IPv6 P-t-P addressing:
The case for /127's

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Infrastructure Architecture
What's wrong with using /64's?

• In theory, nothing! (*)

• In practice, well, that's a different story!
Problems with /64's

• Ping-pong problems on SONET/SDH links
  – Assume 2001:db8::0/64 and 2001:db8::1/64 are 2 sides of a PtP interface
  – Somebody pings 2001:db8::2
  – What happens now?

• Ping sweep of death
  – Assume same addressing as above
  – Link-type is ethernet
  – Somebody ping sweeps 2001:db8::0/64
  – How many outstanding NDP requests will you have?
  – What do you think will happen to your router when it's busy dealing with them, and doesn't get to refresh 2001:db8::1
Is that really a fault of /64's?

- But these are implementation problems!
- Can't we fix these with ACLs?
  - Good luck :)
- Can't we fix the SONET/SDH forwarding semantics?
  - How long do you think before a new spin of the ASICS gets in your routers?
- Can't we fix the NDP queue prioritization?
  - Yes, but, again, have you asked a vendor for a new feature lately?
  - How long before you got it?
- Summary:
  - We need something that works now, not 18 months from now
  - We need something relatively manageable
  - Meanwhile, we still should address the above issues
So, what can we do?

• Proposal:
  – Allocate a /64 for every P-t-P interface
  – Assign (and configure) only the first /127 of the /64 onto the router

• Benefits:
  – Configured /127's suffer from none of the drawbacks of the /64's
  – Easy to read for humans (::0 and ::1)
  – Same allocation plan for the whole network
  – Can deploy this today
Questions?