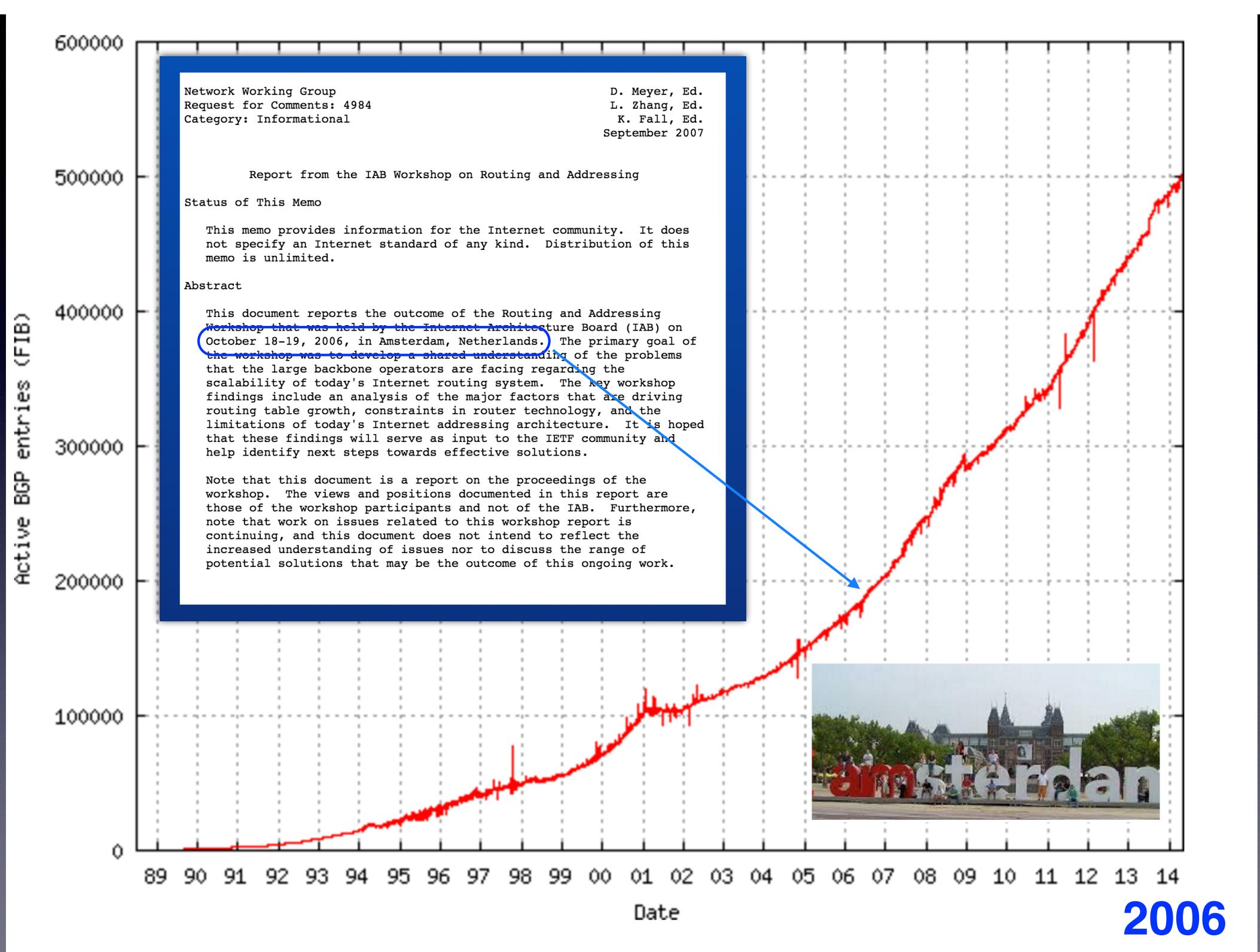
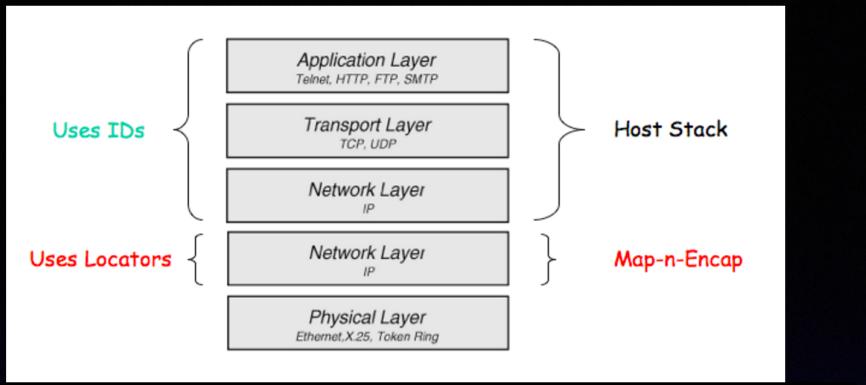


# LISP Turns 10 Years Old

*Pecha Kucha (modified **20x15**)  
Berlin IETF - July 2016*

*Dino Farinacci*





# Routing Research Group RRG

## Charter

The Routing Research Group ([RRG](#)) is chartered to explore routing and addressing problems that are important to the development of the Internet but are not yet mature enough for engineering work within the [IETF](#). As the Internet continues to evolve, the challenges in providing a scalable and robust global routing system will also change over time. At the moment, the Internet routing and addressing architecture is facing challenges in scalability, mobility, multi-homing, and inter-domain traffic engineering. Thus the [RRG](#) proposes to focus its effort on designing an alternate architecture to meet these challenges. Although Internet routing is a broad and active research area, a focused effort at this time is necessary to assure rapid progress towards reaching the goal.

More specifically, we propose to explore architectural alternatives, including, but not limited to, separating host location and identification information. Research and experimentation in addressing and routing algorithms will be encouraged to understand whether this new direction can provide effective solutions, to work out candidate designs as necessary for a complete solution, and to fully understand both the gains and the tradeoffs that the new solutions may bring. The group will produce a list of prioritized design goals and a recommendation for a routing and addressing architecture.

The [RRG](#) will have an open general discussion mailing list where any topic of interest to the routing research community can be discussed, and topics related to scalable routing architectures are particularly encouraged. For specific topics with widespread discussion, interested parties will be encouraged to form ad-hoc mailing lists, with summaries sent to the general mailing list quarterly. Summaries will contain the recent conclusions reached as well as the near-term agenda for future progress.

It is commonly recognized that productive design efforts can be carried out by small and focused design teams. The [RRG](#) encourages the formation of focused design teams to explore specific design choices. As with ad-hoc mailing lists, individual design teams are required to report back quarterly to the [RRG](#) with their progress and remaining open issues. Each design team is expected to produce a set of Internet Drafts that documents their current thinking.

