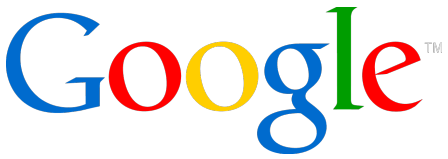
LISA 2007 - HTGR



Ganeti

an open source high-availability cluster based on Xen

Guido Trotter
Google Ganeti Team

Copyright by Google Inc

Content

Google

- Design goals and principles
- Ganeti overview and administration
- Ganeti failover details
- Ganeti usage in Google
- Ganeti roadmap

Copyright by Google Inc

Ganeti overview (1/2)

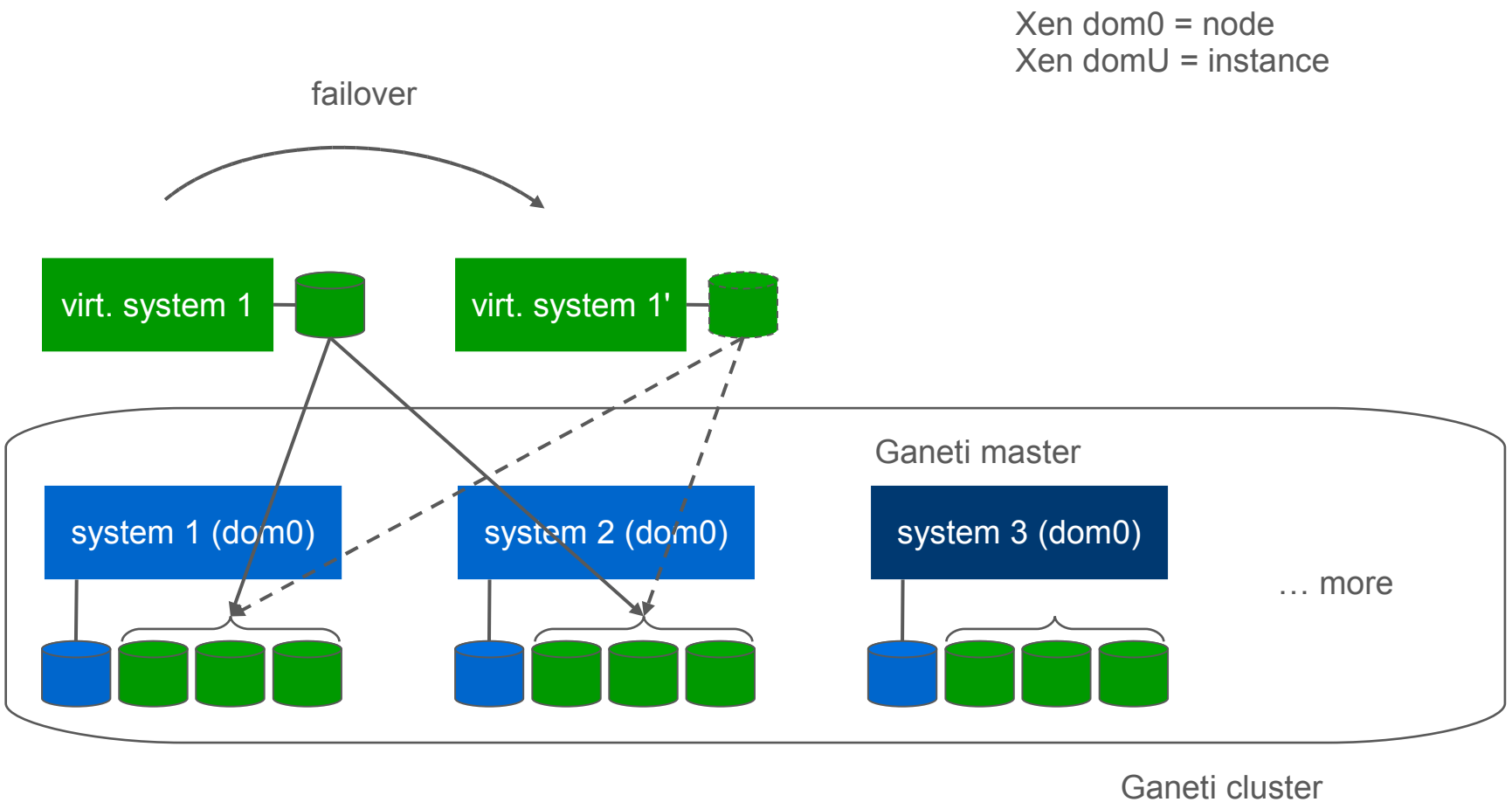
Google

Ganeti is a software to manage clusters of virtual servers

- Based on Xen (but not strictly dependent on it)
- makes it simple to manage 10s of nodes and 100s of instances
- not dependent on specific hardware (e.g. SAN)
- supports different host systems

