

Daemons and Cron

CIS 68C1-01
Lecture 7
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Daemons

- A **daemon** is a background process
 - Performs a specific system service
 - An NT service is similar
 - Some daemons are started...
 - at boot-time and run continuously
 - when needed, and die when completed
 - by the kernel, and are really kernel code dressed up to look like daemons

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Daemons

- **init**
 - The primary, critical system daemon
- **Common system daemons**
 - **Paging daemon**
 - *Faults* pages from disk into RAM as needed
 - **Swapping daemon**
 - Moves entire processes out to disk when thrashing occurs
 - **Filesystem synchronization**
 - Flushes cached in-RAM disk blocks to disk
- **cron**
 - Performs scheduled, periodic tasks

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Daemons

- **inetd**
 - Networking *super*-daemon
 - Starts individual daemons as needed
 - Listens to TCP port numbers
 - Configuration files
 - /etc/inetd.conf on most systems
 - /etc/services lists TCP/UDP port names/numbers
 - /etc/protocols lists protocol names/numbers
 - /etc/rpc lists remote procedure call names/numbers

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Daemons

□ xinetd

- Used by Linux instead of inetd
- Configuration files in /etc/xinetd.d directory
 - One file per service, TCP default protocol

```
# default: on
# description: The telnet server serves telnet sessions; it uses \
# unencrypted username/password pairs for authentication.
service telnet
{
    disable = no
    flags    = REUSE
    socket_type = stream
    wait    = no
    user    = root
    server  = /usr/sbin/in.telnetd
    log_on_failure += USERID
}
```

Daemons

□ NFS Daemons

- nfsd
 - Serves NFS files
- mountd
 - Handles NFS filesystem mount requests
- amd
 - Automatically mounts NFS filesystems when accessed
- lockd
 - Handles advisory locks
- statd
 - Monitors status of NFS servers
- biod
 - Caches NFS blocks – improves performance
 - read-ahead/write-behind

Daemons

□ NIS Daemons

- ypbind
 - Locates NIS servers – runs on client and server
- ypserv
 - Handles NIS queries – runs on all NIS servers
- ypxfrd
 - Transfers NIS databases to slave servers
- rcp.nisd
 - Like ypserv, but for NIS+

Daemons

□ Internet Daemons

- talkd
- comsat
- sendmail
- snmpd
- rwho
- ftpd
- popper
- imapd
- rlogind
- telnetd

□ Internet Daemons

- sshd
- rshd
- rexecd
- rpc.rexd
- routed
- gated
- named
- syslogd
- fingerd
- httpd

Daemons

- Time Synchronization
 - timed
 - xntp
- Boot and Configuration Daemons
 - dhcp
 - Dynamically provides IP, gateway, and name servers
 - bootpd
 - Diskless booting
 - tftpd
 - Trivial file transfer used for diskless booting
 - rarpd, bootparamd

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Cron

- Cron
 - Runs periodic jobs
 - **crontab** configuration file
 - Specifies when a specific job should run
 - Stored in system-specific directory
 - One **crontab** file per user
 - The **crontab** utility is used to schedule jobs listed in a **crontab** configuration file

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Cron

- Crontab format
 - Each line has six white-space separated fields
 - Minute: 0-59
 - Hour: 0-23
 - Day: 1-31
 - Mouth: 1-12
 - Weekday: 0-6 (0 = Sunday)
 - Command
 - * means all values
 - - means ranges
 - comma's can be used to separate values

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- Crontab example

```
# comments are preceded by a # symbol
# Runs mycommand
# every 30 minutes on Friday (weekday=5)
# every 30 minutes on the 13th of the month
# (note: does not mean Friday the 13th)
#
0,30 * 13 * 5 mycommand
#
# Runs the backups command every Monday-Friday at 11:55pm
55 23 * * 1-5 backups
```

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□ The **crontab** utility

- The commands
 - **crontab file**
 - schedules the operations in the file *file*, replacing any existing crontab
 - **crontab -l**
 - Lists the **crontab** for the current user
 - **crontab -e**
 - Edits and schedules a user's **crontab**
 - **crontab -r**
 - Removes a user's **crontab**

Cron

□ Crontab Management

- The files `/etc/cron.allow` and `/etc/cron.deny` specifically allow or deny listed users
- If `/etc/cron.allow` exists, only those logins listed may use **crontab** to schedule jobs
- If `/etc/cron.deny` exists, all logins listed inside are prevented from using **crontab**
- These files do not remove existing crontabs

Cron

□ System jobs

- The system **crontab** is `/etc/crontab`

```
# run-parts
01 * * * * root run-parts /etc/cron.hourly
02 4 * * * root run-parts /etc/cron.daily
22 4 * * 0 root run-parts /etc/cron.weekly
42 4 1 * * root run-parts /etc/cron.monthly
```