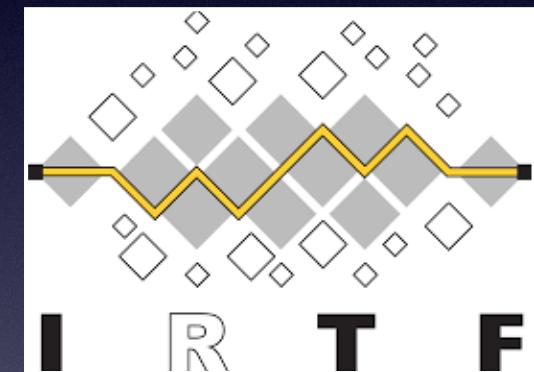
The [RRG](#), as a whole, will hold open meetings from time to time to solicit input from, and supply information to, the broader community. In particular, at least once per year there will be a review of the group's activities held at an [IETF meeting](#). More frequent meetings will be held if it will speed group progress. Ad-hoc and design team meetings are strongly encouraged.

The output of the group will consist of Informational and Experimental RFCs as well as Journal Articles on the topics covered by the subgroups.

## RRG Recommendation Discussion

@ IETF77

March 26, 2010



## Past Meetings

Prague (3/17/07): [Agenda](#)

Chicago (7/2/07): [Agenda](#)

Vancouver (12/3 & 12/7/07): [Agenda](#)

Philadelphia (3/11 & 3/14/08): [Agenda](#)

Dublin (8/1/08): [Agenda](#)

Minneapolis (11/16/08): [Agenda](#)

San Francisco (3/27/09): [Agenda](#)

Stockholm (7/31/09): [Agenda](#)

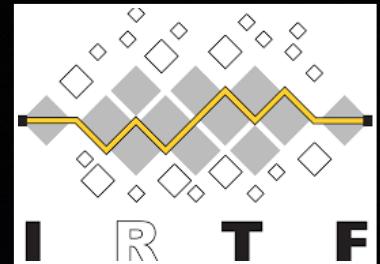
Hiroshima, Japan (11/13/2009): [Agenda](#)

2007

## Locator/ID Separation Protocol (LISP) Map-Server Interface



Request for Comments: 6833



..... Control

— Data

*Mapping System*

Map Resolver

Map Server

LISP Delegated Database Tree  
draft-ietf-lisp-ddt-07

LISP-CONS: A Content distribution Overlay Network Service for LISP  
draft-meyer-lisp-cons-04.txt

LISP-DHT: Towards a DHT to map identifiers onto locators  
draft-mathy-lisp-dht-00

NERD: A Not-so-novel EID to RLOC Database  
draft-lear-lisp-nerd-09.txt

EID Mappings Multicast Across Cooperating Systems for LISP  
draft-curran-lisp-emacs-00

## Locator/ID Separation Protocol Alternative Logical Topology (LISP+ALT)

Request for Comments: 6836

2008



# Locator/ID Separation Protocol (lisp)

[Documents](#) [Charter](#) [Meetings](#) [History](#) [Photos](#) [Email expansions](#) [List archive](#) [Tools »](#)

I E T F®

Date	By	Action
2016-06-24	Stephanie McCammon	sent scheduled notification for IETF-96
2016-05-06	Cindy Morgan	Deleted milestone "Submit a data model (e.g., a MIB) document to the IESG for publication as an Experimental RFC", not present in approved charter
2016-05-06	C Cindy Morgan	Deleted milestone "Submit a deployment model document to the IESG for publication as an Experimental RFC", not present in approved charter
2016-05-06	C Cindy Morgan	Deleted milestone "Summarize results of specifying, implementing, and testing LISP and forward to IESG and/or IRTF.", not present in approved charter
2016-05-06	C Cindy Morgan	Deleted milestone "Submit an Iternet mapping system designs to the IESG for publication as an Experimental RFC", not present in approved charter
2016-05-06	C Cindy Morgan	Deleted milestone "Submit an EID allocation document to the IESG for publication as an Experimental RFC", not present in approved charter
2016-05-06	C Cindy Morgan	Deleted milestone "Submit a LISP threats analysis document to the IESG for publication as an Experimental RFC", not present in approved charter
2016-05-06	C Cindy Morgan	Deleted milestone "Submit a LISP impact discussion document to the IESG for publication as an Experimental RFC", not present in approved charter
2016-05-06	C Cindy Morgan	Deleted milestone "Submit an architecture description to the IESG for publication as an Experimental RFC", not present in approved charter
2016-05-06	C Cindy Morgan	Added milestone "Submit a LISP Mobility document to the IESG for consideration as Proposed Standard", due 2017-07-31, from approved charter
2016-05-06	C Cindy Morgan	Added milestone "Submit a LISP interworking specification (6832bis) document to the IESG for consideration as Proposed Standard", due 2017-07-31, from approved charter
2016-05-06	C Cindy Morgan	Added milestone "Submit a LISP control-plane specification (6833bis) document to the IESG for consideration as Proposed Standard", due 2017-07-31, from approved charter
2016-05-06	C Cindy Morgan	Added milestone "Submit a LISP multicast data-plane specification (6831bis) document to the IESG for consideration as Proposed Standard", due 2017-04-30, from approved charter
2016-05-06	C Cindy Morgan	Added milestone "Submit a LISP unicast data-plane specification (6830bis) document to the IESG for consideration as Proposed Standard", due 2017-04-30, from approved charter
2016-05-06	C Cindy Morgan	Added milestone "Submit a LISP control-plane security mechanism document to the IESG for consideration as Experimental", due 2016-08-31, from approved charter
2016-03-11	Stephanie McCammon	sent scheduled notification for IETF-95
2015-10-09	Stephanie McCammon	sent scheduled notification for IETF-94
2015-10-07	C Cindy Morgan	Shepherding AD changed to <b>Deborah Brungard</b> from
2015-06-26	Stephanie McCammon	sent scheduled notification for IETF-93
2015-06-15	C Cindy Morgan	Mailing list archive changed to <b> <a href="https://mailarchive.ietf.org/arch/browse/lisp/">https://mailarchive.ietf.org/arch/browse/lisp/</a> </b> from <a href="http://www.ietf.org/mail-archive/web/lisp/">http://www.ietf.org/mail-archive/web/lisp/</a>
2015-03-25	Amy Vezza	Shepherding AD changed to <b>Deborah Brungard</b> from Brian Haberman
2015-03-25	A Amy Vezza	IETF Area changed to <b>Routing Area</b> from Internet Area
2015-02-27	Stephanie McCammon	sent scheduled notification for IETF-92
2014-07-24	C Cindy Morgan	Chairs changed to <b>Luigi Iannone, Joel Halpern</b> from Joel Halpern, Luigi Iannone, Terry Manderson
2014-06-23	Stephanie McCammon	sent scheduled notification for IETF-90
2014-06-11	B Brian Haberman	Changed milestone "Submit a data model (e.g., a MIB) document to the IESG for publication as an Experimental RFC", set state to active from ... ▾
2014-06-11	B Brian Haberman	Changed milestone "Submit a deployment model document to the IESG for publication as an Experimental RFC", set state to active from review, accepting new milestone
2014-06-11	L Luigi Iannone	Added milestone "Submit a data model (e.g., a MIB) document to the IESG for publication as an Experimental RFC" for review, due January 2014
2014-06-11	L Luigi Iannone	Added milestone "Submit a deployment model document to the IESG for publication as an Experimental RFC" for review, due January 2014
2014-06-11	L Luigi Iannone	Deleted milestone "Submit a data model (e.g., a MIB) document to the IESG for publication as an Experimental RFC"
2014-06-11	L Luigi Iannone	Deleted milestone "Submit a deployment model document to the IESG for publication as an Experimental RFC"
2014-04-15	C Cindy Morgan	Secretaries changed to <b>Damien Saucez, Wassim Haddad</b> from Wassim Haddad
2014-03-11	C Cindy Morgan	Secretaries changed to <b>Wassim Haddad</b> from Wassim Haddad, Luigi Iannone
2014-03-11	C Cindy Morgan	Chairs changed to <b>Luigi Iannone, Joel Halpern, Terry Manderson</b> from Terry Manderson, Joel Halpern
2012-03-29	C Cindy Morgan	Info Changed
2009-04-28	(System)	Started group
2009-04-27	(System)	Proposed group

