OSPF TE Extension for Area IDs
draft-lu-ospf-area-tlv-00.txt

IETF 80 - Prague, Czech Republic
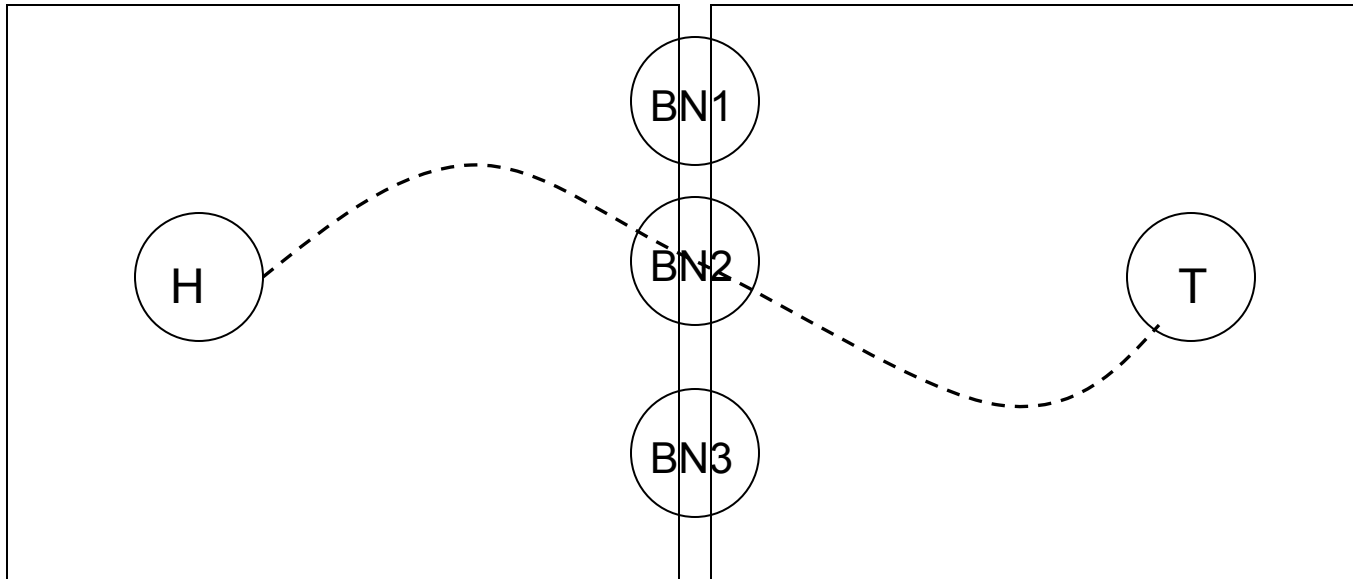**March 27 – April 1, 2011**
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Agenda

- Background
- The Need of TE-ABRs
- Area-ID TLV
- Applications

Background

- The need for inter-area LSPs
- BN (Border nodes) = ABR-LSRs

Solutions

- Global TED
  - Too big, negating the purpose of having multiple areas or ASes;
  - violates the information hiding and confidentiality requirement and is unacceptable by ISPs

- Crankback
  - Probe a list of ABRs till a PATH is viable
  - But need to know ABRs – configure ?

- RBPC – RFC5441
  - Find an optimal path
  - Still need to know ABRs

PCE Development

- RFC 5088 – OSPF Extension for PCE Discovery
  - In Rtr Info LSA space;
  - Scopes: inter-area; inter-as
  - For locating PCEs, NOT LSRs

RFC 3630 – OSPF TE Extension

- Area scope TE database;
  - Opaque to OSPF
  - No idea of TE-ABRs
    - They are area exit LSRs
- Good for finding intra-area LSPs

The proposal

- The ABR info is easily acquirable
- Fig: A,B,C,D,E in backbone
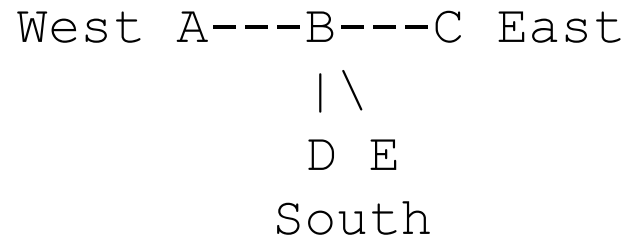 - A,C,D,E are ABRs

```
West A---B---C East
         |\
         D E
        South

Figure 1: Sample Topology
```

Area ID TLV

```
0                   1                   2                   3
 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1
+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
| Type              |     Len       |     Area-ID               |
+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
|  Area-ID (Cont)               |  Another  Area-ID             |
+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
|  Another Area-ID (Cont)       |                               |
+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
|                         More Area-ID                          |
|                                                               |
//                                                             //
|                                                               |
+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
```

- To add under RFC 3630 section 2.4
- At most 1 Area ID TLV
- Type – Area ID TLV (TBD: 3)
- Len – 4xn, n is the number of exit areas
  - Eg: "D" has 1 exit area "south", provided that its link to "south" is also TE enabled.

Example

- Assume router "F" connects to four areas
  - Area 0, 1, 2, and 3
  - Assume area 2 is not TE-enabled
- It advertise following Area-ID TLVs
  - To area 0: `|    3|    8| 0 0 0 1| 0 0 0 3|`
  - To area 1: `|    3|    8| 0 0 0 0| 0 0 0 3|`
  - To area 2: `None`
  - To area 3: `|    3|    8| 0 0 0 0| 0 0 0 1|`

Application

- Area ID TLVs give CSPF (PCE) knowledge of TE-ABR info.
  - It can automate the crankback process
    - Replacing manual configuration
  - Any algorithm (BRPC) that needs exit LSRs
- It is backward compatible

Thank You