

facebook

World IPv6 Day and IPv6 at Facebook

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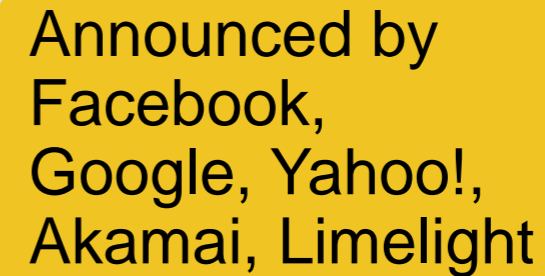
Network Engineering Team - Facebook

May 2011

LACNIC XV - Latin American IPv6 Forum – FLIP6

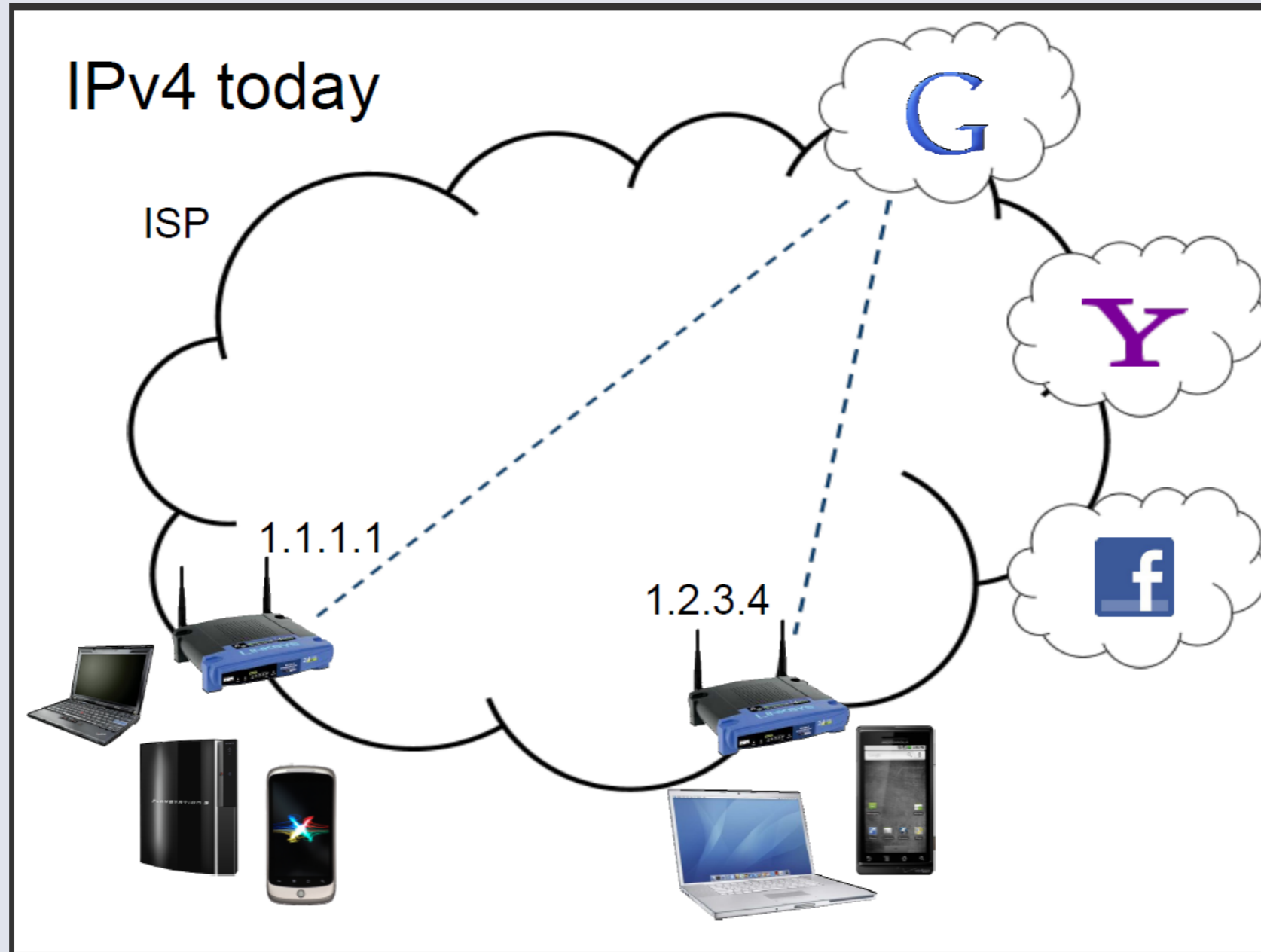
World IPv6 Day: 8 June 2011

- Open to everyone
- Encouraged by ISPs, mobile companies, websites, content providers
- Global awareness for users, ISPs
- First, global test-flight of v6
- Synchronized operations, controlled environment
- Breaks chicken-and-egg situation
- Opportunity to fix hardware/software bugs before June-8