2009

# Locator/ID Separation Protocol (lisp)



Document	◆ Date	◆ Status
<b>Active Internet-Drafts</b>		
<a href="#">draft-ietf-lisp-crypto-06</a>	2016-06-29	Publication Requested <b>for 9 days</b>
<b>LISP Data-Plane Confidentiality</b>	18 pages	Submitted to IESG for Publication: Experimental
<a href="#">draft-ietf-lisp-ddt-07</a>	2016-05-31	Publication Requested <b>for 31 days</b>
<b>LISP Delegated Database Tree</b>	37 pages	Submitted to IESG for Publication: Experimental
<a href="#">draft-ietf-lisp-eid-block-13</a>	2016-02-26	RFC Ed Queue : <a href="#">REF</a> <b>for 99 days</b>
<b>LISP EID Block</b>	15 pages	Submitted to IESG for Publication: Experimental
<a href="#">draft-ietf-lisp-eid-block-mgmt-07</a>	2016-04-06	RFC Ed Queue : <a href="#">REF</a> <b>for 99 days</b>
<b>LISP EID Block Management Guidelines</b>	12 pages	Submitted to IESG for Publication: Informational
<a href="#">draft-ietf-lisp-introduction-13</a>	2015-04-02	RFC Ed Queue : <a href="#">MISSREF</a> <b>for 447 days</b>
<b>An Architectural Introduction to the Locator/ID Separation Protocol (LISP)</b>	27 pages	Submitted to IESG for Publication: Informational
<a href="#">draft-ietf-lisp-lcaf-13</a>	2016-05-03	I-D Exists
<b>LISP Canonical Address Format (LCAF)</b>	41 pages	WG Consensus: Waiting for Write-Up
<a href="#">draft-ietf-lisp-sec-10</a>	2016-04-13	I-D Exists
<b>LISP-Security (LISP-SEC)</b>	19 pages	WG Document
<a href="#">draft-ietf-lisp-signal-free-multicast-01</a>	2016-04-21	I-D Exists
<b>Signal-Free LISP Multicast</b>	19 pages	WG Document
<a href="#">draft-ietf-lisp-yang-03</a>	2016-07-07	● I-D Exists
<b>LISP Configuration YANG Model</b>	81 pages <b>New</b>	WG Document
<b>RFCs</b>		
<a href="#">RFC 6830 (was draft-ietf-lisp)</a>	2013-01	Experimental RFC
<b>The Locator/ID Separation Protocol (LISP)</b>	75 pages	
<a href="#">RFC 6831 (was draft-ietf-lisp-multicast)</a>	2013-01	Experimental RFC
<b>The Locator/ID Separation Protocol (LISP) for Multicast Environments</b>	28 pages	
<a href="#">RFC 6832 (was draft-ietf-lisp-interworking)</a>	2013-01	Experimental RFC
<b>Interworking between Locator/ID Separation Protocol (LISP) and Non-LISP Sites</b>	19 pages	
<a href="#">RFC 6833 (was draft-ietf-lisp-ms)</a>	2013-01	Experimental RFC
<b>Locator/ID Separation Protocol (LISP) Map-Server Interface</b>	13 pages	
<a href="#">RFC 6834 (was draft-ietf-lisp-map-versioning)</a>	2013-01	Experimental RFC
<b>Locator/ID Separation Protocol (LISP) Map-Versioning</b>	21 pages	
<a href="#">RFC 6835 (was draft-ietf-lisp-lig)</a>	2013-01	Informational RFC
<b>The Locator/ID Separation Protocol Internet Groper (LIG)</b>	12 pages	
<a href="#">RFC 6836 (was draft-ietf-lisp-alt)</a>	2013-01	Experimental RFC
<b>Locator/ID Separation Protocol Alternative Logical Topology (LISP+ALT)</b>	25 pages	
<a href="#">RFC 7052 (was draft-ietf-lisp-mib)</a>	2013-10	Experimental RFC
<b>Locator/ID Separation Protocol (LISP) MIB</b> <a href="#">Errata</a>	66 pages	
<a href="#">RFC 7215 (was draft-ietf-lisp-deployment)</a>	2014-04	Experimental RFC
<b>Locator/Identifier Separation Protocol (LISP) Network Element Deployment Considerations</b>	30 pages	
<a href="#">RFC 7834 (was draft-ietf-lisp-impact)</a>	2016-04	Informational RFC
<b>Locator/ID Separation Protocol (LISP) Impact</b>	18 pages	
<a href="#">RFC 7835 (was draft-ietf-lisp-threats)</a>	2016-04	Informational RFC
<b>Locator/ID Separation Protocol (LISP) Threat Analysis</b>	19 pages	

2009



Home Overview Docs/Guides Software/Hardware Contact

## LISP Hardware and Software Support...

### LISP Hardware and Software Support...

LISP support is available across a wide range of Cisco platforms and operating systems. Specific LISP features and functions have been and are being introduced according to priorities for the roles certain platforms may be expected to provide within the network.

The information provided on this page is intended to list the current LISP features and functions supported across various platforms, their software releases, and any caveats or restrictions that might apply. As a general recommendation, please check the release notes for each specific platform.



### LISP Feature Support by Operating System

The following table lists the LISP features by platform OS



	<a href="#">IOS</a>	<a href="#">IOS-XE</a>	<a href="#">NX-OS</a>	<a href="#">IOS-XR</a>	<a href="#">Cat 6K</a>
<a href="#">Roles</a>					
ITR/ETR	yes	yes	yes	yes	yes
PITR/PETR	yes	yes	yes	yes	yes
MS/MR	yes	yes	yes	ASR9K	yes
RTR [1]	yes	yes	roadmap	roadmap	roadmap
<a href="#">AF Support</a>					
EID v4/v6	yes	yes	yes	yes	yes
RLOC v4/v6	yes	yes	v4 only	yes (v6 added in 5.3.0)	v4 only
<a href="#">Virtualization</a>					
Shared	yes	yes	yes	yes	yes
Parallel	yes	yes	yes	yes	yes
<a href="#">Mobility</a>					
ESM/ASM	yes	yes	yes	N/A	ASM only
ESM Multi-Hop	yes	yes	yes	N/A	roadmap
<a href="#">Multicast</a>					
Phase 1	yes	yes	yes	roadmap	roadmap
<a href="#">NAT-Traversal</a>					
NAT-T [2]	testing	testing	N/A	N/A	roadmap

2010

The following organisations are involved in the LISP Beta Network.

