



ARCHERY: the new ARC index system

ISGC 2019, Taipei



Pre-ARC6 resource indexing

- Index services (EGIIS), a built-in feature of ARC
- Requires installation and configuration of ARC (only specific packages)
- Bottom-to-top registration
 - The index owner needs to whitelist a resource
- Registration does not guarantee availability
 - The infosystem can register even if A-REX is down
- **Not really used by the communities**
 - Real grid users pretty much prefer to maintain own static lists of available endpoints

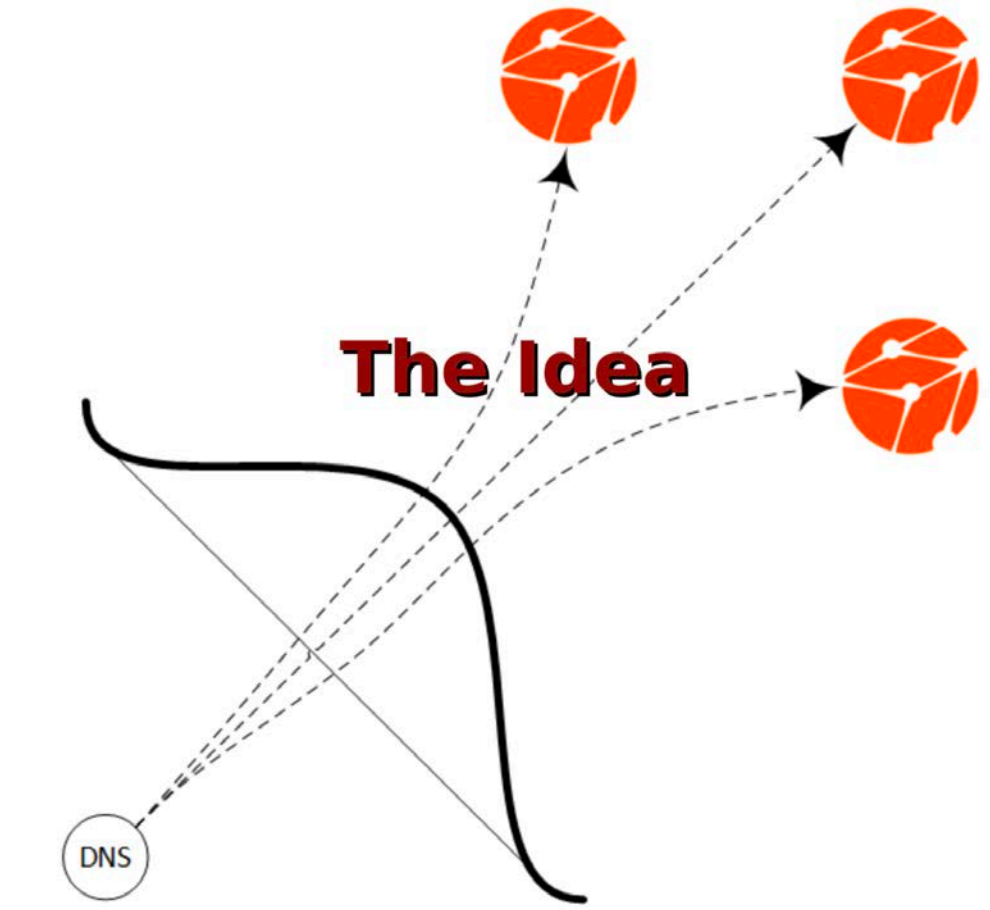


ARCHERY: the idea

Let the communities have their static lists

...and provide them with a robust technology to distribute and access these lists...

Sounds like DNS?



ARCHERY: the DNS idea

- Create a DNS zone
- Insert TXT RRs into the zone
- Now the DNS will take the burden of delivering those RRs
 - Just query the DNS for TXT records to get available resources

```
arc@arc-ce $ host -t TXT 560de49781._archery.atlas.archery.ndgf.org
560de49781._archery.atlas.archery.ndgf.org descriptive text "u=gsiftp://ce03.grid.uio.no:2811/jobs
t=org.nordugrid.gridftpjob"
560de49781._archery.atlas.archery.ndgf.org descriptive text "u=https://ce03.grid.uio.no:443/arex
t=org.ogf.glue.emies.resourceinfo"
560de49781._archery.atlas.archery.ndgf.org descriptive text "u=https://ce03.grid.uio.no:443/arex
t=org.ogf.glue.emies.activitymanagement"
```



