



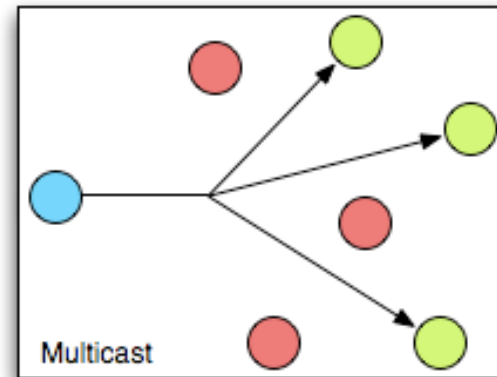
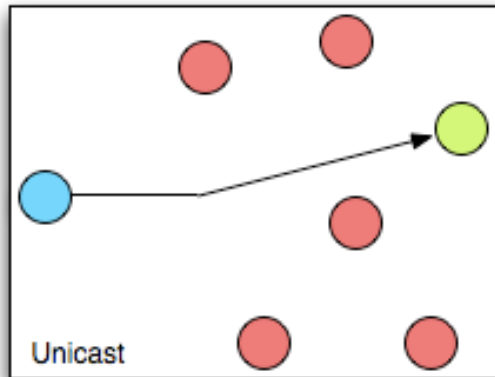
# Multicast Monitoring

## on RIPE NCC Test Traffic Boxes

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# IP Multicast

- Unicast
  - One to One (~97% of today's Internet)
- Multicast
  - One to Many (e.g. Media Distribution)
  - Many to Many (e.g. Group Messaging)

