

## Start and stop

Command example	Description
<code>gnt-instance start &lt;VM&gt;</code>	Start an instance
<code>gnt-instance start -H \ kernel_path=/vmlinuz,initrd_path=/initrd.img &lt;VM&gt;</code>	Start Linux instance with the given kernel from the host filesystem (must exist on both nodes if using drbd)
<code>gnt-instance start -H kernel_args="ro single" &lt;VM&gt;</code>	Start Linux instance in single-user mode (if using kernel from the host filesystem)
<code>gnt-instance shutdown &lt;VM&gt;</code>	Initiate shutdown, with 120 second timeout before forcible switch off.
<code>gnt-instance shutdown --timeout=0 &lt;VM&gt;</code>	Switch off immediately
<code>gnt-instance reboot [--shutdown-timeout=N] &lt;VM&gt;</code>	Shutdown then restart
<code>gnt-instance shutdown --primary &lt;nodename&gt;</code>	Shutdown all instances currently active on nodename

User shutdown allows for proper handling of instances being shut down “from within”, i.e. the ganeti watcher won't attempt to restart them assuming they crashed. To enable this (starting Ganeti 2.11):

```
gnt-cluster modify --user-shutdown=true
gnt-cluster modify -H kvm:user_shutdown=true
```

This can be enabled on a per-instance basis, allowing certain instances to be shut down by the user of the instance, but not for others:

```
gnt-instance modify -H user_shutdown=true <VM>
```

Note: you still need to allow (enable) user shutdown with 'gnt-cluster modify --user-shutdown=true' first.

## Instance overview and console access

Command example	Description
<code>gnt-instance console &lt;VM&gt;</code>	Attach to serial console, ctrl-] to disconnect
<code>gnt-instance list -o name,pnode,network_port</code>	List VMs, showing node and VNC port (or use -o +network_port)
<code>gnt-instance info &lt;VM&gt;</code>	Detailed information about this VM
<code>gnt-cluster modify -H kvm:vnc_bind_address=0.0.0.0</code>	Allow network VNC connections to all VMs
<code>gnt-instance modify -H vnc_bind_address=0.0.0.0 &lt;VM&gt;</code>	Allow network VNC connections to a single VM
<code>gnt-instance modify -H vnc_bind_address=default &lt;VM&gt;</code>	Revert to cluster default behaviour

To set password authentication for VNC connections:

```
echo "somepassword" >/etc/ganeti/vnc-cluster-password
gnt-cluster copyfile /etc/ganeti/vnc-cluster-password
gnt-cluster modify -H kvm:vnc_password_file=/etc/ganeti/vnc-cluster-password
```

## Enable serial console in guest

Configuration	Description
<u>Uncomment this line in /etc/inittab</u> T0:23:respawn:/sbin/getty -L ttyS0 9600 vt100	Debian guest
<u>Create file /etc/init/ttyS0.conf</u> start on stopped rc RUNLEVEL=[2345] stop on runlevel [!2345] respawn exec /sbin/getty -L 115200 ttyS0 xterm	Ubuntu guest
grubby --update-kernel=ALL --args='console=tty0 console=ttyS0,115200n8'	CentOS guest
<u>Make the following change in /etc/ttys for ttyu0</u> ttyu0 "/usr/libexec/getty std.9600" vt100 on secure <u>Add the following line to /boot/loader.conf</u> console="comconsole,vidconsole"	FreeBSD guest

## Instance creation

Command example	Description
<pre>gnt-instance add -s 4G -t drbd [-n &lt;pnode&gt;:&lt;snode&gt;] -o image+cd -H vnc_bind_address=0.0.0.0 --no-start &lt;VM&gt;</pre>	Install from ISO (file must exist on both nodes, see gnt-cluster copyfile)
<pre>gnt-instance start -H boot_order=cdrom, cdrom_image_path=/srv/ganeti/iso/xxx.iso &lt;VM&gt;</pre>	
<pre>gnt-instance add -s 4G -t drbd [-n &lt;pnode&gt;:&lt;snode&gt;] -o debootstrap+default [--no-start] &lt;VM&gt;</pre>	Debian debootstrap
<pre>gnt-instance add -s 4G -t drbd [-n &lt;pnode&gt;:&lt;snode&gt;] -o debootstrap+precise --no-start &lt;VM&gt;</pre>	
<pre>gnt-instance start -H kernel_path=/vmlinuz,initrd_path=/initrd.img &lt;VM&gt;</pre>	Ubuntu debootstrap, install grub
<pre>gnt-instance console &lt;VM&gt; &lt;&lt;login as root&gt;&gt; update-grub grub-install /dev/vda</pre>	
<b>Common options</b>	
<pre>--no-name-check</pre>	Don't check <VM> name resolves to IP
<pre>--no-ip-check</pre>	Don't check <VM> IP address in use
<pre>--no-wait-for-sync</pre>	Don't wait for DRBD to sync
<pre>--net 0:ip=x.x.x.x,link=br-svc</pre>	Specify NIC IP address/link

