cgl@disk:$ echo "This is just a demonstration of how to use partitions and filesystems. Your actual homework will require different parameters to the commands"
cgl2013@caesar:~$ citm createvm disk.dsutux.us 256 8 2001
/qemu/bin/qemu-new-image cgl2013-disk.dsutux.us 8;
Formatting '/qemu/images/cgl2013-cgl2013-disk.dsutux.us.img', fmt=raw size=8589934592
User cgl2013 has created the machine disk.dsutux.us : 386 with 256 memory

cgl2013@caesar:~$
cgl@ns1:/$ sudo emacs /etc/bind/db.dsutux.us
ns1 IN A 144.38.214.2
ns2 IN A 144.38.214.3
users IN A 144.38.214.4
mail IN A 144.38.214.5
www IN A 144.38.214.6
tarzan IN CNAME www
jane IN CNAME www
korak IN CNAME www
borta IN CNAME www
resources IN A 144.38.214.7
disk IN A 144.38.214.8
updated information.

Retry - How often the secondary name servers should retry a refresh, if the refresh is unsuccessful.

expire - How long the secondary name servers should keep this information before it is discarded.

Minimum/TTL - How long negative hits should be stored. This is for other servers that ask us about a non-existent RR. They should cache the negative response for this long.

@ IN SOA ns1.dsutux.us. root.ns1.dsutux.us. (2013092501 ; Serial 3600 ; Refresh every 1 hour 300 ; Retry every 5 minutes 241920 ; Expire in 4 weeks 60 ) ; Negative cache TTL is 1 minute

NS (Name Server) records

@ IN NS ns1.dsutux.us.
@ IN NS ns2.dsutux.us.
sudo emacs /etc/bind/db.0-31.214.38.144.in-addr.arpa
; Negative cache TTL is 1 minute

; NS (Name Server) records
@ IN NS ns1.dsutux.us.
@ IN NS ns2.dsutux.us.

; PTR (Reverse Address) records
2 IN PTR ns1.dsutux.us.
3 IN PTR ns2.dsutux.us.
4 IN PTR users.dsutux.us.
5 IN PTR mail.dsutux.us.
6 IN PTR www.dsutux.us.
7 IN PTR resources.dsutux.us.
8 IN PTR disk.dsutux.us.
; refresh, if the refresh is unsuccessful.
; Expire        - How long the secondary name servers should keep this
;               information before it is discarded.
; Minimum/TTL   - How long negative hits should be stored. This is
;               for other servers that ask us about a non-existent RR.
;               They should cache the negative response for this long.
@    IN  SOA  ns1.dsutux.us. root.ns1.dsutux.us. (2013092501 ; Serial
          3600 ; Refresh every 1 hour
          300 ; Retry every 5 minutes
          241920 ; Expire in 4 weeks
          60 ) ; Negative cache TTL is 1 minute

; NS (Name Server) records
;
@    IN  NS   ns1.dsutux.us.
@    IN  NS   ns2.dsutux.us.

; PTR (Reverse Address) records
cgl@ns1:/$ sudo service bind9 restart
  * Stopping domain name service... bind9
  waiting for pid 11359 to die

  * Starting domain name service... bind9
  [ OK ]
  [ OK ]
cgl@ns1:/$
Sep 25 14:13:06 ns1 named[12099]: automatic empty zone: A.E.F.IP6.ARPA
Sep 25 14:13:06 ns1 named[12099]: automatic empty zone: B.E.F.IP6.ARPA
Sep 25 14:13:06 ns1 named[12099]: automatic empty zone: 8.B.D.0.1.0.0.2.IP6.ARPA
Sep 25 14:13:06 ns1 named[12099]: command channel listening on 127.0.0.1#953
Sep 25 14:13:06 ns1 named[12099]: command channel listening on ::1#953
Sep 25 14:13:06 ns1 named[12099]: zone 0.in-addr.arpa/IN: loaded serial 1
Sep 25 14:13:06 ns1 named[12099]: zone 127.in-addr.arpa/IN: loaded serial 1
Sep 25 14:13:06 ns1 named[12099]: zone 0-31.214.38.144.in-addr.arpa/IN: loaded serial 2013092501
Sep 25 14:13:06 ns1 named[12099]: zone 255.in-addr.arpa/IN: loaded serial 1
Sep 25 14:13:06 ns1 named[12099]: zone localhost/IN: loaded serial 2
Sep 25 14:13:06 ns1 named[12099]: zone dsutux.us/IN: loaded serial 2013092501
Sep 25 14:13:06 ns1 named[12099]: managed-keys-zone ./IN: loaded serial 31
Sep 25 14:13:06 ns1 named[12099]: running
Sep 25 14:13:06 ns1 named[12099]: zone dsutux.us/IN: sending notifies (serial 2013092501)
Sep 25 14:13:06 ns1 named[12099]: zone 0-31.214.38.144.in-addr.arpa/IN: sending notifies (serial 2013092501)
Sep 25 14:13:06 ns1 named[12099]: client 144.38.214.3#43165: query: dsutux.us IN SOA -E (144.38.214.2)
Sep 25 14:13:06 ns1 named[12099]: client 144.38.214.3#54882: query: dsutux.us IN IXFR -T (144.38.214.2)
Sep 25 14:13:06 ns1 named[12099]: zone dsutux.us/IN: loaded serial 2013092501
Sep 25 14:13:06 ns1 named[12099]: managed-keys-zone ./IN: loaded serial 31
Sep 25 14:13:06 ns1 named[12099]: running
Sep 25 14:13:06 ns1 named[12099]: zone dsutux.us/IN: sending notifies (serial 2013092501)
Sep 25 14:13:06 ns1 named[12099]: zone 0-31.214.38.144.in-addr.arpa/IN: sending notifies (serial 2013092501)
Sep 25 14:13:06 ns1 named[12099]: client 144.38.214.3#43165: query: dsutux.us IN SOA -E (144.38.214.2)
Sep 25 14:13:06 ns1 named[12099]: client 144.38.214.3#54882: query: dsutux.us IN IXFR -T (144.38.214.2)
Sep 25 14:13:06 ns1 named[12099]: client 144.38.214.3#54882: transfer of 'dsutux.us/IN': AXFR-style IXFR started
Sep 25 14:13:06 ns1 named[12099]: client 144.38.214.3#54882: transfer of 'dsutux.us/IN': AXFR-style IXFR ended
Sep 25 14:13:07 ns1 named[12099]: client 144.38.214.3#11464: query: 0-31.214.38.144.in-addr.arpa IN SOA -E (144.38.214.2)
Sep 25 14:13:07 ns1 named[12099]: client 144.38.214.3#44200: query: 0-31.214.38.144.in-addr.arpa IN IXFR -T (144.38.214.2)
Sep 25 14:13:07 ns1 named[12099]: client 144.38.214.3#44200: transfer of '0-31.214.38.144.in-addr.arpa/IN': AXFR-style IXFR started
Sep 25 14:13:07 ns1 named[12099]: client 144.38.214.3#44200: transfer of '0-31.214.38.144.in-addr.arpa/IN': AXFR-style IXFR ended

(END)
cgl@ns1:/$ dig @144.38.214.2 disk.dsutux.us | grep disk
; <<< DiG 9.8.1-P1 <<< @144.38.214.2 disk.dsutux.us
;disk.dsutux.us. IN A
disk.dsutux.us. 3600 IN A 144.38.214.8

; <<< DiG 9.8.1-P1 <<< @144.38.214.2 -x 144.38.214.8 | grep '8.*\.|214'
; <<< DiG 9.8.1-P1 <<< @144.38.214.2 -x 144.38.214.8
;8.214.38.144.in-addr.arpa. IN PTR
8.214.38.144.in-addr.arpa. 60 IN CNAME 8.0-31.214.38.144.in-addr.arpa.
8.0-31.214.38.144.in-addr.arpa. 3600 IN PTR disk.dsutux.us.
ns1.dsutux.us. 3600 IN A 144.38.214.2
ns2.dsutux.us. 3600 IN A 144.38.214.3

;; SERVER: 144.38.214.2#53(144.38.214.2)
cgl@ns1:/$
The IP address is unique to your computer and is either:
* Four numbers separated by periods; or
* Blocks of hexadecimal characters separated by colons (IPv6).
You can also optionally specify a CIDR netmask.
If you don’t know what to use here, consult your network administrator.
IP address:
[!!!] Configure the network

The IP address is unique to your computer and is either:
* Four numbers separated by periods; or
* Blocks of hexadecimal characters separated by colons (IPv6).
You can also optionally specify a CIDR netmask.
If you don’t know what to use here, consult your network administrator.
IP address:
144.38.214.8

<Go Back> <Continue>
[!!!] Configure the network

The netmask is used to determine which machines are local to your network. Consult your network administrator if you do not know the value. The netmask should be entered as four numbers separated by periods.