Contributions include: time spend on debugging, sponsoring hardware, connectivity & power, writing software and various other activities.

Non exhaustive list in alphabetical order:

- APNIC
- Cisco
- Facebook
- ICANN
- ISC
- InTouch NV
- Level3
- Microsoft
- NTT
- Savvis
- TaTa
- T-Labs
- UCLA
- Université Catholique de Louvain
- Uninett
- UPC/BarcelonaTECH

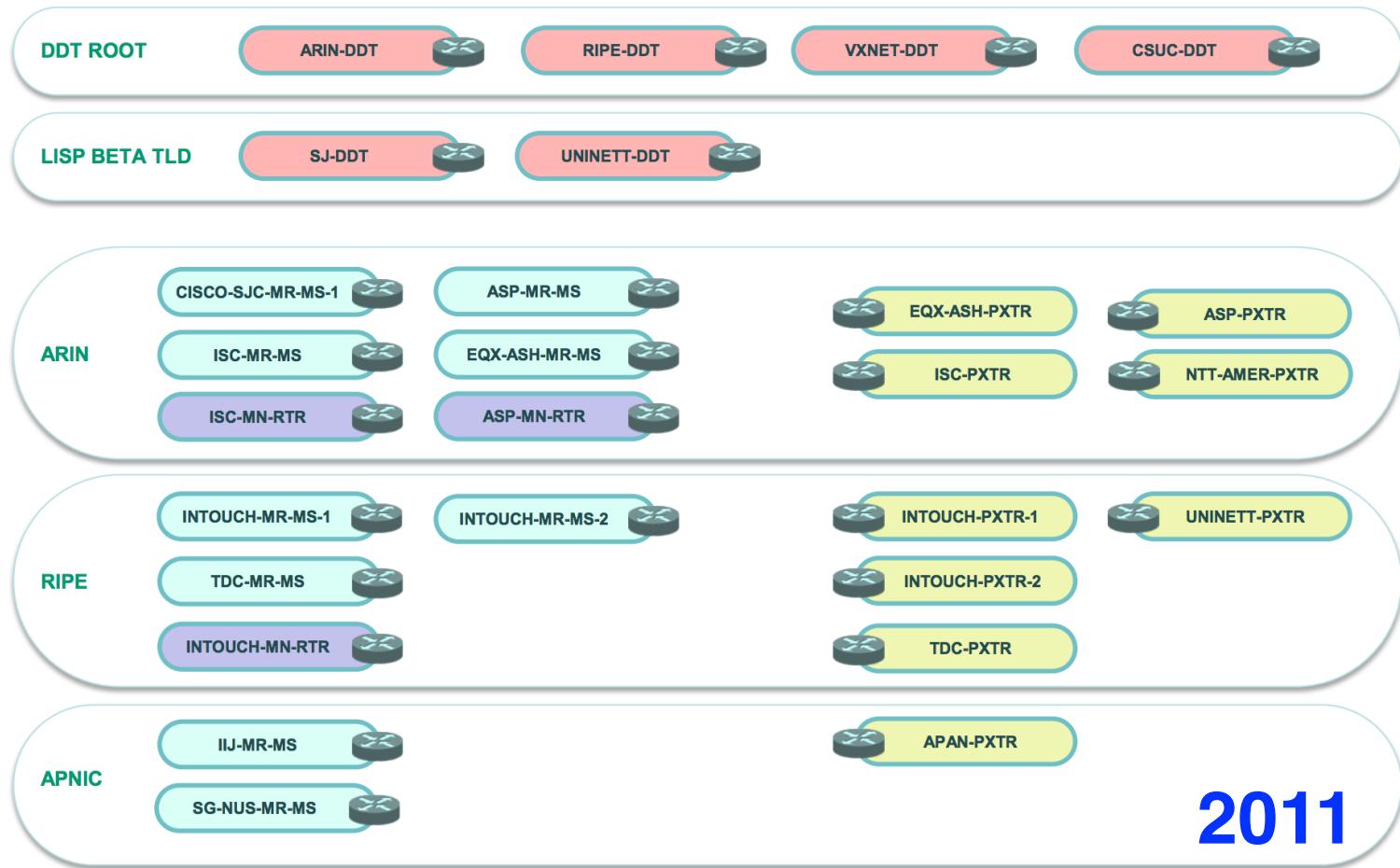
First IPv4 EID range: [153.16.0.0/16](#)

First IPv6 EID range: [2610:00Do::/32](#)

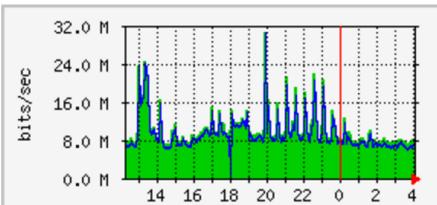
In addition to the EID prefixes there are four experimental prefixes:

- PETR Anycasted prefixes
- MapResolver Anycasted prefixes

### International LISP Beta Network High Level Topology – May 2016



TOTAL LISP BETA NETWORK PXTR TRAFFIC



2011

## lisp-customers



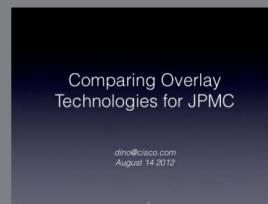
vinci-consulting-ciscolive  
May 8, 2013, 4:33 PM



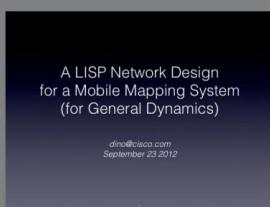
fedex-demo  
April 30, 2013, 3:07 PM



facebook-ciscolive  
March 18, 2013, 5:10 PM



jpmc-comparing-overlays  
March 18, 2013, 4:45 PM



lisp-for-gd  
September 23, 2012, 12:09 PM



jpmc-cold-move  
September 23, 2012, 10:07 AM



njedge-ciscolive  
August 13, 2012, 5:44 PM



qualcomm-ciscolive  
August 13, 2012, 5:44 PM

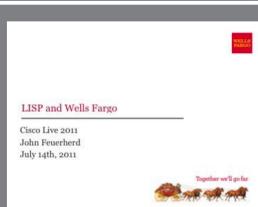
# Deployments



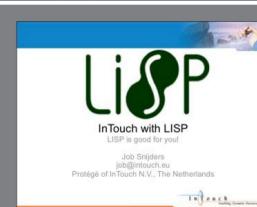
lufthansa-ciscolive  
August 13, 2012, 5:43 PM



