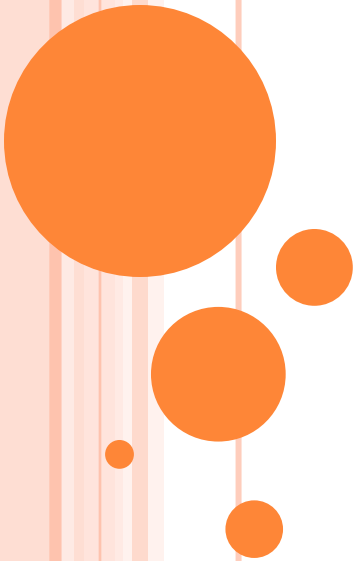

Grid services IPv6 readiness

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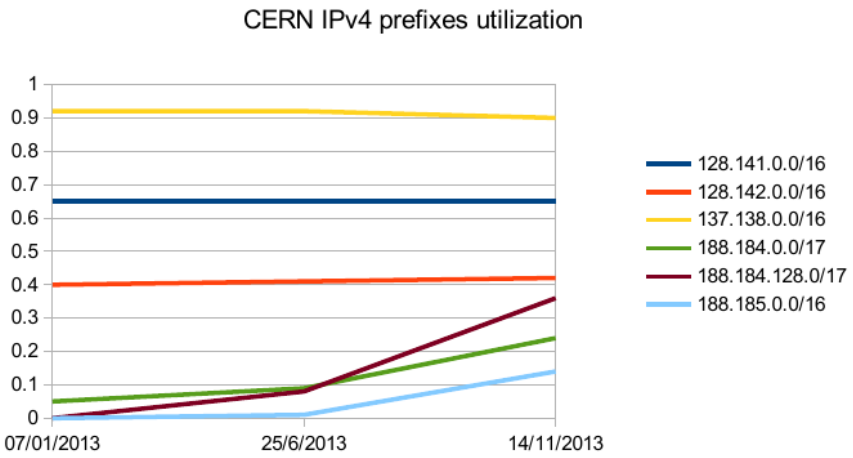
CERN IPv4 pools' status

128.141.0.0/16 (64K, GPN dynamics):	65% used
128.142.0.0/16 (64K, LCG statics):	42% used
137.138.0.0/16 (64K, GPN statics):	90% used
188.184.0.0/17 (32K, GPN statics):	24% used
188.184.128.0/17 (32K, LCG statics):	36% used
188.185.0.0/16 (64K, Wigner):	14% used

[14th of November 2013]



5

Steps in deployment

- Apps continue to run if IPv6 is enabled, but not configured
- … in a dual-stack environment
- … when the machines are published in DNS with both addresses
- Clients make use of IPv6 when available
- and even prefer it
- and work in IPv6-only environment

Central AliEn services

- Authen, IS, JobManager, JobBroker …
  - All run as httpd apps 
- MySQL, LDAP 
- APIService
  - Xrootd-based 
- MonALISA repository
  - Java / Tomcat 
- Various Web apps
  - ALICE public web pages 
  - Software build servers 

Site services

- CVMFS 
- VoBox Services
  - CE, CMReport, PackMan
    - Perl server 
  - ClusterMonitor
    - httpd app 
  - MonALISA
    - Java 
- SE
  - Xrootd/EOS 
  - DCache 
  - DPM 
  - CASTOR 
- JobAgent
  - Internal httpd server 
- ApMon (C, C++, Perl) 

Central services status

- All servers were assigned IPv6 addresses 1y ago
- 2w ago the DNS was switched to the production name and the firewall was opened for all* servers
- DNS load balancing publishes aliases with both the IPv4 and the IPv6 of the respective servers

```
$ host alice-ldap.cern.ch
alice-ldap.cern.ch has address 137.138.99.165
alice-ldap.cern.ch has address 137.138.99.166
alice-ldap.cern.ch has IPv6 address 2001:1458:201:b49f::100:f
alice-ldap.cern.ch has IPv6 address 2001:1458:201:b49f::100:10
```

- No problems detected, but most services are not contacted via IPv6
- Requests from 51 IPv6 classes to *alimonitor.cern.ch* since then (3% of requests)

Site services sore points

- Xrootd
  - Waiting for 4.0 with IPv6 support
  - Will need to update all components to start using it
    - **All** SE elements
    - AliEn command line client
    - ROOT library
    - ApiServices
- Perl code
  - 5.14+ supports IPv6 natively
    - IO::Socket::INET -> IO::Socket::IP
  - 5.10 could also be used with a backported Socket lib
    - But better take the opportunity to upgrade
- ApMon: C, C++ and Perl implementations

Site deployment

- Still only 4 sites have deployed IPv6 on the VoBoxes
  - **BITP, CSC**, DCSC_KU, NECTEC
  - BITP has fully enabled it site-wide
  - More sites seem to have it deployed for users
- Not interfering with the production
- Minor problem recently identified in *glite-ce-job-submit* client, affecting the SAM test results
- We need such production deployment to identify issues early on
  - Please start deploying it, there is no reason to delay

Monitoring status

- So far only checking the IPv6 support on the VoBox
- To do: similar tests as for IPv4
  - tracepath6 / traceroute6
  - Bandwidth measurement on IPv6
  - Comparing the results on both protocols
    - Routes, latency, performance

Other required Grid services

- Survey of Grid software IPv6 readiness: http://hepix-ipv6.web.cern.ch/wlcg-applications
- Please report any other software packages you are using and, if known, their IPv6 support
- It is assumed that local site services could keep using private IPv4 addresses
- The goal is to support IPv6-only WNs
  - For this **all** public-facing services should run in dual-stack
  - Long process, have to start early!


IR6
READY