LISP DEPLOYMENT DRAFT -05

(DRAFT-IETF-LISP-DEPLOYMENT-05.TXT)

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LISP Deployment Draft -05

"This document discusses the different scenarios for the deployment of the new network elements introduced by LISP"

- Diffs from -04
  - Fresh review
  - Reorganized references (Normative/Informative)

- Ask for WG Last Call

Deployment of Tunnel Routers

- Customer Edge
  - Common scenario
- Provider Edge
  - No changes at CE router
- Split ITR/ETR
  - Route packets according to the destination RLOC
- Inter-Service Provider Traffic Engineering
  - LISP between two ISPs (TE)
- ITR/ETR behind NAT

Map-Server and Resolvers

- Map-Servers:
  - Typically deployed by Mapping Service Providers (MSP)
    - EID Registrar
    - Third Parties
  - Recommend redundant Map-Servers
- Map-Resolvers
  - Close to the ITR that are servicing
  - Manual configuration of the RLOC of the Map-Resolver
  - Anycast RLOC

Proxy Tunnel Routers

- PITR
  - A site can delegate BGP announcement to a PITR
    - Aggressive aggregation
  - Keep announcing it(s) prefix(es)
- PETR
  - Unicast Reverse Path Forwarding (uRPF)
  - IPv4-to-IPv6 transition

Migration to LISP

- LISP+BGP
  - BGP prefix(es) announced by the xTR
- Mapping Service Provider (MSP) P-ITR Service
  - BGP prefix(es) announced by the PITR
- Proxy-ITR Route Distribution (PITR-RD)
  - BGP network of PITRs

Phase	LISP+BGP	MSP+P-ITR	PITR-RD
Early transition	No changes	Slower increase	Slower increase
Late transition	May decrease	Slower increase	Slower increase
LISP Internet	Considerable Decrease		

Step-by-Step Example BGP to LISP Migration Procedure

- Short manual + Checklist of stub-network migrating to LISP
  - Assumes PITR scenario

1. Customer Pre-Install and Pre-Turn-up Checklist
2. Customer Activating LISP Service
3. Cut-Over Provider Preparation and Changes

LISP Deployment Draft

WG Last Call?

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BACKUP SLIDES

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Proxy-ITR Requirements

- Keep Interworking Independent of any given mapping system
  - They should use map-resolver/map-server interface
- Provide for consistent origin of EID-routes in accordance with existing Internet best practices
  - The design should not break SIDR, or AS-Path filtering on provider routers
- Allow for policy between P-ITR operators to be reflected in the announcement of EID-Routes into the DFZ, without requiring a central arbitration AS
- Provide for troubleshooting when encapsulation failure prevents communication

Proxy-ITR Requirements

- Permit origination changes to be reflected in large number of Proxy ITRs
  - Every PITR deployed shouldn't have to be modified when the origin of one EID prefix is changed
- Allow for Proxy-ITR only transit providers to exist
  - The design should not preclude providers who want to offer Proxy ITRs but not mapping services
- Keep the design simple as possible, change as little as necessary
  - Use existing tools and protocols, don't change the way SP's work or expect changes to the LISP protocol or mapping system to support this

