Lab 5: NAT

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CS 144
Overview

- lab 5 builds on lab 3
- myths and internet are inside (eth0), app servers are outside (eth>0)
- NAT will rewrite source IPs of outbound packets
- ICMP echo and TCP
- clean up defunct mappings

1) keep all ICMP errors from lab 3, the non –n version should function the same
2/3) packets from myth to app server will be rewritten with NAT’s external IP. incoming packets will get back their original IP. The internal IPs are not private 10. IPs
4) You will be responsible for ping (ICMP echo) and downloading files over HTTP (TCP)
5) clean out mappings based on TCP state, etc.
Parts

- **ICMP:** translate IP addr and query identifier (a la port)

- **TCP:** endpoint-independent mapping and filtering, simultaneous-open for unsolicited SYNs

- **Mapping:** any non-common port ( > 1023)

- **Clean-up:** use the MAPPINGTYPE_TIMEOUT values, separate thread to go through and clean-up

- **Testing:** NAT topology, served page displays addr/port, filtering, reference binary

ICMP: the combination of query/sequence numbers should be unique. you can think of the query identifier as the port. you should have endpoint-independent-mapping

TCP: end-independent mapping and filtering. recalculate checksum (including pseudoheader). simul open → both sides first send SYNs

Clean-up: remember to lock table. go through and mark for deletion. look at how the ARP cache worked. do not return mappings that are marked-for-deletion. make sure you use the customizable values of ICMP, Established TCP and Transitory TCP timeouts

Testing: filtering makes sure you can put packets on the right side of the NAT
Lab 5
Due December 7
Last year’s Piazza
http://piazza.com/public/ge57akd2pfn#other/cs144fall2010
Start early