



Preface

The Locator Identity Separation Protocol (LISP) is a new routing architecture that creates a new paradigm by splitting the device identity, known as an Endpoint Identifier (EID), and its location, known as its Routing Locator (RLOC), into two different numbering spaces. This capability brings renewed scale and flexibility to the network in a single protocol, enabling the areas of mobility, scalability and security.

For enterprises, LISP provides several key benefits, including simplified enterprise multi-homing with ingress Traffic Engineering (TE) capabilities, high-scale multi-tenant VPN over Internet, simplified IPv6 transition support, and IP Mobility for Geographic Dispersion of Data Centers and Disaster Recovery.

This document focuses on the LISP Host Mobility use case addressing today's enterprise data center challenges. Server virtualization and high availability across geographically dispersed data centers are common in data center deployments today. Workload virtualization requires location independence for server resources, and requires the flexibility to move these server resources from one data center to another to meet increasing workloads and to support disaster recovery. This brings the challenge of route optimization, aiming at optimally routing traffic to the workload once it is migrated to the new location. It also mandates to keep the server's identity (IP address) the same across moves, so the clients can continue to send traffic regardless of the server's current location. At the same time, server migration or tighter requirements associated with disaster recovery procedures also introduce the need to provide IP mobility and dynamic traffic flows redirection across disperse data center sites.

The LISP Host Mobility solution addresses this issue seamlessly by enabling IP end-points to change location while keeping their assigned IP addresses. The workloads may move between different subnets or across different locations of a subnet that has been extended with Overlay Transport Virtualization (OTV) or another LAN extension mechanism. In either case, the LISP Host Mobility solution guarantees optimal routing between clients and the IP end-point that moved, regardless of its location. In addition, this solution does not require any change in the DNS infrastructure (since the mobile nodes preserve their original IP addressing), which overall reduces operating expenses for the data center administrator.

LISP Host Mobility provides an automated solution to IP mobility with the following characteristics:

- Guarantees optimal shortest path routing to the moving end-points
- Supports any combination of IPv4 or IPv6 Locator or Identity addressing
- Internet grade scale for global mobility
- IP-based for maximum transport independence

- Transparent to the end-points and to the IP core
- Overlay solution that enables the extension of subnets across multiple Autonomous Systems

This paper describes the LISP Host Mobility use case for an enterprise data center deployment, detailing the respective LISP components operation, and walking through the step-by-step configurations. The final section of the paper will then introduce specific design considerations for the deployment of the LISP Host Mobility solution in data centers leveraging Nexus 7000 platforms.

Audience

This document is intended for, but not limited to, network architects, systems engineers, field consultants, advanced services specialists, and customers who want to understand how to deploy a workload mobility solution.

Organization

This document is organized as follows:

- Chapter 1, [IP Mobility Overview](#) introduces the IP Mobility requirements, listing some of the traditional solutions and their associated caveats.
- Chapter 2, [LISP Functional Overview](#) introduces the LISP technology, highlighting its basic functional components.
- Chapter 3, [LISP Host Mobility Solution](#) focuses on clarifying the use of LISP to provide an answer to the Host Mobility problem. Two different flavors of LISP Host Mobility solutions will be introduced: the first one highlighting how LISP can complement the functionalities of a LAN Extension solution. The second one introduces the use of LISP to provide a true IP Mobility solution.
- Chapter 4, [Deploying LISP Host Mobility with an Extended Subnet](#) and 5, [Deploying LISP Host Mobility Across Subnets](#) describe, in detail, how to deploy these two flavors of LISP Host Mobility solution.
- Appendix A, [LISP Host Mobility Deployment Best Practices](#) discusses some design and deployment best practices.

Obtaining Documentation, Support, and Security Guidelines

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