Problems to solve

- The core SIP RFCs are written for both IPv4 and IPv6

- Dual-stack deployments aren't cleanly handled

- RFC 6157 handles IPv6 transition, but doesn't solve Happy Eyeballs. In fact, it states it as a problem.

- As discussed extensively on the list, RFC 3263 is not clear on DNS procedures in dual-stack networks

- Happy Eyeballs-like problem in SIP due to long transaction timeouts when there is no response

draft-ietf-sipcore-dns-dual-stack

- Addresses the narrow problems of DNS SRV record look-ups of SIP servers in dual-stack environments
- Addresses two issues by:
  - Requires lookup of both A and AAAA records by dual-stack devices
  - Documents that as a consequence, DNS SRV records can indicate server preference of address family
- Now in WGLC

Remaining work

- Recommend SIP Outbound (RFC 5626) between UAs and edge proxies

- Allow devices to change the target order prescribed by RFC 3263/2782 (see later slide)

- Reduce client transaction timeouts

  - Timer B and Timer F are currently 64*T1, which defaults to 32 seconds

- Solution needed for simple UDP (see later slide)

Allow to change target order

- Prefer targets with existing flows

- Deprecate targets known to be non-responsive

- Prefer targets with different address family than a non-responsive address family

- May simultaneously initiate flows with multiple targets

Solution needed for simple UDP

- UDP is still very popular between UAs and proxies, particularly in large deployments

  - 14% of UAs in the latest SIPit were UDP-only

  - Majority did not support Outbound

- Need to allow racing of IPv4 and IPv6 with SIP over UDP

- Propose extension to allow UA to send duplicate requests without fear of merged requests

  - Use Proxy-Require for upward compatibility

  - Can also be used for multiple-path routing between proxies

- SIP/DTLS would be an alternative, because it provides a lightweight UDP flow

Example of simultaneous requests

- Example:

      INVITE sip:biloxi.example.com SIP/2.0
      Proxy-Require: group
      Route: <sip:[fd5a::0101]>;group=2
      Via: SIP/2.0/UDP [fd5a::1000];branch=z9hG4bKnashds8.2;group
      Via: SIP/2.0/UDP 10.0.1.123;branch=z9hG4bK77ef4c2312983
      Call-ID: a84b4c76e66710

- Proxy-Require provides upward-compatibility. (It is removed by the receiving proxy.)

- Route "group" parameter points to 1st and 2nd Vias *from the bottom*

- All requests with branch "z9hG4bK77ef4c2312983" are equivalent, and only one of its children is to be processed

- This request is the child "z9hG4bKnashds8.2"