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CS4513 Project 3 Experimentation

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## Design

### System Conditions:

OS: Linux Mint 17 Qiana with kernel: 3.13.0-24-generic x86_64
CPU: Pentium G328 @ 4.4 Ghz
RAM : 8GB
SSD
1Gbit Network card
device:



Wireshark 1.10.6

### Testing apparatus:

All tests were run on the pc listed above. Multicast network connections could not be measured so they are approximated.

Using the local loopback device lo, it is easy for Wireshark to only capture output from my programs instead of being filled with all the daemons on my computer.

All tests logged in `clienttest.log` and `servertest.log`

**Test 1** – `walk.txt walk.pcap`

`./nutellaClient`

`./nutellaServ -d /home/g4vi/Code/CS4513/proj3-hayes/nutellaServ/movies`

**Test 2** – `starwars.txt starwars.pcap`

`./nutellaClient`

`./nutellaServ -d /home/g4vi/Code/CS4513/proj3-hayes/nutellaServ/movies`

**Test 3** – `matrix.txt  matrix.pcap`

`./nutellaClient -r 13`

`./nutellaServ -d /home/g4vi/Code/CS4513/proj3-hayes/nutellaServ/movies -r 13`

## Results

### Test 1:

| Traffic | Captured | Displayed | Displayed % | Marked | Marked % |
|---|---|---|---|---|---|
| Packets | 28 | 28 | 100.000% | 0 | 0.000% |
| Between first and last packet | 3.334 sec | | | | |
| Avg. packets/sec | 8.398 | | | | |
| Avg. packet size | 79.250 bytes | | | | |
| Bytes | 2219 | 2219 | 100.000% | 0 | 0.000% |
| Avg. bytes/sec | 665.511 | | | | |
| Avg. MBit/sec | 0.005 | | | | |

### Test 2:

| Traffic | Captured | Displayed | Displayed % | Marked | Marked % |
|---|---|---|---|---|---|
| Packets | 172 | 172 | 100.000% | 0 | 0.000% |
| Between first and last packet | 27.341 sec | | | | |
| Avg. packets/sec | 6.291 | | | | |
| Avg. packet size | 115.669 bytes | | | | |
| Bytes | 19895 | 19895 | 100.000% | 0 | 0.000% |
| Avg. bytes/sec | 727.667 | | | | |
| Avg. MBit/sec | 0.006 | | | | |

### Test 3:

| Traffic | Captured | Displayed | Displayed % | Marked | Marked % |
|---|---|---|---|---|---|
| Packets | 598 | 598 | 100.000% | 0 | 0.000% |
| Between first and last packet | 22.723 sec | | | | |
| Avg. packets/sec | 26.317 | | | | |
| Avg. packet size | 5463.055 bytes | | | | |
| Bytes | 3266907 | 3266907 | 100.000% | 0 | 0.000% |
| Avg. bytes/sec | 143769.754 | | | | |
| Avg. MBit/sec | 1.150 | | | | |

## Analysis

The multicast package size for each of the three tests should be the same as it is only used for setting up the data.

Two multicast packets were sent for each test. Not including header data, this is equal to length of `"walk\0"` + `length of "127.0.0.1:6666\0" = 20 bytes.` A UDP header is 8 bytes plus the ipv4 header of 20 bytes per message. Thus 56 bytes in header. The total of the multicast then is 76 bytes.

76 bytes is a fraction of 2219 bytes, the smallest unicast section, so the effect of the multicast networking is negligible on the impact of the performance of text movie streaming on the network.

A Gigabit LAN can hold 1Gbit in traffic a second.

Matrix: 1000/1.150 = 869.565 – 869 users per second.

Starwars: 1000/ 0.006 =  166666...  users per second

Text based movie streaming is a lot more efficient if they are movies like starwars and walk, but matrix uses about what netflix does at standard resolution: 1 mbit a second.