Ninux.org Community Cloud Infrastructure

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Wireless Battlemesh v9
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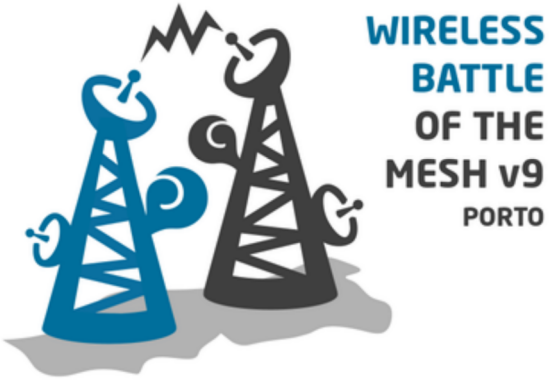
lightning talk



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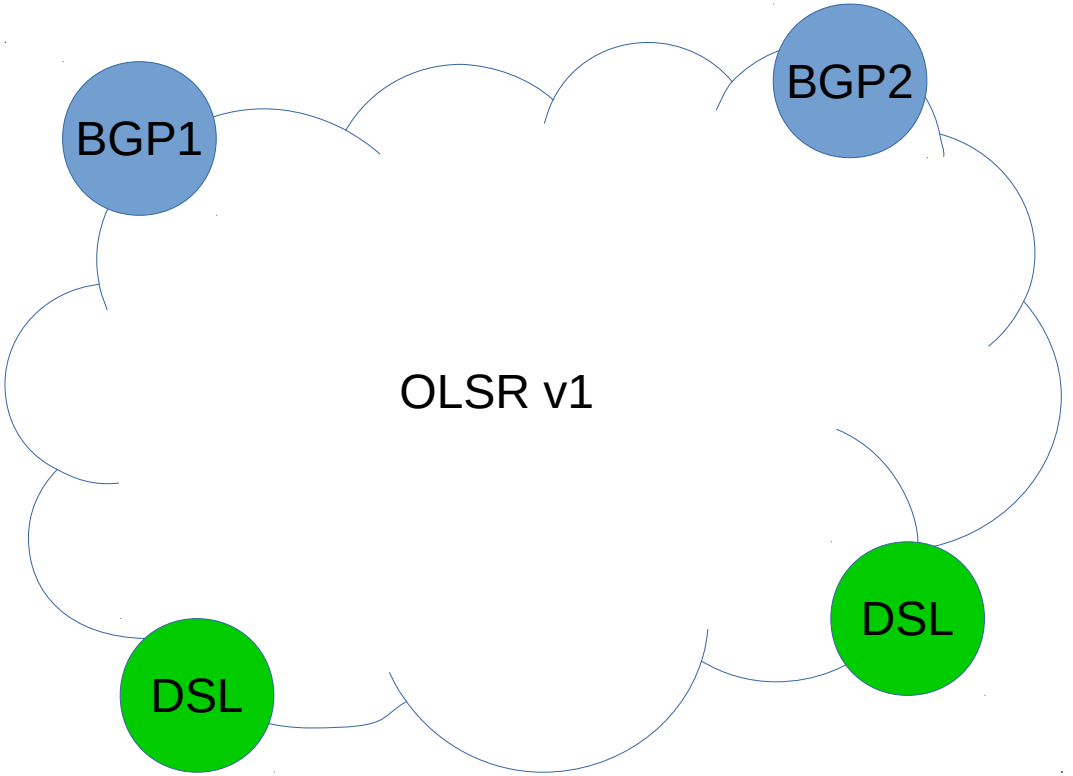
- Group of community networks in Italy
- Several “islands”
  - Calabria
  - Firenze
  - Pisa
  - Friuli
  - Basilicata
  - Campania
  - **Roma**

ninux Rome network



- OLSR v1 based routing
- BGP peerings
  - IPv4 and IPv6 public addresses
- BGP routers are also OLSR routers

“Internal” vs. “External” services

- Internal, e.g.
  - file sharing
  - gaming
  - VoIP
- Externally reachable, e.g.
  - wiki
  - mapserver
  - mailserver

Externally reachable services

- Some externally reachable services are currently hosted at external providers
- But: we have our own public IP addresses and our own infrastructure
- It makes sense to host the externally reachable services inside the community network
  - the **ninux cloud infrastructure**!