verizon-ciscolive  
August 13, 2012, 5:42 PM



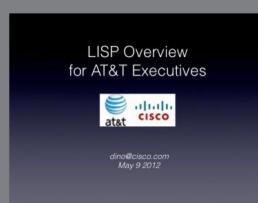
wells-fargo-ciscolive  
August 13, 2012, 5:41 PM



intouch-ciscolive  
August 13, 2012, 5:40 PM



verisign-ciscolive  
August 13, 2012, 4:47 PM



att-execs-why-lisp  
May 21, 2012, 3:35 PM



microsoft-ciscolive  
April 6, 2012, 4:38 PM

2011

## IOS Platforms

	Software	Notes
ISRG1		
1800 Series 2800 Series 3800 Series 7200 Series	Engineering Build Only <a href="#">15.5(2)XB1</a>	<a href="#">EOS/EOL rules</a> <a href="#">15.5(2)XB1 Release Notes</a> <a href="#">Command Ref Guide</a> <a href="#">Config Guides</a>
ISRG2		
800 Series 1900 Series 2900 Series 3900 Series	Mainline Release <a href="#">15.5(2)T</a>  Engineering Build <a href="#">15.5(2)XB1</a>	License: <a href="#">datak9 [1]</a> <a href="#">15.5(2)T Release Notes</a> <a href="#">Command Ref Guide</a> <a href="#">Config Guides</a>



## IOS-XR Platforms

	Software	Notes
ASR 9000		
ASR 9000 Series	Mainline Release ASR 9000 Series: <a href="#">5.3.0(MD)</a>	License: <b>base image</b> IOS-XR 5.3.0(MD) <a href="#">Release Notes</a> <a href="#">Command Ref Guide</a>

## IOS-XE Platforms

	Software	Notes
ASR1K		
ASR 1001, -X ASR 1002, -X ASR 1004 ASR 1006 ASR 1013 ISR 4000-series	Mainline Release ASR1K: <a href="#">3.15.0S(ED)</a> 4000-series: <a href="#">3.15.0S(ED)</a>  Engineering Build <a href="#">15.5(2)S1</a>	License: <a href="#">Advanced IP Services or Advanced Enterprise Services</a> <a href="#">3.15.0S Release Notes</a> <a href="#">Command Ref Guide</a> <a href="#">Config Guides</a>
CSR1KV	Mainline Release CSR1KV: <a href="#">3.15.0S</a>	License: <a href="#">Premium or AX</a> <a href="#">3.15.0S Release Notes</a> <a href="#">Command Ref Guide</a> <a href="#">Config Guides</a>  Cloud Services Router <a href="#">Free Trial</a> Amazon Web Services <a href="#">AWS</a>

## NX-OS Platforms

	Software	Notes
Nexus 7000		
Nexus 7000 Series Nexus 7700 Series	Mainline Release 7000 Series: <a href="#">6.2(12)</a> 7700 Series: <a href="#">6.2(12)</a>	License: <a href="#">Transport Services</a> NX-OS 6.2(8) <a href="#">Release Notes</a> <a href="#">Command Ref Guide</a> <a href="#">Config Guides</a>

## Catalyst 6K Platforms

	Software	Notes
Cat 6K		
Catalyst 6500 Series Catalyst 6800 Series	Mainline Release Cat 6500 Series: <a href="#">15.2.1-SY0a(ED)</a> Cat 6800 Series: <a href="#">15.2.1-SY0a(ED)</a>	License: -- 15.2.1-SY0a(ED) <a href="#">Release Notes</a> <a href="#">Command Ref Guide</a> <a href="#">Config Guides</a>

2012

# LISP Marketing



## LISP Host Mobility Demo – VMworld 2012 Barcelona

on OCTOBER 15, 2012

There's a really nice (short) LISP Host Mobility Demo posted on YouTube from VMworld 2012 Barcelona. Check it out!



iLISP





## LISP, yet another RFC!

- RFC 6830 - The Locator/ID Separation Protocol (LISP)
- RFC 6831 - The Locator/ID Separation Protocol (LISP) for Multicast Environments
- RFC 6832 - Interworking between Locator/ID Separation Protocol (LISP) and Non-LISP Sites
- RFC 6833 - Locator/ID Separation Protocol (LISP) Map-Server Interface
- RFC 6834 - Locator/ID Separation Protocol (LISP) Map-Versioning
- RFC 6835 - The Locator/ID Separation Protocol Internet Groper (LIG)
- RFC 6836 - Locator/ID Separation Protocol Alternative Logical Topology (LISP+ALT)

LISP

2013

Suitable for most Cisco ISR, ISRG2, ASR1K, Nexus 7000, Cat6500, and ASR9K  
Routers

[lisp.cisco.com](http://lisp.cisco.com) (A and AAAA) and [www.cisco.com/go/lisp](http://www.cisco.com/go/lisp)

AVM/Fritz!Box: AVM Fritz!Box 7390

Runs on AVM Fritz!Box 7390 ([firmware here](#))

OpenLISP: [OpenLISP.org](http://OpenLISP.org)

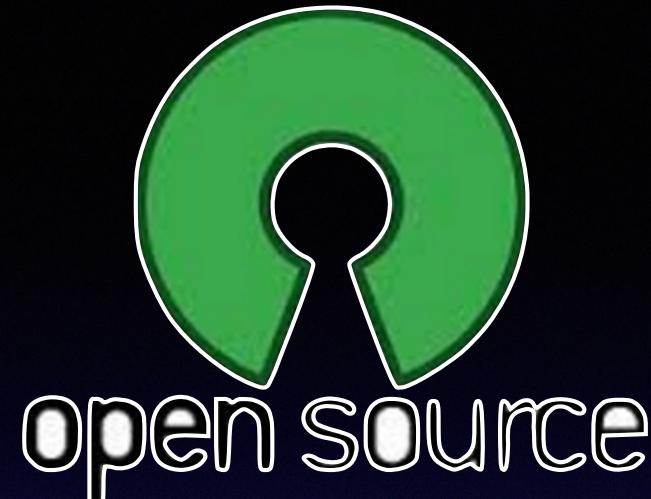
Runs on FreeBSD

OpenOverlayRouter: [openoverlayrouter.org](http://openoverlayrouter.org) (formerly LISPmob)