Copyright by Google Inc

Ganeti overview (2/2)



Copyright by Google Inc

Ganeti administration (1/4)

Google

Cluster Setup:

```
node0# gnt-cluster init mycluster
node0# gnt-node add node1
node0# gnt-node add node2
node0# gnt-node add node3
node0# gnt-cluster command \
> apt-get install ganeti-instance-etch
```

Copyright by Google Inc

Ganeti administration (2/4)

Google

Creation of an instance:

```
node0# gnt-instance add \
> -n node2:node1 \
> -t drbd8 \
> instance0
```

Migration after a node crash:

```
node0# gnt-instance failover --ignore-consistency instance0
node0# gnt-instance replace-disks -s \
> --new-secondary=node3 instance0
```

Copyright by Google Inc

Ganeti administration (4/4)

Google

Cluster status:

```
# gnt-instance list
Instance              OS   Primary_node      Autostart Status  Memory
instance1.example.com etch node1.example.com yes       running    128
instance2.example.com etch node3.example.com yes       running    512
instance3.example.com etch node3.example.com yes       running   1024
instance4.example.com etch node2.example.com yes       running    128
instance5.example.com etch node4.example.com yes       running    512

# gnt-node list
Node                  DTotal  DFree MTotal MNode MFree Pinst Sinst
node1.example.com     858240 442752   4095   511  3456     1     2
node2.example.com     572160 567296   4095   511  3456     1     2
node3.example.com     858240 858240   4095   511  2048     2     1
node4.example.com     356032 356032   4095   511  3072     1     0
```

Copyright by Google Inc

Ganeti administration (4/4)