## Manage hypervisor and backend

Command example	Description
<pre>gnt-instance list -o +option_name,...</pre>	Default output followed by extra fields (ex: -o +oper_ram,disk.size/0)
<pre>gnt-instance info &lt;VM&gt;</pre>	Show all VM settings
<pre>gnt-cluster modify -H kvm:&lt;hvparams&gt; -B &lt;beparams&gt;</pre>	Set cluster-wide default values
<pre>gnt-cluster modify -H kvm:kernel_path=,initrd_path=</pre>	Example: do not boot from kernel on host filesystem (i.e. boot from instance disk)
<pre>gnt-instance modify -H &lt;hvparams&gt; -B &lt;beparams&gt; &lt;VM&gt;</pre>	Modify the settings for a VM, take effect on the next shutdown/start
<pre>gnt-instance start -H &lt;hvparams&gt; -B &lt;beparams&gt; &lt;VM&gt;</pre>	Start a VM with these parameters for one boot only
<pre>gnt-instance modify -m &lt;memory&gt; &lt;VM&gt;</pre>	Set memory (MB) on running instance, between minmem and maxmem

## Important hypervisor parameters (-H) (see 'man gnt-instance' for full list)

hparams (comma-separated)	Description
<code>boot_order={disk cdrom floppy network}</code>	Which device to boot from
<code>cdrom_image_path=/srv/ganeti/iso/cd.iso</code>	Attach CD-ROM
<code>cdrom2_image_path=/srv/ganeti/iso/cd2.iso</code>	Attach second CD-ROM (e.g. drivers disk)
<code>kernel_path=/vmlinuz</code> <code>initrd_path=/initrd.img</code> <code>root_path=/dev/vdal</code> <code>kernel_args="ro"</code>	Boot Linux guest using kernel from host. Other settings are ignored unless <code>kernel_path</code> is set.
<code>nic_type={paravirtual e1000 ...}</code>	Select type of NIC emulated
<code>disk_type={paravirtual ide scsi ...}</code>	Select type of hard disk emulated

## Important backend parameters (-B) (see 'man gnt-instance' for full list)

beparams (comma-separated)	Description
<code>maxmem=N</code>	Maximum memory (default MB)
<code>minmem=N</code>	Minimum memory (default MB)
<code>vcpus=N</code>	Number of CPUs

## Network settings

Command example	Description
<code>gnt-instance modify --net 0:modify,link=br-lan [--hotplug] &lt;VM&gt;</code>	Change NIC 0 to bridge br-lan
<code>gnt-instance modify --net add:link=br-svc [--hotplug] &lt;VM&gt;</code>	Add another NIC connected to br-svc
<code>gnt-instance modify --net 1:remove [--hotplug] &lt;VM&gt;</code>	Remove NIC 1

*Note: [hotplug](#) added in ganeti 2.10. The guest needs to have the "[acpiphp](#)" module loaded.*

## Disk settings

Command example	Description
<code>gnt-node list-storage</code>	Summary of storage on each node
<code>gnt-node volumes</code>	Detailed volume info on each node
<code>gnt-instance modify --disk add:size=4G [--hotplug] [--no-wait-for-sync] &lt;VM&gt;</code>	Add a disk
<code>gnt-instance modify --disk 1:remove [--hotplug] &lt;VM&gt;</code>	Remove disk 1
<code>gnt-cluster modify -D drbd:resync-rate=80</code>	Set global disk parameters, in this example DRBD sync rate=80MB/s (see 'man gnt-cluster')
<code>gnt-instance grow-disk &lt;VM&gt; 1 5G</code>	Grow disk 1 by 5G

*Note: if you want the running instance to pick up the change immediately, you'll need to notify KVM (see [issue 258](#)).*

```
socat STDIO UNIX-CONNECT:/var/run/ganeti/kvm-hypervisor/ctrl/<VM>.monitor
info block
block_resize hotdisk-XXXXXX 0G
^C (do not type "quit!")
```

