Going NUTSS
with NAT URI SIP ICE
and other TLAs

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NATs

NAT (‘nat) n.
A hardware device used to extend the Internet addresses already in use.

Everywhere — Home, Office, ISP, Wireless, …
Annoying — Breaks TCP, UDP, FTP, …
Persistent — Cannot be wished away, much to IETF’s dismay
Not standardized — Every NAT has its own nuance

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IP as identity

NAT problems
NAT problems

The evil Paul!

UPnP problems

• Dead on arrival
• Identity problem still exists
• Uses XML. Ewwww!
The good Paul!

- Fix the identity problem
- Integrate into existing architecture
- Fix the implicit trust issue

NAT problems

Port Prediction
Port Prediction

STUN

Port Prediction Problems

Cone NAT

SAIKAT
Port Prediction Problems

Symmetric NAT

STUNT

STUN Problems

No TCP!

STUNT
1. Tight synchronization needed.
2. Microsoft Windows doesn’t implement TCP spec correctly.

Port Prediction Problems

Symmetric NAT
STUNT

1. Spoofing requirement
2. ICMP packet
3. NAT ICMP/SEQ# behaviour

Tunnels

Solution to these problems

ICE

Solution to these problems

Future work

1. Manpreet: Manpreet's browser here. Need a file from Saikat's webserver. I can be reached at IP A, IP B.
2. Saikat: Sure. I can be reached at IP 1, IP 2, IP 3. Try IPv4 to IP 1.
3. Manpreet: Timeout. IPv4 to IP 1 didn't work.
ICE

1. Saikat: Try STUNT to IP2
2. Manpreet: Success

let's go NUTSS

- N – NAT
- U – URI
- T – Tunnels
- S – SIP
- S – STUNT

Network Address Translation for Universal Resource Identifier objects over Tunnels negotiated by the Session Initiation Protocol and Simple Traversal of User Datagram Protocol through Network Address Translation devices and Transmission Control Protocol too!