Google

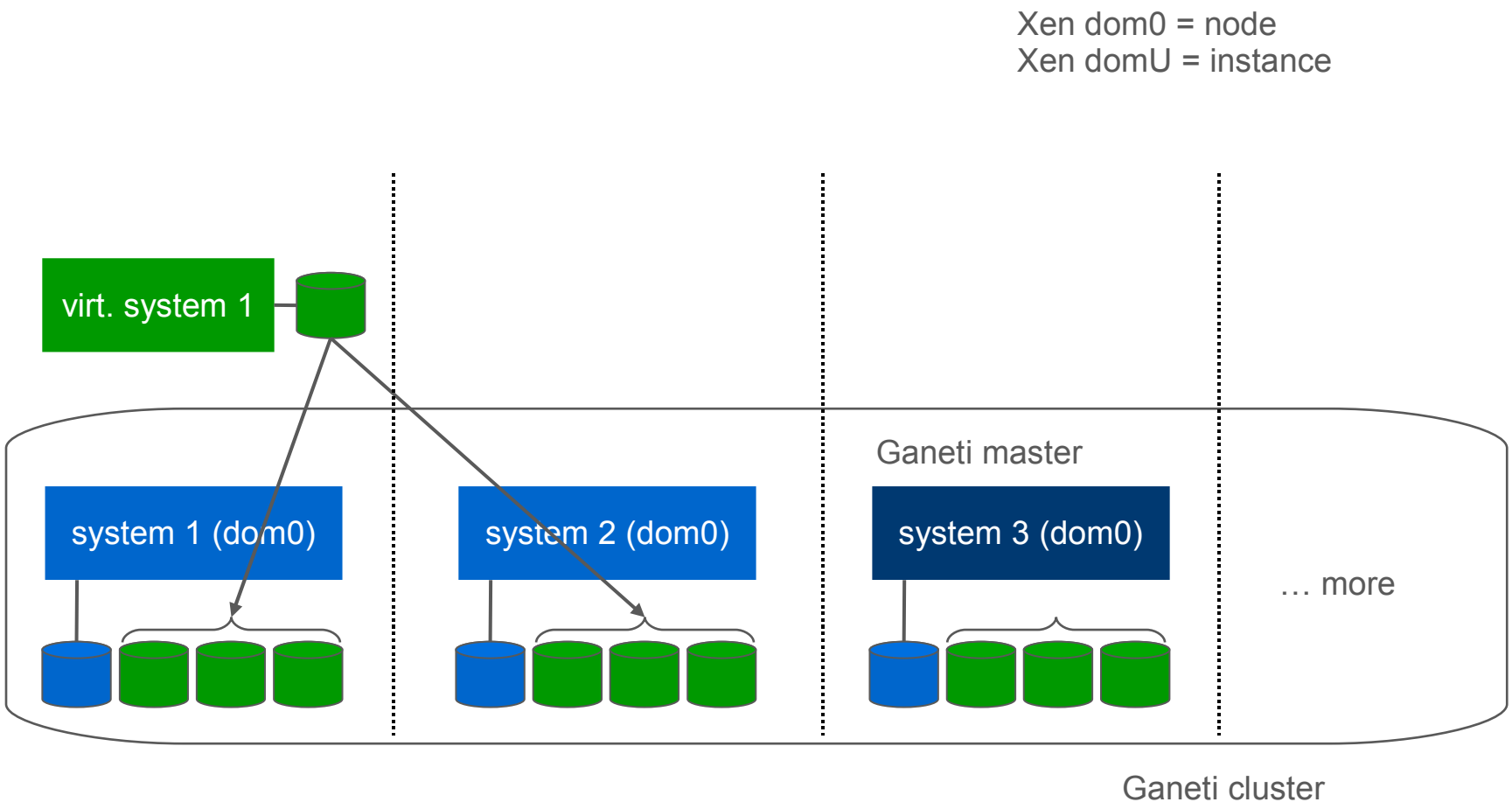
The commands are run on the master node

- `gnt-node`: add / remove / list cluster nodes
- `gnt-instance`:
  - add / remove instance
  - failover instance, change secondary
  - stop / start instance, change parameters
- `gnt-os`: instance OS definitions
- `gnt-cluster`: cluster commands
- `gnt-backup`: instance export and import

All commands have man pages and support interactive help.

