

# Peer-specific Redirection for TURN

`draft-williams-peer-redirect-04`

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# Problem Statement

- Bad relay selection can lead to performance problems (e.g. triangle routing), but the issue can't be detected until both peers are known.
- A TURN service with a large set of relay servers could easily work around the problem, but ...
- STUN provides the `ALTERNATE-SERVER` attribute, but TURN only uses it with allocate request error responses.

# Original Solution Summary

- Allow ALTERNATE-SERVER to be sent in responses to ChannelBind and CreatePermission requests.
- Define CHECK-ALTERNATE attribute for backward compatibility support and controlling usage semantics.
- Define XOR-OTHER-ADDRESS attribute to identify the peer's mapped address when permission is requested for its relay address.

# Comments on Versions 01-03

- Problem statement is too simplistic; may encourage bad use of the mechanism.  
*“You must be this high to ride this ride.”*
- ICE changes may be required to take advantage of this mechanism.
- ICE restart will typically be required anyway, so the method can be simplified.
- Conditions can change during the session, so “push” notification would be better.

# Updates From 01 to 03

- Adds an additional use case: load balancing.
- Adds a cautionary note about complexity.  
*“... selecting a relay server to achieve optimal end-to-end routing ... [requires] a detailed real-time view of network connectivity characteristics and the peering relationships between autonomous systems. A naive approach based solely on the physical location of the hosts involved is just as likely to produce negative results as positive ones.”*

# Update From 03 to 04

- Adds a section on ICE interactions.
  - “Vanilla” ICE requires ICE restart.
  - Trickle ICE might be able to avoid ICE restart, but only if gathering isn’t complete yet.
- Moves to “push” notification.
  - CHECK-ALTERNATE sent in Allocation.
  - ALTERNATE-SERVER sent in new Redirect indication message.
  - Redirect may be sent at any time.

# ICE Activity in mmusic

- Improvements to ICE Candidate Nomination  
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- Goals and Requirements
  - Allow Controlling Endpoint to Make Dynamic Decisions
  - Allow Selected Pair Change At Any Time Without Signaling
  - Allow Continuous Addition of Candidates

# Outstanding Issues

- Server may redirect multiple peers on the same session; desire to avoid multiple ICE restarts.
- Need to send multiple permission requests can slow session startup.
- Each could be resolved with either a new attribute or order dependent attribute parsing.

# Next Steps

- The authors see this capability as critical for 3rd party TURN service. Use can even make relay the best option.
- The WG has no milestone for this, but the charter seems to allow adoption.
- WG interested in adoption?