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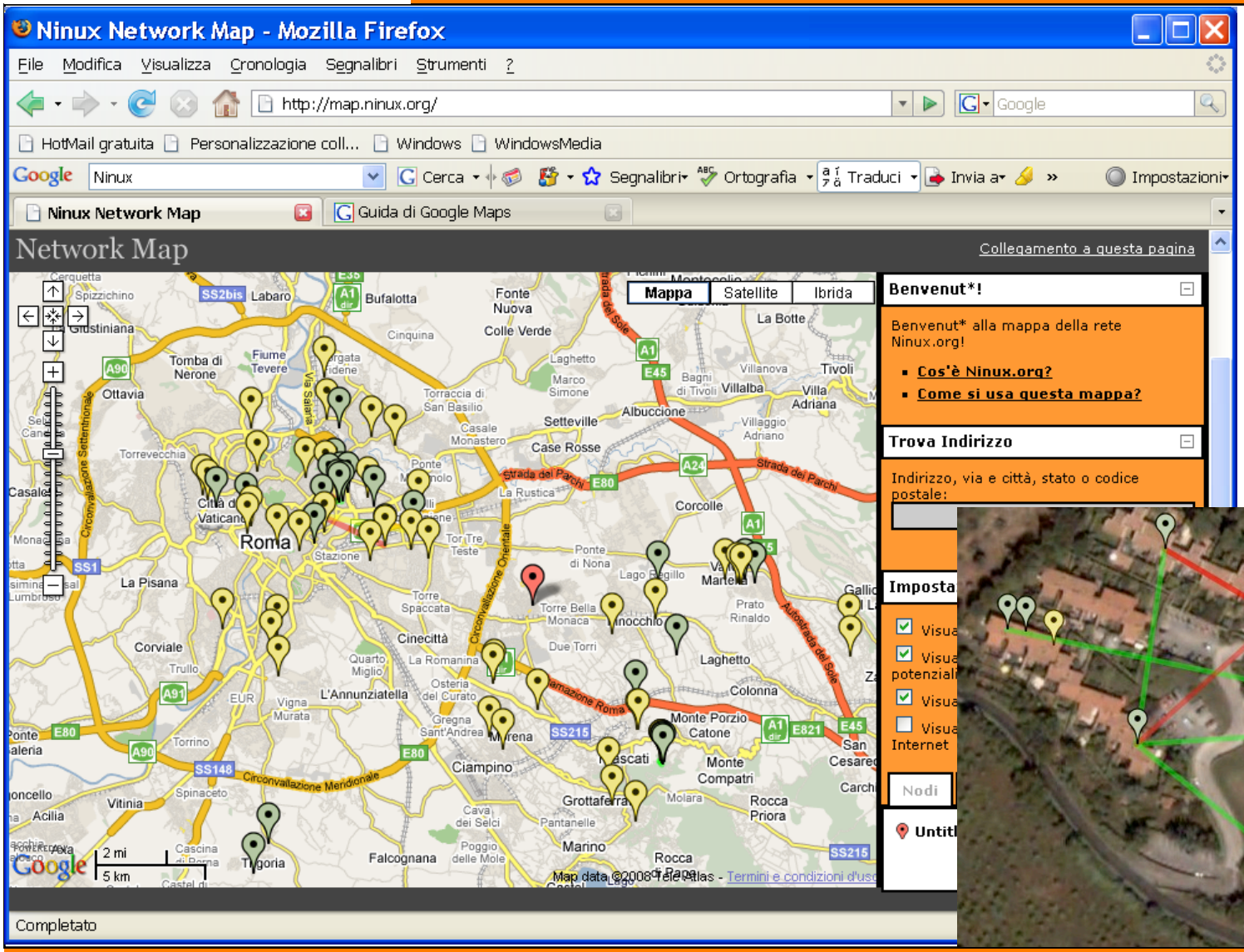
OLSR mDNS Plugin

Roma: Ninux; TuscoloMesh



~30 nodes urban +
~10 nodes rural

Wireless enthusiasts, students, strong connection with the University

Scientific experimentations

Ninux: snapshot

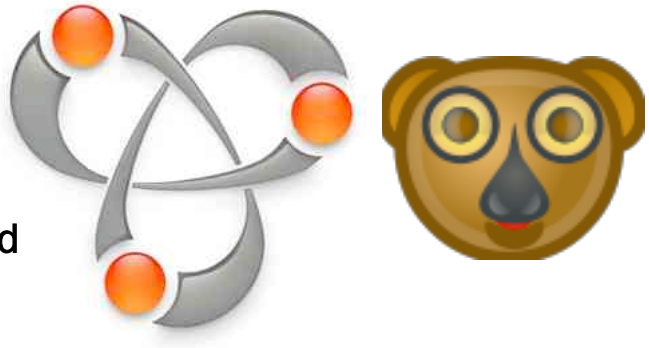
Lots of different Hardware
Strong “do it yourself” approach

