IPv6 Rapid Deployment (6rd) in a Large Data Center

draft-sakura-6rd-datacenter-01

Shishio Tsuchiya shtsuchi@cisco.com
Mark Townsley mark@townsley.net
Shuichi Ohkubo ohkubo@sakura.ad.jp

Introduction

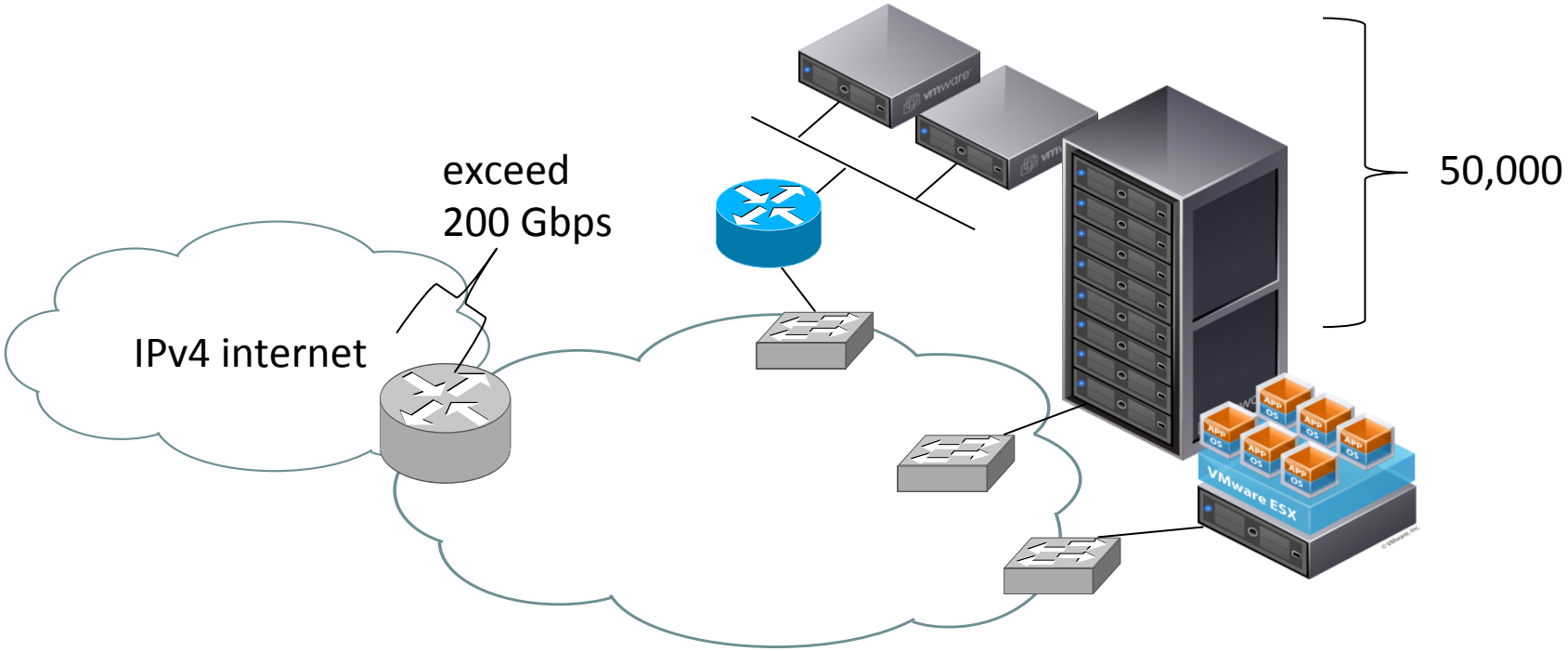
- IPv6 Rapid Deployment (6rd) as defined in RFC 5969 focuses on rapid deployment of IPv6 by an access service provider which has difficulty deploying native IPv6.
- This document describes how one service provider in Japan, Sakura Interent, Inc., not for a large residential deployment, but for a large data center network with protocol unchanged.

