

# Command Line Overview



Using the cli.

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Some images borrowed/modified from Lance Albertson and Justin Pop

## Ganeti Commands...

- ...all start with `gnt-`
  - `gnt-cluster`
  - `gnt-node`
  - `gnt-instance`
  - ...
- ...all take a subcommand
  - `gnt-cluster info`
  - `gnt-node list`
  - `gnt-instance list`
- ...are helpful
  - `gnt-node` (Outputs the list of possible subcommands)
  - `gnt-node list --help` (lists flags and parameters)
  - `man gnt-node` (extensively documented)

## General command format

```
gnt-[subsystem] [verb] --flags --flags [noun]
```

## Three ways to get help

- The man page
  - `man gnt-instance`
- List of subcommands
  - `gnt-instance`
  - `gnt-instance --help`
- Help on individual subcommands:
  - `gnt-instance list --help`

# Help

```
# gnt-instance list --help
Usage
=====
    gnt-instance list [<instance>...]

Lists the instances and their status. The available
fields can be shown using the "list-fields" command
(see the man page for details). The default field list
is (in order): name, hypervisor, os, pnode, status,
oper_ram.

Options
=====
--no-headers           Don't display column headers
--separator=SEPARATOR Separator between output fields ...
...
```

## Commands run on the master

Commands must run on the master. Any other node will give you a friendly message. Scripts can use "getmaster" to know the right place.

```
# gnt-node list
Failure: prerequisites not met for this operation:
This is not the master node, please connect to node
'gnta2.example.com' and rerun the command
# gnt-cluster getmaster
gnta2.example.com
# ssh gnta2.example.com

WARNING:
This machine is part of a ganeti cluster.

# gnt-node list
Node           DTotal DFree MTotal MNode MFree Pinst Sinst
gnta1.example.com 3.6T  3.1T  64.0G 1023M 15.0G      5      3
...etc...
```

## gnt-cluster

Cluster wide operations:

```
gnt-cluster info
gnt-cluster modify [-B/H/N ...]
gnt-cluster verify
gnt-cluster master-failover
gnt-cluster command ...
gnt-cluster copyfile ...
```

## gnt-cluster example

```
# gnt-cluster verify
Submitted jobs 285450, 285451
Waiting for job 285450 ...
Sat Oct 27 19:14:08 2012 * Verifying cluster config
Sat Oct 27 19:14:08 2012 * Verifying cluster certificate files
Sat Oct 27 19:14:08 2012 * Verifying hypervisor parameters
Sat Oct 27 19:14:08 2012 * Verifying all nodes belong to an existing group
Waiting for job 285451 ...
Sat Oct 27 19:14:08 2012 * Verifying group 'default'
Sat Oct 27 19:14:08 2012 * Gathering data (3 nodes)
Sat Oct 27 19:14:10 2012 * Gathering disk information (3 nodes)
Sat Oct 27 19:14:11 2012 * Verifying configuration file consistency
Sat Oct 27 19:14:11 2012 * Verifying node status
Sat Oct 27 19:14:11 2012 * Verifying instance status
Sat Oct 27 19:14:11 2012 * Verifying orphan volumes
Sat Oct 27 19:14:11 2012 * Verifying N+1 Memory redundancy
Sat Oct 27 19:14:11 2012 * Other Notes
Sat Oct 27 19:14:11 2012   - NOTICE: 1 offline node(s) found.
Sat Oct 27 19:14:12 2012 * Hooks Results
```

## gnt-node

Per node operations:

```
gnt-node remove node4
gnt-node modify \
  [ --master-candidate yes|no ] \
  [ --drained yes|no ] \
  [ --offline yes|no ] node2
gnt-node evacuate/failover/migrate
gnt-node powercycle
```

