



First tests of gLite/IPv6 compatibility

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Agenda

- ▶ Objective of the A.2.2
- ▶ Hardware resources
- ▶ Network topology
- ▶ IPv6 address space
- ▶ First software survey
- ▶ Actions

Objective

- ▶ Study the available Grid Middleware for an IPv6 network and the interaction between Grid Services and IPv4-IPv6 communication giving a feedback and possibly proposing code modifications to the middleware editors (EGEE, Globus, etc.).



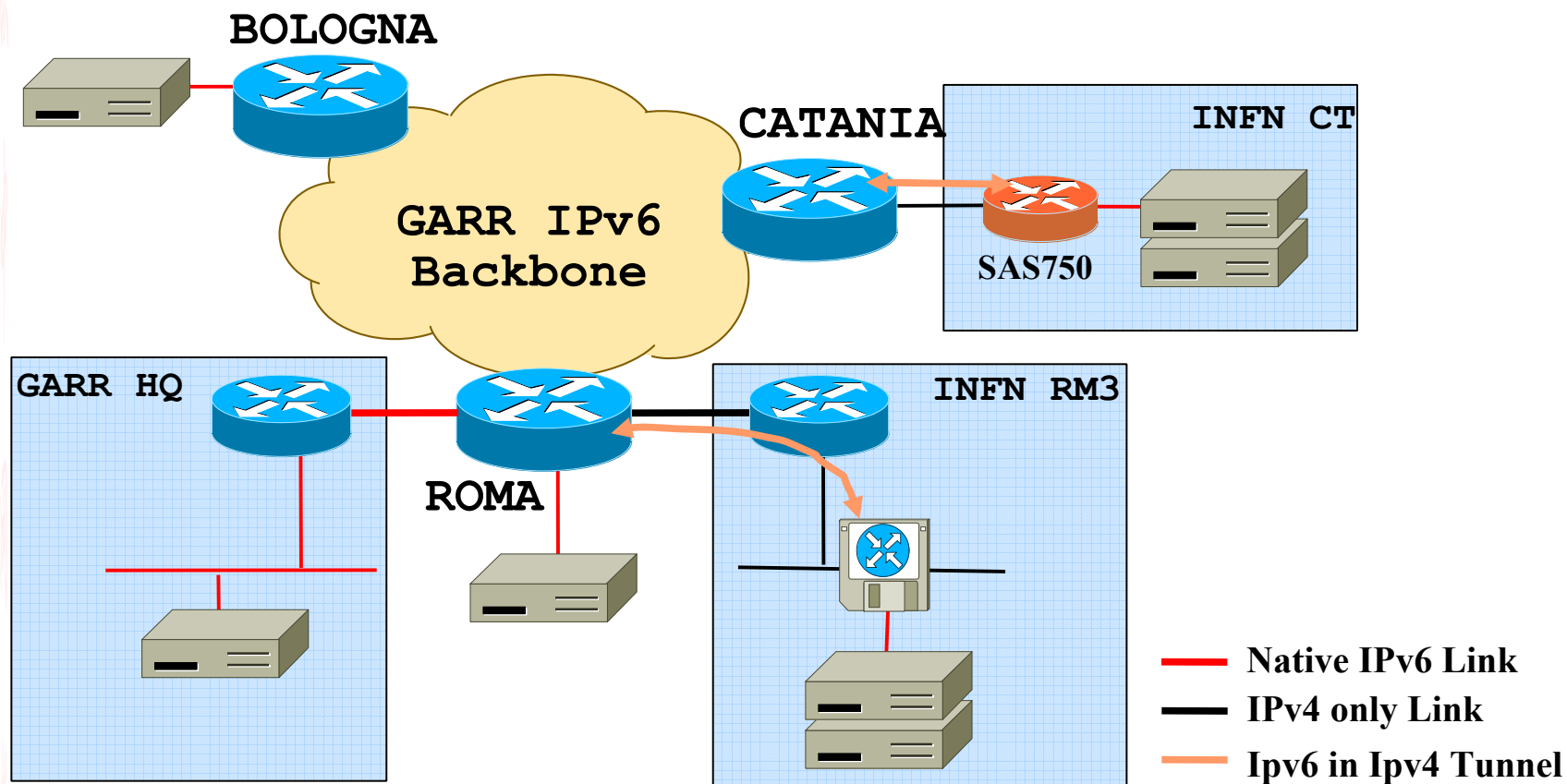
Hardware resources

- ▶ 3 PCs provided by GARR Installed in three different GARR PoPs
 - The hardware is HP DL380 w/ Intel Xeon 2.4Ghz, 1GB RAM and 145 GB of storage, running Scientific Linux 3.0.5
- ▶ 2 PCs will soon be available at INFN Roma3 and INFN Catania
- ▶ 1 Router SAS 750 donated by ELSAG installed in INFN Catania





Network topology





IPv6 Address space

- ▶ A /48 was assigned for EUChinaGrid IPv6 tests from the GARR /32
 - 2001:760:40EC::/48
- ▶ The address space is subnetted in /64 for each LAN involved on the tests.
- ▶ The 3rd level domain ipv6.euchinagrid.eu is used for address resolution of EUChinaGrid servers.
- ▶ DNS Service is provided by GARR.



IPv6 Address space

2001:760:40EC:1::/64
2001:760:40EC:2::/64
2001:760:40EC:3::/64
2001:760:40EC:4::/64
2001:760:40EC:5::/64

GARR Roma1 PoP
GARR Roma2 PoP
INFN Roma3
GARR Bologna PoP
INFN Catania



First software survey

- ▶ The servers have fully functional IPv6 connectivity inside and outside GARR Network

```
[ipv6@roma02 ipv6]$ ping6 www.kame.net
PING www.kame.net(2001:200:0:8002:203:47ff:fea5:3085) 56 data bytes
