

ESTRATEGIA DE ENRUTAMIENTO ESCALABLE EN LA TRANSICIÓN Y ADOPCIÓN DE IPv6.

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Realtime overview of status information and outages for all kinds of services, automatically determine outages and service interruptions.

Level3 problems last 24 hours







Google problems last 24 hours



Fuente: http://downdetector.com/



Active BGP entries (FIB)





Plot Range: 10-Feb-2003 0910 to 03-May-2016 2003

Fuente: http://www.cidr-report.org/as2.0/



Ternary Content Addressable Memory (TCAM)

- Packet forwarding processed by the control plane is programmed into TCAM to allow hardware forwarding
- Packets that cannot be processed by TCAM will be sent to the CPU for forwarding



How a packet is processed can have a big impact on performance. The TCAM utilizes a specialized high performance memory lookup which speeds up performance.

Control plane information that is necessary to make packet forwarding decisions (e.g. MAC address tables, routing information, etc) are programmed into the TCAM for fast lookup.



If you take a full BGP route table, watch out! They're getting bigger again.

212084: Jul 7 15:34:25: %MLSCEF-SP-STDBY-4-FIB_EXCEPTION_THRESHOLD: Hardware CEF entry usage is at 95% capacity for IPv4 unicast protocol. 212085: Jul 7 15:34:25: %MLSCEF-DFC2-4-FIB_EXCEPTION_THRESHOLD: Hardware CEF entry usage is at 95% capacity for IPv4 unicast protocol.



I noticed a fun log entry this morning on my edge routers:

<pre># show mls cef maximum-routes</pre>	
FIB TCAM maximum ro	outes :
Current :-	
IPv4	- 688k (default)
MPLS	- 64k
IPv6	- 128k
IP multicast	- 8k



Traffic Engineering



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Having stable and uninterrupted Internet connectivity is becoming increasingly important, particularly with regard to applications like cloud computing, service as a platform and many others.

In order to improve the robustness of Internet connectivity, it is obvious to connect endpoints to multiple Internet service providers (ISP) simultaneously.





Of course this problem can be easily solved with that universal tool:





SCTP

- New transport protocol
- Supports multihoming & streams

LISP

 Global directory-driven mGRE/NHRP-like solution

shim6

Add-on for TCP over IPv6

HIP

 Replaces IP address with signed host identifiers



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Locator/ID Separation Protocol (LISP) (RFC 6830) is a Map-and-encapsulate protocol which is developed by the Internet Engineering Task Force LISP Working Group.

LISP Use

- 1. Efficient Multihoming
- 2. IPv6 Transition Support
- 3. Efficient Virtualization/Multi-Tenancy
- 4. Data Center/VM Mobility
- 5. LISP Mobile-Node







LISP Advantages

- Improved routing scalability.
- BGP-free multihoming in active-active configuration
- Address family traversal: IPv4 over IPv4, IPv4 over IPv6, IPv6 over IPv6, IPv6 over IPv4
- Inbound traffic engineering
- ✓ Mobility
- Simple deployability

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LISP Advantages

- ✓ No host changes are needed.
- Customer driven VPN provisioning replacing MPLS-VPN
- ✓ Network virtualization
- Customer operated encrypted VPN based on LISP/GETVPN replacing IPsec scalability problems
- High availability for seamless communication sessions through (constraint-based) multihoming

SPEN ISP

Implementations

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2/6 mayo - la habana, cuba



Muchas Gracias Cuba!

Thanks so Much! Muito Obrigado!