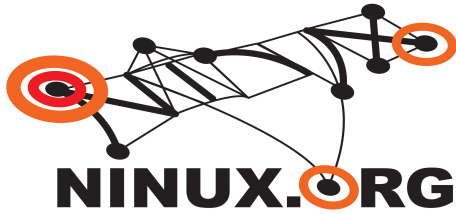


# Ninux.org



## OLSR mDNS Plugin



# Roma: Ninux; TuscoloMesh

~30 nodes urban +  
~10 nodes rural  
Wireless  
enthusiasts,  
students, strong  
connection with the  
University  
Scientific  
experimentations

**Ninux Network Map - Mozilla Firefox**

File Modifica Visualizza Cronologia Segnalibri Strumenti ?

http://map.ninux.org/

HotMail gratuita Personalizzazione coll... Windows WindowsMedia

Google Ninux Cerca Segnalibri Ortografia Traduci Invia a Impostazioni

Ninux Network Map Guida di Google Maps

Network Map

Collegamento a questa pagina

Benvenuto\*!  
Benvenuto\* alla mappa della rete Ninux.org!  
▪ [Cos'è Ninux.org?](#)  
▪ [Come si usa questa mappa?](#)

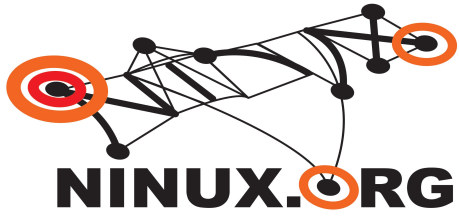
Trova Indirizzo  
Indirizzo, via e città, stato o codice postale:

Imposta  
 Visua  
 Visua  
 Visua  
 Visua Internet

Nodi  
Unitt

Completato



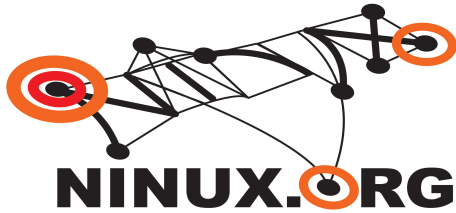


# Ninux: snapshot



**Lots of different  
Hardware  
Strong “do it yourself”  
approach**



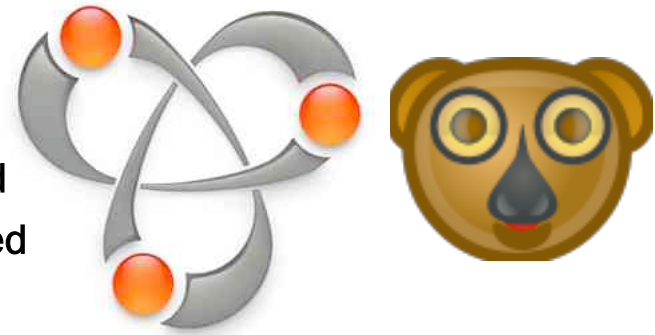


## The goal of this work

- **Practical 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 ...

## ■ Practical 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

# User Applications



pidgin

## ■ OLSR

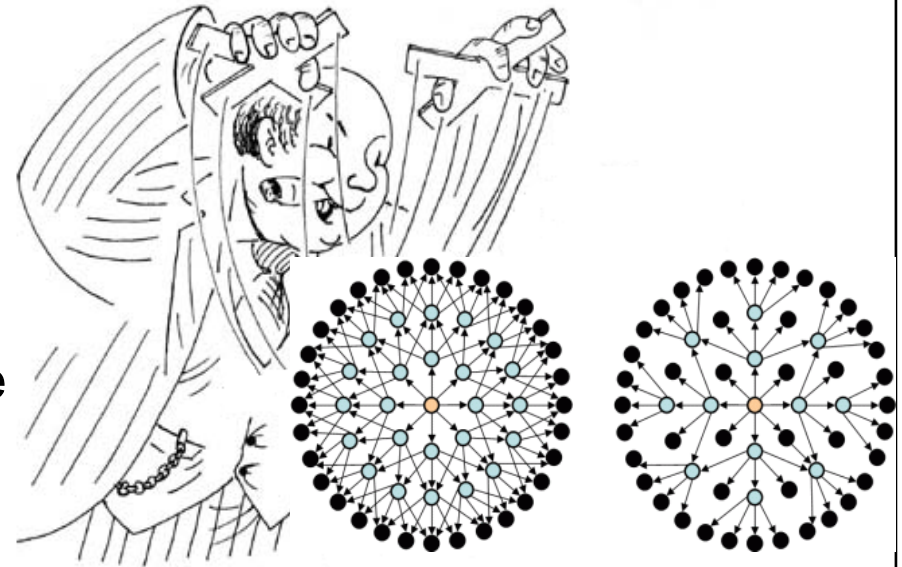
- Optimized flooding mechanism using MPR
  - Core functionalities
  - Additional applications
- Remember that control traffic is broadcast
  - Sent at basic rate
  - No ACKs for frames

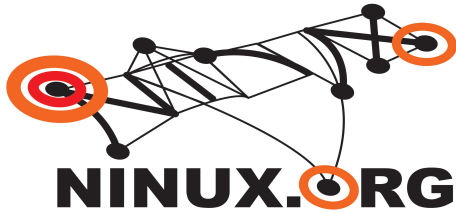
## ■ Pros

- 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



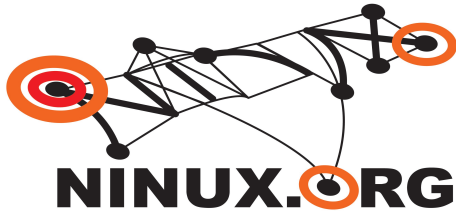
## Wireless Links OLSR

Wireless Links .....  


Subnets inside the houses  
announced as HNA

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

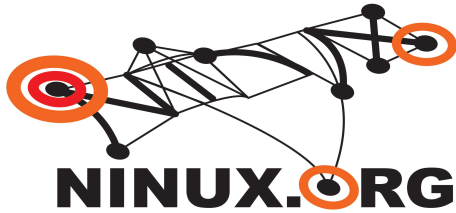
Some (or all) nodes have the mDNS  
Plugin enabled



# OLSR packets

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

0			31
Packet Length		Packet Sequence Number	
Message Type	Vtime	Message Size	
Originator Address			
Time To Live	Hop Count	Message Sequence Number	
MESSAGE			
Message Type	Vtime	Message Size	
Originator Address			
Time To Live	Hop Count	Message Sequence Number	
MESSAGE			
⋮			



## mDNS OLSR message

- Transport OLSR messages

- TC

- HELLO

- HNA

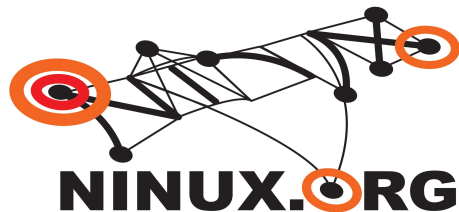
- ....

- *mDNS*

0			31
Message Type	Vtime	Message Size	
Originator Address			
Time To Live	Hop Count	Message Sequence Number	
Encapsulated IP Packet + Padding			

- 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"  
{  
  PIPParam      "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 addresses that are not routable
  
- Remember to configure your HNA subnets accordingly