Runs on Linux, OpenWrt, and Android

Aless: Linux 2.6 implementation

Includes iproute2-lisp and lispd



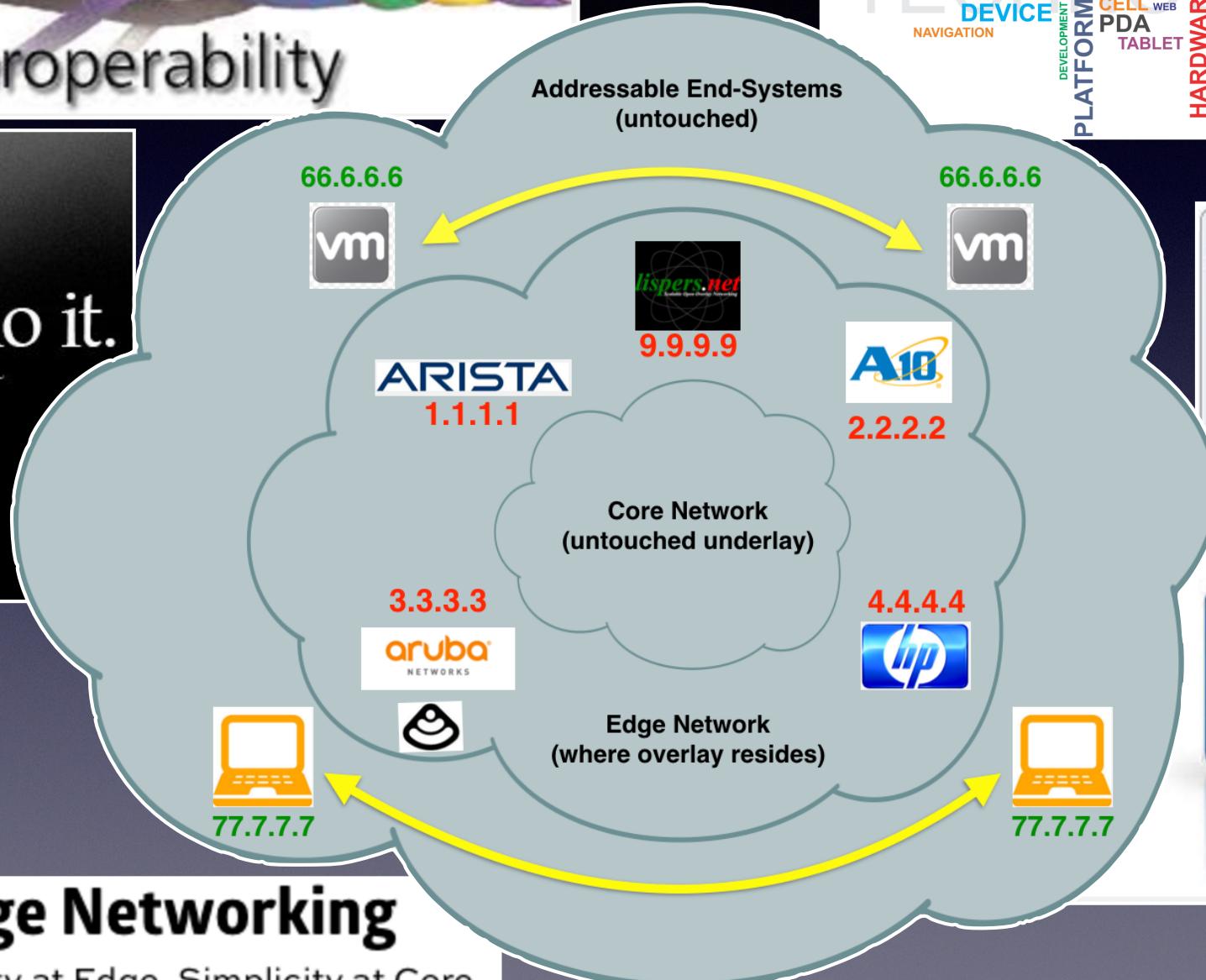
**closed source**



2013

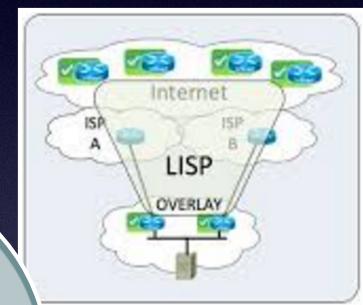


## Interoperability

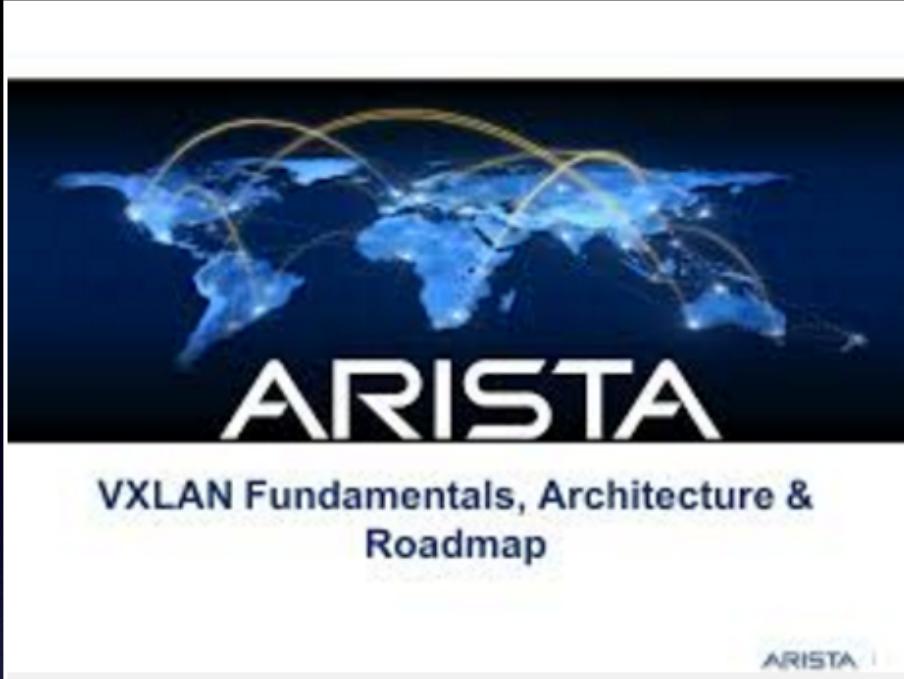


**Edge Networking**  
Complexity at Edge, Simplicity at Core

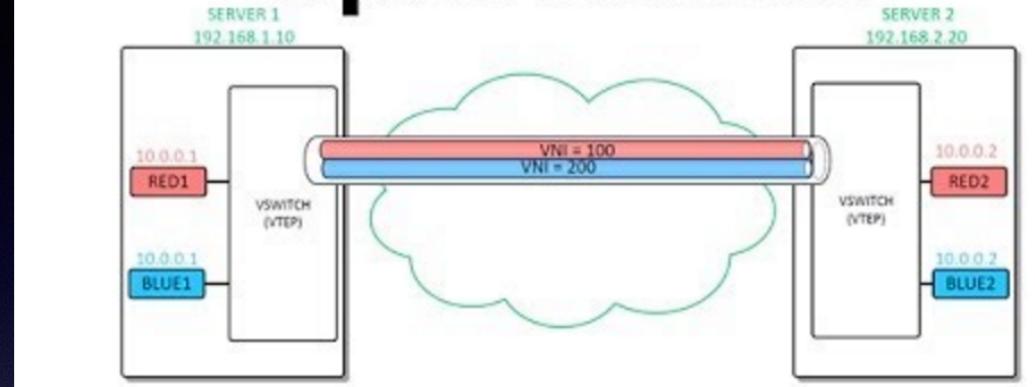
2014



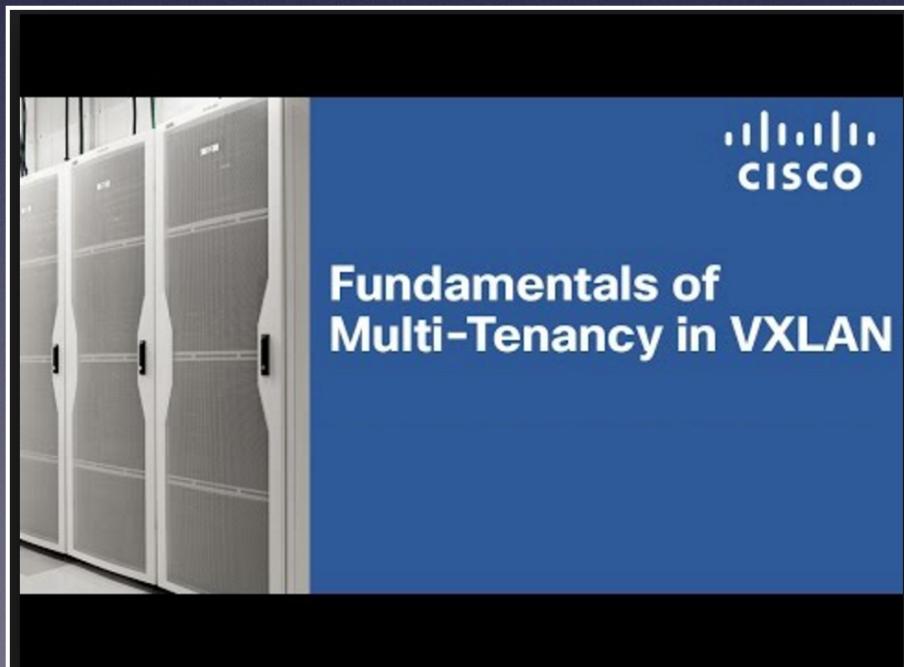
**MULTI VENDOR**  
ANDOK



# VXLAN Overlay with Open vSwitch



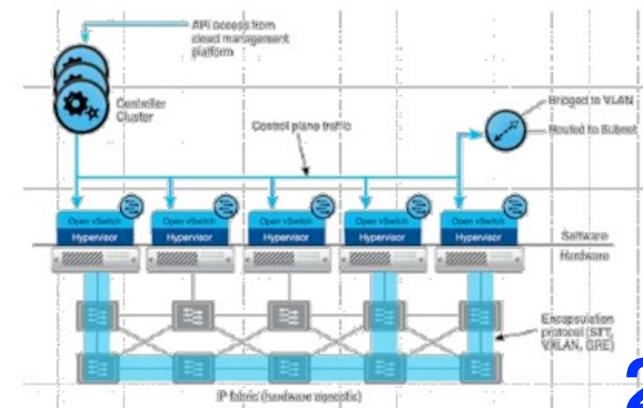
## Overlay Validation - Data Center



### Overlay: VMware NSX



- VxLAN and STT tunneling
- Partnership with several hardware vendors for VTEP

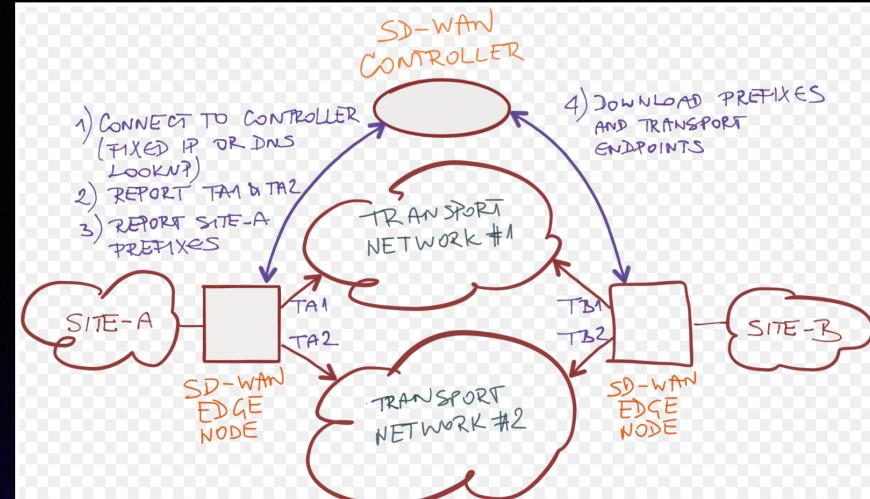


2014

# ONUG Software-Defined WAN Use Case

A white paper from the  
ONUG SD-WAN Working Group

October, 2014



## Overlay Validation - SD-WAN

### ONUG SD-WAN Working Group

Conrad Menezes, Chairman



Pablo Espinosa, Co-Chairman



Aryo Kresnadi, Co-Chairman



Andrew Kulawiak, Co-Chairman



Vijay Balasubramanian



Matthew Clark



David Crosbie



Mike Elmore



Jeff Gray



Joe Houle



Brian Hedstrom



Ron Howell



Bryan Larish



David Laundre



Ray Ng



Jem Pagan



Rameshbabu Prabagaran



Ryan Pena



Srini Seetharaman



Mukhtair Shaikh



Nelson Tai



Howard Wang



Sean Wang



2014

Document	Date	Status
Related Internet-Drafts		
<a href="#">draft-barkai-lisp-nfv-08</a> LISP Based FlowMapping for Scaling NFV	2016-06-03 16 pages	
<a href="#">draft-boucadair-lisp-bulk-02</a> LISP Mapping Bulk Retrieval	2016-06-29 19 pages	
<a href="#">draft-boucadair-lisp-function-discovery-02</a> LISP Mapping Service Functions Discovery (LMSFD) using OSPF	2016-05-31 13 pages	
<a href="#">draft-boucadair-lisp-idr-ms-discovery-01</a> LISP Mapping Service Discovery at Large	2016-03-09 8 pages	I-D Exists