The goal of this work

- Pratical goal: foster the use of internal services of the community network
  - Mesh is now mainly used to access the Internet
  - Internal services are difficult to maintain if they are centralized
    - DNS may be not reachable
    - Web Servers may not have a DNS name ...

Service discovery protocols

- Pratical GOAL: use existing working stuff
  - ZeroConf RFC
    - IETF draft
    - Address Selection
    - Name Resolution
    - Service Discovery
  - Implementations: bonjour, avahi
    - Most GNU/Linux hosts have avahi preinstalled
    - Most Mac OS X hosts have Bonjour preinstalled



- mDNS requires hosts on the same multicast domain
  - Our community uses OLSR: limited broadcast domain
  - No multicast routing support

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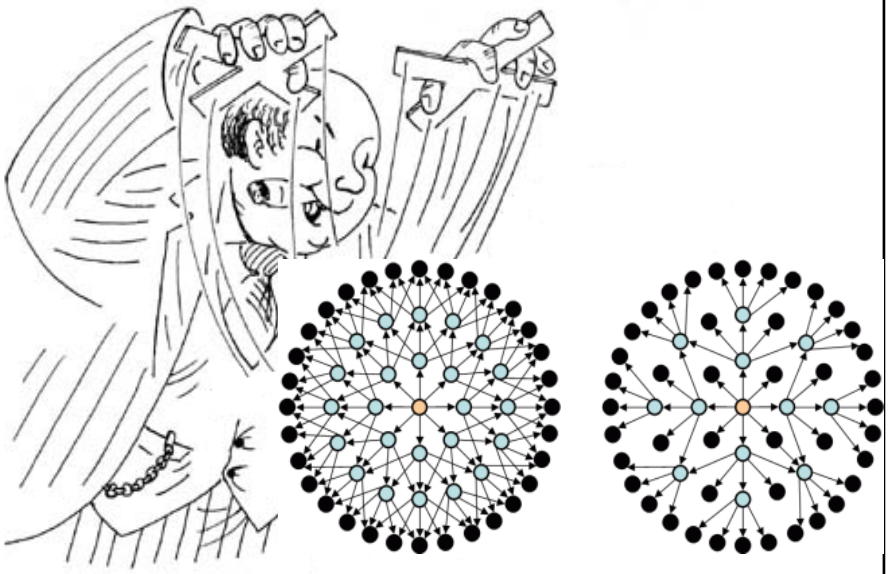
User Applications

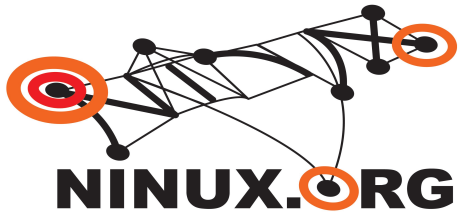
pidgin

Flooding information in OLSR

- OLSR
  - Optimized flooding mechanism using MPR
    - Core functionalities
    - Additional applications
  - Rembember that control traffic is broadcast
    - Sent at basic rate
    - No ACKs for frames



- Pros
  - NOT all nodes must implement the new application
- Cons
  - Application confined in the OLSR domain