6rd deployment customer

http://en.wikipedia.org/wiki/IPv6_rapid_deployment
http://www.kokatsu.jp/blog/ipv4/data/interop2010/S-01_innami_100609.pdf
http://ripe58.ripe.net/content/presentations/ipv6-free.pdf
http://www.comcast6.net/6rd-config.php
http://www.swinog.ch/meetings/swinog22/p/03_IPv6-swinog.ppt

Network Architecture

SAKURA Internet

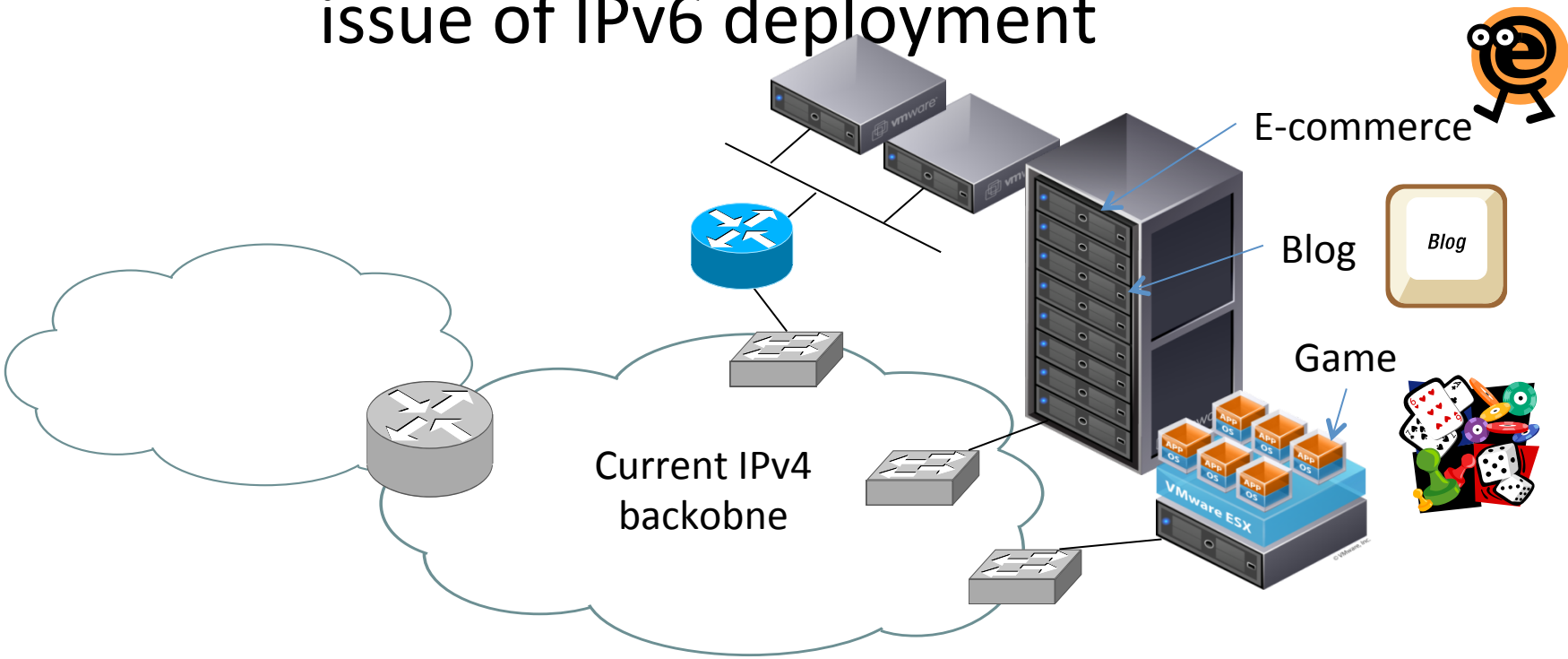


1. Housing Service, which provides Collocation and Internet Access on 5 urban datacenters (4 in Tokyo, 1 in Osaka)
2. Hosting Service, which provides shared service on the servers.
3. Dedicated Server Service, which provides customer dedicated server with variable OSs.
4. Virtual Private Server Service (VPS), which provides guest operating system on the Kernel-based Virtual Machine (KVM).

