ganeti

grnet

GANETICON 2013
cven@grnet.gr

Ganeti ExtStorage Interface

Constantinos Venetsanopoulos

Greek Research and Technology Network
cven@grnet.gr

ganeti

grnet

1. State before the ExtStorage Interface

GANETICON 2013
cven@grnet.gr

Non mirrored templates: plain, file

Internally mirrored templates: drbd

Externally mirrored templates: sharedfile, rbd, blockdev, diskless

2. Ganeti and external SAN/NAS appliances

GANETICON 2013
cven@grnet.gr

Instance disks residing inside an external SAN/NAS appliance visible by all Ganeti nodes (e.g.: NetApp, EMC, IBM)

Instances should be able to migrate/failover to any node that can access the appliance

Ganeti should integrate with external SAN/NAS appliances in a generic way, independent of the appliance itself in the easiest possible way from the admin's perspective

3. Introducing the 'ExtStorage Interface'

GANETICON 2013
cven@grnet.gr

A simple interface inspired by the the Ganeti OS interface

To plug an appliance to Ganeti we need a corresponding 'ExtStorage provider' which is a set of scripts residing under a directory

e.g.: `/usr/share/ganeti/extstorage/provider1/`

4. ExtStorage provider methods

GANETICON 2013
cven@grnet.gr

Every ExtStorage provider should provide the following methods:

- Create a disk on the appliance
- Remove a disk from the appliance
- Grow a disk on the appliance
- Attach a disk to a given Ganeti node
- Detach a disk from a given Ganeti node
- SetInfo on a disk (add metadata)
- Verify the provider's supported parameters

5. ExtStorage provider scripts

GANETICON 2013
cven@grnet.gr

The methods are implemented in the corresponding 7 executable scripts, using appliance-specific tools:

```
# ls -1 /usr/share/ganeti/extstorage/provider1

create
remove
grow
attach
detach
setinfo
verify
```

`attach` returns a block device path on success

Input via enviroment variables e.g.: `VOL_NAME, VOL_SIZE`

ganeti

grnet

6. The new 'ext' template

GANETICON 2013
cven@grnet.gr

Introduce a new externally mirrored disk template: `ext`

Introduce a new disk option: `provider`

7. Using the interface (example)

GANETICON 2013
cven@grnet.gr

Assuming two appliances visible by a Ganeti cluster and their two ExtStorage providers installed on all Ganeti nodes:

```
/usr/share/ganeti/extstorage/emc/*
/usr/share/ganeti/extstorage/ibm/*
```

```
# gnt-instance add -t ext --disk=0:size=2G,provider=emc

# gnt-instance add -t ext --disk=0:size=2G,provider=emc
                          --disk=1:size=1G,provider=emc
                          --disk=2:size=10G,provider=ibm

# gnt-instance modify --disk 3:add,size=20G,provider=ibm

# gnt-instance migrate testvm1

# gnt-instance migrate -n nodeX.example.com testvm1
```

8. ExtStorage Interface dynamic parameters

GANETICON 2013
cven@grnet.gr

Support for dynamic passing of arbitrary parameters to ExtStorage providers during instance creation/modification per-disk:

```
# gnt-instance add -t ext --disk=0:size=2G,provider=emc,
                          param1=value1,param2=value2
                  --disk=1:size=10G,provider=ibm,
                          param3=value3,param4=value4

# gnt-instance modify --disk 2:add,size=3G,provider=emc,param5=value5
```

The above parameters will be exported to the ExtStorage provider's scripts as enviroment variables:

```
EXTP_PARAM1 = str(value1)
EXTP_PARAM2 = str(value2)
...
```

ganeti

grnet

9. The new ‘gnt-storage’ client

GANETICON 2013
cven@grnet.gr

Inspired by 'gnt-os'

```
# gnt-storage diagnose
# gnt-storage info
```

ganeti

grnet

10. Docs on the ExtStorage interface

GANETICON 2013
cven@grnet.gr

```
man gnt-extstorage-interface
man gnt-storage
man gnt-instance {add,modify,migrate,failover}

Design doc: design-shared-storage
```

GANETICON 2013
cven@grnet.gr

Thank you.

Questions?