Key idea

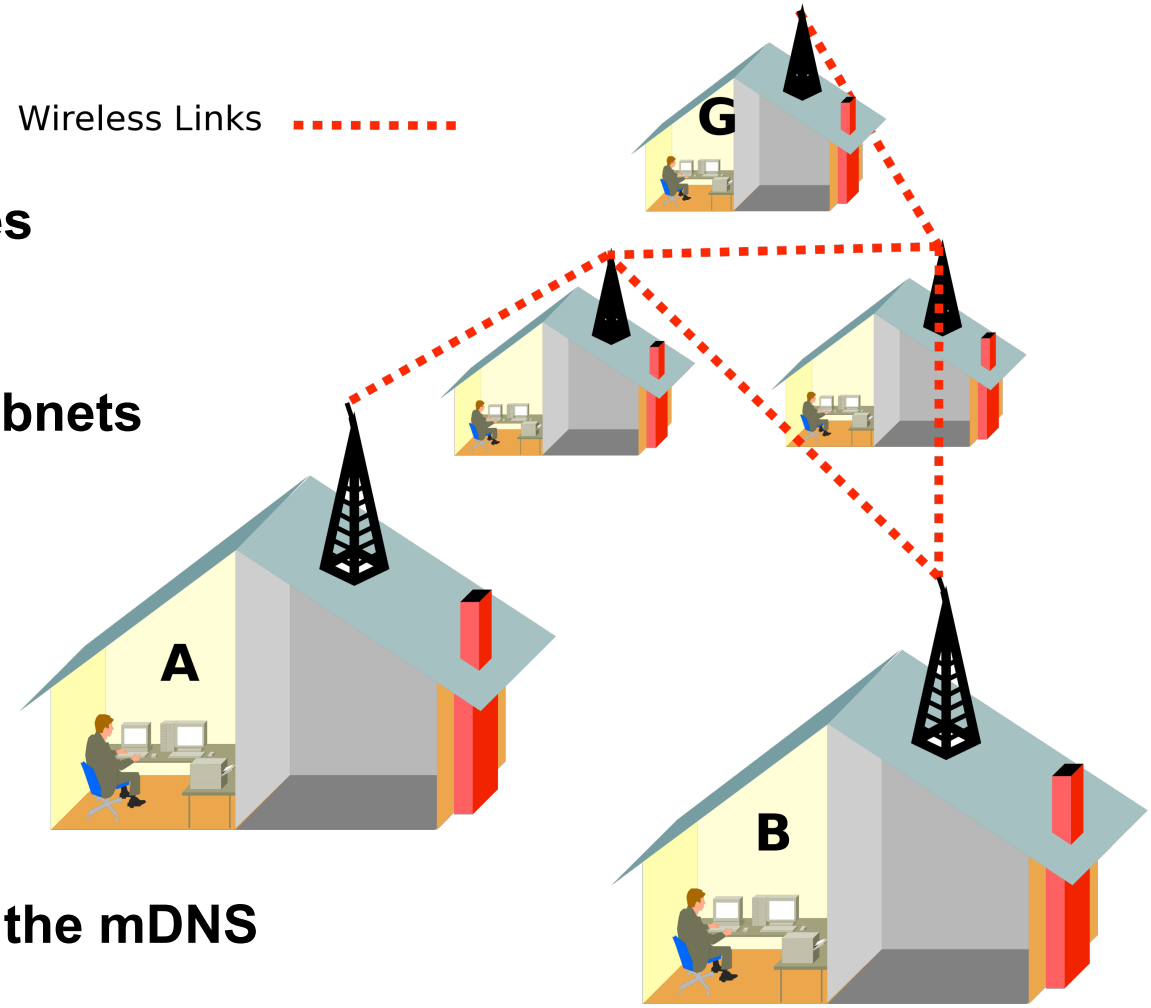
- Define an OLSR application to transport mDNS traffic in the Mesh Network
  - Existing applications (Amarock, Pidgin, iTunes, iChat) will start to work automagically
  - The solution is fully distributed

Reference Scenario

Wireless Links OLSR

Subnets inside the houses announced as HNA

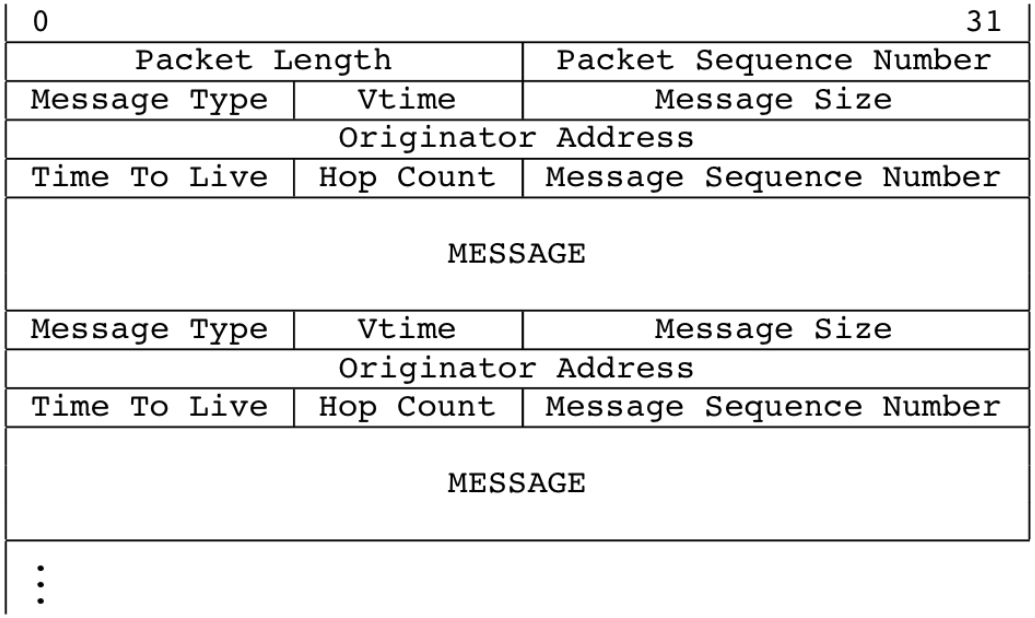
IP addresses and HNA subnets Manually configured and fully routable network (No NAT !!)