Netmask:
255.255.255.224

<Go Back>  <Continue>
The gateway is an IP address (four numbers separated by periods) that indicates the gateway router, also known as the default router. All traffic that goes outside your LAN (for instance, to the Internet) is sent through this router. In rare circumstances, you may have no router; in that case, you can leave this blank. If you don't know the proper answer to this question, consult your network administrator.

Gateway:

144.38.214.1

<Go Back> <Continue>
The name servers are used to look up host names on the network. Please enter the IP addresses (not host names) of up to 3 name servers, separated by spaces. Do not use commas. The first name server in the list will be the first to be queried. If you don't want to use any name server, just leave this field blank.

Name server addresses:

144.36.214.1

<Go Back> <Continue>
The name servers are used to look up host names on the network. Please enter the IP addresses (not host names) of up to 3 name servers, separated by spaces. Do not use commas. The first name server in the list will be the first to be queried. If you don't want to use any name server, just leave this field blank.

Name server addresses:

144.38.214.2 144.38.214.3 144.38.192.2

<Go Back> <Continue>
Configure the network

Please enter the hostname for this system.

The hostname is a single word that identifies your system to the network. If you don't know what your hostname should be, consult your network administrator. If you are setting up your own home network, you can make something up here.

Hostname:

**disk**

<Go Back> <Continue>
Configure the network

Please enter the hostname for this system.

The hostname is a single word that identifies your system to the network. If you don't know what your hostname should be, consult your network administrator. If you are setting up your own home network, you can make something up here.

Hostname:

disk

<Go Back> <Continue>
Configure the network

The domain name is the part of your Internet address to the right of your host name. It is often something that ends in .com, .net, .edu, or .org. If you are setting up a home network, you can make something up, but make sure you use the same domain name on all your computers.

Domain name:

dsutux.us

<Go Back> <Continue>
The domain name is the part of your Internet address to the right of your host name. It is often something that ends in .com, .net, .edu, or .org. If you are setting up a home network, you can make something up, but make sure you use the same domain name on all your computers.

Domain name:

dsutux.us
The installer can guide you through partitioning a disk (using different standard schemes) or, if you prefer, you can do it manually. With guided partitioning you will still have a chance later to review and customise the results.

If you choose guided partitioning for an entire disk, you will next be asked which disk should be used.

Partitioning method:

- **Guided - use entire disk**
- Guided - use entire disk and set up LVM
- Guided - use entire disk and set up encrypted LVM
- Manual

<Go Back>
The installer can guide you through partitioning a disk (using different standard schemes) or, if you prefer, you can do it manually. With guided partitioning you will still have a chance later to review and customise the results.

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Partitioning method:

- Guided - use entire disk
- Guided - use entire disk and set up LVM
- Guided - use entire disk and set up encrypted LVM
- Manual

<Go Back>
This is an overview of your currently configured partitions and mount points. Select a partition to modify its settings (file system, mount point, etc.), a free space to create partitions, or a device to initialize its partition table.

Guided partitioning
Configure iSCSI volumes

SCSI1 (0,0,0) (eda) - 8.6 GB ATA QEMU HARD_DISK

Undo changes to partitions
Finish partitioning and write changes to disk

<Go Back>
You have selected an entire device to partition. If you proceed with creating a new partition table on the device, then all current partitions will be removed.

Note that you will be able to undo this operation later if you wish.

Create new empty partition table on this device?

<Go Back>  <Yes>  <No>
This is an overview of your currently configured partitions and mount points. Select a partition to modify its settings (file system, mount point, etc.), a free space to create partitions, or a device to initialize its partition table.

Guided partitioning
Configure software RAID
Configure the Logical Volume Manager
Configure encrypted volumes
Configure iSCSI volumes

SCSI1 (0,0,0) (sda) - 8.6 GB ATA QEMU HARDISK
  pri/log  0.6 GB   FREE SPACE

Undo changes to partitions
Finish partitioning and write changes to disk

<Go Back>
This is an overview of your currently configured partitions and mount points. Select a partition to modify its settings (file system, mount point, etc.), a free space to create partitions, or a device to initialize its partition table.

Guided partitioning
Configure software RAID
Configure the Logical Volume Manager
Configure encrypted volumes
Configure iSCSI volumes

SCSI1 (0,0,0) (sda) - 8.6 GB ATA QEMU HARDDISK
pri/log 0.6 GB FREE SPACE

Undo changes to partitions
Finish partitioning and write changes to disk

<Go Back>
How to use this free space:

Create a new partition
Automatically partition the free space
Show Cylinder/Head/Sector information

<Go Back>
[!] Partition disks

The maximum size for this partition is 8.6 GB.

Hint: "max" can be used as a shortcut to specify the maximum size, or enter a percentage (e.g. "20%") to use that percentage of the maximum size.

New partition size:

2GB

<Go Back>    <Continue>
[!!] Partition disks

Type for the new partition:

Primary
Logical

<Go Back>

<Tab> moves; <Space> selects; <Enter> activates buttons
[!!] Partition disks

Please choose whether you want the new partition to be created at the beginning or at the end of the available space.

Location for the new partition:

   Beginning
     End

<Go Back>
[!] Partition disks

You are editing partition #1 of SCSI1 (0,0,0) (sda). No existing file system was detected in this partition.

Partition settings:

Use as: Ext4 journaling file system

Mount point: /  
Mount options: defaults  
Label: none  
Reserved blocks: 5%  
Typical usage: standard  
Bootable flag: off

Copy data from another partition  
Delete the partition  
Done setting up the partition

<Go Back>
[!!] Partition disks

You are editing partition #1 of SCSI1 (0,0,0) (sda). No existing file system was detected in this partition.

Partition settings:

Use as: Ext4 journaling file system

Mount point: /
Mount options: defaults
Label: none
Reserved blocks: 5%
Typical usage: standard
Bootable flag: off

Copy data from another partition
Delete the partition
Done setting up the partition

<Go Back>

<Fl> for help; <Tab> moves; <Space> selects; <Enter> activates buttons
This is an overview of your currently configured partitions and mount points. Select a partition to modify its settings (file system, mount point, etc.), a free space to create partitions, or a device to initialize its partition table.

Guided partitioning
Configure software RAID
Configure the Logical Volume Manager
Configure encrypted volumes
Configure iSCSI volumes

SCSI1 (0,0,0) (sda) - 8.6 GB ATA QEMU HARDISK
  #1 primary 2.0 GB  f  cxt4   /
  pri/log 6.6 GB  FREE SPACE

Undo changes to partitions
Finish partitioning and write changes to disk

<Go Back>
[!] Partition disks

How to use this free space:

Create a new partition
Automatically partition the free space
Show Cylinder/Head/Sector information

<Go Back>
[!!!] Partition disks

The maximum size for this partition is 6.6 GB.

Hint: "max" can be used as a shortcut to specify the maximum size, or enter a percentage (e.g. "20%") to use that percentage of the maximum size.

New partition size:

256MB

<Go Back> <Continue>
[!] Partition disks

Type for the new partition:

Primary
Logical

<Go Back>
[!] Partition disks

Please choose whether you want the new partition to be created at the beginning or at the end of the available space.

Location for the new partition:

- **Beginning**
- **End**

<Go Back>
[!!] Partition disks

You are editing partition #2 of SCSI1 (0,0,0) (sda). No existing file system was detected in this partition.

