

Thin(g) ICE

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NAT Traversal

- How to get connectivity through Network Address Translators (NATs) — and other middle boxes
- IETF protocol for NAT traversal: ICE (RFC 5245)
 - Using STUN & TURN protocols
 - ICE WG: updated version of ICE

ICE Background

- Originally for SIP/SDP and UDP
 - Later extended to TCP (RFC 6544), suggesting many relaying (TURN, SOCKS, SSH, etc.) and NAT assisted solutions
 - Used by XMPP, RTSP, HIP, RELOAD, OCF, etc.
 - Main use today: WebRTC
- Also multi home & dual stack address selection mechanism
- ICE-bis: split SIP/SDP away from base mechanism
 - And various fixes; keeping backwards compatibility

ICE Basics

- Gather candidates (IP address & port candidates where the agent/endpoint might be reachable)
 - Host, server reflexive, relayed, etc.
 - Using STUN & TURN servers in Internet
- Exchange candidates (out of band signalling)
- Connectivity checks of candidate pairs
 - Try everything (no assumptions). Prioritised pair order.

Thin ICE

- How can we do ICE on constrained (class 1) devices?
- Re-using CoAP, Resource Directory, pub/sub broker, CBOR, and other infra we have
 - RD instead of STUN server
 - pub/sub broker as rendezvous layer
 - CBOR for encoding candidate pairs