Some (or all) nodes have the mDNS Plugin enabled

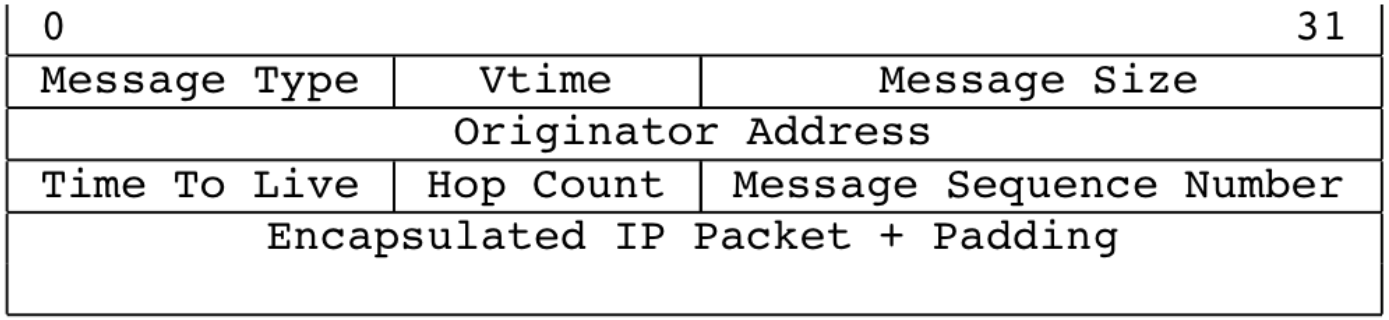
OLSR packets

- OLSR packet is defined as a transport container
  - Transport OLSR messages
    - TC
    - HELLO
    - HNA
    - *mDNS*

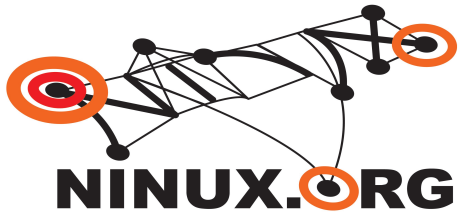


mDNS OLSR message

- Transport OLSR messages
  - TC
  - HELLO
  - HNA
  - ....
  - *mDNS*



- mDNS message contains a captured IP packet
  - our protocol can deliver IPv4 packets up to **1456** bytes and IPv6 packets up to **1424** bytes

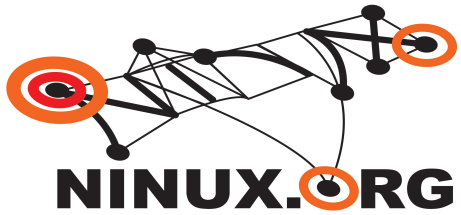


Using the plugin

- mDNS plugin release is out !
  - Available on olsrd.org trunk
  - Available on olsrd-luci
  - Available on Ninux.org repositories (http://hg.ninux.org)
- Enable the plugin is as easy as:

```
LoadPlugin “olsrd_mdns.so.1.0.0”
{
PlParam          “NonOlsrdIf” “eth0”
}
```

- Remember to configure your HNA subnets accordingly



Common problems

- To debug
  - Remove any firewall entry
    - Can’t use NAT !
  - Check with PING the IP connectivity between hosts
    - Maybe you have a problem with HNA entries
  - Disable IPv6
    - Some applications (iChat) announce IPv6 addressed that are not routable
- Remember to configure your HNA subnets accordingly