Deep Routing Simulation

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Recap

- *What is Deep Routing Simulation?*
  - *It is a simulation of routing data on a large scale network.*
- *What can it be used for?*
  - *Traffic Monitoring*
  - *DoS Simulation*
  - *Disaster Simulation*

What I Discovered!

- *Memory is not expendable*
- *However dynamic methods leads to latency within the system as a whole even though they save on memory*
- *Commercial implementations are expensive …*
- *Many different approaches to network simulation*
  - *Software*
  - *Hardware*
  - *Hybrids*

So Where did my Project Go?

This could be awkward …

Long Planning Stage (Vacation)

Lots of Fiddling with C (Procrastination)

Modularization (Got Lost)

Fixing Memory Leaks (Rescue Operation)

Combing Modules (I'm currently here and on track)

Some Design Goals

- *Implement Delay*
- *Packet Loss*
- *Network Congestion*
- *ICMP Messaging (TTL Expired, Port Closed)*
- *Stateless Nodes*
- *Core Routing (From the top outward)*
- *Routing at a IP Datagram Level*

So I Actually Made Progress

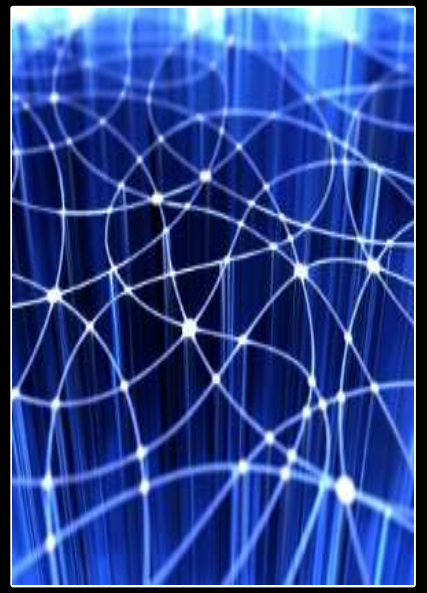
- Integrated libpcap and have pieces of libnet I still need to fit in
- Created Nodes that can communicate with each other
- Built a console and migrated all heavy work loads to run in separate threads
- Added dynamic functionality into the simulation

How it Works

- *Network is created by manually adding nodes and routes or by parsing a configuration file.*
- *Set into “Run” mode where libpcap is activated.*
- *Packet sniffed off network from a connected host.*
- *Packets Destination IP is used to route IP Datagram from node to node.*
- *When destination node is reached the packet is then outputted onto the relevant interface.*
- *Note: Nodes can be added and removed during runtime without any effect on the simulated network.*

Network Simulator

PCAP



LIBNET

The Future …

Write a short thesis essentially

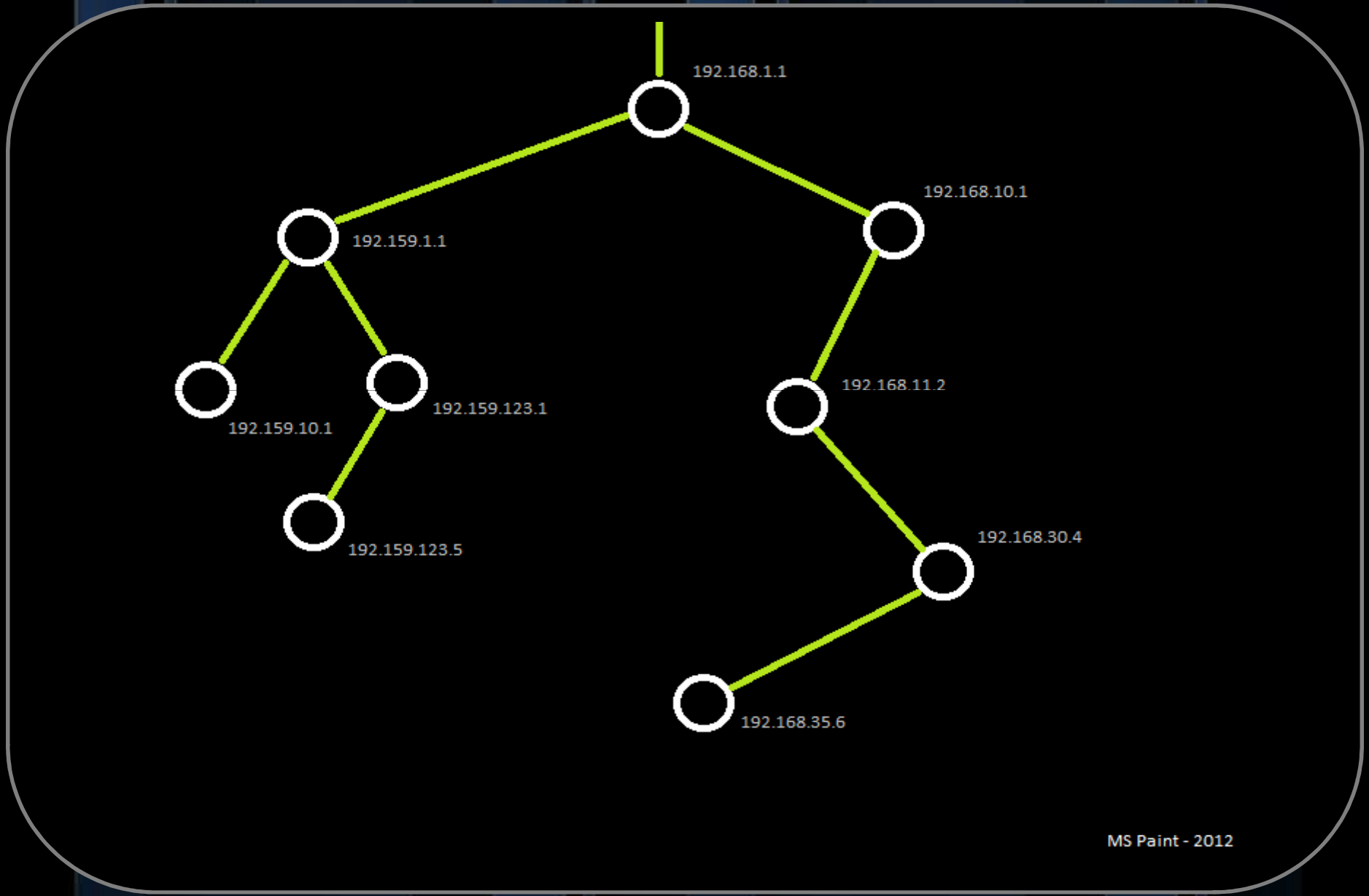
- Removal of nodes
- Configuration file parsing
- Fully integrate libpcap
  - This includes ICMP messaging and sending received packets out the correct end points

What I'm Aiming for

BOOM! Headshot

- >= 10Mbps throughput
- Multi-core functionality
- Lightweight (in terms of memory use)
- Easily scalable

Demo Time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