Partition settings:

Use as: Ext4 journaling file system

Mount point: /home
Mount options: defaults
Label: none
Reserved blocks: 5%
Typical usage: standard
Bootable flag: off

Copy data from another partition
Delete the partition
Done setting up the partition

<Go Back>
How to use this partition:

- Ext4 journaling file system
- Ext3 journaling file system
- Ext2 file system
- ReiserFS journaling file system
- btrfs journaling file system
- JFS journaling file system
- XFS journaling file system
- FAT16 file system
- FAT32 file system
- swap area
  - physical volume for encryption
  - physical volume for RAID
  - physical volume for LVM
  - do not use the partition

<Go Back>
You are editing partition #2 of SCSI1 (0,0,0) (sda). No existing file system was detected in this partition.

Partition settings:

Use as: swap area
Bootable flag: off
Copy data from another partition
Delete the partition
Done setting up the partition

<Go Back>
This is an overview of your currently configured partitions and mount points. Select a partition to modify its settings (file system, mount point, etc.), a free space to create partitions, or a device to initialize its partition table.

Guided partitioning
Configure software RAID
Configure the Logical Volume Manager
Configure encrypted volumes
Configure iSCSI volumes

SCSI1 (0,0,0) (sda) - 8.6 GB ATA QEMU HARDDISK

#1 primary 2.0 GB f ext4 /
#2 primary 255.9 MB f swap swap

undo changes to partitions
Finish partitioning and write changes to disk

<Go Back>
[!] Partition disks

This is an overview of your currently configured partitions and mount points. Select a partition to modify its settings (file system, mount point, etc.), a free space to create partitions, or a device to initialize its partition table.

Guided partitioning
Configure software RAID
Configure the Logical Volume Manager
Configure encrypted volumes
Configure iSCSI volumes

SCSI1 (0,0,0) (sda) - 8.6 GB ATA QEMU HARDDISK
   #1 primary  2.0 GB  f    ext4       /
   #2 primary  255.9 MB  f    swap       swap
         pri/log  6.3 GB    FREE SPACE

Undo changes to partitions
Finish partitioning and write changes to disk

<Go Back>
If you continue, the changes listed below will be written to the disks. Otherwise, you will be able to make further changes manually.

The partition tables of the following devices are changed:
  SCSI1 (0,0,0) (sda)

The following partitions are going to be formatted:
  partition #1 of SCSI1 (0,0,0) (sda) as ext4
  partition #2 of SCSI1 (0,0,0) (sda) as swap

Write the changes to disks?

<Yes>  <No>
Updated the RAM for disk.dsutux.us to 128Mbyte.
cgl@disk:/$ sudo sfdisk -l /dev/sda

Disk /dev/sda: 1044 cylinders, 255 heads, 63 sectors/track
Units = cylinders of 8225280 bytes, blocks of 1024 bytes, counting from 0

<table>
<thead>
<tr>
<th>Device</th>
<th>Boot</th>
<th>Start</th>
<th>End</th>
<th>#cyls</th>
<th>#blocks</th>
<th>Id</th>
<th>System</th>
</tr>
</thead>
<tbody>
<tr>
<td>/dev/sda1</td>
<td>*</td>
<td>0+</td>
<td>243-</td>
<td>243-</td>
<td>1951744</td>
<td>83</td>
<td>Linux</td>
</tr>
<tr>
<td>/dev/sda2</td>
<td>243+</td>
<td>274-</td>
<td>32-</td>
<td>249856</td>
<td>82</td>
<td>Linux swap / Solaris</td>
<td></td>
</tr>
<tr>
<td>/dev/sda3</td>
<td>0</td>
<td>-</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>Empty</td>
</tr>
<tr>
<td>/dev/sda4</td>
<td>0</td>
<td>-</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>Empty</td>
</tr>
</tbody>
</table>

cgl@disk:/$
cgl@disk:/$ sudo parted /dev/sda
GNU Parted 2.3
Using /dev/sda
Welcome to GNU Parted! Type 'help' to view a list of commands.
(parted)
(parted)
(parted)
(parted)
(parted)
(parted)
(parted)
(parted)
(parted)
(parted)
(parted)
(parted)
(parted)
(parted)
(parted)
(parted)
(parted)
(parted)
(parted)
(parted)
(parted)
(parted)
(parted)
(parted)

(parted) print free
Model: ATA QEMU HARDDISK (scsi)
Disk /dev/sda: 8590MB
Sector size (logical/physical): 512B/512B
Partition Table: msdos

<table>
<thead>
<tr>
<th>Number</th>
<th>Start</th>
<th>End</th>
<th>Size</th>
<th>Type</th>
<th>File system</th>
<th>Flags</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1049kB</td>
<td>2000MB</td>
<td>1999MB</td>
<td>primary</td>
<td>ext4</td>
<td>boot</td>
</tr>
<tr>
<td>2</td>
<td>2000MB</td>
<td>2255MB</td>
<td>256MB</td>
<td>primary</td>
<td>linux-swap(v1)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2255MB</td>
<td>8590MB</td>
<td>6334MB</td>
<td></td>
<td>Free Space</td>
<td></td>
</tr>
</tbody>
</table>
(parted)
(parted)
(parted)
(parted)
(parted)
(parted)
(parted)

(parted) help mkpart
mkpart PART-TYPE [FS-TYPE] START END     make a partition

PART-TYPE is one of: primary, logical, extended
FS-TYPE is one of: zfs, btrfs, ext4, ext3, ext2, fat32, fat16, hfsx, hfs+, hfs, jfs, swsusp, linux-swap(v1), linux-swap(v0), ntfs, reiserfs, freebsd-ufs, hp-ufs, sun-ufs, xfs, apfs2, apfs1, asfs, amufs5, amufs4, amufs3, amufs2, amufs1, amufs0, amufs, affs7, affs6, affs5, affs4, affs3, affs2, affs1, affs0, linux-swap, linux-swap(new), linux-swap(old)
START and END are disk locations, such as 4GB or 10%. Negative values count from the end of the disk. For example, -1s specifies exactly the last sector.

'mkpart' makes a partition without creating a new file system on the partition. FS-TYPE may be specified to set an appropriate partition ID.

(parted)
Model: ATA QEMU HARDDISK (scsi)
Disk /dev/sda: 8590MB
Sector size (logical/physical): 512B/512B
Partition Table: msdos

<table>
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<tr>
<th>Number</th>
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<th>Type</th>
<th>File system</th>
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</thead>
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<tr>
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<td>2000MB</td>
<td>1999MB</td>
<td>primary</td>
<td>ext4</td>
<td>boot</td>
</tr>
<tr>
<td>2</td>
<td>2000MB</td>
<td>2255MB</td>
<td>256MB</td>
<td>primary</td>
<td>linux-swap(v1)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2255MB</td>
<td>8590MB</td>
<td>6334MB</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Model: ATA QEMU HARDDISK (scsi)
Disk /dev/sda: 8590MB
Sector size (logical/physical): 512B/512B
Partition Table: msdos

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<td>2255MB</td>
<td>256MB</td>
<td>primary</td>
<td>linux-swap(v1)</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>2255MB</td>
<td>8590MB</td>
<td>5335MB</td>
<td>primary</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

(parted)
Model: ATA QEMU HARDDISK (scsi)
Disk /dev/sda: 8590MB
Sector size (logical/physical): 512B/512B
Partition Table: msdos

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</tr>
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<tbody>
<tr>
<td>32.3kB</td>
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<td>Free Space</td>
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</tr>
<tr>
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<td>ext4</td>
<td>boot</td>
</tr>
<tr>
<td>2</td>
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<td>256MB</td>
<td>primary</td>
<td>linux-swap(v1)</td>
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(parted) mkpart extended 3255MB 8590MB
(parted)
Model: ATA QEMU HARD_DISK (scsi)
Disk /dev/sda: 8590MB
Sector size (logical/physical): 512B/512B
Partition Table: msdos

<table>
<thead>
<tr>
<th>Number</th>
<th>Start</th>
<th>End</th>
<th>Size</th>
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<th>Filesystem</th>
<th>Flags</th>
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Model: ATA QEMU HARDDISK (scsi)
Disk /dev/sda: 8590MB
Sector size (logical/physical): 512B/512B
Partition Table: msdos