<a href="#">draft-boucadair-lisp-itr-failure-01</a> Improving ITR Resiliency in Locator/ID Separation Protocol (LISP) Networks	2016-07-15	I-D Exists
<a href="#">draft-boucadair-lisp-subscribe-02</a> Improving Mapping Services in LISP Networks		
<a href="#">draft-boucadair-lisp-type-iana-01</a> IANA Registry for LISP Packet Type Allocations		
<a href="#">draft-boucadair-lisp-v6-compact-header-02</a> A Compact LISP Encapsulation Scheme to Transport IPv4 Packets over an IPv6 Network		
<a href="#">draft-ermagan-lisp-nat-traversal-10</a> NAT traversal for LISP		
<a href="#">draft-ermagan-lisp-nsh-01</a> LISP Control Plane integration with NSH		
<a href="#">draft-farinacci-lisp-eid-anonymity-00</a> LISP EID Anonymity		
<a href="#">draft-farinacci-lisp-geo-00</a> LISP Geo-Coordinate Use-Cases		
<a href="#">draft-farinacci-lisp-name-encoding-00</a> LISP Distinguished Name Encoding		
<a href="#">draft-farinacci-lisp-predictive-rlocs-00</a> LISP Predictive RLOCs		
<a href="#">draft-farinacci-lisp-rig-05</a> LISP-DDT Referral Internet Groper (RIG)		
<a href="#">draft-farinacci-lisp-te-10</a> LISP Traffic Engineering Use-Cases		
<a href="#">draft-kouvelas-lisp-map-server-reliable-transport-01</a> LISP Map Server Reliable Transport		
<a href="#">draft-meyer-lisp-mn-15</a> LISP Mobile Node		
<a href="#">draft-portoles-lisp-eid-mobility-00</a> LISP L2/L3 EID Mobility Using a Unified Control Plane		
<a href="#">draft-rodrigueznatal-lisp-ms-smr-01</a> MS-originated SMRs		
<a href="#">draft-rodrigueznatal-lisp-multi-tuple-eids-01</a> LISP support for Multi-Tuple EIDs	2016-01-07 10 pages	I-D Exists <span style="background-color: orange; color: white; padding: 2px;">Expires soon</span>
<a href="#">draft-rodrigueznatal-lisp-oam-04</a> LISP-OAM (Operations, Administration and Management): Use cases and requirements	2016-06-03 13 pages	I-D Exists
<a href="#">draft-saldana-lisp-compress-mux-00</a> Header compression and multiplexing in LISP	2016-05-04 8 pages	I-D Exists

