

Nikhef

Physics Data Processing



Grid Service Systems Guide

DRAFT

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Document Revision History

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1	DavidG	Initial Version

1 Introduction

The *Grid Services* environment contains nodes and virtual machines that run special or dedicated services for grid and grid-related work: web servers, grid-wide VO-LDAP servers, the CA and RA systems, et cetera. These service nodes are ‘one-off’ systems, not under quattor control, installed separately, and updating themselves using yum or apt. They do not even all run the same OS version or flavour.

Most of these systems are located on a special network segment called *gridsrv* hanging off the *deel* core router.

<i>Machine name and aliases</i>	<i>Type and OS</i>	<i>Description</i>
beerput <i>aliases:</i> www.dutchgrid.nl , www.biggrid.nl , poc.vl-e.nl , internal.vl-e.nl , www.eugridpma.org , cvs.eugridpma.org	SL3	Host of most general services, including web sites, the ‘rsync backup’ service, VO-LDAP, and CVS. It also contains a mirror of popular web sites (mirrors.centos.org, in particular)
gierput	SL3	a clone of beerput, except that the website mirror and the backup service data is not on gierput
rooier	CentOS4	Hosting system for VMware VMs. A basrebone system without <i>any</i> service except for local ssh and vmware-console
hek <i>aliases: ra.dutchgrid.nl</i>	CentOS3	On-line protected web site for DutchGrid CA operations (used by CA operators, and for applicants that upload a new cert request)
kaasvat <i>aliases: ca.dutchgrid.nl</i>	CentOS4	On-line web server for the public DutchGrid CA repository
sikkel <i>aliases: dist.eugridpma.info</i>	CentOS4 VM on wierde	Static distribution service for the EUGridPMA/IGTF trust anchors. This is the upstream info for VDT, EGEE and the APGridPMA mirror.
“triangle”	Knoppix4	This is the off-line CA signing machine, booted from a Knoppix CD-ROM. It’s at the bottom of the cabinet where the safe is.

The physical systems and there connections are all documented on the NDPF Node function Wiki and the Deel_Interfaces Wiki. Please see there to find out how to wire things up and locate the physical nodes in the cabinets.

1.1 Hardware

beerput.nikhef.nl	
Hardware type	Dual Xeon 2.8GHz 1 GByte Supermicro single PS (sm1sn)
Disk configuration	3ware 8602LP dual SATA, 2x250GByte: OS, /project On-board SiI SATA controller: 1x500GByte: /data
Comments	gierput.nikhef.nl is an almost exact replica, except for the 500GByte /data disk. The idea is that from both systems you can recreate a working config any time. Gierput takes a nightly mirror from beerput using rsync (initiated from gierput) Note: has only 1 power supply.
Location	Cab. 08 (next to the Halloween farm)

gierput.nikhef.nl	
Hardware type	Dual Xeon 2.8GHz 1 GByte Supermicro single PS (sm1sn)
Disk configuration	3ware 8602LP dual SATA, 2x250GByte: OS, /project On-board SiI SATA controller: no disks
Comments	beerput.nikhef.nl is an almost exact replica, except that gierput has no 500GByte /data disk. Note: has only 1 power supply.
Location	Cab. 08 (next to the Halloween farm)

hek.nikhef.nl	
Hardware type	Single Xeon 2.8GHz 512 MByte Supermicro, single PS
Disk configuration	3ware 8602LP dual SATA, 2x250GByte: OS, /project
Comments	This server is dedicated to the ra.dutchgrid.nl web site and must be a separate system running nothing else. Note: has only 1 power supply. Note: should be moved to a secure rack with CA stuff
Location	Cab. 08 (next to the Halloween farm)

kaasvat.nikhef.nl	
Hardware type	Single Xeon 2.8GHz 512 MByte Supermicro, single PS
Disk configuration	3ware 8602LP dual SATA, 2x160GByte: OS, /project
Comments	<p>This server is dedicated to the ca.dutchgrid.nl web site and must be a separate system running nothing else.</p> <p>Note: has only 1 power supply.</p> <p>Note: should be moved to a secure rack with CA stuff</p>
Location	Cab. 18 (formerly: bosui)

rooier.nikhef.nl	
Hardware type	Dual Woodcrest 2.66GHz 8 GByte Dell PE1950, dual PS
Disk configuration	MPT SATA, SWRAID1 2x500GByte: OS, /project/vm/
Comments	<p>This is a server hosting VMs only: sikkel (=dist.eugridpma.info), and others.</p> <p>Note: should run minimal services only (ssh from within NIKHEF, VMware server console from within NIKHEF).</p> <p>Note: installed using Ronald's SWRAID1 recipe.</p>
Location	Cab. 22 (with the HA-GRID systems, near the top)

deel.nikhef.nl	
Hardware type	Foundry BigIron 15000
Disk configuration	N/A
Comments	see explanation for CVS on beerput on how to configure the system and keep track of config changes.
Location	Cab. 11

2 Service structure

Most similar services look alike ... When looking for configuration or sun time data, start off under “/project/” and look there. In virtually all cases, all data is stored there, and relevant symbolic links are made from other places in the file system to point there.