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<tr>
<th>Number</th>
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(parted) print free
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Model: ATA QEMU HARDDISK (scsi)
Disk /dev/sda: 8590MB
Sector size (logical/physical): 512B/512B
Partition Table: msdos

<table>
<thead>
<tr>
<th>Number</th>
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### Partition Table: msdos

<table>
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(parted)
(parted) mkpart logical 3355MB 3455MB
Warning: The resulting partition is not properly aligned for best performance. Ignore/Cancel? c
(parted) mkpart logical 3356MB 3456MB
(parted)
Model: ATA QEMU HARDDISK (scsi)
Disk /dev/sda: 8590MB
Sector size (logical/physical): 512B/512B
Partition Table: msdos

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<tr>
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<th>Start</th>
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<th>Size</th>
<th>Type</th>
<th>File system</th>
<th>Flags</th>
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</thead>
<tbody>
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<td>1016kB</td>
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<td>Free Space</td>
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Partition Table: msdos

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(parted) mkpart logical 3456MB 3556MB
Warning: The resulting partition is not properly aligned for best performance. Ignore/Cancel? c
(parted) mkpart logical 3457MB 3557MB
(parted)
Model: ATA QEMU HARD_DISK (scsi)
Disk /dev/sda: 8590MB
Sector size (logical/physical): 512B/512B
Partition Table: msdos

<table>
<thead>
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(parted) print free

(parted)
Sector size (logical/physical): 512B/512B  
Partition Table: msdos

<table>
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<tr>
<th>Number</th>
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<td>linux-swap(v1)</td>
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</table>

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(parted)
(parted)
(parted)
(parted) quit

Information: You may need to update /etc/fstab.
cgl@disk:/$ mkfs.
mkfs.bfs  mkfs.ext2  mkfs.ext4  mkfs.minix  mkfs.ntfs
mkfs.cramfs  mkfs.ext3  mkfs.ext4dev  mkfs.msdos  mkfs.vfat

cgl@disk:/$ mkfs.
cgl@disk:/$ sudo sfdisk -l /dev/sda

Disk /dev/sda: 1044 cylinders, 255 heads, 63 sectors/track
Warning: extended partition does not start at a cylinder boundary.
DOS and Linux will interpret the contents differently.
Units = cylinders of 8225280 bytes, blocks of 1024 bytes, counting from 0

<table>
<thead>
<tr>
<th>Device</th>
<th>Boot</th>
<th>Start</th>
<th>End</th>
<th>#cyls</th>
<th>#blocks</th>
<th>Id</th>
<th>System</th>
</tr>
</thead>
<tbody>
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<td>*</td>
<td>0+</td>
<td>243-</td>
<td>243-</td>
<td>1951744</td>
<td>83</td>
<td>Linux</td>
</tr>
<tr>
<td>/dev/sda2</td>
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<td>243+</td>
<td>274-</td>
<td>32-</td>
<td>249856</td>
<td>82</td>
<td>Linux swap / Solaris</td>
</tr>
<tr>
<td>/dev/sda3</td>
<td></td>
<td>274+</td>
<td>395-</td>
<td>122-</td>
<td>975872</td>
<td>83</td>
<td>Linux</td>
</tr>
<tr>
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<td>395+</td>
<td>1044-</td>
<td>649-</td>
<td>5210112</td>
<td>f</td>
<td>W95 Ext'd (LBA)</td>
</tr>
<tr>
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<td>395+</td>
<td>407-</td>
<td>13-</td>
<td>97280</td>
<td>83</td>
<td>Linux</td>
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<td>408+</td>
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<td>Linux</td>
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<td>/dev/sda7</td>
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<td>420+</td>
<td>432-</td>
<td>13-</td>
<td>97280</td>
<td>83</td>
<td>Linux</td>
</tr>
</tbody>
</table>

cgl@disk:/$
cgl@disk:/$ sudo mkfs -t ext4 /dev/sda5
cgl@disk:/$ sudo mkfs -t ext4 /dev/sda5
mke2fs 1.42 (29-Nov-2011)
Discarding device blocks: done
Filesystem label=
OS type: Linux
Block size=1024 (log=0)
Fragment size=1024 (log=0)
Stride=0 blocks, Stripe width=0 blocks
24384 inodes, 97280 blocks
4864 blocks (5.00%) reserved for the super user
First data block=1
Maximum filesystem blocks=67371008
12 block groups
8192 blocks per group, 8192 fragments per group
2032 inodes per group
Superblock backups stored on blocks:
        8193, 24577, 40961, 57345, 73729
Allocating group tables: done
Writing inode tables: done
Creating journal (4096 blocks): done
Writing superblocks and filesystem accounting information: done

cgl@disk:/$
cgl@disk:/$ df

<table>
<thead>
<tr>
<th>Filesystem</th>
<th>1K-blocks</th>
<th>Used</th>
<th>Available</th>
<th>Use%</th>
<th>Mounted on</th>
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<tbody>
<tr>
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<td>1921036</td>
<td>902244</td>
<td>921208</td>
<td>50%</td>
<td>/</td>
</tr>
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<td>udev</td>
<td>49380</td>
<td>4</td>
<td>49376</td>
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<tr>
<td>tmpfs</td>
<td>23280</td>
<td>256</td>
<td>23024</td>
<td>2%</td>
<td>/run</td>
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<td>none</td>
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<td>58192</td>
<td>0</td>
<td>58192</td>
<td>0%</td>
<td>/run/shm</td>
</tr>
</tbody>
</table>

cgl@disk:/$
cgl@disk:$ sudo mkdir /myspace

cgl@disk:$ sudo mkdir /myspace/it3100

cgl@disk:$
cgl@disk:$ sudo mount -t ext4 /dev/sda5 /myspace/it3100

cgl@disk:$
<table>
<thead>
<tr>
<th>Filesystem</th>
<th>1K-blocks</th>
<th>Used</th>
<th>Available</th>
<th>Use%</th>
<th>Mounted on</th>
</tr>
</thead>
<tbody>
<tr>
<td>/dev/sda1</td>
<td>1921036</td>
<td>902256</td>
<td>921196</td>
<td>50%</td>
<td>/</td>
</tr>
<tr>
<td>udev</td>
<td>49380</td>
<td>4</td>
<td>49376</td>
<td>1%</td>
<td>/dev</td>
</tr>
<tr>
<td>tmpfs</td>
<td>23280</td>
<td>256</td>
<td>23024</td>
<td>2%</td>
<td>/run</td>
</tr>
<tr>
<td>none</td>
<td>5120</td>
<td>0</td>
<td>5120</td>
<td>0%</td>
<td>/run.lock</td>
</tr>
<tr>
<td>none</td>
<td>58192</td>
<td>0</td>
<td>58192</td>
<td>0%</td>
<td>/run/shm</td>
</tr>
<tr>
<td>/dev/sda5</td>
<td>94195</td>
<td>5646</td>
<td>83685</td>
<td>7%</td>
<td>/myspace/it3100</td>
</tr>
</tbody>
</table>
cgl@disk:$ ls -la /myspace/it3100/
total 17
drwxr-xr-x 3 root root 1024 Sep 26 13:38 .
drwxr-xr-x 3 root root 4096 Sep 26 13:39 ..
drw------- 2 root root 12288 Sep 26 13:38 lost+found
cgl@disk/$
cgl@disk:/$ sudo tune2fs -l /dev/sda5
cgl@disk:/$ sudo tune2fs -l /dev/sda5