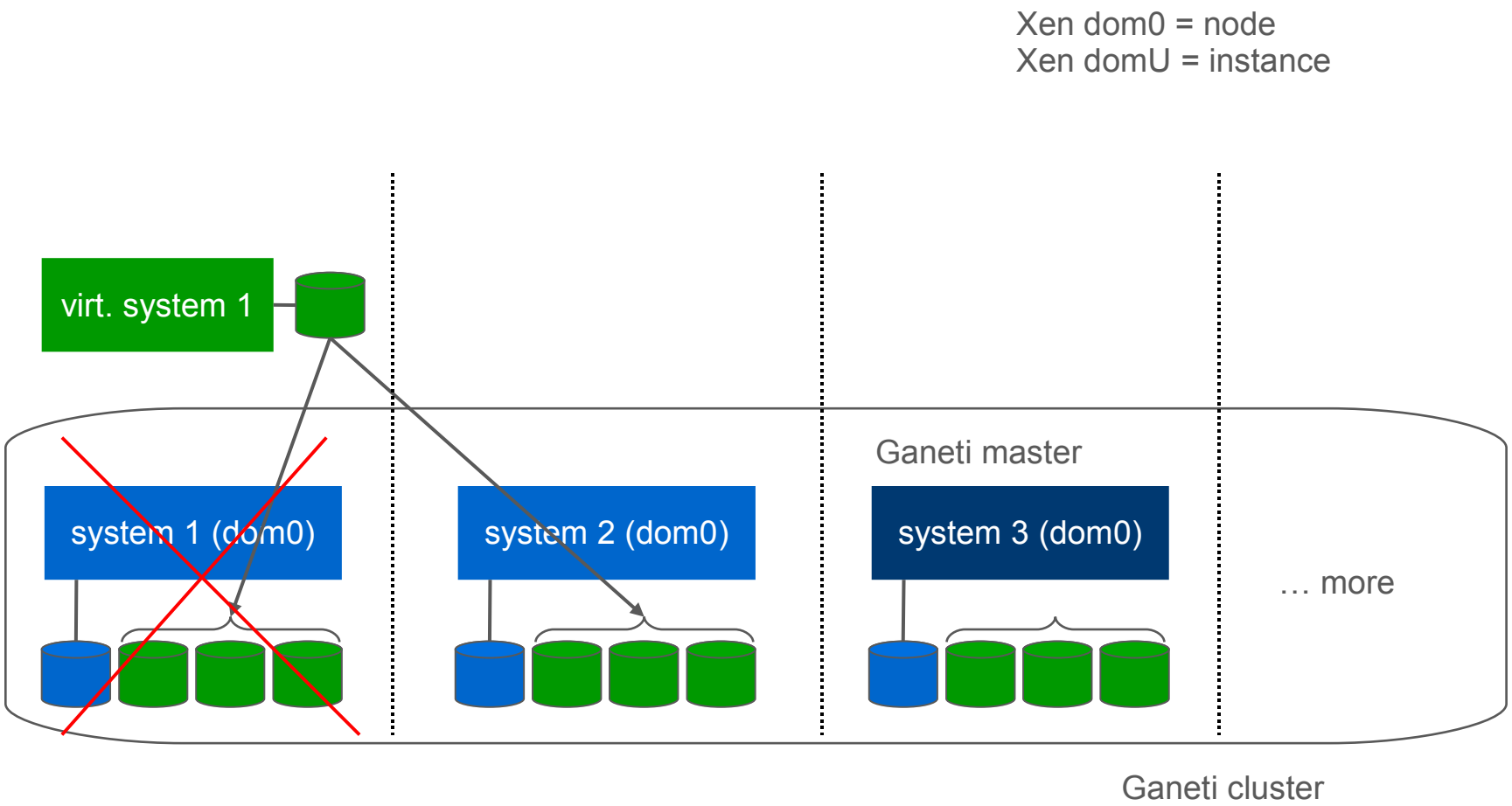
Copyright by Google Inc

Instance failover (1/4)



