ROLL

Routing over Low-Power And Lossy Networks

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ROLL WG intro

IPv6 routing for constrained devices and networks (IoT such as smart metering, smart cities, smart building, Industry 4.0)

Specifies/maintains/improves the RPL routing protocol

Interacts with 6lo, LWIG, 6TiSCH, RAW, ANIMA
Some RPL milestones/background

(2012) Distributed proactive DV routing
- DAG oriented (default up, SR or HbH down)
- Minimum control traffic

(2016) Multicast

(2013-) Point to point routing across DODAG

(2017) Compression of RPL routing header
Mode of Operation Extension

Projected routes (SDN)

Reactive point-to-point RPL

Current goals

Issue, way to achieve goal

draft-ietf-roll-mopex
MOP defines the minimal and mandatory set of primitives to be supported by all the nodes participating in the network. Currently: MOP 3 bits, 8 modes maximum, 5 are used Proposed: extend MOP field, by adding 1 byte to MOP 7

draft-ietf-roll-aodv-rpl (IESG)
AODV reactive route discovery for Point to Point flows, coping with symmetric and asymmetric links

draft-ietf-roll-dao-projection

RPL Control Messages [P-DAO Request, PDR-ACK]
Flags
RPL Option [VIO, SIO]

To build a Track
Select Siblings
Current goals (cont’d)

- Parent selection for good upward packet replication/elimination
- Advert./Discovery of capabilities of RPL Nodes
- Quick detection of crash of Border Router
- Fix RPL storing mode DAO ACK

Issue, way to achieve goal

- Metric that advertises the parent set and Objective Function to select parents based on their parent set (grand-parents).
- Control message/option for Discovery, Advertisement and Query of capabilities for RPL nodes
- Several sentinels track the status of the root, advertize opinion, distributed consensus algorithm (TBC)
- DAO ACK message from the Root (end ot end)
Thanks for your attention

Questions?