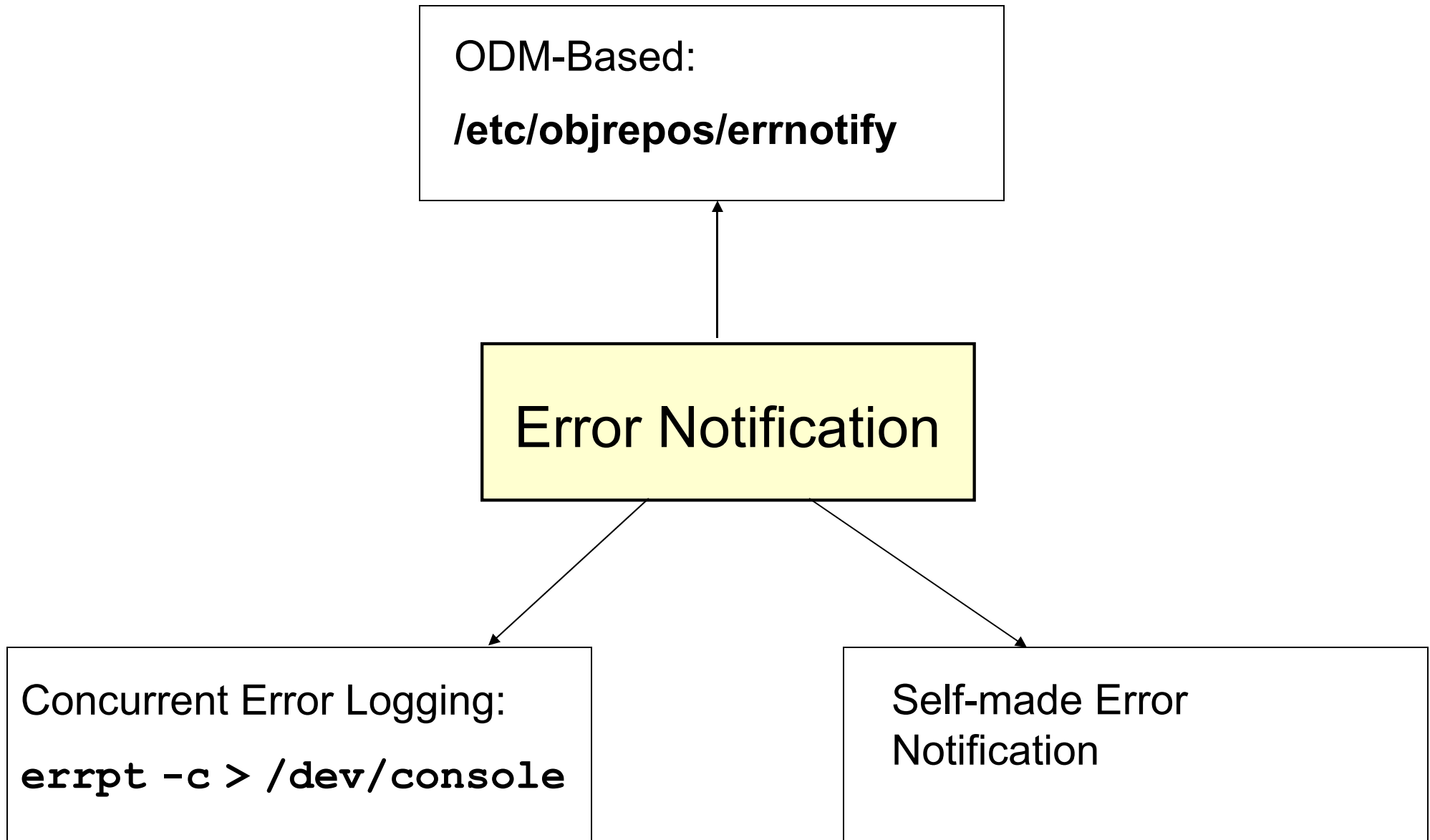
==> Use the `errlogger` command as a reminder <==

Exercise 9: Error Logging and syslogd (Part 1)