ARCHERY: specification

- **_archery** TXT RR as an entry point
- RR format for each endpoint is
 - u=<uri> t=<type> [t=<type>...] [s=<status>]
 - o=group [t=<group type>] [id=<group id>]
 - o=service t=<service type> id=<service id>
- Examples of endpoint types
 - org.nordugrid.ldapng
 - org.nordugrid.ldapglue2
 - org.ogf.glue.emies.resourceinfo
- Examples of endpoint registries types
 - archery.group
 - archery.service
- Links to the detailed docs and specs:
<http://www.nordugrid.org/documents/arc6/admins/archery>



Hierarchy: Ukraine's example

```
$ORIGIN nordugrid.org.
```

```
_archery TXT "u=ua.archery.nordugrid.org t=archery.group"
```

```
$ORIGIN ua.archery.nordugrid.org.
```

```
_archery TXT "u=dns://304fb16a79._archery.ua.archery.nordugrid.org. t=archery.service"
```

```
_archery TXT "u=dns://66ae15cebe._archery.ua.archery.nordugrid.org. t=archery.service"
```

```
$ORIGIN _archery.ua.archery.nordugrid.org.
```

```
304fb16a79 TXT "u=ldap://felix.iap.sumy.org:2135/Mds-Vo-Name=local,o=grid t=org.nordugrid.ldapng"
```

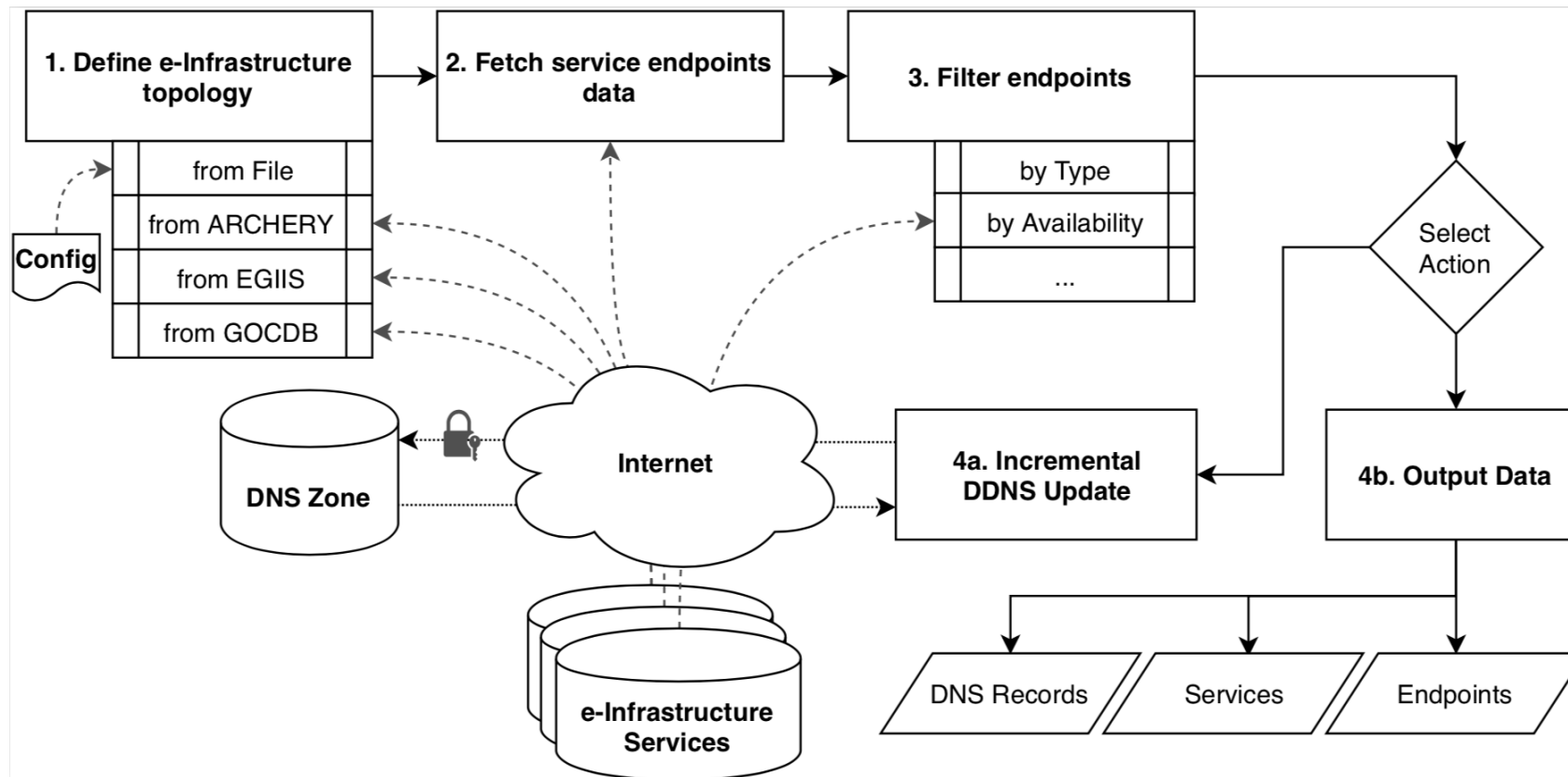
```
304fb16a79 TXT "u=gsiftp://felix.iap.sumy.org:2811/jobs t=org.nordugrid.gridftpjob"
```

```
66ae15cebe TXT "o=service t=org.nordugrid.arex id=arc.immsp.kiev.ua"
```



