# CS558 Network Security

Lecture 8: DoS and DDoS





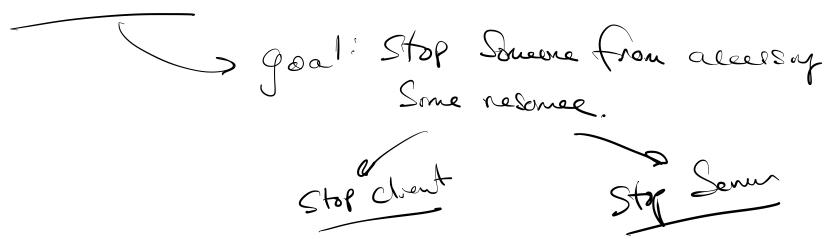
naliable Review BGPSec: Subpref x hijacks > annound was
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Validate amount orjan

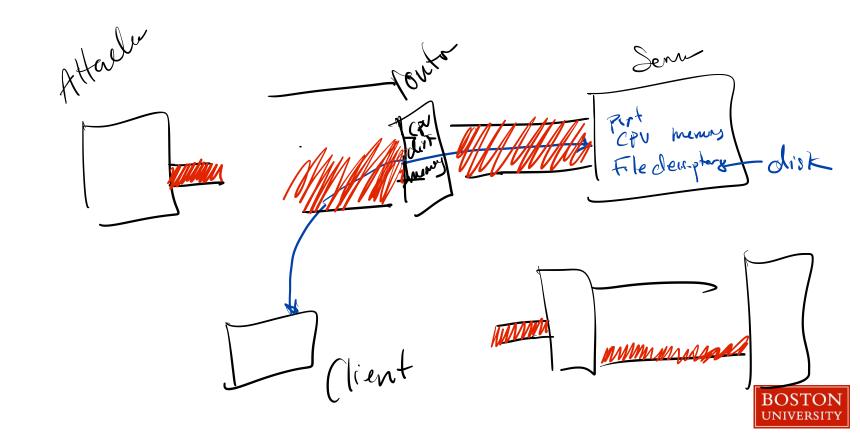
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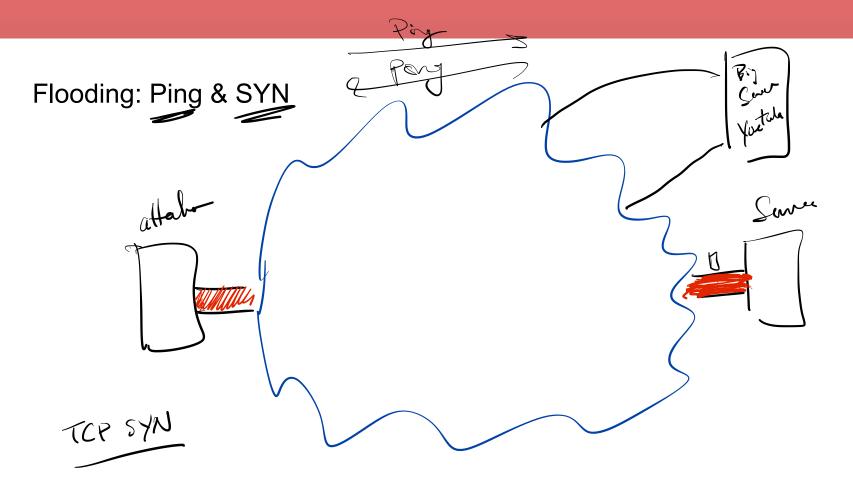