Network Architecture

issue of IPv6 deployment

SAKURA Internet



1. Some switches are too old.It needs replacement.
2. Some switches require software upgrade to support IPv6.

network downtime and additional cost would be needed.

In datacenter,each server is operated by each server administrator.

And each server is providing different service to different customers.

Server-based 6rd

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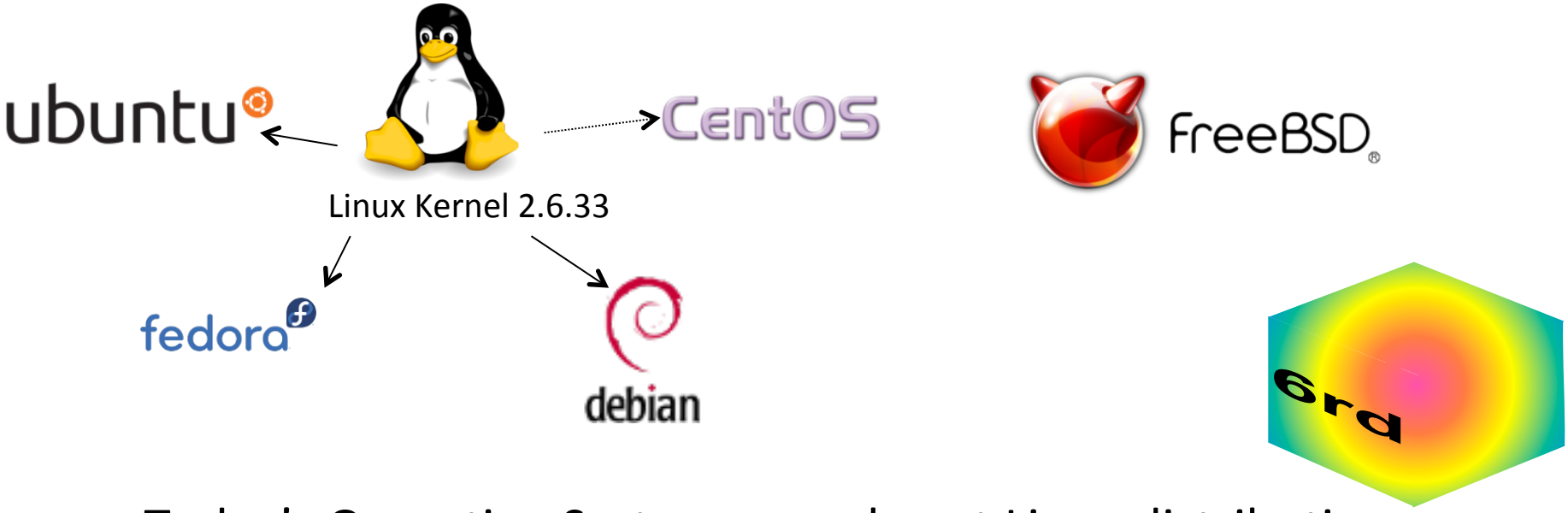

- Today's Operating Systems are almost Linux distribution.
- Linux kernel has started to support 6rd since 2.6.33.
- FreeBSD and CentOS could not provide 6rd in default, but the patch exists.

