Using a software router

Masakazu Asama @ Ginzado Co., Ltd.

Topics: What I will Speak

- Self introduction
- Case studies
  - Case (1): As a BGP router for a regional ISP (BM)
  - Case (2): As a shared CDN cache router (BM)
  - Case (3): As a static route, router for a regional ISP (VM)
    (BM: bare metal; VM: virtual environment)

  All of them run on PC UNIX installed on PC servers with IA32/Intel 64 architecture; this is not a usual case of white boxes...
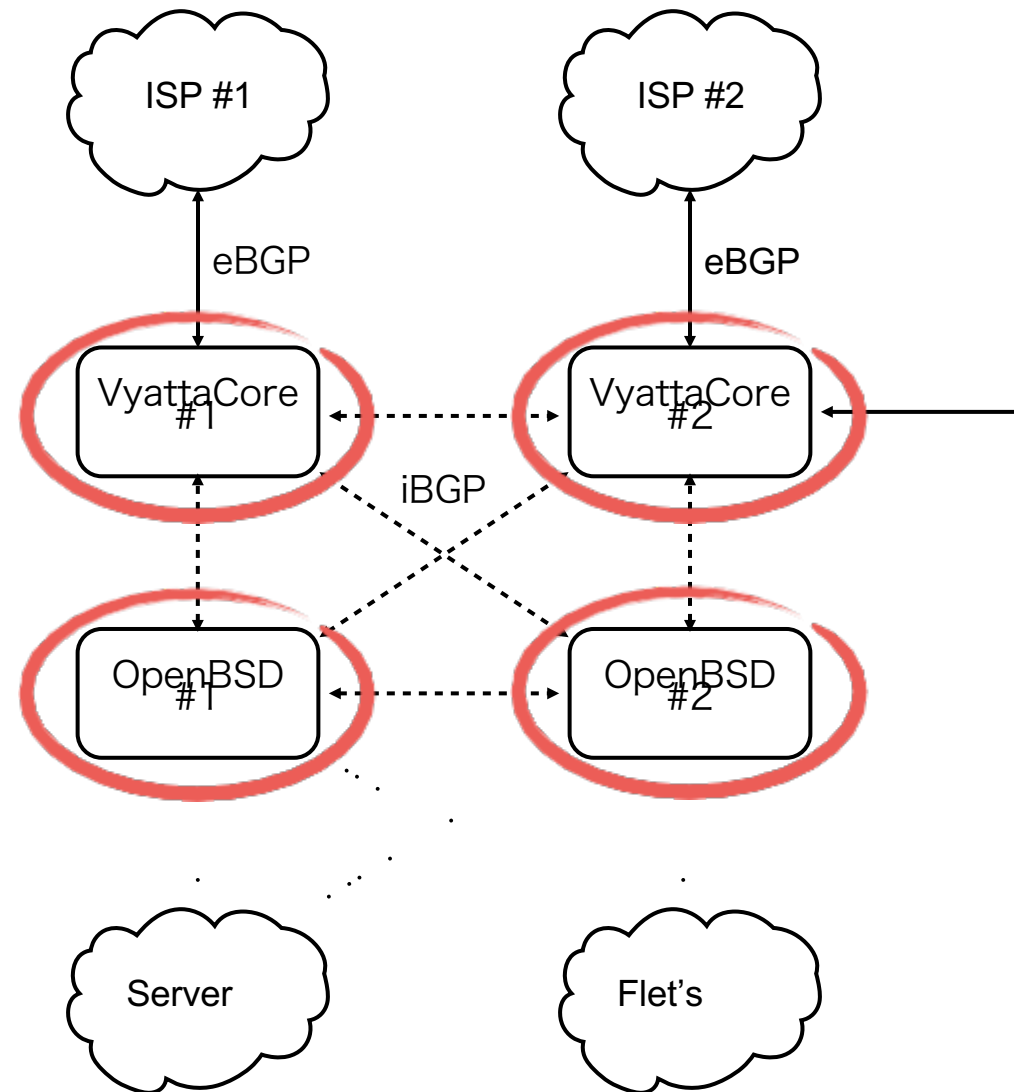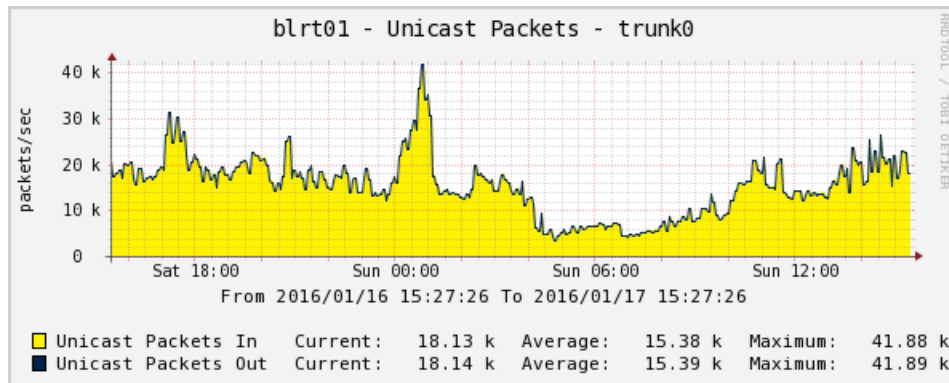- Sharing operational experience

Ginzado?

