

Routing Coordination

Akira Kato and others



WIDE Project and APAN-JP
kato@wide.ad.jp

Routing Coordination

☆ **One of the most important role among the operators**

☆ **Goal**

- Provide optimum routing
 - for every pair of source and destination
 - at least avoid sub-optimum routing
 - even in case of troubles/fiber-cuts
- Question: What is the optimum routing?
 - Usually shorter RTT w/ bigger BW
 - Depends on users/type of apps
- Required to comply with policy constraints

☆ **Requires extensive mutual cooperation**

Discussions in Chicago

- ☆ Introduction
- ☆ Each NOC introduced how management of gear is done
- ☆ Short report from discussion in APAN Singapore Meeting
- ☆ Routing information exchange
- ☆ Layer-2 circuit tracking

Routing Information Exchange

- ☆ **We need to get information before fixing the problems**
 - Traceroute only tells the active route
 - Traceroute from the other direction is required
 - Many routes are now asymmetric
- ☆ **Collecting routing information is required**
 - It can tell possible alternate routes
- ☆ **Router Proxy at every NOC also helps a lot**
 - How we can get access info of a particular router
 - Some common naming scheme would be helpful
 - e.g. router-proxy.asNNNN.renog.org
 - Hop-by-hop access is required
 - Sometimes inconvenient for debugging
 - Collecting routing information is helpful
 - "one-stop shopping"

Routing Information Exchange

☆ Chris proposed to feed RT info from every node

- via IBGP
- Pre-selected routes can be seen

☆ APAN Tokyo prepared a box

- Xeon 3.06GHz Dual 2GB 140GB FreeBSD
- Zebra may be able to speak multiple ASes

bgp multiple-instance

```
router bgp 2500 view WIDE
  neighbor XXX.XXX.XXX.XXX remote-as 2500
röuter bgp 7660 view APAN-JP
  neighbor YYY.YYY.YYY.YYY remote-as 7660
...
```

Routing Information Exchange

☆ Benefit of zebra

- It can speak multiple ASN

☆ Drawbacks of using zebra

- No recent development activities
 - Lack of latest functionalities including 4byte ASN
- No SNMP support
- No "show ip bgp view ANY sum" command
 - routerproxy script may supply view names
 - Source code is available to modify

☆ Does R&E network router have 200k full routes?

- Which routes to send?
- Send all, filter commercial routes at RT collector?
 - Bigger overhead
- Send routes with specified origin ASNs?
 - Hard to update the filter on-time

BGP Community

☆ A limited additional attributes

- Need to explicitly pass the community
 - In some routes including cisco
- 32bit value
 - 16bit ASN + 16bit number
 - extended communities available
- Route source can control acceptance/advertisement
 - Primary/backup, customer/peer, ...

☆ 16bit number is defined in each AS

- No common number is defined
 - Confusing and inconvenient
- May we able to define a common set of values?
 - Within RENOG scope
 - Space should not conflict with existing ones
 - 1000-1099 is okay?