Local Services

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Lectures

1. System administration introduction
2. Operating System installation
3. User management
4. Application management
5. System monitoring
6. Filesystem Maintenance
7. **Local services**
8. Network services
9. Security and Protection
10. Virtualization

Outline

Goals

Knowledge

- Task Scheduling
  - periodic
  - sporadic
- Printing services functionality

Abilities

- Task scheduling configuration

Outline

Task Scheduling
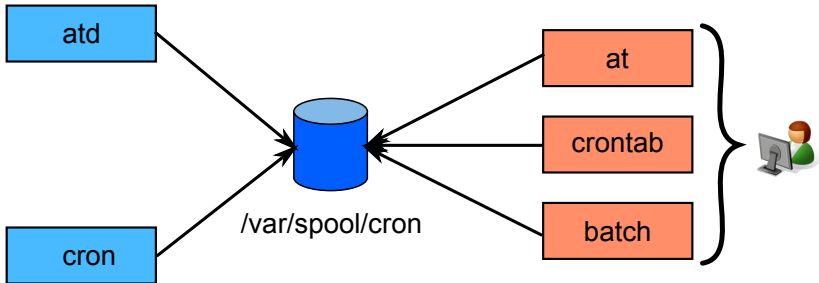
Task Scheduling

```
cron
```

- Periodic command execution
- Per user command file
  - /var/spool/cron/crontab/<user>
- The daemon is executed each minute
  - It checks all the configuration files
  - The file is reread in case it has changed
  - It is not necessary to reload the service in case of changes

The command is executed using user privileges (not superuser)

Task Scheduling: cron

```
crontab [-l , -r, -e ]
```

- Format for each command line: MM HH DD MM DS command parameters. . .
  - HH: hour
  - MM: minute
  - DD: day of month
  - MM: month
  - DS: day of the week (Sun, Mon...)

Examples:

```
*    *    *     *       *    <command>...
33 */2  *     *       Tue <command>...
 9  0   *  1-7,9-12 1-5 <command>...
```

at [-f <file>, -q queue] when

- +3 hours, +2 days, 18:00 Apr 3, 5:00pm tomorrow, . . .
- 26 queues (a-z) i 26 queues (A-Z)

batch

- When load is not high

- Script from standard input
    - They are stored in /var/spool/cron/atjobs
    - Daemon (atd) executed each minute
        - It verifies all the queues
        - It executes all the required commands
    - It keeps the user privileges and the execution directory

Security considerations

- It might be a security breach
    - A disabled user can continue to execute commands
    - It allows to exceed the maximum CPU time
- Files /etc/{cron.allow, cron.deny, at.allow, at.deny}
    - If the .allow files exist, the user must be on it
    - If the .deny files exist, the user cannot be there
- User management
    - Consider inserting disabled users in the .deny files

Exercise

> Which tool would you use (and which parameters, input. . .
> would you pass to it) for this scheduled tasks

- Daily backup of /etc
- Reboot the machine tonight at 2:00
- Weekly rotation of the log files
- Update a database as soon as the machine load is low
- Invalidate a particular user this Friday
- Generate an activity report the first Sunday of each month

Another periodic activities

- Erase old files from /tmp
- Check for weak passwords
- Update some system databases (man, locate,...)
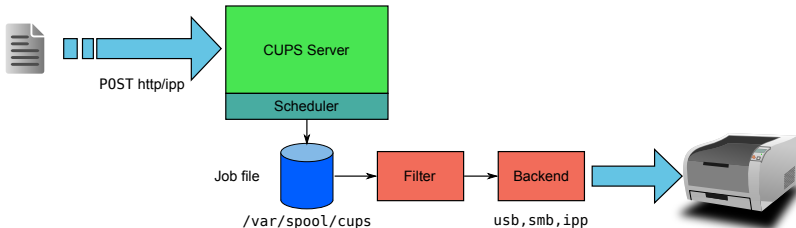- Check for software updates
- Service monitoring

Outline

Printing Service

Basic functionality

1. Job sent through HTTP/IPP
2. The job is enqueued
3. The job is post-processed
4. It is printed

CUPS Functionality

- Support for most printers
- Interface using Internet Printing Protocol (IPP)
- Printer self-discovery (local and networked)
- PDF based printing
- ACL based permissions
- Quota
- Printer configuration API

Personal homework

- Network types
    - LAN
    - WAN
- IP Addresses
- Network elements
    - Switch, gateway, router...
- Superserver