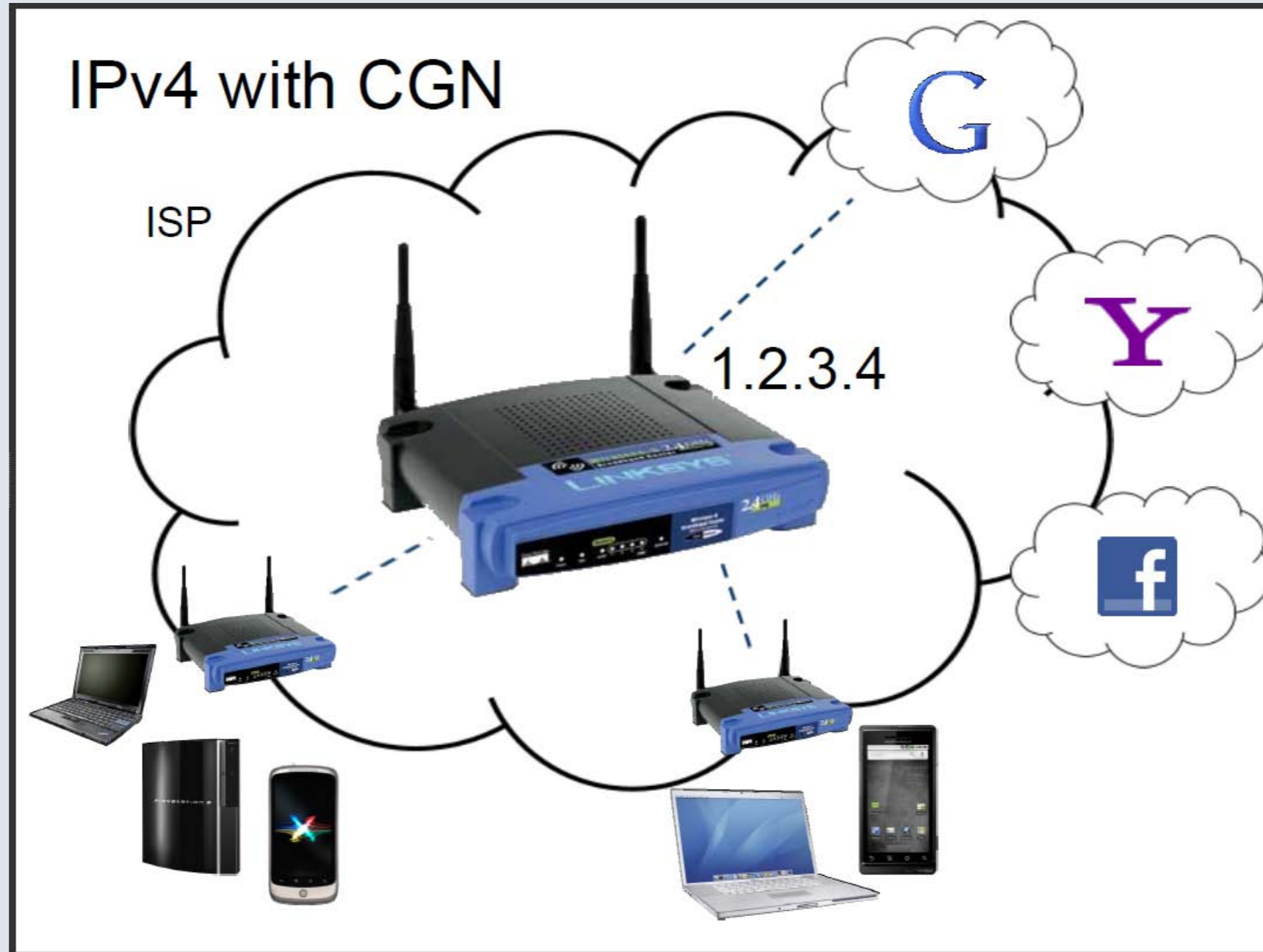
A yellow speech bubble with a tail pointing towards the top-left, containing text about the event's announcement.