2.1 Web sites

<i>Systems</i>	
beerput	www.dutchgrid.nl , www.eugridpma.org , poc.vl-e.nl, internal.vl-e.nl, www.biggrid.nl
gierput	<i>cold mirror of beerput</i>
hek	ra.dutchgrid.nl
kaasvat	ca.dutchgrid.nl
sikkel (on rooier)	dist.eugridpma.info

Every web server has a web server configuration directory

`/project/srv/www`

where all relevant data are kept. The `/etc/httpd/conf/httpd.conf` is also a symlink to the configuration file there (`/project/srv/www/conf/httpd.conf`). The main configuration file then includes the per-site configuration files from the site’s directory:

<i>Path</i>	<i>Content</i>
<code>.../conf</code>	central configuration for the entire server
<code>.../conf/cert(s)</code>	certificates for the web site(s). There may be more than one cert for different IP addresses in case of IP based virtual hosting (for the eugridpma.org site).
<code>.../share/scripts</code>	shared php and perl scripts, in particular the <i>genpg.php</i> script that generates the menus on all sites
<code>.../site/sitename/sitename.conf</code>	per-site configuration
<code>.../site/sitename/html</code>	documents for the site
<code>.../site/sitename/cgi</code>	the site’s cgi-bin directory
<code>.../site/sitename/autocontent</code>	content generated by scripts on the site. Usually writable by the apache user.
<code>.../site/sitename/conf</code>	per-site configuration data, usually for scripts and the like.

Typically each web server is configured with multiviews enabled (which means that you do not need to provide the “.html” or “.php” suffixed in the URLs), and indexing disabled except for specific software download directories. Also, PHP is enabled everywhere by default¹

2.2 CVS service

<i>Systems</i>	
beerput	active: /cvs/eugridpma, /cvs/ndpf, /cvs/dutchgridca retired: /cvs/vlam-g
gierput	<i>mirror of beerput</i>

All CVS data is contained in

```
/project/srv/cvs
```

And a symlink is made

```
/cvs -> /project/srv/cvs
```

to make it accessible in a location-independent way. The rights are managed by unix uids and guids on the beerput host itself, so the /etc/passwd and /etc/group file are “precious” in that respect. In particular, the access rights on /cvs/eugridpma should be respected, as otherwise people could inadvertently write to the repository directory for the IGTF distribution (we will catch that later when building on the trusted host, but still I rather prevent it early on).

The directory is and should be backed up.

2.2.1 Deel configuration file in CVS

The boot configuration of deel is also stored in CVS at

```
/cvs/ndpf/nl.nikhef.ndpf.networking.routercfg/
```

There is a checked-out version on beerput in

```
~davidg/src/nl.nikhef.ndpf.networking.routercfg/
```

That is symlinked in /tftpboot as “deel.src”. The idea is that you *only edit* deel.src, and check that in after every change in CVS, and then make a copy in /tftpboot/deel as the running config.

Notmally , you will make changes on the live system as well, and do a “wri mem” there, keeping the modification on the router itself in synch with the configuration stored in /tftpboot and in CVS.

¹ With the notable exception of ‘dist.eugridpma.info’, where all dynamic content is, and *must remain* disabled. This is a special secure server that should host only static content to prevent holes therein from being exploited.

2.3 LDAP service

<i>Systems</i>	
beerput	ldap://grid-vo.nikhef.nl/dc=org,dc=eu-datagrid (VO-LDAP) ldap://grid-vo.nikhef.nl/dc=nl,dc=vl-e (VO-LDAP) <i>obsolete</i> ldap://grid-vo.nikhef.nl/dc=nl,dc=dutchgrid (CA)
gierput	<i>mirror of beerput</i>

All data is in `/project/srv/voldap`, but there is also a specialised startup script (symlinked) in `/etc/init.d` to start this service. It is *not* the standard “ldap” service that ships with EL3.

2.4 Netmon, monifarm, and cricket graphs

<i>Systems</i>	
beerput	main copy
gierput	<i>mirror of beerput</i>

All these services run at the *netmon* user on beerput, all from cron (set manually in the crontab for the *netmon* user).

Also the cricket 1.0.5 graphs run as the *netmon* user. Before changing the cricket configuration, you need to set the following PERLLIB line correctly, since this version of cricket requires SNMP support:

```
export PERLLIB=/project/srv/netmon/SNMP_Session-0.92/lib
```

Then go to the cricket directory, edit the mappings file, and recompile

```
cd /project/srv/netmon/cricket-1.0.5/  
vi ../cricket-config/deel/targets  
./compile
```

After compilation, the changes are immediately reflected on the web site, but the history is and remains linked to the physical interface on *deel* or *hef-router*.

