What's new in Ganeti?

Technical details of changes since GanetiCon 2014

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Forthcoming instances

reserve now, create later

Forthcoming instances

- New type of instances: forthcoming (`forthcoming` field in the config, default `false`)
- Those instances only exist in the configuration
  - however, resources are fully accounted for
  - can be moved and renamed just as real ones
  - are also balanced by `htools`

Instance reservations—use case

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- Now if DNS propagation is slow
and lots of instances are requested. . .

Instance reservations—non use case

- speed up instance creation by first reserving
  locking-wise no difference
  - reservation takes the same locks as adding a real instance
  - creation will hold the same locks as adding a real instance afer node choice

  Remember: NAL is gone anyway

Using instance reservations

```
gnt-instance add --forthcoming --no-name-check
    ... tmp123.example.com

gnt-instance rename tmp123.example.com
    finalname.example.com

gnt-instance add --commit ... finalname.example.com
```

OS Installations

public, private, and secret parameters

OS Parameters

	Ganeti Config	Job File		Log Files
		queued	running	
public	✓	✓	✓	✓
private	✓	✓	×	×
secret	×	×	×	×

Secret Parameters - Previous State

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- do not appear in job files for running jobs

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- do not appear in job files for running jobs
- written into job files for queued jobs

Secret Parameters - Current State

- keep secret parameters only in memory
- transmit them in the last step when a job process is forked off
- re-inject them into the job description of the forked process

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How to prevent secret parameters from appearing in job files?

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How to prevent secret parameters from appearing in job files?

- value is shown as `<redacted>`
- new type **Secret** (similar to `Private`):
  - wrap secret value
  - different `showJSON` method:
    prints `<redacted>` instead of value
  - changed to `Private` before transmission to forked job process

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What happens if we re-try a job with secret parameters?

- we do not want the value <`redacted`> to appear in the instance
- jobs fail if they read <`redacted`> as secret parameter value

News from the htools

Redundancy, Metrics, `hail`

Additional redundancy checks

traditional Ganeti approach towards N+1 redundancy

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Ganeti 2.15+ approach

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- instances on shared storage can move anywhere
  $\rightsquigarrow$ capacity check!
- instances on plain/file are lost on failure
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Capacity check: for each node, verify that we can

- failover DRBD instances, and then
- evacuate/reinstall other instances in the same group

Memory reservation for DRBD instances

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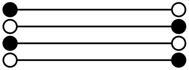

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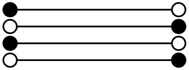

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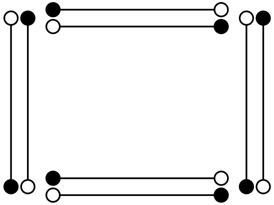

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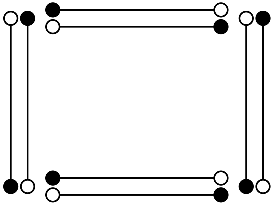

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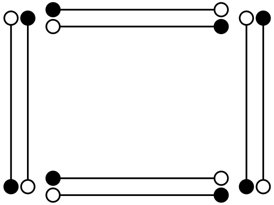

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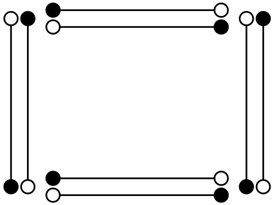

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!! Best metric value no longer 0.
(all `htools` interpret limits relative to the theoretical minimum)

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  avoid *(cluster-metrics)*
  - primary and secondary in the same location
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  Bonus: desired location of an instance
  $\rightsquigarrow$ Instance tag `htools:desiredlocation:x`

  (again, cluster metrics)

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  Example: simple hypervisor update
  - tag updated nodes `hv:new`
  - cluster tags `htools:migration:hv`

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  Example: complex hypervisor situation
  - tag nodes `hv:foo`, `hv:bar`, `hv:baz`. . .
  - cluster tags `htools:migration:hv`
    `htools:allowmigration:hv:foo::hv:baz`, . . .

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Allocation metric for partitionend (2.15+): "Lost allocations"

- recall: instances come in discrete size (as per policy)

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Example: instances of size 1/1, 1/2, 1/4
preferences for 1/4 instance

- 3/4; lost (0, 0, 1), no left-over
- 1/4; lost (0, 0, 1), left-over 1/2
- 1/2; lost (0, 1, 1)
- 0/1; lost (1, 1, 1)

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- 1/4; lost (0, 1, 2) left-over 1/4
- 0/1; lost (1, 1, 2)

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  Btw, who uses an allocator other than `hail`?

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New request type

```
"request": {
  "name": "notyetdrbd.example.com",
  "type": "allocate-secondary"
}
```

Job Filtering

reject, defer, and throttle jobs

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- `jobid`. Field `id`, values numbers or `"watermark"`
- `opcode`. Fields `OP_ID`, plus whatever fields the opcode has *("or" over the op-codes of a job)*
- `reason`. Fields `source`, `reason`, `timestamp` *("or" over all entries of all opcodes)*

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  - `RATE_LIMIT` *n*

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- limit disk-replacements to throttle replication traffic

```
{"priority": 99, "action": ["RATE_LIMIT", 10],
 "predicates": [["opcode", ["=", "OP_ID",
                     "OP_INSTANCE_REPLACE_DISKS"]]] }
```

Upcoming (2.17)

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    (opt-in by setting tags)
  - does load-based balancing
    (opt-in by setting flag in the configuration)

The End

Thank you for your attention

Ganeti releases are availbale from `http://downloads.ganeti.org/` and signed by the following key.

```
pub   4096R/6AA8276A 2013-12-10 [expires: 2017-12-29]
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uid                  Ganeti (Release signing key) <ganeti@googlegroups.com>
sub   4096R/3F3F9806 2013-12-10 [expires: 2017-12-29]
```