- A regional ISP in Sanjo, Niigata Prefecture
- Approx. 1,300 members
- Provides internet connection services
  (NTT's FLETS connections) and hosting services
- Began dial-up connection services in 1996 (Static route connection with upstream at this point)
- Initiated BGP connections in April 2009, and most services currently operate with BGP
- Employees: 7 (network: 2)
- Offer computer repairs, cosmetic sales, and welfare services besides ISP services

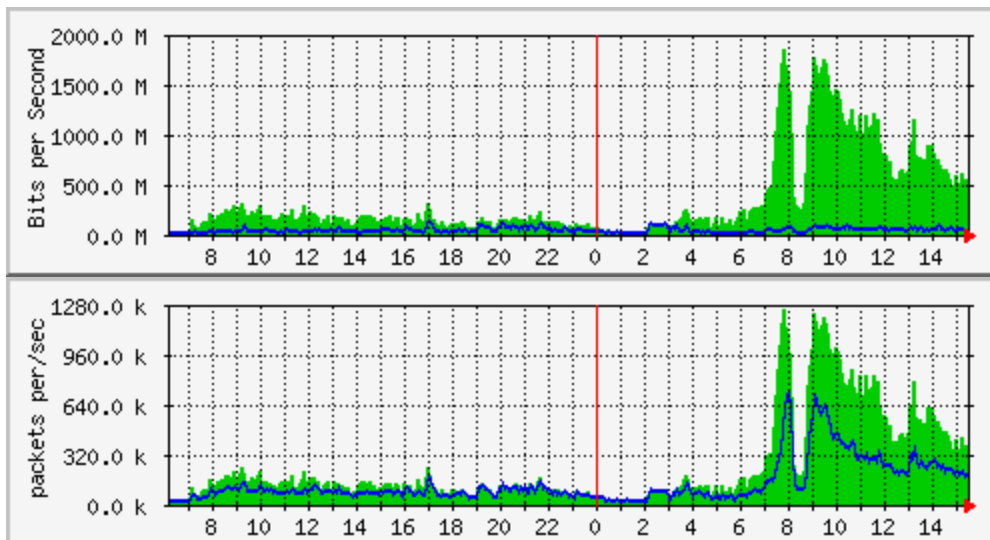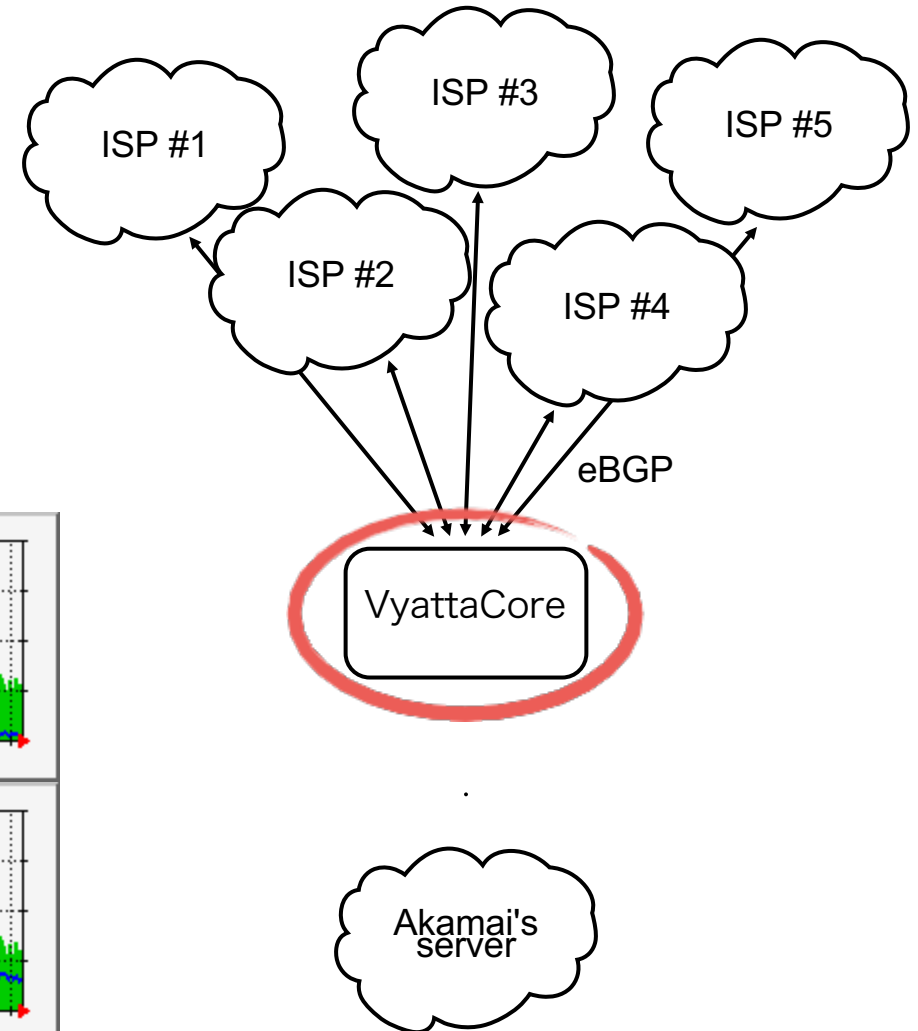# Case (1): a BGP connection router for a regional ISP