Announced by
Facebook,
Google, Yahoo!,
Akamai, Limelight

Direct v4 connection

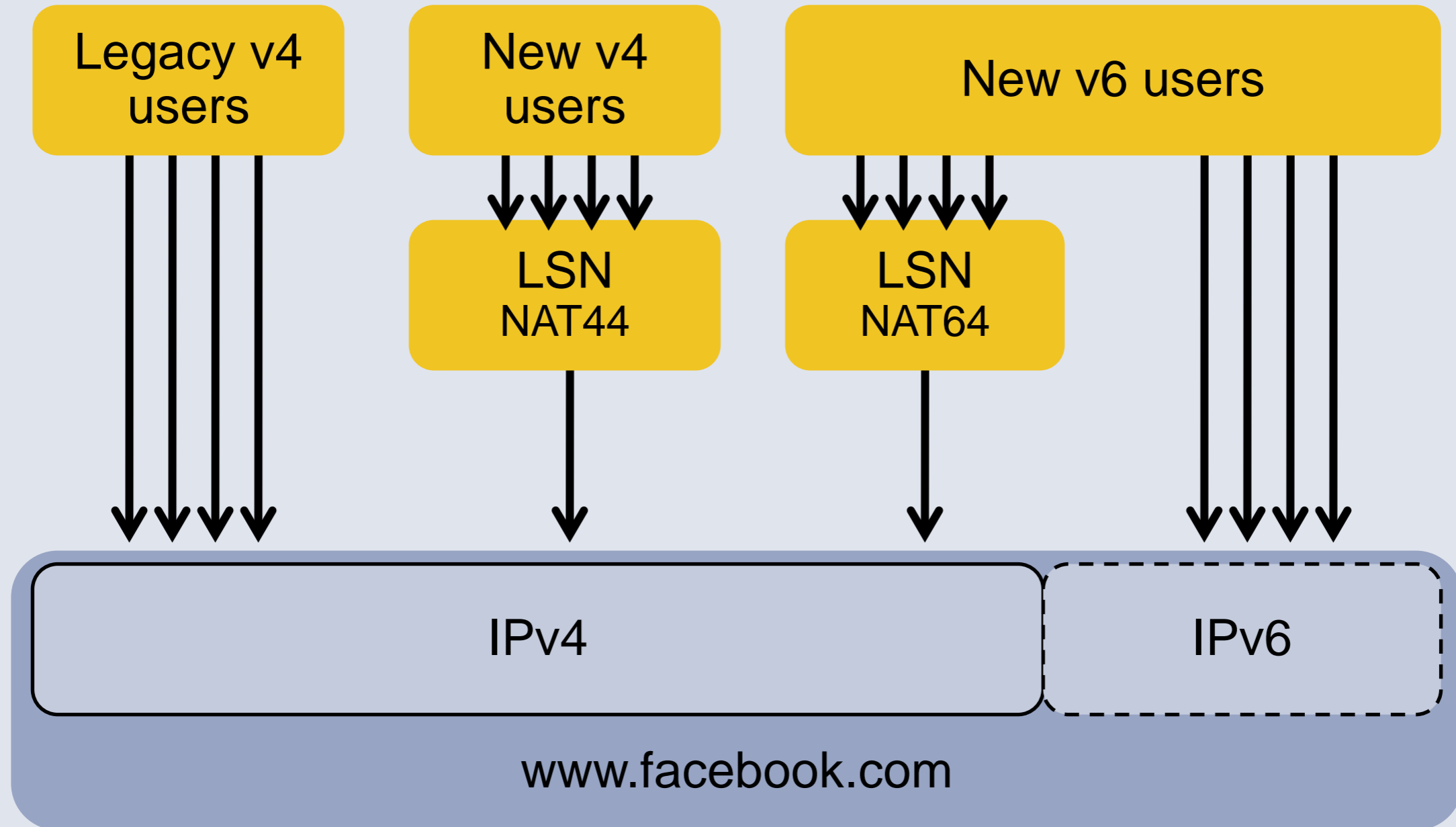


v4 with LSN



Credit: L. Colitti, "The path to IPv6", Google

Large scale NAT



LSN

Adds a device between user and websites

Off-path detour and load on translator adds latency

1000s of users share one IP address

Single attacker can poison an address shared by 1000s of users, Attackers can hide easily