- Part 1: Working with the error log

Error Notification Methods



Self-made Error Notification

```
#!/usr/bin/ksh

errpt > /tmp/errlog.1

while true
do
    sleep 60                # Let's sleep one minute

    errpt > /tmp/errlog.2

    # Compare the two files.
    # If no difference, let's sleep again
    cmp -s /tmp/errlog.1 /tmp/errlog.2 && continue

    # Files are different: Let's inform the operator:
    print "Operator: Check error log " > /dev/console

    errpt > /tmp/errlog.1

done
```

ODM-based Error Notification: errnotify

```
errnotify:  
  en_pid = 0  
  en_name = "sample"  
  en_persistenceflg = 1  
  en_label = ""  
  en_crcid = 0  
  en_class = "H"  
  en_type = "PERM"  
  en_alertflg = ""  
  en_resource = ""  
  en_rtype = ""  
  en_rclass = "disk"  
  en_method = "errpt -a -l $1 | mail -s DiskError root"
```

syslogd Daemon

/etc/syslog.conf:

`daemon.debug /tmp/syslog.debug`

syslogd

/tmp/syslog.debug:

`inetd[16634]: A connection requires tn
service`

~~`inetd[16634]: Child process 17212 has ended`~~

`# stopsrc -s inetd`

`# startsrc -s inetd -a "-d"`

Provide debug
information

syslogd Configuration Examples

/etc/syslog.conf:

auth.debug /dev/console



All security messages to the system console

mail.debug /tmp/mail.debug



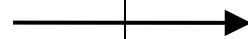
Collect all mail messages in /tmp/mail.debug

daemon.debug /tmp/daemon.debug



Collect all daemon messages in /tmp/daemon.debug

***.debug; mail.none @server**



Send all messages, except mail messages, to host **server**

After changing /etc/syslog.conf:

refresh -s syslogd

Redirecting syslog Messages to Error Log

```
/etc/syslog.conf:
```

```
*.debug    errlog
```

Redirect all syslog
messages to error log

```
# errpt
```

```
IDENTIFIER  TIMESTAMP  T  C  RESOURCE_NAME  DESCRIPTION
```

```
...
```

```
C6ACA566    0505071399  U  S                syslog    MESSAGE REDIRECTED  
FROM SYSLOG
```

```
...
```

Directing Error Log Messages to syslogd

errnotify:

```
en_name = "syslog1"  
en_persistenceflg = 1  
en_method = "logger Error Log: `errpt -l $1 | grep -v TIMESTAMP`"
```

errnotify:

```
en_name = "syslog1"  
en_persistenceflg = 1  
en_method = "logger Error Log: $(errpt -l $1 | grep -v TIMESTAMP)"
```

Direct the last error entry (-l \$1) to the syslogd.
Do not show the error log header (grep -v) or (tail -1).

errnotify:

```
en_name = "syslog1"  
en_persistenceflg = 1  
en_method = "errpt -l $1 | tail -1 | logger -t errpt -p  
daemon.notice"
```

Checkpoint

1. Which command generates error reports? Which flag of this command is used to generate a detailed error report?

4. Which type of disk error indicates bad blocks?

6. What do the following commands do?

errclear _____

errlogger _____

• What does the following line in **/etc/syslog.conf** indicate?

***.debug errlog**

12. What does the descriptor **en_method** in **errnotify** indicate?

Checkpoint Solutions

1. Which command generates error reports? Which flag of this command is used to generate a detailed error report?

errpt

errpt -a

4. Which type of disk error indicates bad blocks?

DISK_ERR4

6. What do the following commands do?

errclear Clears entries from the error log.

errlogger Is used by root to add entries into the error log.

- What does the following line in **/etc/syslog.conf** indicate?

***.debug errlog**

All syslogd entries are directed to the error log.

12. What does the descriptor **en_method** in **errnotify** indicate?

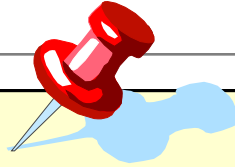
It specifies a program or command to be run when an error matching the selection criteria is logged.

Exercise 9: Error Logging and `syslogd` (Part 2)



- Part 2: Working with `syslogd`
- Part 2: Error notification with `errnotify`

Unit Summary



- Use the `errpt (smit errpt)` command to generate error reports
- Different **error notification methods** are available
- Use `smit errdemon` and `smit errclear` to maintain the error log
- Some components use `syslogd` for error logging
- The `syslogd` configuration file is `/etc/syslog.conf`
- You can **redirect syslogd** and error log messages