Filesystem volume name:  <none>
Last mounted on:          <not available>
Filesystem UUID:          4f3b5fc0-582f-4cda-9680-bb78aaa80b48
Filesystem magic number:  0xEF53
Filesystem revision #:    1 (dynamic)
Filesystem features:      has_journal ext_attr resize_inode dir_index filetype nodirect noatime extents_recovery extent_bgs sparse_super huge_file uninit_bg dir_nlink extra_is_nlink
Filesystem flags:         signed_directory_hash
Default mount options:    user_xattr acl
Filesystem state:         clean
Errors behavior:          Continue
Filesystem OS type:        Linux
Inode count:              24384
Block count:              97280
Reserved block count:     4864
Free blocks:              88549
Free inodes:              24373
First block:              1
Block size:               1024
Fragment size:            1024
Reserved GDT blocks:      256
Fragment size: 1024
Reserved GDT blocks: 256
Blocks per group: 8192
Fragments per group: 8192
Inodes per group: 2032
Inode blocks per group: 254
Flex block group size: 16
Filesystem created: Thu Sep 26 13:38:02 2013
Last mount time: Thu Sep 26 13:39:57 2013
Last write time: Thu Sep 26 13:39:57 2013
Mount count: 1
Maximum mount count: -1
Last checked: Thu Sep 26 13:38:02 2013
Check interval: 0 (<none>)
Lifetime writes: 4447 kB
Reserved blocks uid: 0 (user root)
Reserved blocks gid: 0 (group root)
First inode: 11
Inode size: 128
Journal inode: 8
Default directory hash: half_md4
Directory Hash Seed: 6cf361e0-eced-44b3-a74c-11882380f438
Journal backup: inode blocks
cgl@disk:/$ df
Filesystem  1K-blocks  Used  Available  Use%  Mounted on
/dev/sda1  1921036  902256  921196  50%  /
udev       49380     4  49376    1%  /dev
tmpfs      23280   256  23024    2%  /run
none       5120     0  5120     0%  /run/lock
none       58192     0  58192     0%  /run/shm
/dev/sda5  94195  5646  83685    7%  /myspace/it3100

cgl@disk:/$ sudo umount /myspace/it3100/
cgl@disk:/$ df
Filesystem  1K-blocks  Used  Available  Use%  Mounted on
/dev/sda1  1921036  902256  921196  50%  /
udev       49380     4  49376    1%  /dev
tmpfs      23280   256  23024    2%  /run
none       5120     0  5120     0%  /run/lock
none       58192     0  58192     0%  /run/shm

cgl@disk:/$
cgl@disk:/$ sudo emacs /etc/fstab
# /etc/fstab: static file system information.
# Use 'blkid' to print the universally unique identifier for a
# device; this may be used with UUID= as a more robust way to name devices
# that works even if disks are added and removed. See fstab(5).

# <file system> <mount point>   <type>  <options>    <dump>  <pass>
proc     /proc         proc    nodev,noexec,nosuid 0      0
# / was on /dev/sda1 during installation
UUID=9cc7c501-f550-4a78-bd9f-23e79858bf71  /         ext4     errors=remount\t-ro  0      1
# swap was on /dev/sda2 during installation
UUID=6a7d804b-d258-4b4f-8743-cddb59f6260e  none     swap     sw    \
     0      0
/dev/fd0  /media/floppy0  auto    rw,user,noauto,exec,utf8 0      0
/etc/fstab: static file system information.

Use 'blkid' to print the universally unique identifier for a device; this may be used with UUID= as a more robust way to name devices that works even if disks are added and removed. See fstab(5).

# <file system> <mount point> <type> <options> <dump> <pass>
proc /proc proc nodev,noexec,nosuid 0 0
# was on /dev/sda1 during installation
UID=9cc7c501-f550-4a78-bd9f-23e79858bf71 / ext4 errors=remount

t-ro 0 1
# swap was on /dev/sda2 during installation
UID=6a7d804b-d258-4b4f-8743-cdb59f6260e none swap sw 0 0

dev/fd0 /media/floppy0 auto rw,user,noauto,exec,utf8 0 0
# <file system> <mount point> <type> <options> <dump> <pass>
/dev/sda5 /myspace/it3100 ext4 defaults 0 2

-WU-:----F1_fstab All L16 (Conf[Space])------------
cgl@disk:/$ df
Filesystem   1K-blocks  Used  Available  Use%  Mounted on
/dev/sda1   1921036  1010364  813088   56%  /
udev        49380    4  49376     1%  /dev
tmpfs       23280   256  23024     2%  /run
none        5120     0  5120     0%  /run/lock
none        58192    0  58192     0%  /run/shm
cgl@disk:/$ sudo mount /myspace/it3100

cgl@disk:/$ df
Filesystem   1K-blocks  Used  Available  Use%  Mounted on
/dev/sda1   1921036  1010364  813088   56%  /
udev        49380    4  49376     1%  /dev
tmpfs       23280   256  23024     2%  /run
none        5120     0  5120     0%  /run/lock
none        58192    0  58192     0%  /run/shm
/dev/sda5   94195   5646  83685     7%  /myspace/it3100

cgl@disk:/$ man mkfs.ext4
NAME
mke2fs  -  create  an  ext2/ext3/ext4 filesystem

SYNOPSIS
mke2fs  [  -c  |  -l  filename  ]  [  -b  block-size  ]  [  -f  fragment-size  ]  [  -g  blocks-per-group  ]  [  -G  number-of-groups  ]  [  -i  bytes-per_inode  ]  [  -I  inode-size  ]  [  -j  ]  [  -J  journal-options  ]  [  -N  number-of-inodes  ]  [  -n  ]  [  -m  reserved-blocks-percentage  ]  [  -o  creator-os  ]  [  -O  feature[,...]  ]  [  -q  ]  [  -r  fs-revision-level  ]  [  -E  extended-options  ]  [  -v  ]  [  -F  ]  [  -L  volume-label  ]  [  -M  last-mounted-directory  ]  [  -S  ]  [  -t  fs-type  ]  [  -T  usage-type  ]  [  -U  UUID  ]  [  -V  ]  device  [  blocks-count  ]
mke2fs  -O  journal_dev  [  -b  block-size  ]  [  -L  volume-label  ]  [  -n  ]  [  -q  ]  [  -v  ]  external-journal  [  blocks-count  ]

DESCRIPTION
mke2fs  is  used  to  create  an  ext2,  ext3,  or  ext4 filesystem,  usually  in a disk partition.  device  is  the  special  file  corresponding  to the device  (e.g  /dev/hdXX).  blocks-count  is  the  number  of blocks  on the device.  If  omitted,  mke2fs  automagically  figures  the  file system  size.
cgl@disk:/$ man fstab
NAME

fstab - static information about the filesystems

SYNOPSIS

/etc/fstab

DESCRIPTION

The file **fstab** contains descriptive information about the various file systems. **fstab** is only read by programs, and not written; it is the duty of the system administrator to properly create and maintain this file. Each filesystem is described on a separate line; fields on each line are separated by tabs or spaces. Lines starting with '#' are comments, blank lines are ignored. The order of records in **fstab** is important because **fsck(8)**, **mount(8)**, and **umount(8)** sequentially iterate through **fstab** doing their thing, though at boot time **mountall(8)** may process the file out-of-order when it believes it is safe to do so.

The first field (**fs_spec**).

This field describes the block special device or remote filesystem to be mounted.
cgl@disk:/$ sudo sfdisk -l /dev/sda

Disk /dev/sda: 1044 cylinders, 255 heads, 63 sectors/track
Warning: extended partition does not start at a cylinder boundary.
DOS and Linux will interpret the contents differently.
Units = cylinders of 8225280 bytes, blocks of 1024 bytes, counting from 0