Unknown location and uptime of LSN devices

IPv6

Provides direct, native http connection like today

Shortest path, No added latency

One address per user (or household)

Same security model as today

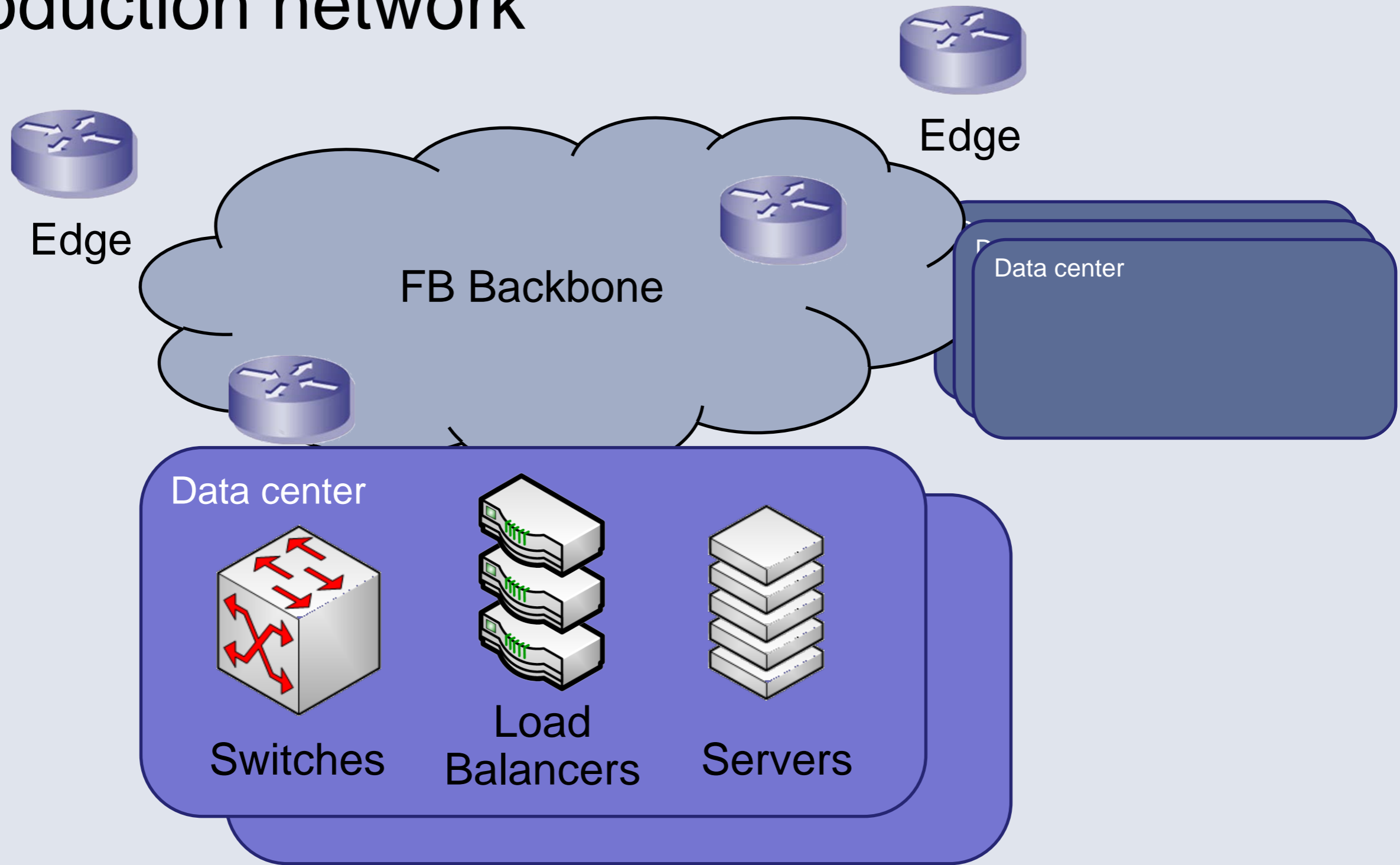
Same SLA model as today

Comparison: Large Scale NAT vs. End-to-end IPv6