Network Architecture

Server-based 6rd

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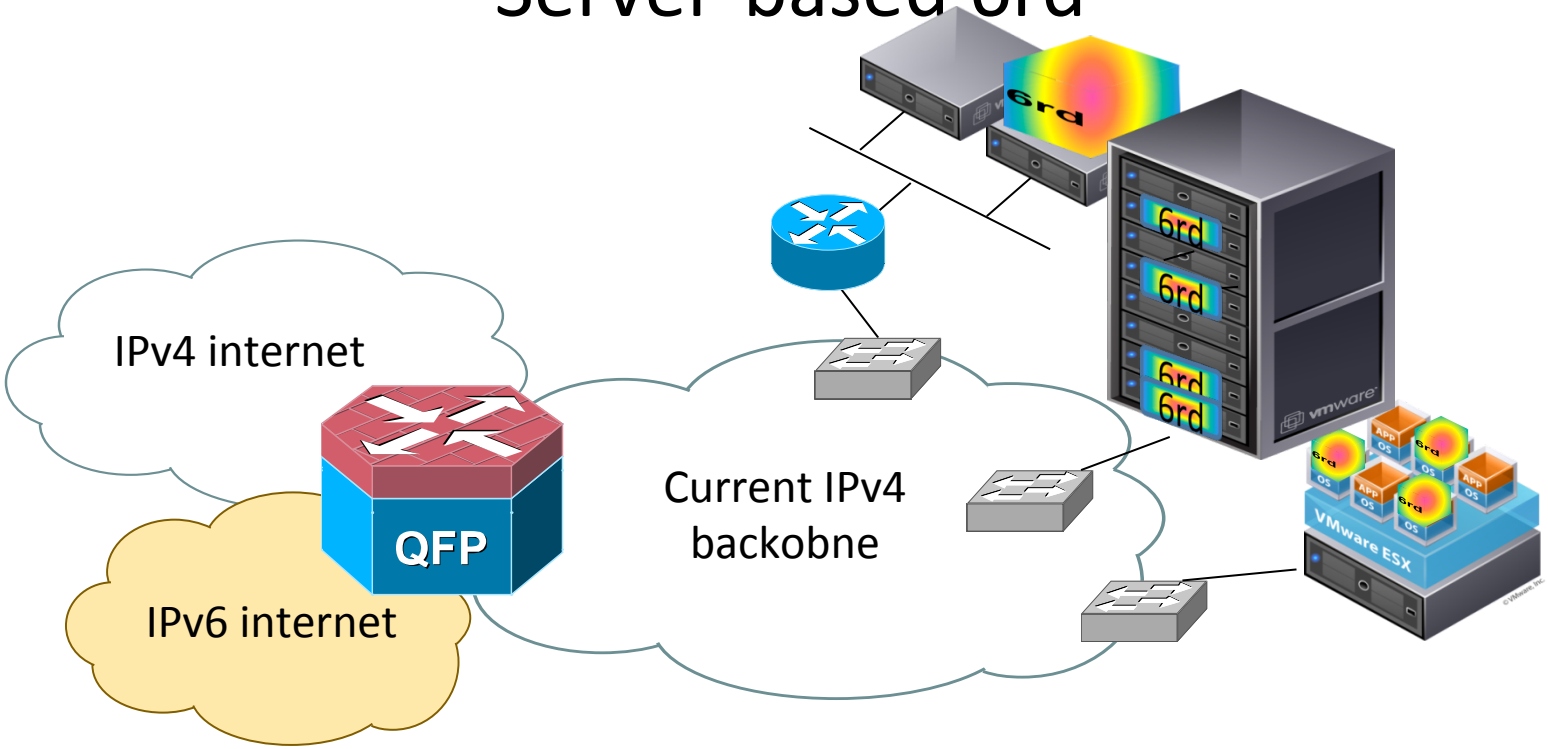

Sakura provide IPv6 internet reachability.6rd BR & information of server-based 6rd (Appendix A.1. OS configuration)

Server administrators can start IPv6 service on demand themselves independent of backbone IPv6 capability.

Deployment Consideration

- IPv4 compression address (Section 4 of [RFC5969])
  - Linux Kernel also support s this feature.Server-based 6rd needs one IPv6 address for the server itself.Even if datacenter has less than /32,the server administrator can get 6rd delegated address.
- Configuration(Section 7.1 of [RFC5969])
  - server-based 6rd does not needs automatic configuration because the server usually configure IPv4 address statically.
- MTU consideration(Section 9.1 of [RFC5969])
  - Server-based 6rd should take care of IPv6 MTU.But it is well-managed switched network. So server administrator may simply set -20 from IPv4 MTU.

next step

- We are thinking this case is new application for 6rd.
- wg adopt?