<table>
<thead>
<tr>
<th>Device</th>
<th>Boot</th>
<th>Start</th>
<th>End</th>
<th>#cyls</th>
<th>#blocks</th>
<th>Id</th>
<th>System</th>
</tr>
</thead>
<tbody>
<tr>
<td>/dev/sda1</td>
<td>*</td>
<td>0+</td>
<td>243-</td>
<td>243-</td>
<td>1951744</td>
<td>83</td>
<td>Linux</td>
</tr>
<tr>
<td>/dev/sda2</td>
<td></td>
<td>243+</td>
<td>274-</td>
<td>32-</td>
<td>249856</td>
<td>82</td>
<td>Linux swap / Solaris</td>
</tr>
<tr>
<td>/dev/sda3</td>
<td></td>
<td>274+</td>
<td>395-</td>
<td>122-</td>
<td>975872</td>
<td>83</td>
<td>Linux</td>
</tr>
<tr>
<td>/dev/sda4</td>
<td></td>
<td>395+</td>
<td>1044-</td>
<td>649-</td>
<td>5210112</td>
<td>f</td>
<td>W95 Ext'd (LBA)</td>
</tr>
<tr>
<td>/dev/sda5</td>
<td></td>
<td>395+</td>
<td>407-</td>
<td>13-</td>
<td>97280</td>
<td>83</td>
<td>Linux</td>
</tr>
<tr>
<td>/dev/sda6</td>
<td></td>
<td>408+</td>
<td>420-</td>
<td>13-</td>
<td>97280</td>
<td>83</td>
<td>Linux</td>
</tr>
<tr>
<td>/dev/sda7</td>
<td></td>
<td>420+</td>
<td>432-</td>
<td>13-</td>
<td>97280</td>
<td>83</td>
<td>Linux</td>
</tr>
</tbody>
</table>
cgl@disk:/$ sudo mkfs -t vfat /dev/sda6
mkfs.vfat 3.0.12 (29 Oct 2011)
cgl@disk:/$
cgl@disk:/$ sudo mkdir /myspace/it1100

cgl@disk:/$
cgl@disk:/$ sudo mount /dev/sda6 /myspace/it1100

cgl@disk:/$ df

Filesystem  1K-blocks Used   Available Use% Mounted on
/dev/sda1   1921036 1010368 813084   56%  /
udev        49380     4    49376    1%  /dev
tmpfs       23280    256    23024    2%  /run
none        5120     0     5120    0%  /run/lock
none        58192     0    58192    0%  /run/shm
/dev/sda5   94195    5646    83649    7%  /myspace/it3100
/dev/sda6   97070     0    97070    0%  /myspace/it1100

cgl@disk:/$
cgl@disk:/$ ls -la /myspace/it1100/
total 20
drwxr-xr-x 4 root root 4096 Sep 26 13:47 ..
cgl@disk:/$ 
cgl@disk:/$ df
Filesystem  1K-blocks  Used  Available  Use%  Mounted on
/dev/sda1  1921036  1010368  813084  56%  /
udev       49380      4     49376    1%  /dev
tmpfs      23280     256    23024    2%  /run
none        5120      0     5120     0%  /run/lock
none        58192     0     58192     0%  /run/shm
/dev/sda5  94195     5646   83685     7%  /myspace/it3100
/dev/sda6  97070      0    97070     0%  /myspace/it1100

cgl@disk:/$ sudo umount /myspace/it1100

cgl@disk:/$ df
Filesystem  1K-blocks  Used  Available  Use%  Mounted on
/dev/sda1  1921036  1010368  813084  56%  /
udev       49380      4     49376    1%  /dev
tmpfs      23280     256    23024    2%  /run
none        5120      0     5120     0%  /run/lock
none        58192     0     58192     0%  /run/shm
/dev/sda5  94195     5646   83685     7%  /myspace/it3100

cgl@disk:/$
cgl@disk:/$ sudo emacs /etc/fstab
### /etc/fstab: static file system information.

- **proc**
  - `mount point`: /proc
  - **type**: proc
  - **options**: nodev,noexec,nosuid
  - **dump**: 0
  - **pass**: 0
  - *Comment*: was on /dev/sda1 during installation
  - **UUID**: 9cc7c501-f550-4a78-bd9f-23e79858bf71

- **swap**
  - `mount point`: none
  - **type**: swap
  - **options**: sw
  - **dump**: 0
  - **pass**: 0
  - *Comment*: swap was on /dev/sda2 during installation
  - **UUID**: 6a7d804b-d258-4b4f-8743-cddb59f6260e

- **myparse**
  - `mount point`: /media/floppy0
  - **type**: auto
  - **options**: rw,user,noauto,exec,utf8
  - **dump**: 0
  - **pass**: 0

- **ext4**
  - `mount point`: /myspace/it3100
  - **type**: ext4
  - **options**: defaults
  - **dump**: 0
  - **pass**: 2

- **vfat**
  - `mount point`: /myspace/it1100
  - **type**: vfat
  - **options**: defaults
  - **dump**: 0
  - **pass**: 0

---

```
Wrote /etc/fstab
```
cgl@disk:/$ df

<table>
<thead>
<tr>
<th>Filesystem</th>
<th>1K-blocks</th>
<th>Used</th>
<th>Available</th>
<th>Use%</th>
<th>Mounted on</th>
</tr>
</thead>
<tbody>
<tr>
<td>/dev/sda1</td>
<td>1921036</td>
<td>1010368</td>
<td>813084</td>
<td>56%</td>
<td>/</td>
</tr>
<tr>
<td>udev</td>
<td>49380</td>
<td>4</td>
<td>49376</td>
<td>1%</td>
<td>/dev</td>
</tr>
<tr>
<td>tmpfs</td>
<td>23280</td>
<td>256</td>
<td>23024</td>
<td>2%</td>
<td>/run</td>
</tr>
<tr>
<td>none</td>
<td>5120</td>
<td>0</td>
<td>5120</td>
<td>0%</td>
<td>/run/lock</td>
</tr>
<tr>
<td>none</td>
<td>58192</td>
<td>0</td>
<td>58192</td>
<td>0%</td>
<td>/run/shm</td>
</tr>
<tr>
<td>/dev/sda5</td>
<td>94195</td>
<td>5646</td>
<td>83685</td>
<td>7%</td>
<td>/myspace/it3100</td>
</tr>
</tbody>
</table>

sudo mount /myspace/it1100

cgl@disk:/$ df

<table>
<thead>
<tr>
<th>Filesystem</th>
<th>1K-blocks</th>
<th>Used</th>
<th>Available</th>
<th>Use%</th>
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<td>/dev/sda1</td>
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<td>813084</td>
<td>56%</td>
<td>/</td>
</tr>
<tr>
<td>udev</td>
<td>49380</td>
<td>4</td>
<td>49376</td>
<td>1%</td>
<td>/dev</td>
</tr>
<tr>
<td>tmpfs</td>
<td>23280</td>
<td>256</td>
<td>23024</td>
<td>2%</td>
<td>/run</td>
</tr>
<tr>
<td>none</td>
<td>5120</td>
<td>0</td>
<td>5120</td>
<td>0%</td>
<td>/run/lock</td>
</tr>
<tr>
<td>none</td>
<td>58192</td>
<td>0</td>
<td>58192</td>
<td>0%</td>
<td>/run/shm</td>
</tr>
<tr>
<td>/dev/sda5</td>
<td>94195</td>
<td>5646</td>
<td>83685</td>
<td>7%</td>
<td>/myspace/it3100</td>
</tr>
<tr>
<td>/dev/sda6</td>
<td>97070</td>
<td>0</td>
<td>97070</td>
<td>0%</td>
<td>/myspace/it1100</td>
</tr>
</tbody>
</table>
cgl@disk:/$ man mkfs.vfat
NAME
mkdosfs - create an MS-DOS file system under Linux

SYNOPSIS
mkdosfs|mkfs.msdos|mkfs.vfat [ -a ] [ -A ] [ -b sector-of-backup ] [ -c ] [ -l filename ] [ -C ] [ -f number-of-FATs ] [ -F FAT-size ] [ -h number-of-hidden-sectors ] [ -i volume-id ] [ -I ] [ -m message-file ] [ -n volume-name ] [ -r root-dir-entries ] [ -R number-of-reserved-sectors ] [ -s sectors-per-cluster ] [ -S logical-sector-size ] [ -v ] device [ block-count ]

DESCRIPTION
mkdosfs is used to create an MS-DOS file system under Linux on a device (usually a disk partition). device is the special file corresponding to the device (e.g. /dev/hdXX). block-count is the number of blocks on the device. If omitted, mkdosfs automatically determines the file system size.