Requirements

- We want:
  - the services to be available
  - the infrastructure to be distributed as much as possible
    - from the architectural and management points of view
  - the infrastructure to be lightweight
    - i.e. to run on low cost hardware
  - APIs

Community Cloud Infrastructure: experiments in progress

- CONFINE/Community-Lab boxes
  - instantiate LXC containers
    - meant to give access to researchers but can be used for community services as well
  - IPv4 support only
  - unmaintained
- Community-Lab + Proxmox
- Cloudy
- Virtual Machines (e.g. KVM) deployed by community members in the community network

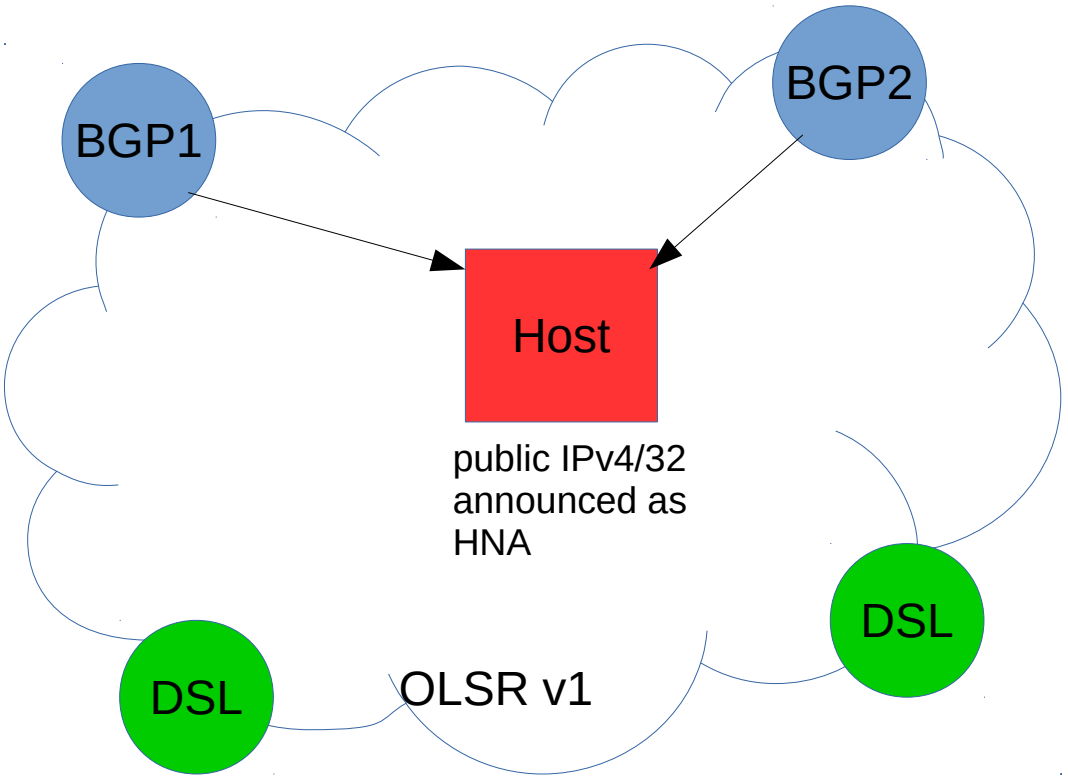
Challenges

- Availability
  - replication
  - migration
- How to transport IPv4 public addresses from BGP routers to containers/VMs in the community network
  - tinc & GRE tunnels
  - SNAT + DNAT
- We have a bunch of scripts to semi-automate some of these processes