#### **Denial of Service**





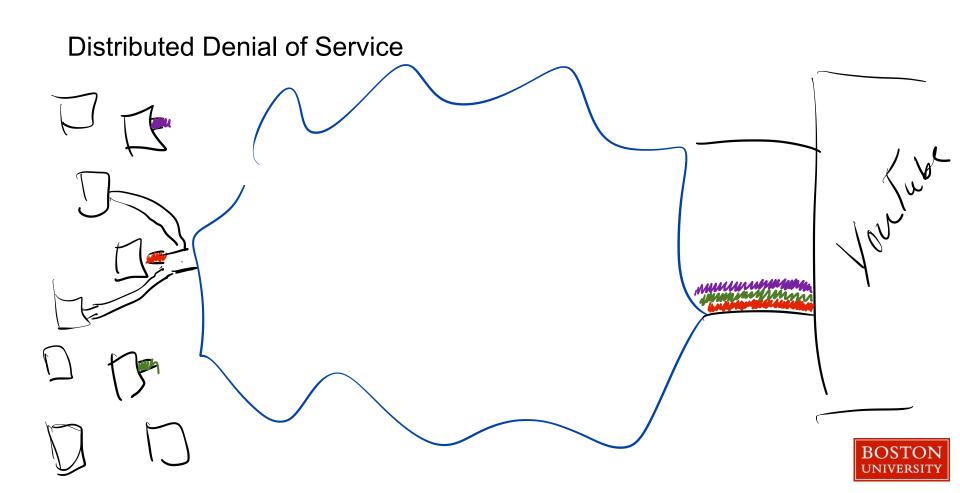


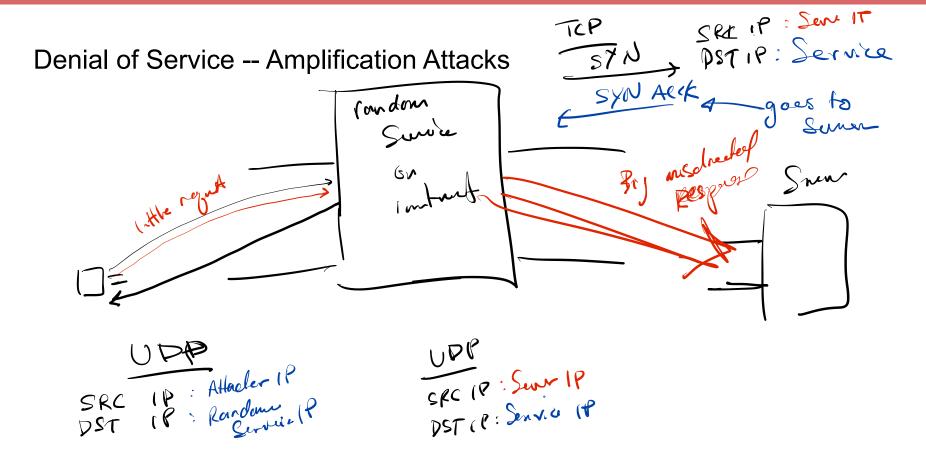




SYN TCP vs UDP MS9 Symaels Reliable ms9 50W Not relater SEC IP : Client IP DST IP : Sener IP SEC PORTE PORTH ON SOM Sac Port : Client Pert DSL BAY: Clark DST Port, Seve Ret

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#### The evolution of DDoS reflection amplification vectors: a chronology

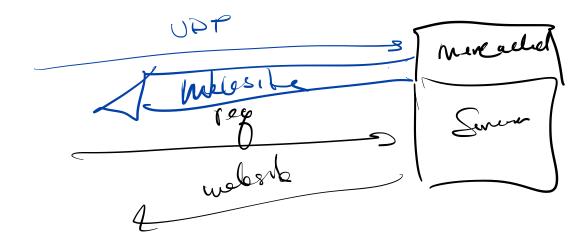


Amplification factor: Amplification factor: Amplification factor: Amplification factor: Amplification factor: Amplification factor: 10 Amplification factor: 5 556.9 6.3 358.8 60 10,000 - 51,0000 - 500 - 10 First ever DDoS Can speed up webattack is started -Synchronizes the Used to debug and sites and applications without any amplifitime between Is used to monitor measure networks Enables simple by caching content Localizes services Standard protocol cation method computer systems device status and applications file transfers and object data In LAN for data exchange NTP TCP SNMP CHARGEN TFTP Memcached **WS Discovery** 1999 2014 2014 2015 2016 2018 2019 2019 2014 2015 2015 2019 2013 2017 2018 DNS SSDP RIPv1 **NetBIOS** CLDAP COAP **Apple Remote** Translates Discovers Universal Used to exchange Programming Is used for queries Enables IoT Enables the website names Plug and Play routing information interface for and changes in or M2M administration into IP addresses devices (UPnP) communication in distributed directory communication of macOS devices in a network and vice versa Windows networks services Amplification factor: 28 Amplification factor: Amplification factor: Amplification factor: Amplification factor: 56 Amplification factor: Amplification factor: - 54 30.8 131.2 3.8 -70 34

## N(etwork) T(ime) P(rotocol)

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### Memcached (eg. Feb 2018 Against Github @1.3TBPS)





TCP (IP, IP, Pert, Port)

about SYN ACK DIOTM

