Publish–Subscribe Deployment Option for NDN in the Constrained IoT

draft-gundogan-icnrg-pub-iot

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Revisiting: Publish–Subscribe for the IoT

• First presented @IETF99 in Prague 2017
• Generated a lengthy debate about an ICN control plane: “Do we need an ICMP for ICN?”
  • Got stuck
• Since then:
  1. A name: “Hop and Pull – HoPP”
  2. Fairly advanced implementation augmenting CCN-Lite on RIOT
  3. Cool demos showcasing publisher mobility and network resilience
  4. Extensive evaluation with strong results
HoPP: Hop and Pull

Originally two control plane messages:
• PAM – Prefix advertisement to bootstrap routing
• NAM – Name advertisement to initiate publishing
Implementation
Demos

A series of exhibits demonstrated

• Seamless producer mobility

• Fast recovery from network partitioning

• Resilient M2M Communication
Evaluation Results

Multihop Network:
• 50 Nodes
• Publishing every 5 s
How to continue with that control plane?

• Bootstrapping: Route Establishment
  • Link-local broadcasts
  • Can be achieved on L2 – below ICN

• Publishing: Announcing Data Availability
  • Signaling between next-hop neighbors
  • Can be done on L2 (using MAC address mapping)
  • Can also be done on NDN: Interest – Interest – Data

• Conclusion: HoPP Likewise Works with Current NDN Primitives
Quo Vadis?

• Continue the Pub-Sub work towards an RG item?