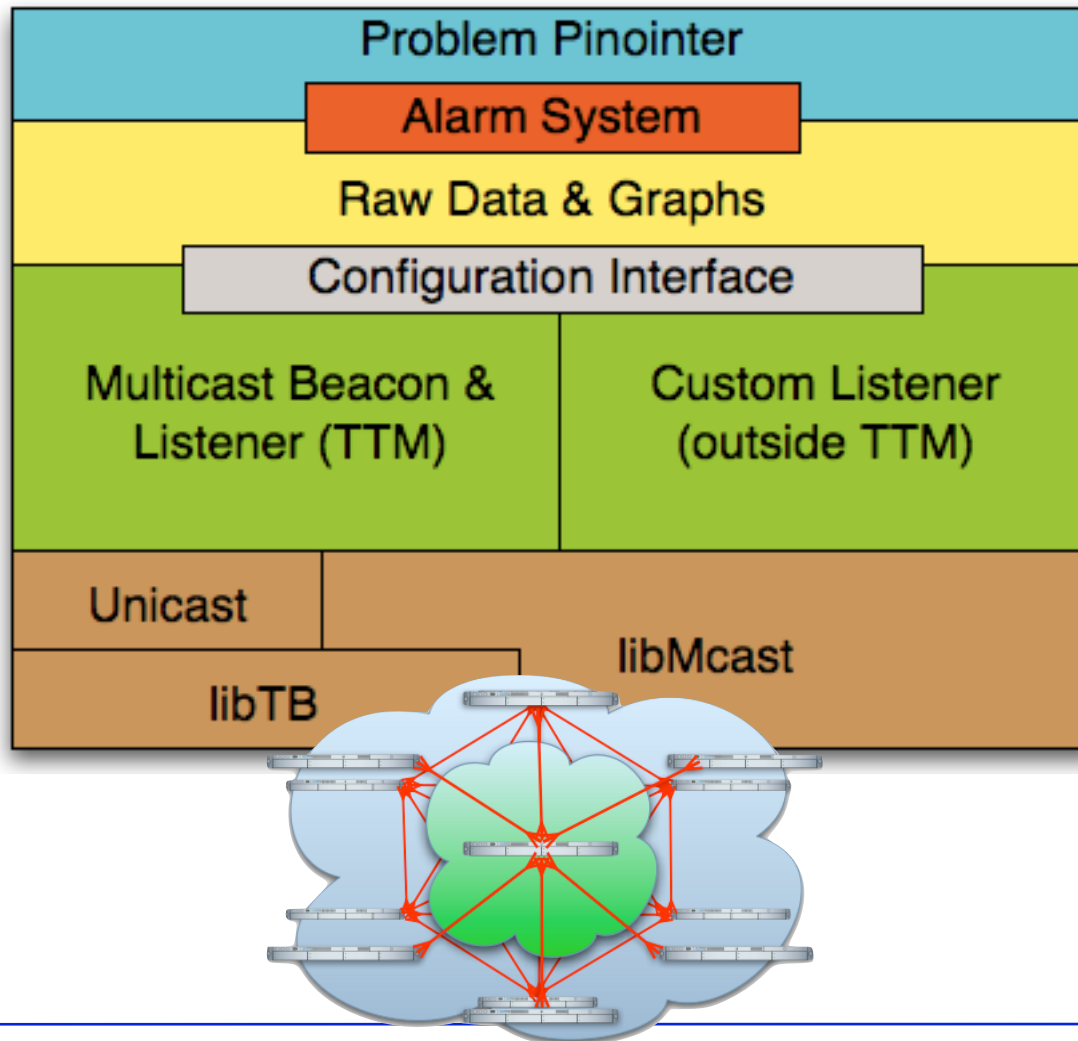




# Motivation

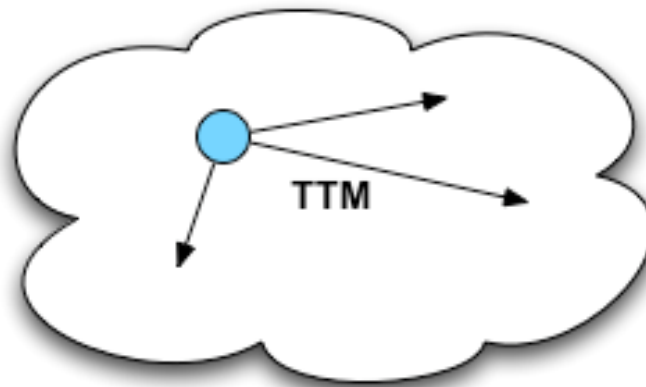
- Multicast Monitoring on RIPE NCC Test Traffic Boxes
  - RIPE Policy Proposal, April 2006
- Policy suggests
  - Multicast beacons
  - Multicast listeners
  - Raw data for interested parties
  - Pinpointing of problems

# Results

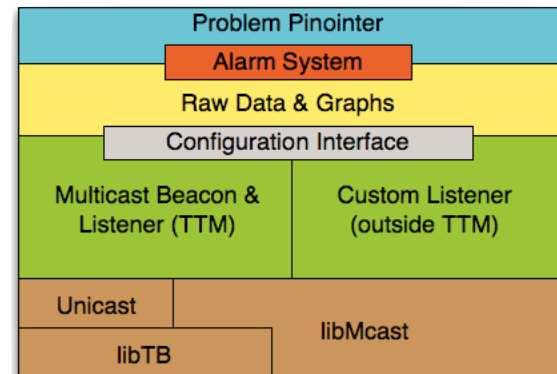


# Results

- Multicast Beacon
  - Open, well-known TTM packet format
  - Timestamps from GPS clocks
  - Standard configuration using NCC GLOP addresses



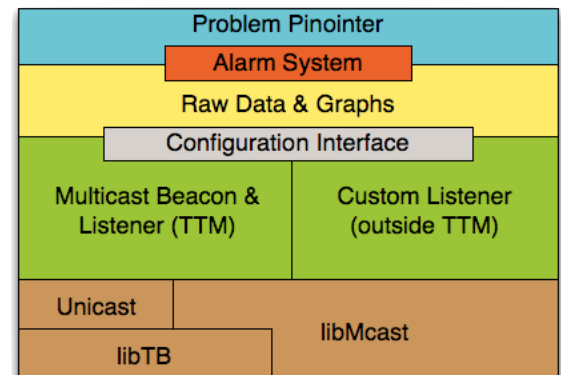
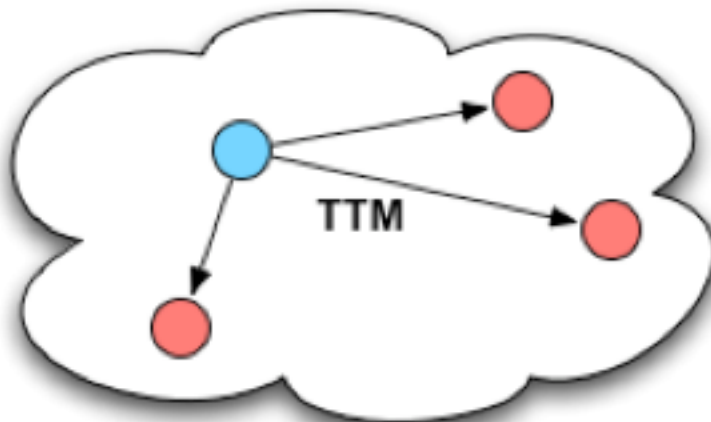
233.13.5.1