- Operates with two PC servers that have installed Vyatta Core (Linux) for BGP connections with two upstream ISPs
- Operates with two PC servers that have installed Open BSD as the core routers ☺
- Stable operation with very few issues since April 2009

blrt01 - Unicast Packets - trunk0

From 2016/01/16 15:27:26 To 2016/01/17 15:27:26

	Current:	Average:	Maximum:
■ Unicast Packets In	18.13 k	15.38 k	41.88 k
■ Unicast Packets Out	18.14 k	15.39 k	41.89 k

☞ ⊠ Open BSD #1's packets/sec

ISP #1

ISP #2

eBGP

eBGP

VyattaCore #1

VyattaCore #2

iBGP

OpenBSD #1

OpenBSD #2

Server

Flet's

Case (2): a shared CDN cache connection router

- The router is for accessing Akamai's CDN cache, located in Echigo-IX (A regional IXP operated by 5 ISPs within Niigata Prefecture)
- 1 Gbps Ethernet × 2 LAG connections for both upstream and downstreams

☞ ⊠ Vyatta Core's bits/sec and packets/sec

Case (3): A static route connection router for a regional ISP

- Router for a statically routed connection which was in use before migrating to BGP the connection
- The router is connected to DNS servers, hosting servers and housing servers which were too difficult to migrate
- Operates in a Linux KVM virtual environment which houses a hosting server and VPN router
- It was originally a regular router, however, since it broke down in the late evening, it was restored through a virtual machine from a remote site, and has stayed as it is until today. (It was initially meant to be a temporary restoration measure, but we could no longer be bothered to undergo the full restoration, hence operating as it is since then)
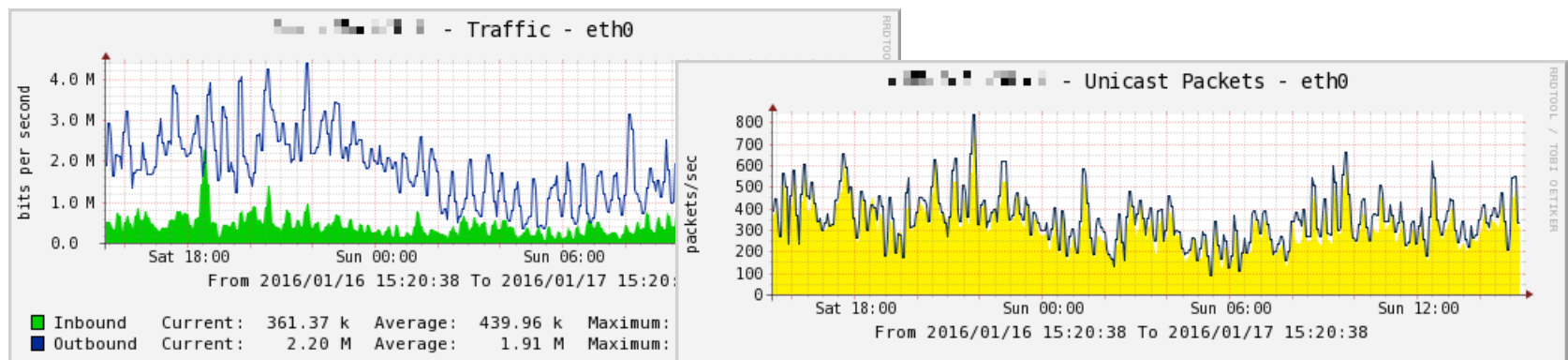
Operational Experience

- The positives:
  - They can be replaced quickly and cheaply if they break
    - ☞ They are cheap, which makes it easy to stock spare units
  - They can run in a virtual environment, so they are easy to test
    - ☞ Testing configuration changes is likely to be easy
  - ☞ Could reduce machines (with virtual routers)
    - ☞ Works also as a measure against failures (They can be migrated if a host experiences failure)
- ☞ The negatives:
  - No such thing as vendor support and so on
    - ☞ Look for solution on your own when faced with problems
  - New features may not work?
    - ☞ Performance is slightly unstable for BGP's optional features which are not yet standardised (for virtual routers)
    - ☞ Use them appropriately and in the right place