FLOOD REFLECTION
DRAFT-PRZYGIEANDA-LSR-FLOOD-REFLECTION

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AGENDA

• PROBLEM
• DESIRED PROPERTIES
• SOLUTION OUTLINE
WE ARE ENGINEERS: WE CREATED A NEW PROBLEM

- IGP BACKBONES OF "VERY BIG CUSTOMERS" ARE MAX'ING OUT #LINKS AND #NODES
- EVEN VERY, VERY GOOD IMPLEMENTATIONS ARE HITTING ARCHITECTURAL PROTOCOL LIMITATIONS
- IGPS ARE ARCHITECTURALLY BOUND BY ONE-SCALE-LIMITED-HUB, THE REST ARE ACCESS SPOKES
- CUSTOMERS LIKE MORE AND MORE VERY DENSE LOCAL "MESHES"
- IN ISIS HIDING TOPOLOGY IN AREAS IS NOT SATISFACTORY SINCE IT ALSO HIDES UNDERLYING PATH DIVERSITY IF L1 USED AS "L2 TRANSIT"
DESIRED PROPERTIES

• SCALE THE BACKBONE CAPACITY WITHOUT TRIGGERING THE CONTROL PLANE SCALE LIMITATIONS

• MORE SMALLER BOXES DESIRABLE FOR MORE FLEXIBLE CAPACITY PROVISIONING

• NO, SERIOUSLY NO, FORKLIFT OF THE PROTOCOL

• SIMPLE, ROBUST CONFIGURATION

• NO PROPRIETARY SOLUTIONS

• NO CENTRALIZED SINGLE POINTS OF FAILURE OR NSR-TYPE SOLUTIONS

• BGP-LS OR SOMETHING LIKE THIS TO EXPOSE THE “HIDDEN” PART OF TOPOLOGY FOR TE
OUTLINE OF THE SOLUTION

• EQUIVALENT OF ROUTE REFLECTION FOR FLOODING

• FLOOD REFLECTORS ALLOW TO USE ALL L1 PATHS WITHOUT EXPOSING ALL L1 NODES TO THE “BACKBONE”

• BORDER ROUTERS USE SHORTCUT NEXTHOPS INSTEAD OF FOLLOWING L2 “FLOOD REFLECTOR ADJACENCIES”

• NODES “OUTSIDE” IN L2 CAN STAY OBLIVIOUS
BITS MORE DETAIL

• IIH/LSP L1 TLVs are used to discover client/server of a flood reflector cluster

• No hierarchies or links between FRS in same cluster allowed for simplicity (burnt fingers from RR deployments)

• Orange L1 tunnel mesh is optional
SO WHAT’S THE BIG DEAL AGAIN?

• ONLY FRS AND CLIENTS NEED PROTOCOL UPDATE WITH LOCAL CONFIGURATION KNOBS

• L2 CONTROL PLANE SCALES IN ROUGHLY LINEAR FASHION COMPARED TO N^2 FOR FULL TUNNEL MESH
  - PRACTICALLY SPEAKING GOOD ENOUGH FOR VERY LONG TIME TO COME

• L1 CAN FUNCTION AS TRANSIT FOR L2 UTILIZING ALL PATHS IN L1 EVEN IF HIDDEN IN L2 CONTROL PLANE

• ROBUST VS. MISCONFIGURATION & FAILURES, OPERATIONALLY SIMPLE TO DEPLOY AND DEBUG

• IT’S A KISS SOLUTION