# Results

- Listeners

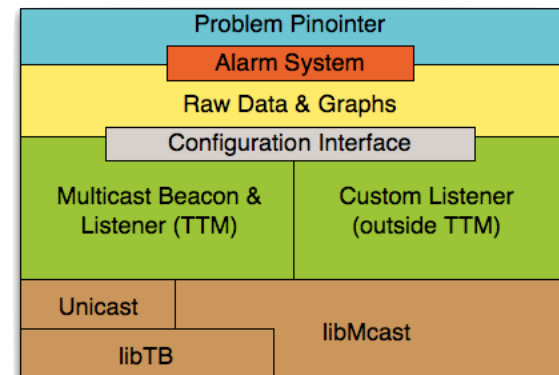
- Performing one-way delay measurements using GPS-Clocks
- Supporting measurements inside and outside the TTM network
- Highly configurable Custom Listener



# Results

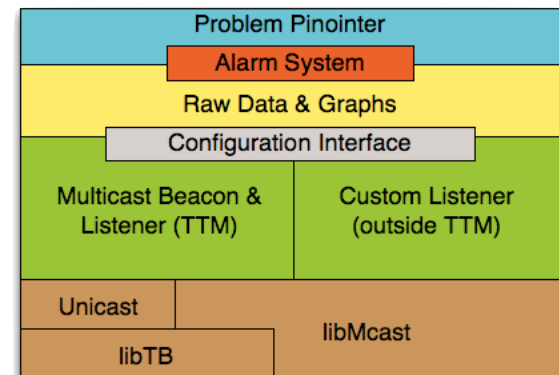
- Listeners

- Performing one-way delay measurements using GPS-Clocks
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# Results

