# Call Home and Existing NAT Traversal Work

Jonathan Rosenberg

Cisco Systems

Fundamental Protocol Operations

- Connection
  - Client reaches out to server – TCP or UDP
  - Dual connections if HA critical
  - TLS/SSH in client to server direction
- Registration
  - Binding of name to connection
  - IP address or host name poor choice for name
  - Authentication
- Keepalive
  - Outbound initiated traffic keeps bindings active, detects failures, NAT reboots
  - 15s for UDP, 10m for TCP
  - Low overhead
- Messaging
  - Server to Client Request/Response over connection

Server

Connect,
Register,
keepalive

Message
Request/
Resp

nat

Client
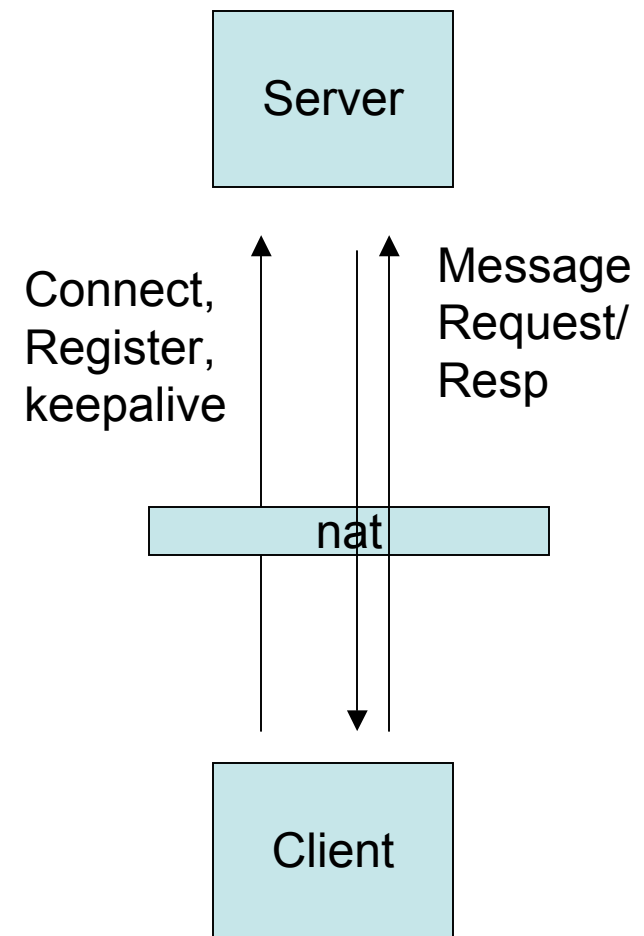
Architectural Question: Layering

- Exists as a shim layer above IP but below application protocol
  - Reuse
- Part of the application protocol itself
  - Independence from other network services
  - Leverage application naming and authentication
  - Common path for new net apps
- Hybrid
  - Borrow protocol middleware as part of application protocol

Existing NAT Toolkit Work

- STUN
  - Useful for binding keepalives
  - Low overhead, detects NAT failure, works even over TCP
- TURN
  - Useful for making this work for existing protocols
- ICE
  - Not applicable – covers session apps, not for client-server

Prototype Callhome case: SIP

- draft-ietf-sip-outbound
  - Allow incoming SIP calls from SIP server

- Mechanisms
  - Connection: TCP/TLS or UDP
  - Registration: SIP REGISTER
  - Keepalive: STUN
  - Messaging: SIP