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Improving Route Scalability with Nexthop Objects

Wednesday, September 11, 2019 12:00 PM (45 minutes)

Route entries in a FIB tend to be very redundant with respect to nexthop configuration with many routes using the same gateway, device and potentially encapsulations such as MPLS. The legacy API for inserting routes into the kernel requires the nexthop data to be included with each route specification leading to duplicate processing verifying the nexthop data, an effect that is magnified as the number of paths in the route increases (e.g., ECMP).

A new API was recently committed to the kernel for managing nexthops as separate objects from routes. The nexthop API allows nexthops to be created first and then routes can be added referencing the nexthop object. This API allows routes to be managed with less overhead (e.g., dramatically reducing the time to insert routes) and enables new capabilities such as atomically updating a nexthop configuration without touching the route entries using it.

This talk will discuss the nexthop feature touching on the kernel side implementation, reviewing the userspace API and what to expect for notifications, performance improvements and potential follow on features. While the nexthop API is motivated by Linux as a NOS, it is useful for other networking deployments as well such as routing on the host and XDP.

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Yes

I confirm that I am already registered for LPC 2019

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