Do we need an ICMP for NDN

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The Value of Request-Response

NDN was designed from a strong security angle:
• Data transfer is always solicited
• No explicit addressing of nodes (except next hop)
→ Makes DDoS difficult

Interest flooding?
• Interests small (without data)
• Bursts can be mitigated by rate control and backpressure
• State management is problem of infrastructure, not end node

We don’t want sender-controlled data flows to a remote node
Need for Pushme?

• How to bootstrap a network?
• How to disseminate control state efficiently?
• How to initiate a flow to the remote?
• How to manage alerts?

... without addressing remote network nodes!
Considered Harmful

• Push packet
  • This just breaks the paradigm

• Persistent Interest/persistent subscription (COPSS)
  • Implements a persistent data path (for DDoS)
  • Can cause broadcast disasters (the pushme-pullyou case)

• Interest notification (data in Interest, Ack in ‘data’)
  • ‘Push light’ packet
  • Again breaks the paradigm
Semantic Overloading

Interest-follows-Interest
• Obfuscates communication logic
• Inflicts with message semantics
• Fools the forwarders
  • Initiates hop-wise unwanted transactions with stale states
  • ...?
Control Plane?

Wanted:

• A clean message design for
  • Control state transfer
  • Alerting of errors or informational

• Between neighboring hops
  • No new attack surface
  • No new routing or forwarding logic

• Dedicated (appropriate) processing in the stack
  • No unwanted transactional state
  • No intermingling with Interest-data communication logic