- Alarms
  - Email notification with links to relevant data

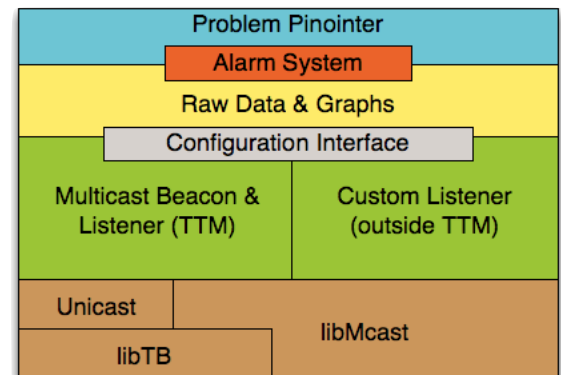




# Results

- Problem Pinpointer

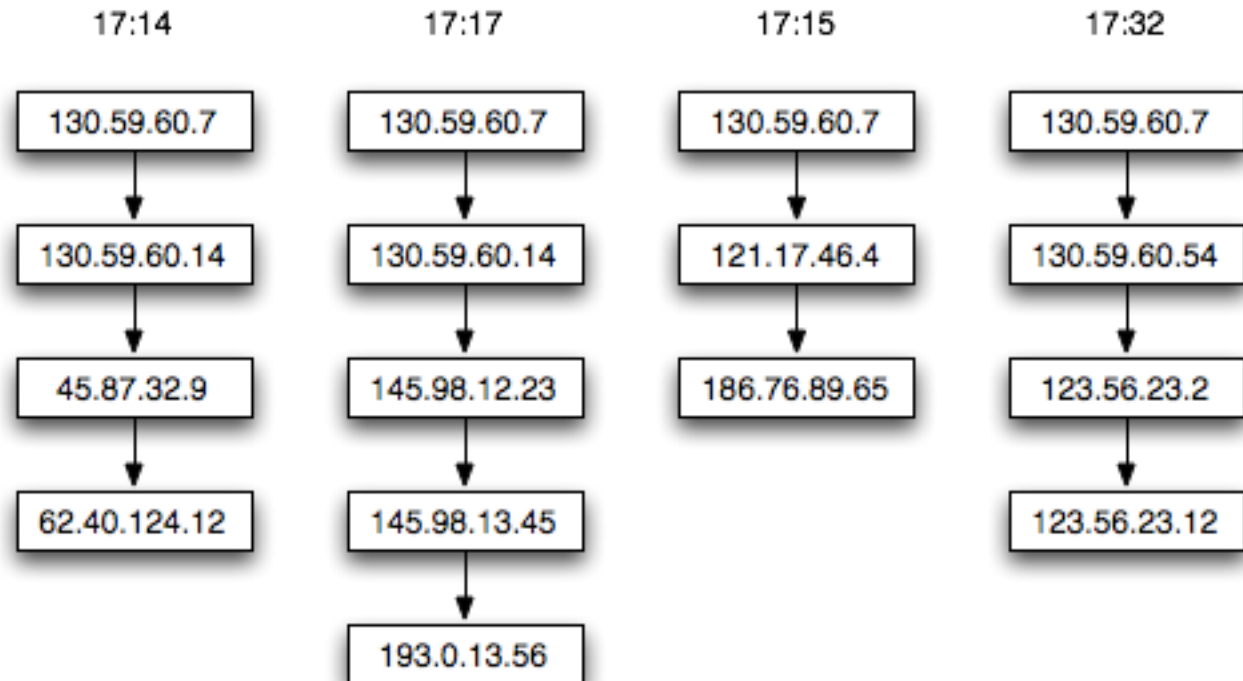
- Each textbox traces the path to all configured groups
- Data gathered is centrally and clustered by groups and timestamps