## DRBD and migration

Command example	Description
<code>gnt-instance modify -t drbd -n &lt;snode&gt; [--no-wait-for-sync] &lt;VM&gt;</code>	Convert plain to drbd, with secondary storage on given node (instance must be shutdown)
<code>gnt-instance modify -t plain &lt;VM&gt;</code>	Convert drbd to plain (instance must be shutdown)
<code>gnt-instance move [-n &lt;node&gt;] &lt;VM&gt;</code>	Move a shutdown plain instance to another node
<code>gnt-instance migrate &lt;VM&gt;</code>	Live-migrate a running instance from primary to secondary; secondary becomes primary
<code>gnt-instance migrate --cleanup &lt;VM&gt;</code>	Clean up after failed live migration
<code>gnt-instance shutdown &lt;VM&gt;</code> <code>gnt-instance modify -t plain &lt;VM&gt;</code> <code>gnt-instance modify -t drbd -n &lt;snode&gt; &lt;VM&gt;</code> <code>gnt-instance start &lt;VM&gt;</code>	Fix a seriously failed migration which --cleanup cannot (by converting to plain and back to drbd)
<code>gnt-instance failover &lt;VM&gt;</code>	Migrate a shutdown or failed instance (i.e. change the secondary node to be primary and vice versa)
<code>gnt-instance replace-disks -n &lt;snode&gt; &lt;VM&gt;</code>	Move a DRBD secondary to the given node

## Backing up instances

Command example	Description
<code>gnt-backup export -n &lt;node&gt; &lt;VM&gt;</code>	Export a node (disk + configuration data) to a directory – by default <code>/var/lib/ganeti/export</code> The exported image will typically be no larger than the data used on the disk (not the entire disk allocated)

## Node management

Command example	Description
<code>gnt-node list</code>	Show all nodes with disk and memory usage and number of primary/secondary instances
<code>gnt-node info [&lt;nodename&gt;]</code>	Detailed information about given node or all nodes
<code>gnt-node evacuate -p &lt;nodename&gt;</code>	Migrate all primary instances off this node: running instances will be live-migrated to their secondary, and hence all instances which were primary on this node will now be secondary on this node
<code>gnt-node evacuate -s [-n &lt;newnode&gt;] &lt;nodename&gt;</code>	Migrate secondary storage off this node. This will copy data to another node, which you can specify using -n or let the instance allocator choose
<code>gnt-node modify --offline=yes &lt;nodename&gt;</code>	Mark a node as failed, so we no longer try to communicate with it
<code>gnt-node add --readd &lt;nodename&gt;</code>	Re-add node after repair
<code>gnt-node failover [--ignore-consistency] &lt;node&gt;</code>	Fail over all instances having the given node as primary to their secondary nodes
<code>gnt-cluster getmaster</code>	Show which node is the master
<code>gnt-cluster master-failover [--no-voting]</code>	Promote the node you are logged into to master. ("no-voting" for 2-node cluster when other is down)

## Cluster maintenance

Command example	Description
<code>gnt-cluster info</code>	Show cluster settings and instance defaults
<code>gnt-cluster copyfile /path/to/file</code>	Distribute file to all nodes
<code>gnt-cluster command apt-get install -y foo</code>	Execute command on all nodes
<code>gnt-cluster verify</code>	Check the cluster configuration
<code>gnt-cluster redist-conf</code>	Redistribute configuration to all nodes
<code>gnt-cluster modify --reserved-lvs=ganeti/root, ganeti/swap,ganeti/var</code>	Ignore these logical volumes when checking cluster configuration
<code>gnt-cluster verify-disks</code>	Check disk status
<code>drbd-overview</code>	(Run on individual nodes) show DRBD sync status
<code>gnt-instance activate-disks &lt;instance&gt;</code>	Repair missing DRBD on given instance
<code>gnt-node add [-s x.x.x.x] &lt;nodename&gt;</code>	Add new node [x.x.x.x = new node's secondary IP]
<code>gnt-node remove &lt;nodename&gt;</code>	Remove node, once all instances removed

## Rebalancing a cluster

Command example	Description
<code>hbal -m &lt;cluster-name&gt;</code>	Connect to <cluster-name>, analyze it, and show a possible solution to rebalance the cluster (relocating virtual instances more evenly across the nodes of the cluster). <cluster-name> can be localhost.
<code>hbal -C -m &lt;cluster-name&gt;</code>	Show the commands that need to be executed to achieve the solution offered
<code>gnt-cluster add-tags htools:iextags:service</code>	Exclusion tag: ensure that instances with tag "service:xxx" do not run on the same node
<code>gnt-instance add-tags &lt;VM&gt; service:&lt;type&gt;</code>	Add tag to an instance, e.g. service:dns
<b>Options</b>	
<code>--no-disk-moves</code>	Do not use <code>gnt-instance replace-disks</code> commands – this limits the rebalancing to use only migration
<code>--no-instance-moves</code>	Do not use <code>gnt-instance migrate</code> commands, only disk replacement/relocation.

## Miscellaneous

Command options	Description
<code>--submit</code>	Most <code>gnt-*</code> commands will accept a <code>--submit</code> option, which lets the user submit a command, but not wait for completion. This is useful for long-running tasks.
<code>lvs -o name,path,lv_tags</code>	Displays <code>lvs</code> output including tags. This is useful as Ganeti records the instance name under the <code>originstname</code> tag.