

GNU/Linux, software libre para la comunidad universitaria

# Administración avanzada del sistema

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Universidad de Salamanca, 17 de mayo de 2008



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# Índice

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- ¿Qué debe conocer el administrador de Linux?
  - Características de Linux
  - Componentes del sistema
  - Servicios
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- Ejemplos de las tareas del Administrador de Linux
- Conclusiones



# Características de Linux

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- Sistema Operativo Basado en UNIX
  - Multitud de herramientas por consola que se complementan.
  - SO muy valorado y estudiado.
- Multitarea
  - Se están realizando muchos trabajos a vez por debajo. Dificultad para saber lo que pasa.



# Características de Linux (2)

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- Multiusuario
  - Distintos usuarios con distintos permisos comparten la máquina.
- Sistemas de Red
  - Disponemos por defecto de distintos servicios de red para administrar.
  - Sistema de Código Abierto.
  - Disponemos de su código para el estudio y modificación.



# Componentes: Procesos

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- Las distintas tareas que esta realizándose en la máquina se denomina procesos.
- Como administradores debemos gestionar los trabajos que realiza nuestro sistema.
- Podemos verlos y analizarlos (*ps*, *top*), darlos prioridades (*nice*), pararlos (*kill*).
- Podemos saber de quien es el trabajo, su estado actual, sus prioridad, cuanto lleva, sus recursos.



# Componentes: CPU y Memoria

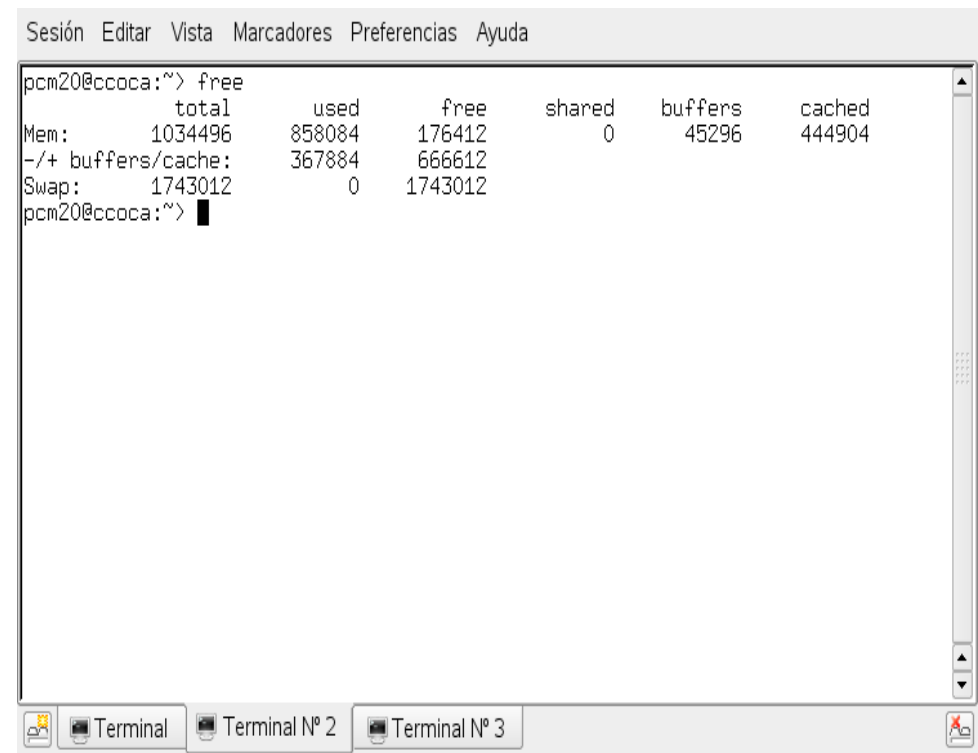
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- Recursos principales por los que “luchan” los procesos.
- Linux soporta múltiples procesadores.
- Dispone de memoria virtual.
- El administrador debe conocer la utilización que se esta haciendo de estos recursos.
  - La CPU podemos ver su utilización con *top*, *uptime*.
  - La memoria con *free*, *top*, *vmstat*.



# Componentes: CPU y Memoria (2)

- Memoria Física
  - Total
  - Usada
  - Libre
  - Compartida/Buffers/Cache
- Memoria Virtual



A terminal window titled 'Sesión Editar Vista Marcadores Preferencias Ayuda' showing the output of the 'free' command. The output is as follows:

```
pcm20@ccoca:~> free
              total        used        free      shared    buffers     cached
Mem:      1034496      858084      176412           0       45296      444904
-/+ buffers/cache:      367884      666612
Swap:      1743012           0      1743012
pcm20@ccoca:~>
```

The terminal window has tabs for 'Terminal', 'Terminal Nº 2', and 'Terminal Nº 3' at the bottom.





