Problems with Address Sharing

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Network Address Translation for Dummies

IPv4

Jean

Hi my name is
Bob

IPv4

NAT

IPv4

Ingrid

Lassie

IPv4

?
SRC: 192.168.1.2:1024
DST: 192.0.2.123:80

SRC: 10.123.45.67:2222
DST: 192.0.2.123:80

SRC: 192.168.1.2:1024
DST: 192.0.2.123:80
Subpoena: Who has 192.0.2.117?

LEA/MPAA/RIAA: Your subpoena is overly broad

Victim of attack from my network: Your logs don’t tell me source port, and your timestamp isn’t reliable. And now you’ve black holed one address==many users.
Dear P2P Tracker or Game Console Server,

Please tell Subscriber B to connect to me.

Thanks,

Subscriber A

Connection from Subscriber B doesn’t match 5-tuple mapping on CGN. Connection fails.
Geolocation

192.0.2.117

NY
DC
AT
LA
SF
Port Spray

Common websites open 80+ TCP connections
Some common apps open hundreds of sessions
What happens if browser/app reloads?
Thanks

- Mat Ford, ISOC

  
  M. Ford, Ed.
  M. Boucadair, France Telecom
  A. Durand, Juniper Networks
  P. Levis, France Telecom
  P. Roberts, Internet Society
Conclusions

- Sharing addresses makes security hard
  - Subpoena response
  - Black holes affect many customers

- Sharing addresses breaks some applications
  - Develop workarounds or develop IPv6 stack?

- Sharing addresses makes operations/support hard
  - Where’s my OSS?
  - How many ports per user?