64 bytes from 2001:200:0:8002:203:47ff:fea5:3085: icmp_seq=0 ttl=44
time=319 ms

rtt min/avg/max/mdev = 319.406/325.850/332.295/6.469 ms, pipe 2

[ipv6@roma02 ipv6]$ ssh 2001:760:40ec:4::10
Warning: Permanently added '2001:760:40ec:4::10' (RSA) to the list
of known hosts.
ipv6@2001:760:40ec:4::10's password:
```



First software survey

- ▶ A first look on gLite code highlight that some network routines are not compliant to RFC 3493

```
[~/org.glite.wms-utils.tls] $ grep F_INET  
./src/socket++/Socket*.cpp  
SocketClient.cpp: agent -> peeraddr_in.sin_family = AF_INET;  
SocketClient.cpp: if( (agent -> sck = socket(AAF_INET, SOCK_STREAM,  
0)) == -1 ) {  
SocketServer.cpp: myaddr_in.sin_family = AF_INET;  
SocketServer.cpp: sck = socket (AF_INET, SOCK_STREAM, 0);
```

- ▶ IP dependencies can be fixed only by developers.



First software survey

- ▶ A more detailed survey was started on a Storage Element (DPM with SRM)
- ▶ System libraries resolve correctly IPv6 addresses but the software is unable to understand it.

```
[ipv6@roma02 ipv6]$ dpns-ls /
send2nsd: NS009 - fatal configuration error: Host unknown:
  roma02.ipv6.euchinagrid.eu
[ipv6@roma02 ipv6]$ strace dpns-ls /
...
recvfrom(3,
  "\263\354\201\203\0\1\0\0\0\1\0\0\6roma02\4ipv6\veuchin"... ,1024,
0, {sa_family=AF_INET, sin_port=htons(53),
  sin_addr=inet_addr("193.206.158.1")}, [16]) = 123
close(3) = 0
```



Actions

- ▶ Extend the debugging to the other package of the GRID MW and identify the IP dependencies in the code
- ▶ Draw up an interoperability guideline for developers
- ▶ Other actions may be defined in the final discussion.



Questions ?



Thank you!