IPv6 session
TF-NGN, Ljubljana

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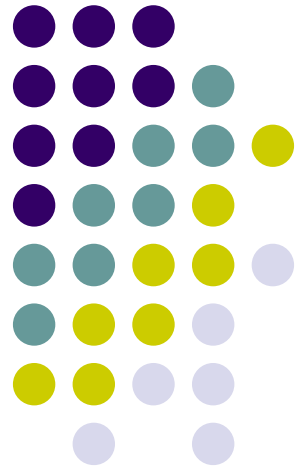
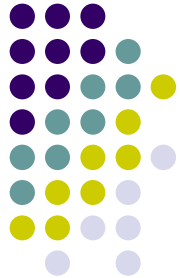
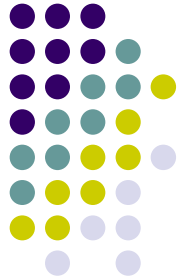


Agenda



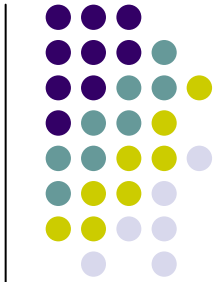
- IPv6 status update, news
- Is IPv6 still an NGN topic?
  - Presenting for Carlos Friacas

6bone is gone



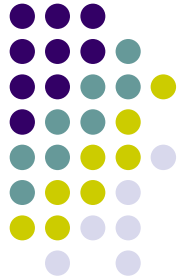
- 6bone was shut down at 6/6/06
- This means that 6bone addresses should no longer be used
- Many stopped announcing 6bone prefixes
- Some have added filters
- Prefixes still seen out there: 3ffe::/24, 3ffe:800::/24, 3ffe:2e00::/24, 3ffe:3600::/24, 3ffe:400a::/32, 3ffe:8110::/28, 3ffe:8240::/28, 3ffe:8270::/28

ip6.int and reverse for 3ffe



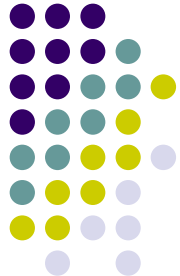
- ip6.int is now gone, domain is removed
- Unfortunately there are systems/applications trying to use it for reverse lookups. Some vendors have still not updated their code
- The delegation of e.f.f.3.ip6.arpa will be removed shortly

Embedded-RP in GEANT



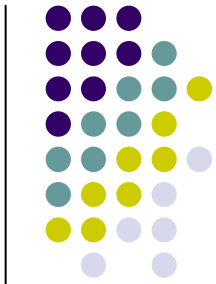
- Embedded-RP is now deployed in GEANT
- Several random successful tests have been made
- Should we perform more systematic tests?
  - I’ve presented on this before
- I would suggest more to deploy asmping servers
- We’re considering deploying a multicast beacon using embedded-RP, only issue is that we’ll only get to test one specific RP with one beacon
- RENATER is still operating an RP that is used by the entire M6Bone for all global non-embedded groups
- This does not scale and RENATER will remove this service later
- We should make sure that embedded-RP works
- We should use embedded-RP whenever possible today, to learn of possible issues

IPv6 multicast scopes



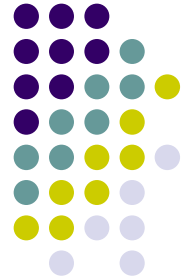
- For IPv4 we have defined administrative scopes for limiting multicast to a single NRN, and for limiting to all of GEANT
- We should define IPv6 scopes for this as well
- I've mentioned this before, but would like us to get something agreed upon
- Do you agree we should? What is needed to get this formally agreed upon?
- My proposal is scope A for NRNs, C for GEANT
  - B for some super-NRN networks, e.g. NORDUnet
  - D could be used for GEANT+Abilene….
  - E is global
  - 8 might be used by universities (organisation scope), 9 for e.g. regional networks

IPv6 multicast in RENATER



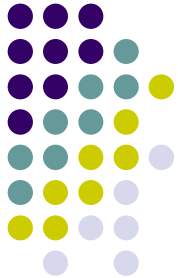
- RENATER now provides IPv6 multicast to all their IPv6 unicast customers
  - PIM is enabled by default
  - Unicast + multicast BGP used for RPF
- Multicast addresses have also been allocated to customers

SEND – Secure Neighbor Discovery



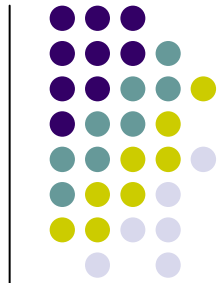
- DoCoMo has released open-source implementation of Secure Neighbor Discovery
  - RFC 3971 (SEND), RFC 3972 (CGA), RFC 3779 (X.509 extensions for IP addresses and AS identifers)
- Available from http://www.docomolabs-usa.com/lab_opensource.html
- BSD license, no restrictions on use, enhancements or distribution
- Both for Linux and BSD

IPv6 – the green protocol



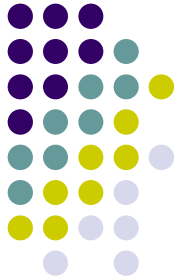
- Just saw someone claim that IPv6 is environment friendly
- Cell phones need more power with IPv4 together with NAT and/or firewalls where keep-alives are needed to maintain state

ssmping 0.9



- Hopefully you know about ssmping already, more info at http://www.venaas.no/multicast/ssmping/
- Some minor improvements
  - Can specify size of replies
    - Useful for debugging fragmentation/MTU issues
  - Can check server version and capabilities
  - Slightly improved windows support
- Contains new tool called mcfirst
  - Joins multicast session, returns when first packet received
    - Optionally specify # packets or # seconds to run
  - Useful for checking that a session is received and at what rate
    - Easy to use from scrips for automated tests
  - Supports ASM/SSM and IPv4/IPv6
    - Uses code from ssmping

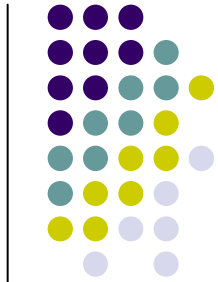
mcfirst examples



```
$ mcfirst 224.2.127.254 9875
mcfirst joined (*,G) = (*,224.2.127.254)
Received 662 bytes from 158.42.251.81 after 126.001 ms (ttl/hops 46)
$

$ mcfirst -r -t 10 224.2.127.254 9875
mcfirst joined (*,G) = (*,224.2.127.254)
115333 bytes (payload) and 233 packets received in 9.989 seconds
Average rate: 75.710 kbits of payload per second
Estimated average rate including all headers: 79.998 kbits per second
$
```

ssmping looking glass



- A looking glass for ssmping has been written by Nicholas Humfrey from ecs.soton.ac.uk
- From the looking glass you can run ssmping and asmping commands
  - Can be used to check that looking glass can receive multicast from you or others with ssmping servers
- See http://www.multicast.org.uk/lg/
- Source code (perl script) can be downloaded from the above URL and you can easily set up your own looking glass