2.5 Backup ‘rsync’ service

<i>Systems</i>	
beerput (server)	main copy
clients:	bedstee.nikhef.nl (grid database server) dorsvlegel.nikhef.nl (D0 project disks) hek.nikhef.nl (ra.dutchgrid.nl) hooimijt.nikhef.nl (NDPF core file server, perm only) kaasvat.nikhef.nl (ca.dutchgrid.nl) sikkel.nikhef.nl (dist.eugridpma.info)

Configuration data for the backup service, and the backup script, are kept in


```
/project/backupservice/bin/
/project/backupservice/etc/
```

All backup data is kept in `'/data/backups/'`, and a `rsync -rav --delete-excluded` done daily at 02:10 AM:

```
10 2 * * * nice -n 10 /project/backupservice/bin/rsync-backup\
> /var/log/backup.log 2>&1
```

Note that a backup of *beerput* itself (not the `rsync-backup` data) is kept on *gierput*, and is triggered from *gierput* as well.

Only selected data is copied from the clients, see the configuration files in `.../etc/` for details. The syntax is `rsync '–exclude'` mode (which is different from the ADSM `inlexcl.opt` file!).

2.5.1 Adding new client nodes

Documentation of this service (how to add new nodes) is kept in

```
beerput: /project/backupservice/doc/template
```

On the client, the `rsyncd.conf` file should look like:

```
uid = root
gid = root
use chroot = yes
max connections = 10
syslog facility = daemon
pid file = /var/run/rsyncd.pid

[fsroot]
  path = /
  comment = hek.nikhef.nl:/
  read only = yes
  list = false
  auth users = backup
  secrets file = /etc/rsyncd.secrets
  hosts allow = 194.171.96.69/32
  hosts deny = 0.0.0.0/0
```

And of course the `rsync` service enabled and reachable from *beerput* (mind the firewall rules in `iptables` and `on deel`).

A typical client config (running the “`fsroot`” style `rsyncd.conf` file) on `backupservice/etc/` looks like:

```
HOSTNAME      hek.nikhef.nl
USERNAME      backup
PASSWORD      97^jhJSdF76%lkj
MODULE        fsroot
DEST          hek.nikhef.nl
EXCLUDES      +/project**      +/etc      \
               +/etc/sysconfig**      -*
```

3 Service failure diagnostics

Is a service is failing, look for solutions or hints on these system(s):

Failure	Look for suggestions in
www.eugridpma.org does not repond	<p>First, make sure it really is the “regular” www site, and not the download repository they are asking for. The download location is <i>dist.eugridpma.info</i> and is located on sikkel (VM on rooier).</p> <p>Then, look to see if beerput is OK, and the webserver for the other sites is responding (www.dutchgrid.nl, for instance). If all web servers are down, login on beerput and restart httpd. Look for errors here.</p> <p>If beerput is down, reanimate the host if possible. Look for power failures &c, or network disconnects (can you still ping gierput?)</p> <p>In an emergency: beerput and gierput share the same hardware. Cannibellise where needed, but only revert to the <i>gierput</i> disk image as a last resort, since you will then need to enable all services again, make the appropriate symlinks, and assign new IP addresses to gierput.</p> <p>Note: beerput has <i>two</i> (2) IP addresses, since www.eugridpma.org is a IP-based virtual host.</p>
ca.dutchgrid.nl does not repond	<p>Is the host <i>kaasvat</i> (in cabinet 18) still responding? Restart if needed, check for network failures.</p> <p>Note that a complete backup of the contents is available on the rsync-backup on beerput, so you can take a new host, configure it as a web server (NO SELinux!), copy the backup back to the new host, and make the httpd.conf symlink to the restored /project/srv/www/conf/ directory.</p> <p>Note: this should be a physical, dedicated, machine as per DutchGrid CP/CPS version 3.0.</p>
cannot submit new certificate requests	<p>This needs the host ra.dutchgrid.nl (hek) to be available, as well as a working mail server.</p> <p>If it’s just the mail server, ask people to use the web interface at http://ra.dutchgrid.nl/ra/public/submit until mail has been repaired.</p>

	<p>If the problem is in the CA mail processing only, look in <code>/global/ices/grid/techn/certauth/bin/</code> and <code>.../ca-maillog/</code> to see what's wrong. <code>dca_accept</code> should be executable by the mail agens (be in <code>smrsh</code>), and it will invoke <code>dcara_submitrequest</code> to actually send the mail in a "wget" command to the <code>ra.dutchgrid.nl</code> web submission form.</p> <p>If <code>ra.dutchgrid.nl</code> is down, see there.</p> <p>Note that people CANNOT use https to submit the request, as the https URL is restricted to internal NIKHEF use only for RA operations.</p>
<p><code>dist.eugridpma.info</code> does not respond</p>	<p>This is a VM on rooier, so check if rooier is working, vmware server is up, and the <code>dist.eugridpma.info</code> (sikkel) VM is running. Restart the VM if you need to.</p> <p>Note that a complete backup of the contents is available on the <code>rsync-backup</code> on beerput, so you can take a new (virtual) host, configure it as a web server (NO SELinux!), copy the backup back to the new host, and make the <code>httpd.conf</code> symlink to the restored <code>/project/srv/www/conf/</code> directory.</p>