# Results

- Problem Pinpointer

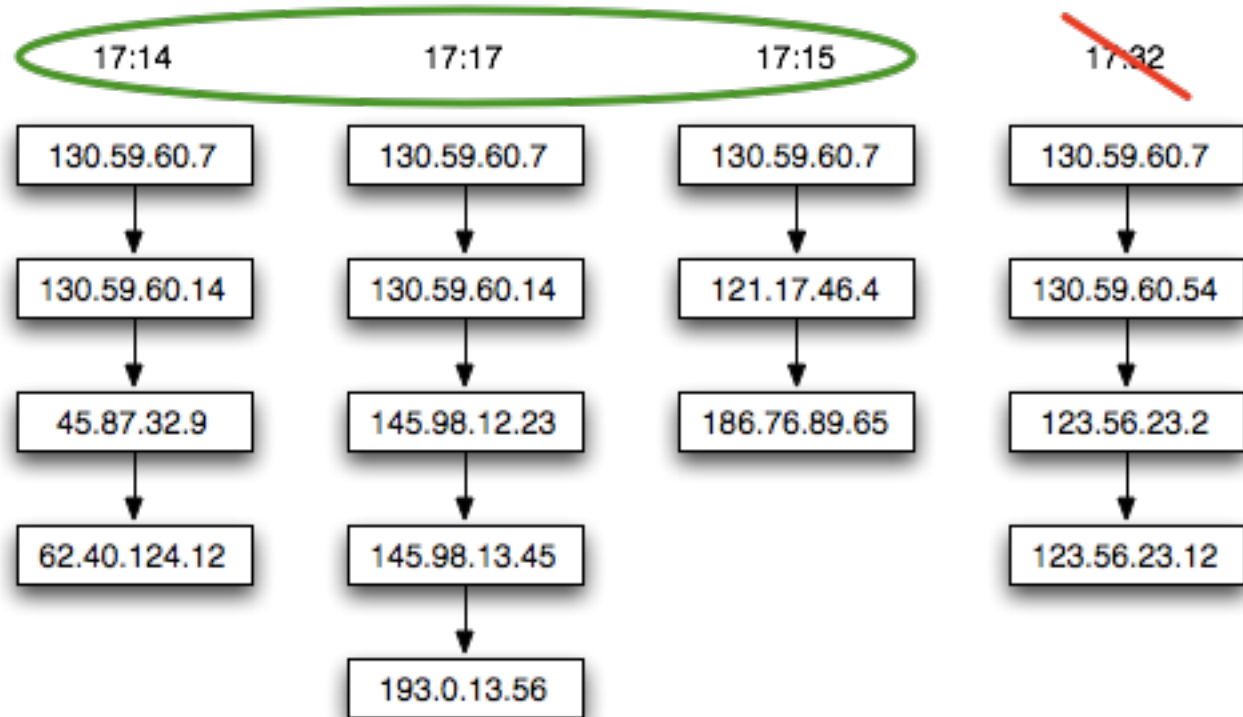
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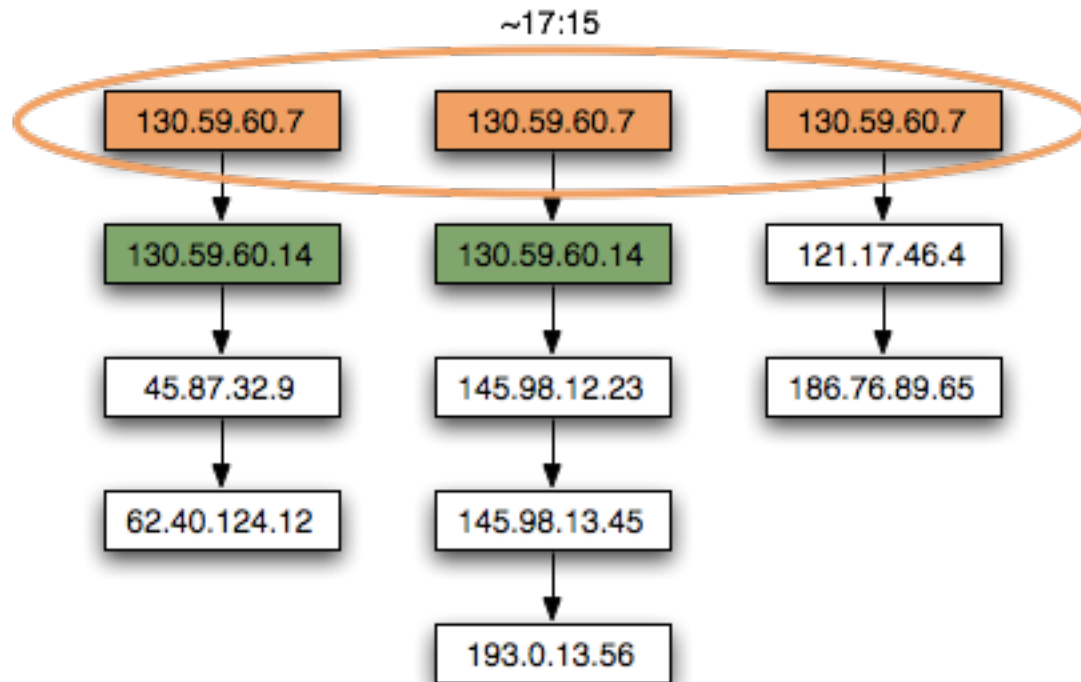
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