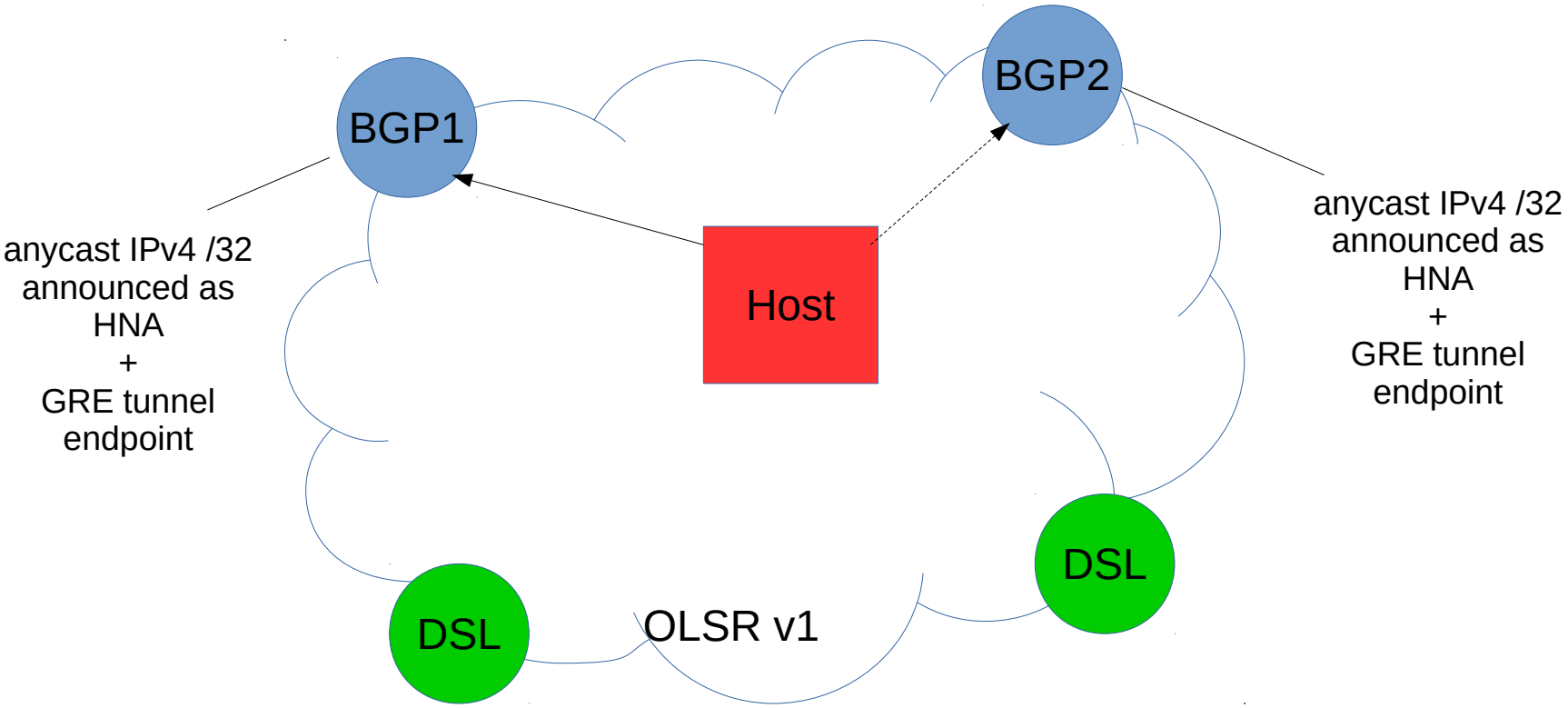
IP addressing

- 3 tiers of IP addresses
  - IPv4 public
    - tunnels
  - IPv4 community public
    - SNAT and DNAT
  - IPv4 community private
    - not routed

Incoming Traffic



Outgoing Traffic



Open issues

- Mutual trust between the host manager and the guest manager
  - “picopeering agreement” but for VMs?
- Distributed API
  - No central controller
  - VM instantiation and management authorization based on PGP keys?

Thank you