## gnt-node examples

```
# gnt-node list
Node      DTotal DFree MTotal MNode MFree Pinst Sinst
gnta1.example.com  3.6T  3.1T  64.0G 1023M 15.0G    5    3
gnta2.example.com  3.6T  3.1T  64.0G 1023M 22.9G    4    4
gnta3.example.com      *      *      *      *      *    0    0
gnta4.example.com  3.6T  3.1T  64.0G 1023M 21.0G    4    6

# gnt-node info gnta1
Node name: gnta1.example.com
  primary ip: 172.15.155.15
  secondary ip: 172.99.199.1
  ...etc...
  primary for instances:
    - ginny.example.com
    ...etc...
  secondary for instances:
    - webcsi.example.com
    ...etc...
  node parameters:
    - oob_program: default (None)
    - spindle_count: default (1)
    ...etc...
```

## gnt-instance

Instance operations:

```
gnt-instance start/stop i0
gnt-instance modify ... i0
gnt-instance info i0
gnt-instance migrate i0
gnt-instance console i0
```

## gnt-instance examples

```
# gnt-instance list
Instance      Hypervisor OS           Primary_node      Status  Memory
rocker1.example.com xen-pvm    debian-server gnta2.example.com running  512M
webcsi.example.com  xen-pvm    debian-server gnta3.example.com running  1.0G

# gnt-instance info rocker1
Instance name: rocker1.example.com
UUID: 3244567d-a08a-4663-8349-c68307fab664
Serial number: 2
Creation time: 2012-07-05 20:08:14
Modification time: 2012-07-09 15:33:03
State: configured to be up, actual state is up
Nodes:
  - primary: gnta2.example.com
  - secondaries: gnta3.example.com
Operating system: debian-server
Allocated network port: None
Hypervisor: xen-pvm
  - blockdev_prefix: default (sd)
  - bootloader_args: default ()
  - bootloader_path: default ()
  - cpu_mask: default (all)
...etc...
```

## Job Queue

- Ganeti operations generate jobs in the master (with the exception of queries)
- Jobs execute concurrently
- You can cancel non-started jobs, inspect the queue status, and inspect jobs

```
gnt-job list
gnt-job info
gnt-job watch
gnt-job cancel
```

## hbal

A utility for balancing a cluster:

- Read cluster configuration, calculate, and balance
  - `hbal -L -X`
- Read cluster configuration, calculate, don't execute
  - `hbal -L`
- Minimal moves to evacuate any "drained" nodes
  - `hbal -L --evac-mode -X`
- Migrate only. Don't move any disks
  - `hbal -L --no-disk-moves`

## gnt-backup

Manage instance exports/backups:

```
gnt-backup export -n node1 web
gnt-backup import -t plain \
  {-n node3 | -I hail } --src-node node1 \
  --src-dir /tmp/myexport web
gnt-backup list
gnt-backup remove
```

## gnt-group

Managing node groups:

```
gnt-group add
gnt-group assign-nodes
gnt-group evacuate
gnt-group list
gnt-group modify
gnt-group remove
gnt-group rename
gnt-instance change-group
```

## hspace

Calculate free space on a cluster, depending on instace policy.

```
hspace -L --disk-template ...
```

How many more instances can I fit? What will be the resource that runs out, then?

## Custom output

- Customize `list` output with `-o`:

```
# gnt-instance list -o name,snodes
Instance           Secondary_Nodes
rocker1.example.com gnta3.example.com
webcsi.example.com  gnta2.example.com
```

- `--no-headers` is useful in shell scripts:

```
# gnt-instance list --no-headers
rocker1.example.com
webcsi.example.com
```

## What are the -o fields?

- `list-fields` subcommand lists all the fields
  - `gnt-group list-fields`

- `gnt-instance list-fields`
- `gnt-job list-fields`
- `gnt-backup list-fields`

## Filtering a list

- Filter output of `list` subcommands using the `-F` option:

```
# gnt-instance list -F 'pnode == "gntal"' \  
  --no-headers -o name  
ringo.example.com  
george.example.com  
john.example.com  
paul.example.com  
luke.example.com
```

## More on filtering

- Filtering language is described in `man ganeti`
- Examples:

```
'(be/vcpus == 3 or be/vcpus == 6) and pnode.group =~ m/^rack/'  
  
'pinst_cnt != 0'  
  
'not master_candidate'
```

## Conclusion

Questions?

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