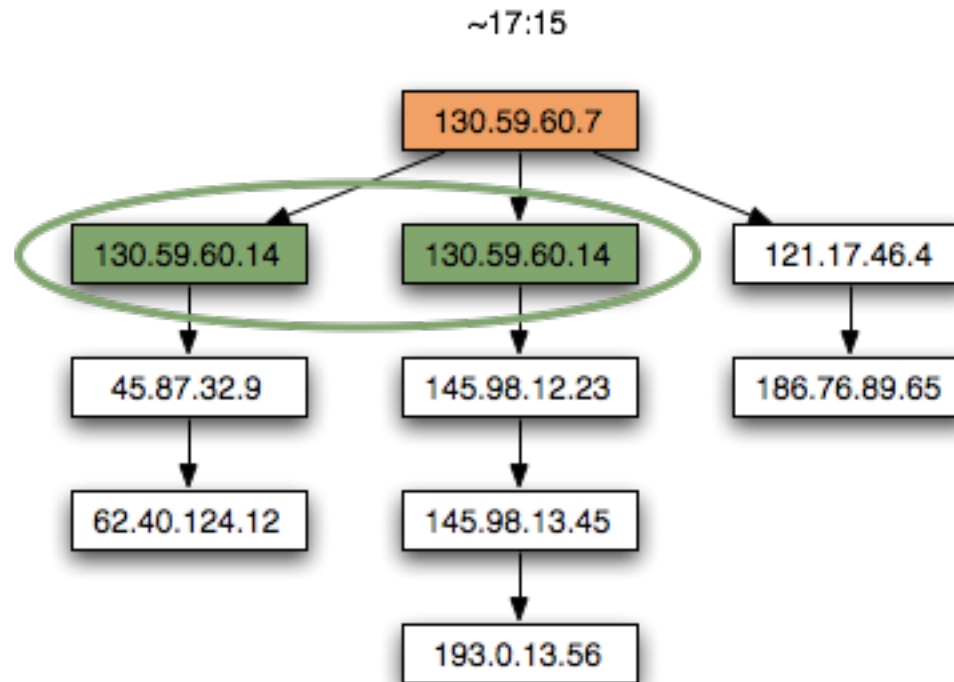
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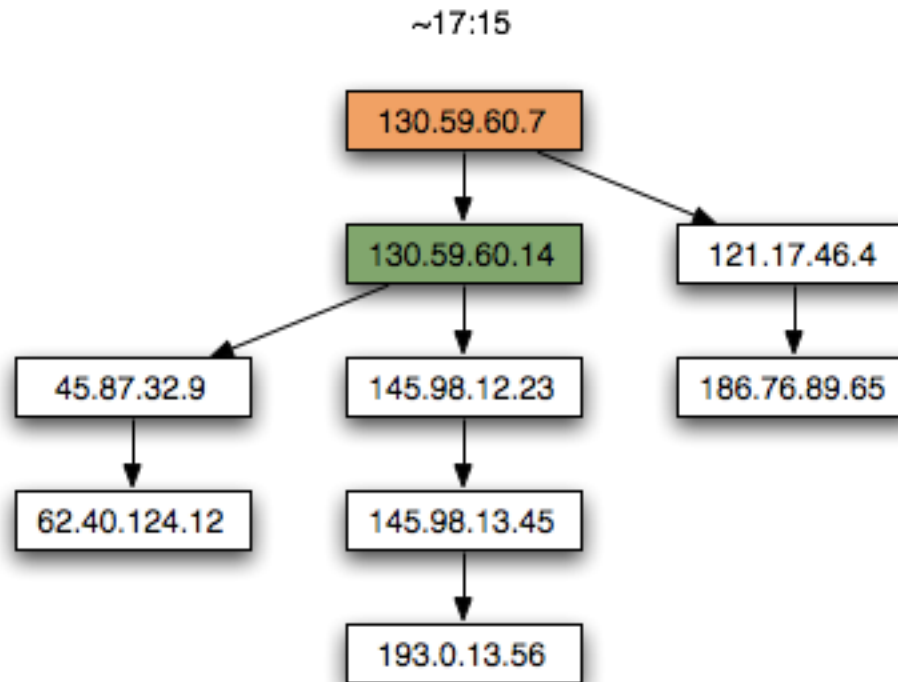
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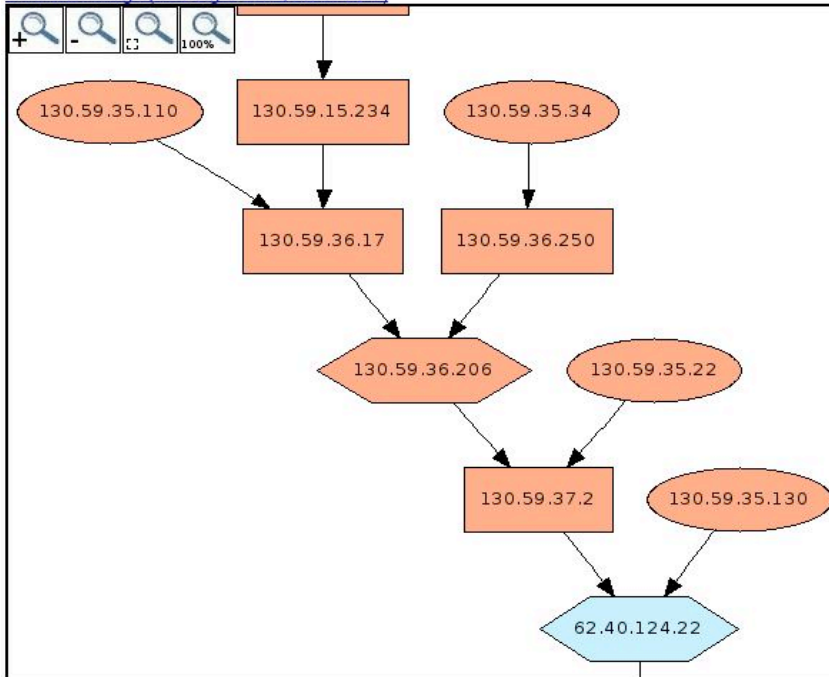