ARCHERY: so how do you index?

- Manual RR creation in the zone file
- *archery-manage* tool (much more recommended!)



Filter as you index

- *archery-manage* can be picky
 - *portscan*
 - drop endpoints that do not answer to queries to service ports
 - *vo:<voname>[,<voname>...]*
 - drop endpoints that do not support specified VOs
 - *type:<endpoint type>[,<endpoint type>...]*
 - drop endpoints that do not provide the specified service types (f.ex. gridftp interface)
- For extra pickiness: combine the filters

```
[dmytrok@gridadm grid]$ archery-manage -f portscan -f vo:atlas,atlas.ops -s arcce-list:/tmp/archery.txt
```



atlas.archery.ndgf.org

A real ARCHERY usecase: a CE-list for ATLAS, hosted by NDGF
(maintains *ndgf.org* zone)

```
zone "atlas.archery.ndgf.org" IN {  
    type master;  
    file "/var/lib/bind/atlas.archery.ndgf.org";  
    notify yes;  
    allow-update {  
        key archery_key;  
    };  
};
```



A directory writable
by bind



atlas.archery.ndgf.org [2]

- Contains the hosts ATLAS wants to see indexed
<http://aipanda404.cern.ch/data/releases/atlasregistrants.txt>
- A cron job dumps that list to the archery twice a day via Ansible

```
- name: download the list of ATLAS servers
```

```
  local_action: get_url
```

```
    url=http://aipanda404.cern.ch/data/releases/atlasregistrants.txt
```

```
    dest=/tmp/archery.txt
```

```
    force=yes
```

```
- name: update Archery registry on ndgf.org
```

```
  local_action: "shell /usr/sbin/archery-manage -s arcce-list:/tmp/archery.txt -f portscan --ddns-update --domain atlas.archery.ndgf.org --ddns-master-ip <our_shy_nameservers_ip> --ddns-tsig-keyfile /etc/arc/archery-manage.key"
```



atlas.archery.ndgf.org: the result

Due to portscan and the need for the CEs to register themselves, the ARC5 and archery ATLAS indices differ. Please note, that the hashes in the text to the left are replaced with real domain names to make comparison possible.

```
dmytrok@ladon:~$ host -t TXT _archery.atlas.archery.ndgf.org
u=dns://abisko-ce.hpc2n.umu.se <-- Don't register to arcgiis.grid.uio.no
u=dns://arc-1-kit.gridka.de          Present only in Archery
u=dns://arc-2-kit.gridka.de
u=dns://arc-3-kit.gridka.de
u=dns://arc-4-kit.gridka.de
u=dns://arc-5-kit.gridka.de
u=dns://arc-6-kit.gridka.de
u=dns://arc-ce-condor.pleiades.uni-wuppertal.de
u=dns://arc-ce.pleiades.uni-wuppertal.de
u=dns://arc-ce01.gridpp.rl.ac.uk
u=dns://arc-ce02.gridpp.rl.ac.uk
u=dns://arc-ce03.gridpp.rl.ac.uk
u=dns://arc-ce04.gridpp.rl.ac.uk
u=dns://arc-fdr2.grid.sinica.edu.tw
u=dns://arc-grid.uaic.ro
u=dns://arc-htc.nipne.ro
u=dns://arc-it4i.farm.particle.cz
u=dns://arc-node.itim-cj.ro
u=dns://arc.nipne.ro
```

```
dmytrok@ladon:~$ ldapsearch -xLLL -h arcgiis.grid.uio.no -p 2135 -b "mdu-vo-name=Atlas,o=grid" -s base | grep nordugrid-cluster-name | sort
arc-ce-condor.pleiades.uni-wuppertal.de
arc-ce.pleiades.uni-wuppertal.de
arc-ce01.gridpp.rl.ac.uk
arc-ce02.gridpp.rl.ac.uk
arc-ce03.gridpp.rl.ac.uk
arc-ce04.gridpp.rl.ac.uk
arc01.hpc.ku.dk <-- Had problems during portscan
arc01.lcg.cscs.ch   Present only in arcgiis's index
arc02.lcg.cscs.ch
arc03.lcg.cscs.ch
arc04.lcg.cscs.ch
arc07.lcg.cscs.ch
aurora-grid.lunarc.lu.se
c2papdata2.lrz.de
ce01.lhep.unibe.ch
ce02.lhep.unibe.ch
gar-ex-etpgrid1.garching.physik.uni-muenchen.de
gar-ex-etpgrid2.garching.physik.uni-muenchen.de
```