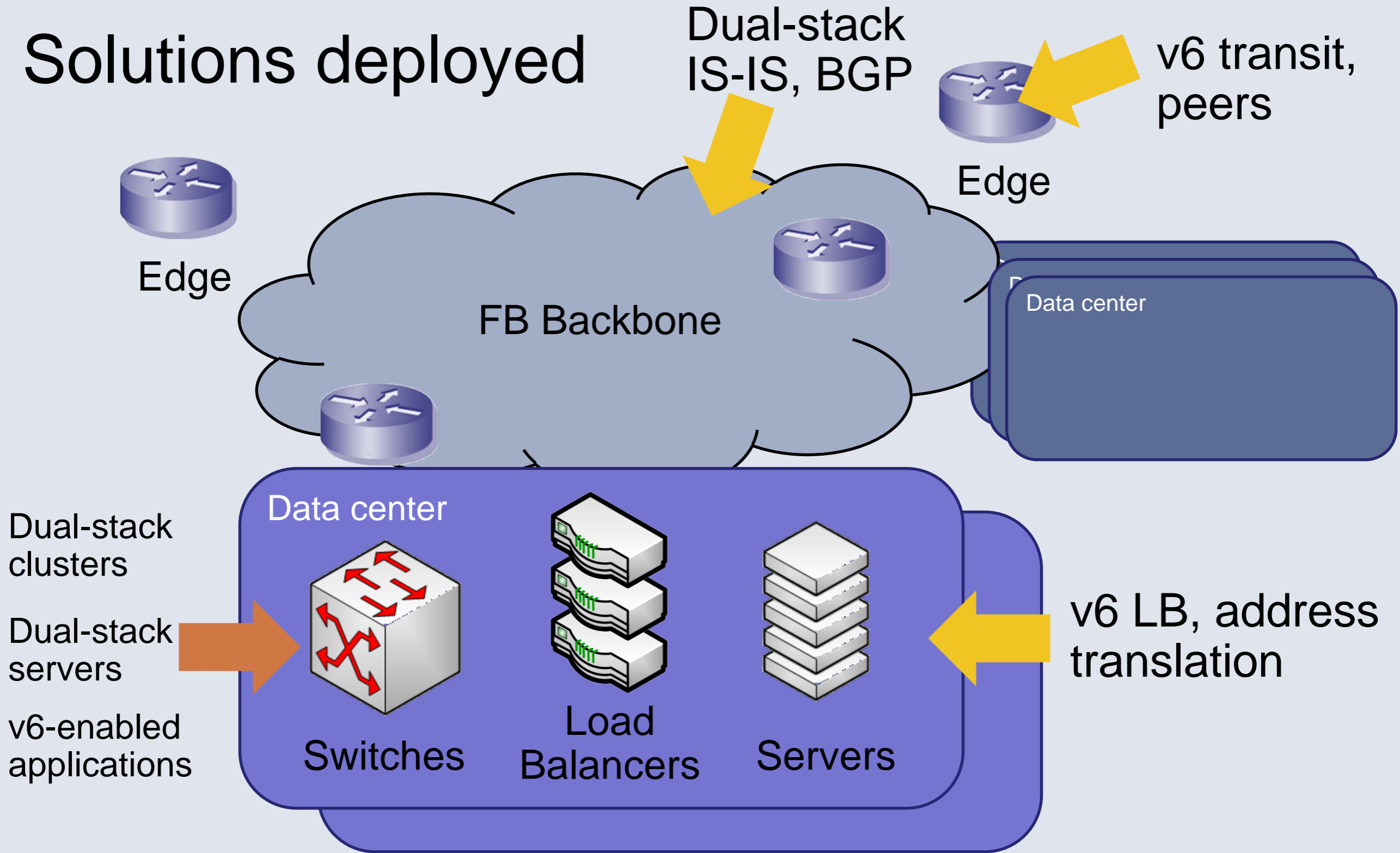
Goals for Facebook's IPv6 implementation

- Serve Facebook application to v6 users
- Deploy IS-IS early
- Go dual-stack on routers
- Make no changes to servers
- Start with two projects
 - Chicago: Native v6
 - Cakewalk: LISP for v6