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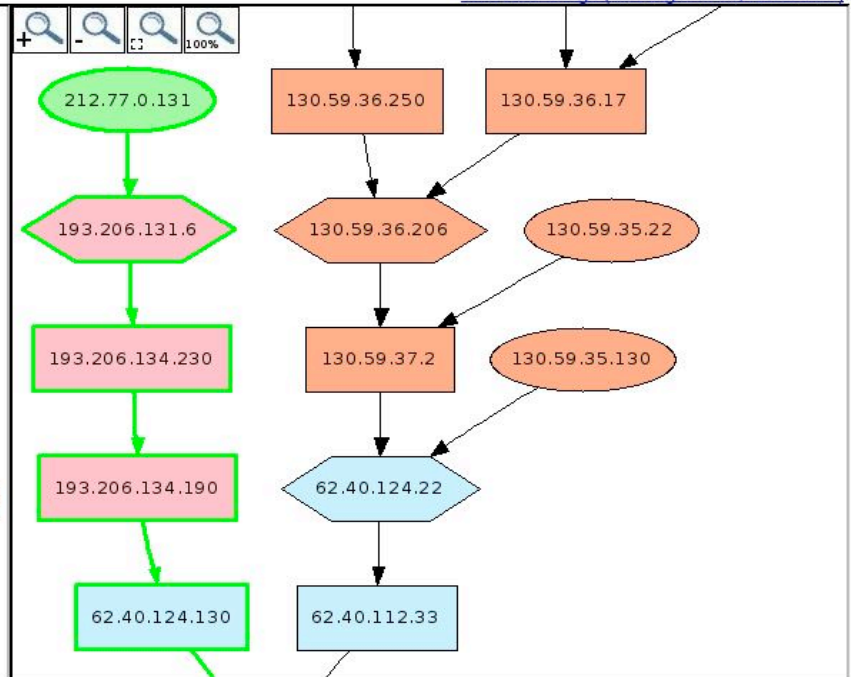
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Multicast Group: 233.2.47.1, Wed Mar 14 2007 07:15  
[Download Image \(Use Right Click, Save As...\)](#)



Multicast Group: 233.2.47.1, Wed Mar 14 2007 07:30  
[Download Image \(Use Right Click, Save As...\)](#)





# Future Plans

- A global view on Multicasting
  - Visualise global interconnection of multicast networks
  - “A High-Level Problem Pinpointer”
- Integration with Future Frameworks and Services
  - Ad-Hoc Testing
  - Centralised Alarm System
- IPv6 support
- IGMP v3 + SSM





# Future Plans

- More probes with Multicasting enabled
  - So, do you have a testbox?
  - Do you have multicast routing on your network?

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# Thank you for your attention!



## Questions?