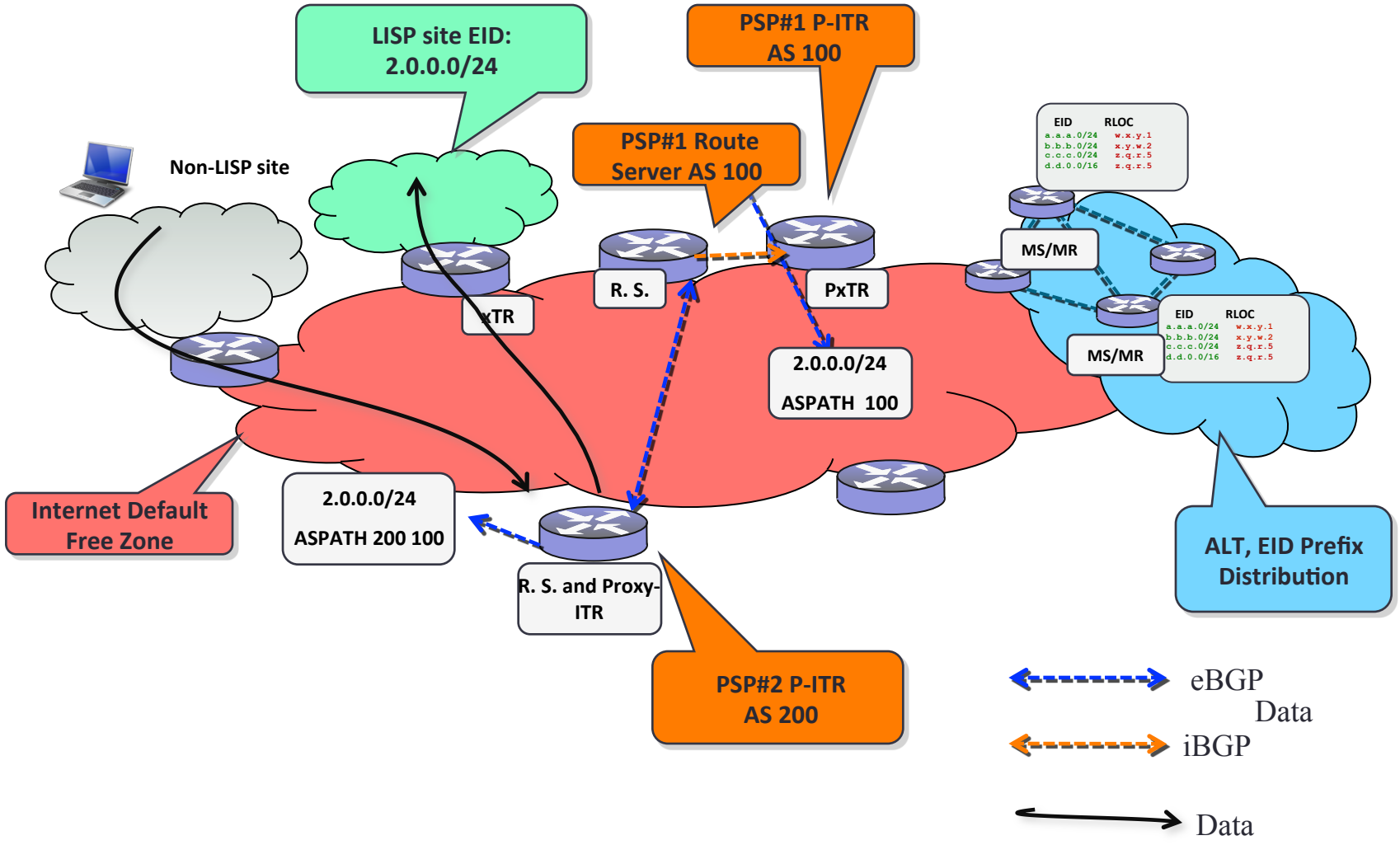
Proxy-ITR Route Origination

- **EID Route Server** is a router that either propagates routes learned from other EID Route Servers, or it originates EID Routes. The EID-Routes that it originates are those that it is authoritative for. It propagates these routes to Proxy-ITRs within the AS of the EID-Route-Server.
- **EID-Route** is a prefix originated via the Route Server of the mapping service provider, it the Mapping Service Provider, or Proxy Service Provider, may aggregate it if it has multiple customers inside a single netblock (like we do with 153.16.0.0/16 today)
  - This prefix is propagated to other PITRs both within the MSP and to other PITR operators it peers with

Proxy-ITR Route Origination

- A EID Route Server distributes routes to other domain's servers via Multi-Hop eBGP to connect to other Autonomous Systems/PITR operators. This keeps the origin-AS of a given EID-Route consistent.
  - This means SIDR techniques could be applied to this technique
- An EID Route Server may be collocated with a map-server, or a Proxy ITR, but they act independently

Use BGP route servers to propagate EID-Routes to remote Proxy ITRs



Proxy ITR Route Origiantion

- Decoupling EID origination and propagation provides the following benefits
  - It can accurately reflect business relationships between the P-ITR operators due to explicit peering (which aids in troubleshooting as well)
  - It further decouples Proxy-ITRs from the ALT, using the MR and MS infrastructure just like site ITRs (less things attached to the ALT makes it easier to replace)
  - It only requires minor changes to PITR implementation, and none to existing Mapping systems.

LISP Customer Pre-install

- ✓SP connections → RLOCs
- ✓'show version' → LISP support?
- ✓Customize old config
- ✓1556 MTU if possible
- ✓Prefix validation
- ✓RLOC reachability check
- ✓OOB router connectivity

Customer Activating LISP

- ✓Load new configs customized by SP
- ✓Soft shutdown of existing eBGP sessions

Provider Checklist

- ✓Site config and active registration
- ✓Add EID-space to map-cache on proxies
- ✓BGP advertisments on proxies
- ✓Test traffic