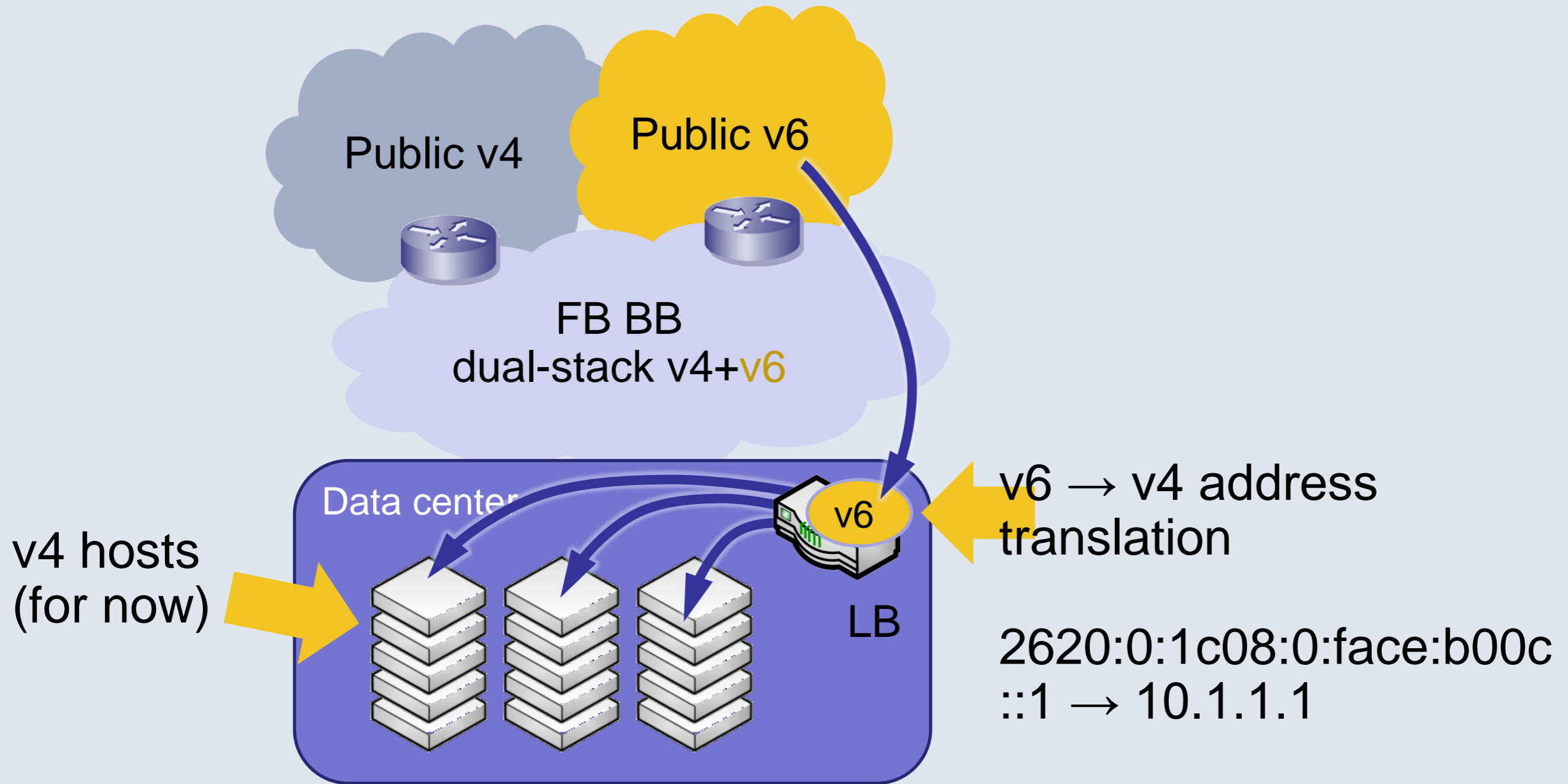
Production network



Solutions deployed



LB address translation



v6 from a network engineer view

Network Hierarchy	Devices	Solutions	Deployment
Edge	Routers	Transit, peering	Day 1, then organic
Backbone	Routers	Routing protocols	Organic
Data center	Switches, load balancers (LB)	Address translation	Enough for W6D and initial v6 use
Host	Servers	No change in most cases, dual-stack for development	Minimal (development hosts and apps)

Opening the floodgates



Opening the floodgates

- Understanding the blast radius of AAAA on broken clients
- Good instrumentation of user experience
- Testing
- Communication
- Taking the leap in doses
- Analysis
- Iteration



World IPv6 Day
8 June 2011

Ongoing and future initiatives

- Code
 - Logging
 - Geo-location
 - Tools
- CDN
- Broken clients
 - Detection
 - Repair

www.v6.facebook.com
m.v6.facebook.com

www.lisp6.facebook.com
m.lisp6.facebook.com

Experimental, non-production

Make your next status update over IPv6

Good report: <http://fud.no/ipv6> (Tore Anderson, Oct-2010)

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