

HLP: A Next generation Inter-domain Routing Protocol

Introduction

The paper proposes a new inter domain protocol, HLP which uses a hybrid of Link State Routing and Path vector Routing. This routing protocol exploits the fact that keeping full privacy, even for customer provider relationship and providing full path information is not needed. The paper proposes to withhold some path information by using link state routing in the Customer Provider hierarchy. Employing this reduces the churn rate, provides better scalability and isolation improvement. The path vector routing as in BGP is employed only for peer to peer relationships. The protocol also takes care of Complex policies that may exist between the ASs. By exposing the full privacy of BGP the protocol takes care of misconfigurations and attacks to some level.

Drawbacks

- Since the routing is Link State in the Customer Provider hierarchy, HLP cannot support path based policies for some prefixes.
- Using a link-state protocol takes away autonomy from ASes within the provider-customer hierarchy.
- HLP assumes a fixed structure on the AS topology, as induced by business relations. Business relations among ASes can be more complex than simple customer-provider and peering relations.
- The economic viabilities are still the same as BGP for the ISPs.

Implications

HLP is a good start for replacement of BGP as an inter domain protocol as it has some good routing properties

- Reduces the churn rate of the routes and isolates the effect of routing events by using Link State Routing in the Customer Provider hierarchy and AS prefix mapping.
- Takes care of Complex policies by modeling them as peer to peer.
- Isolation improvement - The no of ASs that are affected by a single event goes down considerably in HLP as the changes in the hierarchy are not always propagated to the peers.
- Shows better scalability and convergence.

HLP seems to perform better than BGP. The real performance of HLP can only be compared to BGP by exploiting it to wide range of ISPs and router vendors. The protocol proposes some major changes to BGP which is a widely accepted inter domain protocol. It may take some time for it to be accepted by the vendors and the ISPs as inter domain protocols are more about reliability than performance and BGP is known to perform quite well.