Anycast as a Load Balancing Feature

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Introduction

- Service availability is critical to business function
- Large scale failures often require slow, manual restoration
- Maintenance of next-nearest fallback configuration is painful
- Traditional Anycast deployments scale poorly with capacity
Failover Techniques

- Backend failure
Failover Techniques

- Load Balancer failure, site failure
Anycast is a network routing technique where many hosts have the exact same IP address.

Clients trying to reach that IP address are routed to the nearest host.
Combining Load Balancing and Anycast

- Reduced amount of route advertisers
- Reduced number of routing changes
- Tolerates LB failure
- No need for manual configuration to define failover location
- No need for manual intervention to deal with LB failure
...and turning it into a service

- Many services per location
- One load balancing instance per location
- Centralized management for it all
- Simple to use to by other service owners/sysadmins
Implementation Details - Load Balancer

- Load Balancer
- Heartbeat
- Ldirectord
- ip_vs
- ifconfig
- Quagga

Server 1, Server 2, Server 3, Server 4, Server 5
Software details

Heartbeat
- Active-passive cluster resource management

Idirectord
- Backend monitoring software
- Patched to add "fallback command"

ip_vs
- Linux kernel module for load balancing

Quagga
- Software implementation of routing protocol daemons
- Advertises availability of services using /32 routes
If a new service owner wants to use it...

- Reserve IP on the Anycast subnet.
- Create the new Anycast VIP config:
  - Same as a normal/local VIP
  - Plus a "fallback command"
- Done.
Reference links

- Quagga, a software routing suite, http://www.quagga.net
- Ldirectord, http://www.vergenet.net/linux/Ldirectord/
Questions?

Thank you!