Draft version 2

• Previously presented
• This new iteration is to address comments from the wg:
  − to address detection of misconfiguration
  − Clarification on the handling and flooding of stub Router LSA
Problem Statement

• In one-level hub and spoke topologies, the spokes only possible next-hops are usually through the hubs.

• These spokes are:
  - leaf nodes and do not need the full topological information beyond their hubs
  - The spokes have usually limited capacity and still have to store unnecessary information and updates from the hub in their LSDB.

• Flooding of large database information to the spokes limit the number of neighbors a hub can handle.

• Today there is no mechanism to aggregate or filter intra-area information.
Proposal

• Hub Routers supporting the stub neighbor functionality will advertise their capability using the OSPF Router Functional Capability Bits registry.

• Hub Routers will define a new type of neighbor relationship called stub neighbor over *stub* links.

• The hubs will then send a modified router LSA with only the default route (or aggregated routes by policy) to the spoke. It will then effectively mask all topological information behind it to the spoke.

• The modified form of the router LSA is called a Local Router LSA and will be ignored by the other hubs and must not be flooded back on a *normal* link.
Local Hub Router-LSA Format

LS age = 0
Options = 1
LS type = 1
Link State ID = 192.0.2.1
Advertising Router = 192.0.2.1
bit E = 0
bit B = 0
#links = 2
Link ID = 192.0.2.2
Link Data = 192.0.2.1
Type = 1
# TOS metrics = 0
metric = 1

Link ID = 0.0.0.0
Link Data = 0x0
Type = 3
# TOS metrics = 0
metric = 100
Local Router LSA Zones

Rest of the OSPF network

Normal Links

Stub Links

Hub1

Hub2

Hub3

Normal Links With normal Rtr LSAs

Spoke-1

Spoke-2

Spoke-3

Spoke-N

Stub Links with Hub Local Router LSAs
Handling of Local Router LSA

• Local Router LSAs are only flooded in the stub link zones with spokes.

• A Hub receiving its own Local Router LSA through another hub can detect whether there is a misconfiguration and act upon it. It should either revert back to normal mode or log an error.

• A hub receiving another Hub’s Local Router LSA from a spoke should acknowledge it to being up the adjacency but should not flood it further nor use it for its normal spf calculations.

• A Hub should not normally receive a Local router LSA from
Misconfiguration Detection

Hub 2 will detect the misconfiguration

Rest of the OSPF network

Misconfigured Hub1 → Hub2

Hub 2 will detect the misconfiguration

Normal Link

Local Link

Local flooded over Normal link

Hub 2 will detect the misconfiguration

Spoke1

Spoke2

Hub 1

Hub 2

Hub 3

Rest of the OSPF network

Normal Link

Local Link

Local flooded over Normal link
Next steps

- Request to become a WG document.

- Comments welcome.