# Componentes: S. Ficheros

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- Organización de directorios estándar FHS.
- Amplio soporte de sistema de ficheros. Capa virtual VFS.
  - Sistemas de ficheros propios de Unix
  - Transaccionales
  - Sistemas propietarios
  - Sistema de ficheros en red
  - Volúmenes Lógicos y SAN



# Componentes: S. Ficheros (2)

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- Cualquier sistema de fichero lo montaremos sobre el árbol de directorios, con el comando mount. Para quitarlo con umount.
- Para tener información de los sistemas tenemos los comandos df y du.
- Podemos establecer cuotas (quotaon) del sistema a los usuarios, con edquota, verlas con quotacheck.
- Dispone de permisos para ficheros unix y acl.



# Componentes: Núcleo

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- Componente principal de sistema, encargado de relacionar todas las partes de sistema, desde el hardware hasta las características que queremos para nuestro sistema.
- Es un núcleo monolítico con soporte para módulos creado por Linux Torvalds.
- Linux permite al administrador compilar el núcleo a partir del código fuente para obtener el máximo rendimiento y configurabilidad de su sistema.



# Componentes: Gestión de Usuarios

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- Nos podemos cambiar de un usuario a otro con el comando *su*.
- Los usuarios se agrupan en grupos. Para ver nuestros grupos con *id*.
- Los procesos y ficheros pertenecen a los usuarios.



# Componentes: Gestión de Usuarios

## (2)

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- Un usuario que todo lo puede, root. Nosotros los administradores.
- El administrador puede crear usuarios (*useradd*), borrarlos (*userdel*), cambiar la clave (*passwd*).
- La lista de usuarios se encuentra en */etc/passwd*.



# Componentes: Auditoría y Logs

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- Todo lo que va ocurriendo en el sistema va a quedar apuntado.
- Como administradores podemos revisar que ha estado pasando en nuestro sistema.
- Los principales servicios y el núcleo dejan sus incidencias en */var/logs*.
- El registro de usuarios se puede ver con *last* y *lastlog*. Los actuales con *w*, *who* y *users*.



# Componentes: Distribuciones

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- Una distribución es el conjunto de aplicaciones con las que se nos presenta un sistema Linux para su instalación, actualización y correcciones del software.
- El administrador decide la distribución en instalación y puede instalar el software que desea en su máquina.
- Las distribuciones dan la posibilidad de instalar aplicaciones de administración mucho más complejas (*linuxconf*, *webmin*).



# Servicios

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- Los servicios son procesos que están disponibles en el sistema para la realización de tareas esenciales típicas de los sistemas.
- El administrador decide cuales son los servicios que va a disponer el sistema.
- Existen servicios para la gestión local de la máquina, ya sea del sistema operativo (*cron*, *syslog*...) o hardware (*apmd*, *udev*...)





# Servicios (2)

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- Pero donde ha triunfado Linux es en los Servicios de Red.
  - Servicios para conexión remota (ssh, X)
  - Servicios de Internet (email, web, ftp, news)
  - Ficheros compartidos e impresión (samba, nfs, cups)
  - SGBD (MySQL, PostgreSQL)
  - ...



# Shell Script

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- Para la interacción de las herramientas del sistema existe un lenguaje que el administrador debe dominar:
  - Las herramientas del sistema y aplicaciones están preparadas para su utilización en shell script.
  - La configuración del sistema y muchos servicios se realiza con shell script.
  - Principal forma de automatizar procesos.



# Tareas del Administrador

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- Gestión de Usuarios y Ficheros
  - Alta, baja y cambios en usuarios y grupos
  - Permisos en ficheros
  - Cuotas en ficheros
- Instalación y mantenimiento de hardware y software
- Automatización de Tareas



# Tareas del Administrador (2)

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- Gestión de recursos
  - CPU y Memoria
  - Dispositivos de almacenamiento, discos duros, particiones, LVM...
  - Impresoras
  - Otros recursos



# Tareas del Administrador (3)

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- Optimización y personalización del sistema
  - Compilación del núcleo
  - Parámetros del núcleo
- Auditoria del sistema
- Seguridad y permisos



# Tareas del Administrador (4)

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- Backup y Restauración
- Administración de Red
  - Dispositivos de red
  - Enrutado
  - Servicios de Red
  - Seguridad de red



# Conclusiones

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- Sistema operativo totalmente profesional, requiere de profesionales de administración de sistemas.
- La administración de Linux es compleja, extensa y profesional, pero al ser un sistema de código abierto, licencia GNU GPL y ampliamente soportado en Internet, podemos utilizarlo y administrarlo dentro de nuestros límites.



# Ruegos y preguntas

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Gracias por la atención





Fin



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