

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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- Conclusiones



Características de Linux

- 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)

- 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

- 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.



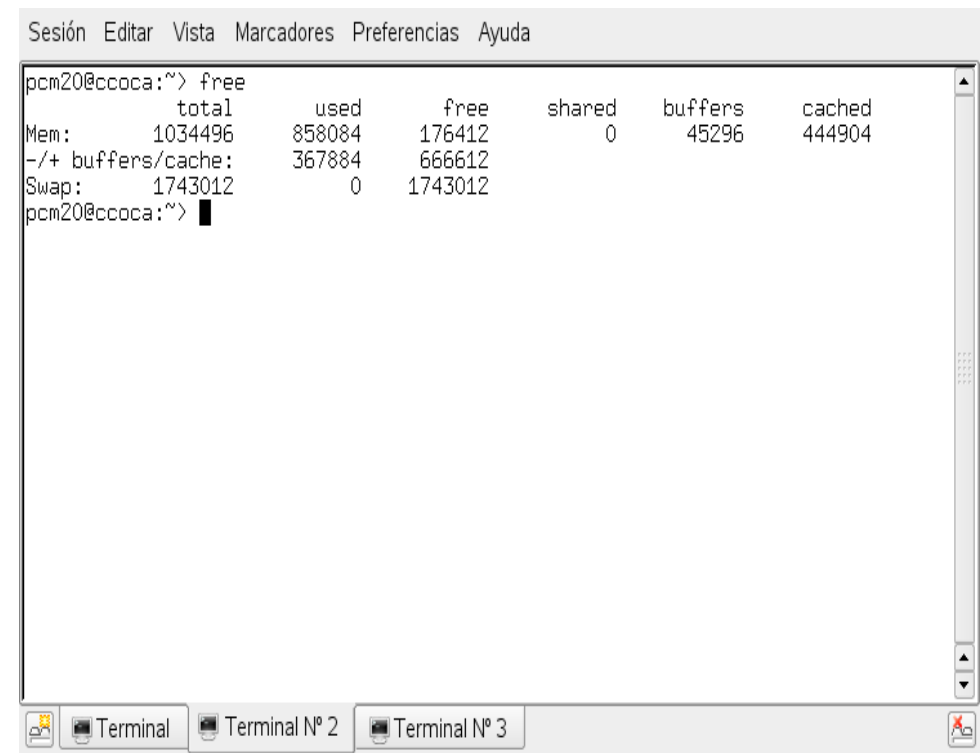
Componentes: CPU y Memoria

- 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



```
Sesión Editar Vista Marcadores Preferencias Ayuda
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 image shows a terminal window with a menu bar at the top containing 'Sesión', 'Editar', 'Vista', 'Marcadores', 'Preferencias', and 'Ayuda'. The terminal content shows the execution of the 'free' command, displaying memory usage statistics in a table format. The table has columns for 'total', 'used', 'free', 'shared', 'buffers', and 'cached'. The rows represent 'Mem:', '-/+ buffers/cache:', and 'Swap:'. The cursor is positioned at the end of the last line of output.



Componentes: S. Ficheros

- 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)

- 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

- 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

- 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)

- 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

- 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

- 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

- 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)

- 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

- 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

- 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)

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



Tareas del Administrador (3)

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



Tareas del Administrador (4)

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



Conclusiones

- 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

Gracias por la atención



Fin



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