atlas.archery.ndgf.org in use

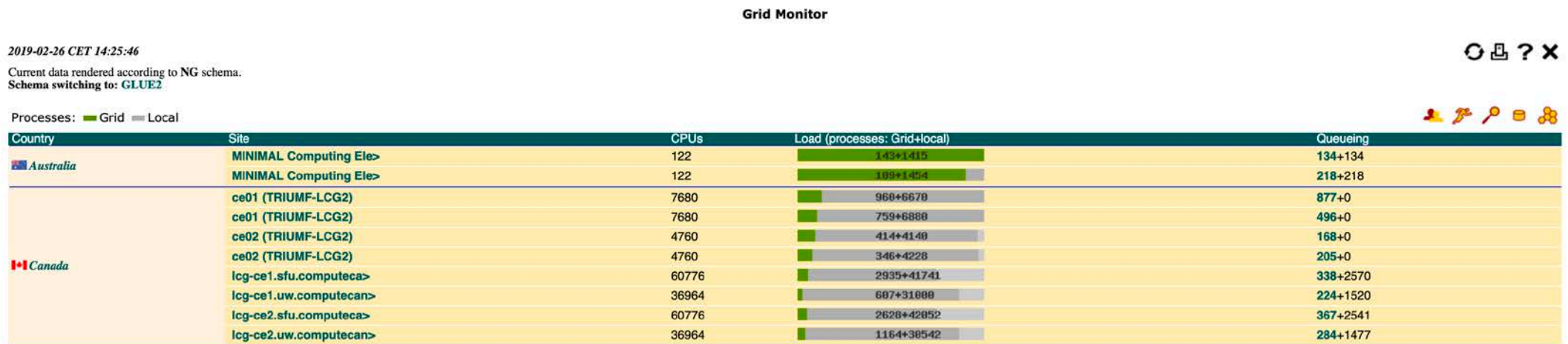
- To submit a job

```
[dmytrok@gridadm grid]$ arsub -g atlas.archery.ndgf.org xrsf
```

Job submitted with jobid:

```
gsiftp://arc03.lcg.cscs.ch:2811/jobs/cCFMDm3voctndvtlepYPV1GmABFKDmABFKDmAvfKDmABFKDmRFFdrn
```

- To populate the monitor



ARCHERY: ongoing

- Country-level zones
- Central zone nordugrid.org, with entries for country level zones
 - Is operational already

```
dig -t TXT _archery.nordugrid.org
[...]
_archery.nordugrid.org. 1617      IN      TXT     "u=ee.archery.nordugrid.org t=archery.group"
_archery.nordugrid.org. 1617      IN      TXT     "u=dk.archery.nordugrid.org t=archery.group"
_archery.nordugrid.org. 1617      IN      TXT     "u=si.archery.nordugrid.org t=archery.group"
_archery.nordugrid.org. 1617      IN      TXT     "u=atlas.archery.ndgf.org t=archery.group"
_archery.nordugrid.org. 1617      IN      TXT     "u=hu.archery.nordugrid.org t=archery.group"
_archery.nordugrid.org. 1617      IN      TXT     "u=fi.archery.nordugrid.org t=archery.group"
_archery.nordugrid.org. 1617      IN      TXT     "u=uk.archery.nordugrid.org t=archery.group"
_archery.nordugrid.org. 1617      IN      TXT     "u=lt.archery.nordugrid.org t=archery.group"
_archery.nordugrid.org. 1617      IN      TXT     "u=sk.archery.nordugrid.org t=archery.group"
_archery.nordugrid.org. 1617      IN      TXT     "u=ua.archery.nordugrid.org t=archery.group"
_archery.nordugrid.org. 1617      IN      TXT     "u=ch.archery.nordugrid.org t=archery.group"
_archery.nordugrid.org. 1617      IN      TXT     "u=se.archery.nordugrid.org t=archery.group"
_archery.nordugrid.org. 1617      IN      TXT     "u=pt.archery.nordugrid.org t=archery.group"
_archery.nordugrid.org. 1617      IN      TXT     "u=no.archery.nordugrid.org t=archery.group"
[...]
```



Questions?