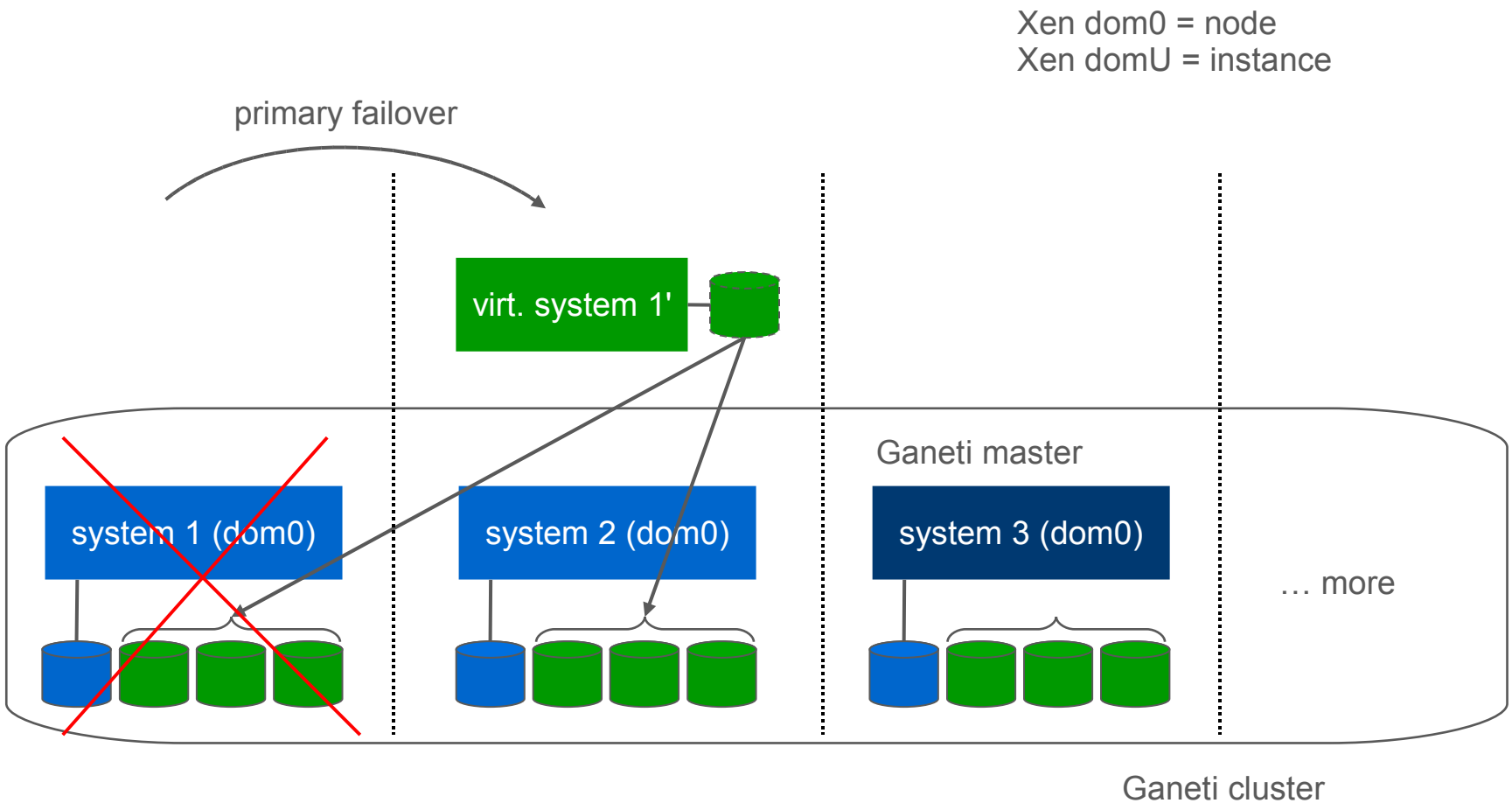
Copyright by Google Inc

Instance failover (2/4)