OPTIONS
-a Normally, for any filesystem except very small ones, mkdosfs will align all the data structures to cluster size, to make sure
cgl@disk:/$ sudo sfdisk -l /dev/sda

Disk /dev/sda: 1044 cylinders, 255 heads, 63 sectors/track
Warning: extended partition does not start at a cylinder boundary.
DOS and Linux will interpret the contents differently.
Units = cylinders of 8225280 bytes, blocks of 1024 bytes, counting from 0

<table>
<thead>
<tr>
<th>Device</th>
<th>Boot</th>
<th>Start</th>
<th>End</th>
<th>#cyls</th>
<th>#blocks</th>
<th>Id</th>
<th>System</th>
</tr>
</thead>
<tbody>
<tr>
<td>/dev/sda1  *</td>
<td>0+</td>
<td>243-</td>
<td>243-</td>
<td>1951744</td>
<td>83</td>
<td>Linux</td>
<td></td>
</tr>
<tr>
<td>/dev/sda2</td>
<td>243+</td>
<td>274-</td>
<td>32-</td>
<td>249856</td>
<td>82</td>
<td>Linux swap / Solaris</td>
<td></td>
</tr>
<tr>
<td>/dev/sda3</td>
<td>274+</td>
<td>395-</td>
<td>122-</td>
<td>975872</td>
<td>83</td>
<td>Linux</td>
<td></td>
</tr>
<tr>
<td>/dev/sda4</td>
<td>395+</td>
<td>1044-</td>
<td>649-</td>
<td>5210112</td>
<td>83</td>
<td>W95 Ext'd (LBA)</td>
<td></td>
</tr>
<tr>
<td>/dev/sda5</td>
<td>395+</td>
<td>407-</td>
<td>13-</td>
<td>97280</td>
<td>83</td>
<td>Linux</td>
<td></td>
</tr>
<tr>
<td>/dev/sda6</td>
<td>408+</td>
<td>420-</td>
<td>13-</td>
<td>97280</td>
<td>83</td>
<td>Linux</td>
<td></td>
</tr>
<tr>
<td>/dev/sda7</td>
<td>420+</td>
<td>432-</td>
<td>13-</td>
<td>97280</td>
<td>83</td>
<td>Linux</td>
<td></td>
</tr>
</tbody>
</table>

cgl@disk:/$
cgl@disk:/$ sudo mkfs -t ntfs /dev/sda7
cgl@disk:/$ sudo mkfs -t ntfs /dev/sda7
Cluster size has been automatically set to 4096 bytes.
Initializing device with zeroes: 100% - Done.
Creating NTFS volume structures.
mkntfs completed successfully. Have a nice day.
cgl@disk:/$ sudo mkdir /myspace/it3150
cgl@disk:/$
cgl@disk:/$ sudo mount /dev/sda7 /myspace/it3150
cgl@disk:/$
cgl@disk:/$ df
Filesystem  1K-blocks  Used  Available  Use%  Mounted on 
/dev/sda1  1921036  1010376  813076  56%  /
udev       49380    4  49376  1%  /dev
tmpfs      23280   256  23024  2%  /run
none       5120    0  5120  0%  /run/lock
none       58192    0  58192  0%  /run/shm
/dev/sda5  94195   5646  83685  7%  /myspace/it3100
/dev/sda6  97070    0  97070  0%  /myspace/it1100
/dev/sda7  97276   2500  94776  3%  /myspace/it3150

cgl@disk:/$ 
cgl@disk:/$ ls -la /myspace/it3150/
total 8
drwxrwxrwx 1 root root 4096 Sep 26 13:51  
drwxr-xr-x 5 root root 4096 Sep 26 13:51 ..
cgl@disk:/$  

cgl@disk:~$ df
Filesystem  1K-blocks  Used  Available  Use%  Mounted on
/dev/sda1  1921036  1010376  813076  56%  /
udev       49380      4  49376   1%  /dev
tmpfs      23280     256  23024   2%  /run
none       5120       0   5120   0%  /run/lock
none       58192     0   58192   0%  /run/shm
/dev/sda5  94195    5646  83685    7%  /myspace/it3100
/dev/sda6  97070      0  97070   0%  /myspace/it1100
/dev/sda7  97276    2500  94776    3%  /myspace/it3150

```bash
cgl@disk:~$ sudo umount /dev/sda7
```
cgl@disk:~$ df
```
Filesystem  1K-blocks  Used  Available  Use%  Mounted on
/dev/sda1  1921036  1010376  813076  56%  /
udev       49380      4  49376   1%  /dev
tmpfs      23280     256  23024   2%  /run
none       5120       0   5120   0%  /run/lock
none       58192     0   58192   0%  /run/shm
/dev/sda5  94195    5646  83685    7%  /myspace/it3100
/dev/sda6  97070      0  97070   0%  /myspace/it1100
```
cgl@disk:/$ sudo emacs /etc/fstab
# /etc/fstab: static file system information.
# Use 'blkid' to print the universally unique identifier for a device; this may be used with UUID= as a more robust way to name devices that works even if disks are added and removed. See fstab(5).

<table>
<thead>
<tr>
<th>&lt;file system&gt;</th>
<th>&lt;mount point&gt;</th>
<th>&lt;type&gt;</th>
<th>&lt;options&gt;</th>
<th>&lt;dump&gt;</th>
<th>&lt;pass&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>proc</td>
<td>/proc</td>
<td>proc</td>
<td>nodev,noexec,nosuid</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>/ was on /dev/sda1 during installation</td>
<td>UUID=9cc7c501-f550-4a78-bd9f-23e79858bf71</td>
<td>/</td>
<td>ext4 errors=remount,t-rot 0 1</td>
<td></td>
<td></td>
</tr>
<tr>
<td># swap was on /dev/sda2 during installation</td>
<td>UUID=6a7d804b-d258-4b4f-8743-cddb59f6260e</td>
<td>none</td>
<td>swap sw</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0 0</td>
<td>/dev/fd0</td>
<td>/media/floppy0 auto</td>
<td>rw,user,noauto,exec,utf8</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td># &lt;file system&gt;</td>
<td>&lt;mount point&gt;</td>
<td>&lt;type&gt;</td>
<td>&lt;options&gt;</td>
<td>&lt;dump&gt;</td>
<td>&lt;pass&gt;</td>
</tr>
<tr>
<td>/dev/sda5</td>
<td>/myspace/it3100</td>
<td>ext4</td>
<td>defaults</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>/dev/sda6</td>
<td>/myspace/it1100</td>
<td>vfat</td>
<td>defaults</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>/dev/sda7</td>
<td>/myspace/it3150</td>
<td>ntfs</td>
<td>defaults</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>
cgl@disk:/$ df
Filesystem  1K-blocks  Used  Available  Use%  Mounted on
/dev/sda1  1921036  1010376  813076  56%  /
udev  49380  4  49376  1%  /dev
tmpfs  23280  256  23024  2%  /run
none  5120  0  5120  0%  /run/lock
none  58192  0  58192  0%  /run/shm
/dev/sda5  94195  5646  83685  7%  /myspace/it3100
/dev/sda6  97070  0  97070  0%  /myspace/it1100

cgl@disk:/$ sudo mount /dev/sda7

cgl@disk:/$ df
Filesystem  1K-blocks  Used  Available  Use%  Mounted on
/dev/sda1  1921036  1010376  813076  56%  /
udev  49380  4  49376  1%  /dev
tmpfs  23280  256  23024  2%  /run
none  5120  0  5120  0%  /run/lock
none  58192  0  58192  0%  /run/shm
/dev/sda5  94195  5646  83685  7%  /myspace/it3100
/dev/sda6  97070  0  97070  0%  /myspace/it1100
/dev/sda7  97276  2500  94776  3%  /myspace/it3150


cgl@disk:/$
cgl@disk:/$ man mkfs.ntfs
MKNTFS(8)

NAME

mkntfs - create an NTFS file system

SYNOPSIS

mkntfs [options] device [number-of-sectors]

mkntfs [ -C ] [ -c cluster-size ] [ -F ] [ -f ] [ -H heads ] [ -h ] [ -I ] [ -L volume-label ] [ -l ] [ -n ] [ -p part-start-sect ] [ -Q ] [ -q ] [ -S sectors-per-track ] [ -s sector-size ] [ -T ] [ -U ] [ -V ] [ -v ] [ -z mft-zone-multiplier ] [ --debug ] device [ number-of-sectors ]

DESCRIPTION

mkntfs is used to create an NTFS file system on a device (usually a disk partition) or file. device is the special file corresponding to the device (e.g. /dev/hdXX). number-of-sectors is the number of blocks on the device. If omitted, mkntfs automagically figures the file system size.