# IETF 96 Berlin, Germany

## July 17-22, 2016

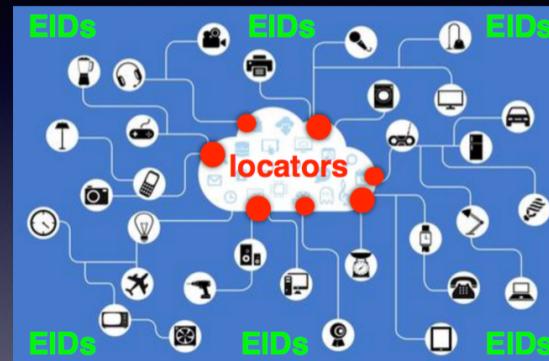
ms-smr  
 eid-anonymity  
 compact-headers  
 mobile-iana  
 multi-tuple-eids  
 oam  
 reliable LISP pub/sub  
 predictive nfv nat  
 name-encoding  
 discovery  
 compress-mux  
 nsh rig geo

2015

# The Next Generation is Coming...

## Mapping Database

"Need a Level of Indirection"



EIDs → locator(s)  
...  
EIDs → locator(s)

Few locators in many places (data-plane)  
Billions of EIDs in a few places (control-plane)

## Less Tethered than Ever

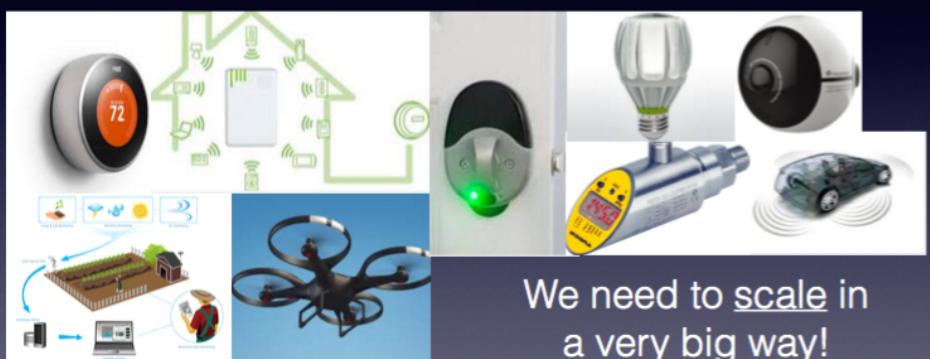


All of these devices will be multi-homed



## Even more Devices

We need inventory and access control



We need to scale in a very big way!

The core routes packets to locators - orders of magnitude less state than billions of devices

2016

# *Happy Birthday LISP!*

Versions: [00](#) [01](#) [02](#) [03](#) [04](#) [05](#) [06](#) [07](#) [08](#) [09](#) [10](#) [11](#)  
[12](#) [draft-ietf-lisp](#)

Network Working Group

Internet-Draft

Intended status: Experimental

Expires: July 21, 2007

D. Farinacci

V. Fuller

D. Oran

cisco Systems

January 17, 2007

**Locator/ID Separation Protocol (LISP)**  
**[draft-farinacci-lisp-00.txt](#)**

*You turn 10!*

## Appendix A. Acknowledgments

An initial thank you goes to Dave Oran for planting the seeds for the initial ideas for LISP. His consultation continues to provide value to the LISP authors.

A special and appreciative thank you goes to Noel Chiappa for providing architectural impetus over the past decades on separation of location and identity, as well as detailed reviews of the LISP architecture and documents, coupled with enthusiasm for making LISP a practical and incremental transition for the Internet.

The authors would like to gratefully acknowledge many people who have contributed discussions and ideas to the making of this proposal.

They include Scott Brim, Andrew Partan, John Zwiebel, Jason Schiller, Lixia Zhang, Dorian Kim, Peter Schoenmaker, Vijay Gill, Geoff Huston, David Conrad, Mark Handley, Ron Bonica, Ted Seely, Mark Townsley, Chris Morrow, Brian Weis, Dave McGrew, Peter Lothberg, Dave Thaler, Eliot Lear, Shane Amante, Ved Kafle, Olivier Bonaventure, Luigi Iannone, Robin Whittle, Brian Carpenter, Joel Halpern, Terry Manderson, Roger Jorgensen, Ran Atkinson, Stig Venaas, Iljitsch van Beijnum, Roland Bless, Dana Blair, Bill Lynch, Marc Woolward, Damien Saucez, Damian Lezama, Attila De Groot, Parantap Lahiri, David Black, Roque Gagliano, Isidor Kouvelas, Jesper Skriver, Fred Templin, Margaret Wasserman, Sam Hartman, Michael Hofling, Pedro Marques, Jari Arkko, Gregg Schudel, Srinivas Subramanian, Amit Jain, Xu Xiaohu, Dhirendra Trivedi, Yakov Rekhter, John Scudder, John Drake, Dimitri Papadimitriou, Ross Callon, Selina Heimlich, Job Snijders, Vina Ermagan, Albert Cabellos, Fabio Maino, Victor Moreno, Chris White, Clarence Filsfils, and Alia Atlas.

This work originated in the Routing Research Group (RRG) of the IRTF. An individual submission was converted into the IETF LISP working group document that became this RFC.

The LISP working group would like to give a special thanks to Jari Arkko, the Internet Area AD at the time that the set of LISP documents were being prepared for IESG last call, and for his meticulous reviews and detailed commentaries on the 7 working group last call documents progressing toward experimental RFCs.