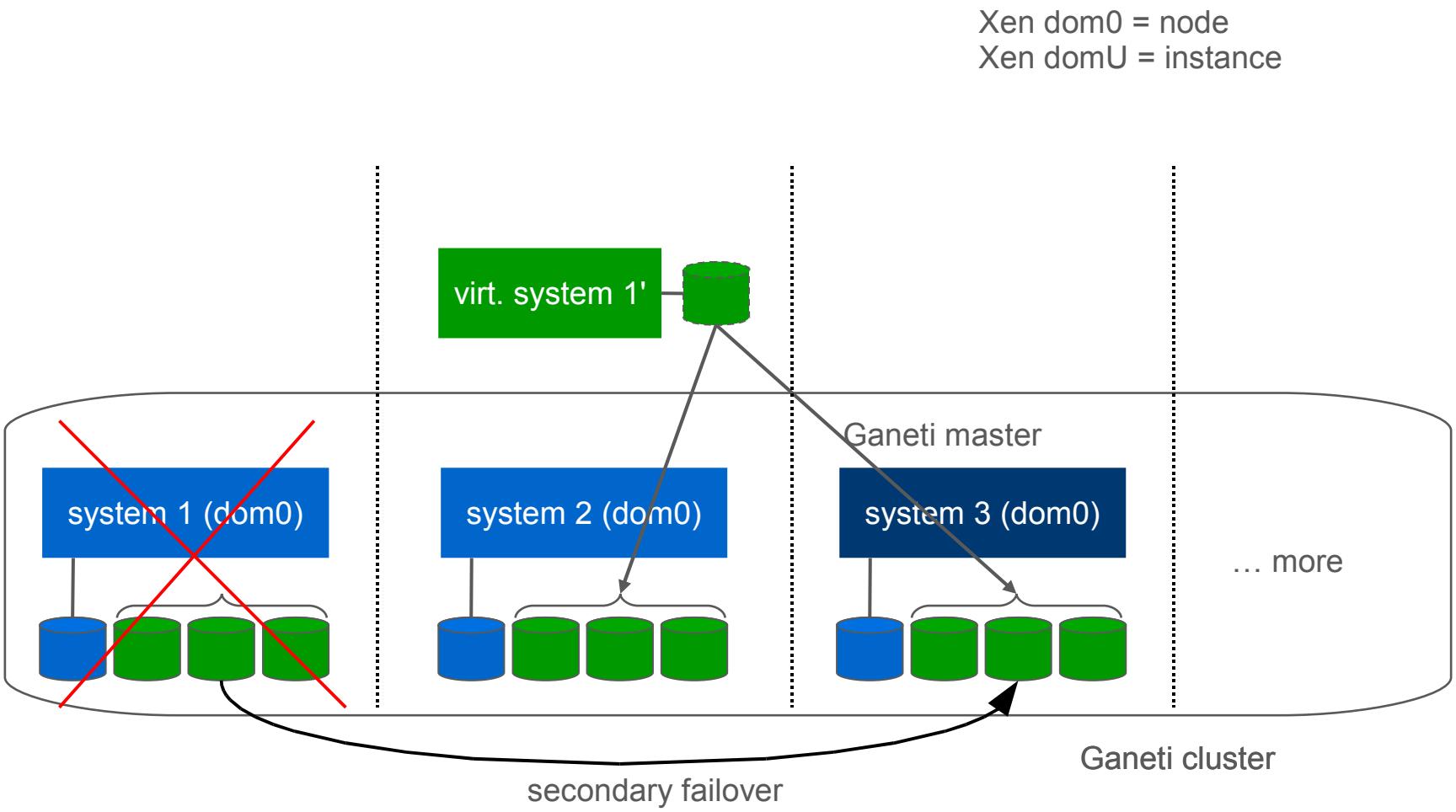
Copyright by Google Inc

Instance failover (3/4)



Copyright by Google Inc

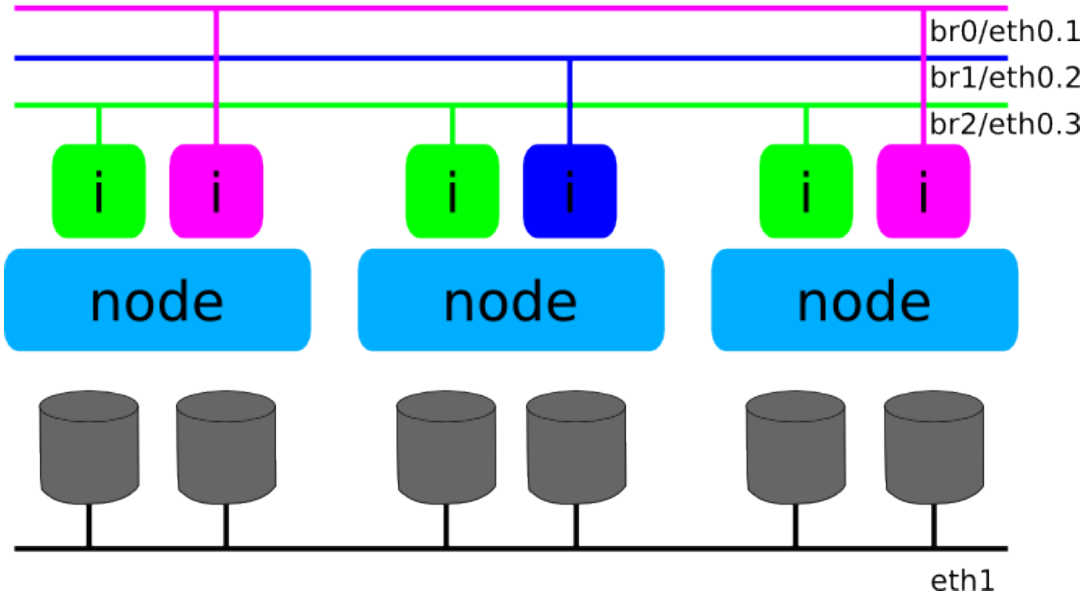
Instance failover (4/4)



Copyright by Google Inc

Optional advanced features

- Separate replication network
- Multiple bridges/VLAN support
- **Tagging (new)**



Copyright by Google Inc

Ganeti code

Google

- developed at Google
- license: GPLv2
- code location: http://code.google.com/p/ganeti/
- August 2007
  - open source and release 1.2b1
- November 2007
  - release 1.2b2
- December 2007
  - release 1.2
- February 2008
  - release 1.2.1
- Later
  - release 1.3 (draft features: remote API, live migration, job queuing, ...)

Copyright by Google Inc

Q&A

Copyright by Google Inc