OPTIONS

Below is a summary of all the options that mkntfs accepts. Nearly all
cgl@disk:/$ man mount.ntfs
OPTIONS

Below is a summary of the options that `ntfs-3g` accepts.

**uid=value** and **gid=value**
Set the owner and the group of files and directories. The values are numerical. The defaults are the uid and gid of the current process.

**umask=value**
Set the bitmask of the file and directory permissions that are not present. The value is given in octal. The default value is 0 which means full access to everybody.

**fmask=value**
Set the bitmask of the file permissions that are not present. The value is given in octal. The default value is 0 which means full access to everybody.

**dmask=value**
Set the bitmask of the directory permissions that are not present. The value is given in octal. The default value is 0 which means full access to everybody.
USING VFAT

To use the vfat filesystem, use the filesystem type 'vfat'. i.e.
mount -t vfat /dev/fd0 /mnt

No special partition formatter is required. mkdosfs will work fine
if you want to format from within Linux.

VFAT MOUNT OPTIONS

uid=###  -- Set the owner of all files on this filesystem.
          The default is the uid of current process.

gid=###  -- Set the group of all files on this filesystem.
          The default is the gid of current process.

umask=###

          -- The permission mask (for files and directories, see
          umask(1)).
          The default is the umask of current process.

dmask=###

          -- The permission mask for the directory.
          The default is the umask of current process.

fmask=###

          -- The permission mask for files.
          The default is the umask of current process.
cgl@disk:/$ df
Filesystem  1K-blocks   Used   Available  Use% Mounted on
/dev/sda1   1921036 1010380   813072   56%  /
udev        49380     4    49376    1%   /dev
tmpfs       23280    256    23024    2%   /run
none        5120      0     5120    0%   /run/lock
none        58192     0    58192    0%   /run/shm
/dev/sda5   94195    5646   83685    7%   /myspace/it3100
/dev/sda6   97070     0    97070    0%   /myspace/it1100
/dev/sda7   97276    2500   94776    3%   /myspace/it3150

cgl@disk:/$ sudo du -s /myspace/it3100/
13 /myspace/it3100/
cgl@disk:/$ sudo du -s /myspace/it1100/
16 /myspace/it1100/
cgl@disk:/$ sudo du -s /myspace/it3150/
4 /myspace/it3150/
cgl@disk:/$
cgl@disk:/$ cd /tmp
cgl@disk:/tmp$ wget http://cit.dixie.edu/it/3100/examples.examples/y13m09d10-resource-hogs.tgz
--2013-09-26 14:00:00--  http://cit.dixie.edu/it/3100/examples.examples/y13m09d10-resource-hogs.tgz
Resolving cit.dixie.edu (cit.dixie.edu)... 144.38.192.200
Connecting to cit.dixie.edu (cit.dixie.edu)|144.38.192.200|:80... connected.
HTTP request sent, awaiting response... 200 OK
Length: 11551 (11K) [application/x-gzip]
Saving to: `y13m09d10-resource-hogs.tgz'

100%[==============================================] 11551   --.-K/s   in 0s
2013-09-26 14:00:00 (124 MB/s) - `y13m09d10-resource-hogs.tgz' saved [11551/11551]
cgl@disk:/tmp$
cgl@disk:/tmp$ sudo tar -zxvf y13m09d10-resource-hogs.tgz -C /usr/local/bin/
./
./nodehog
./memhog
./fileiohog
./README-hogs.txt
./cpuhog
./diskhog
cgl@disk:/tmp$ ls -l /usr/local/bin
total 76
-rw-rw-r-- 1 cgl cgl  8989 Sep 10 09:53 cpuhog
-rw-rw-r-- 1 cgl cgl  13379 Sep 10 09:53 diskhog
-rw-rw-r-- 1 cgl cgl  13174 Sep 10 09:53 fileiohog
-rw-rw-r-- 1 cgl cgl  13220 Sep 10 09:53 nodehog
-rw-rw-r-- 1 cgl cgl   8951 Sep 10 09:53 memhog
-rw-rw-r-- 1 cgl cgl   1344 Sep 10 09:53 README-hogs.txt

cgl@disk:/tmp$
cgl@disk:/$ cd /myspace/it3100/
cgl@disk:/myspace/it3100$ □
usage: diskhog [-f name]
   -f name : base of filenames
   -h      : display this message
cgl@disk:/myspace/it3100$ sudo diskhog -f hogfile
0000 - .Error in write.cgl@disk:/myspace/it3100$
cgl@disk:/myspace/it3100$ ls -l
 total 88561
-rwx------ 1 root root 90673152 Sep 26 14:02 hogfile-0000
drwx------ 2 root root  12288 Sep 26 13:38 lost+found
cgl@disk:/myspace/it3100$ df .
Filesystem  1K-blocks Used Available Use% Mounted on
/dev/sda5      94195  94195        0 100% /myspace/it3100

cgl@disk:/myspace/it3100$ sudo rm hogfile-0000

cgl@disk:/myspace/it3100$  
cgl@disk:/myspace/it3100$ sudo rm hogfile-0000

cgl@disk:/myspace/it3100$ ls -l

```
total 12
drwx------ 2 root root 12288 Sep 26 13:38 lost+found
```

cgl@disk:/myspace/it3100$
cgl@disk:/myspace/it3100$ inodehog -h
usage: inodehog [-n name] [-s size] [-c files_per_dir]
    -c num : files per directory (default == 1024)
    -s num : size of files in KB (default == 1)
    -n file-name : base name for files (default == hog)
    -h     : display this message

cgl@disk:/myspace/it3100$
cgl@disk:/myspace/it3100$ sudo nodehog -n hogfile -s 1 -c 512
cgl@disk:/myspace/it3100$ sudo inodehog -n hogfile -s 1 -c 512
Failed to fopen hogfile-00047/hogfile-00261.
fopen failed:: No space left on device
Created 48 directories and 24325 files.
cgl@disk:/myspace/it3100$
cgl@disk:/myspace/it3100$ df .
Filesystem  1K-blocks   Used   Available Use% Mounted on
/dev/sda5    94195  32082    57249  36%  /myspace/it3100
cgl@disk:/myspace/it3100$
cgl@disk:/myspace/it3100$ ls -a
.
..  hogfile-00009  hogfile-00020  hogfile-00031  hogfile-00042
hogfile-00000  hogfile-00010  hogfile-00021  hogfile-00032  hogfile-00043
hogfile-00001  hogfile-00011  hogfile-00022  hogfile-00033  hogfile-00044
hogfile-00002  hogfile-00012  hogfile-00023  hogfile-00034  hogfile-00045
hogfile-00003  hogfile-00013  hogfile-00024  hogfile-00035  hogfile-00046
hogfile-00004  hogfile-00014  hogfile-00025  hogfile-00036  hogfile-00047
hogfile-00005  hogfile-00015  hogfile-00026  hogfile-00037  lost+found
hogfile-00006  hogfile-00016  hogfile-00027  hogfile-00038
hogfile-00007  hogfile-00017  hogfile-00028  hogfile-00039
hogfile-00008  hogfile-00018  hogfile-00029  hogfile-00040
hogfile-00008  hogfile-00019  hogfile-00030  hogfile-00041
cgl@disk:/myspace/it3100$
cgl@disk:/myspace/it3100$ sudo rm -rf hogfile-*
cgl@disk:/myspace/it3100$ df .
Filesystem 1K-blocks Used Available Use% Mounted on
/dev/sda5 94195 5648 83683 7% /myspace/it3100
cgl@disk:/myspace/it3100$ ls -la
total 19
drw-r-xr-x 3 root root 3072 Sep 26 14:05 .
drw-r-xr-x 5 root root 4096 Sep 26 13:51 ..
drw------- 2 root root 12288 Sep 26 13:38 lost+found
cgl@disk:/myspace/it3100$