Improving interconnection in Japan and beyond

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Next JANOG meeting

- JANOG meetings
  - 500-600 attendees (Tokyo meeting are 1000+)
  - Around 10 foreign attendees, 2-3 English presentations
- JANOG37
  - Nagoya (BBIX and JPIX have switches)
  - 2hour Shinkansen ride from Tokyo
  - January 20-22 3days
  - https://www.janog.gr.jp/en
    - More info on JANOG37 to be provided soon on English wiki

What's important for interconnection?

Data Center

subsea

IXP

IP Transit

Metro

What can make a difference to interconnection?

- Regulation
  - License
  - Competition
  - Trade issues

- Market structure and business rules

- <u>Community??</u>

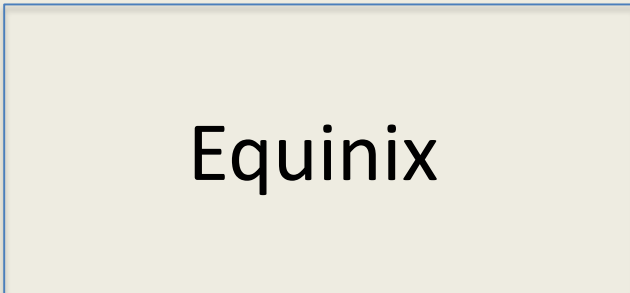# Internet eXchanges in Japan now
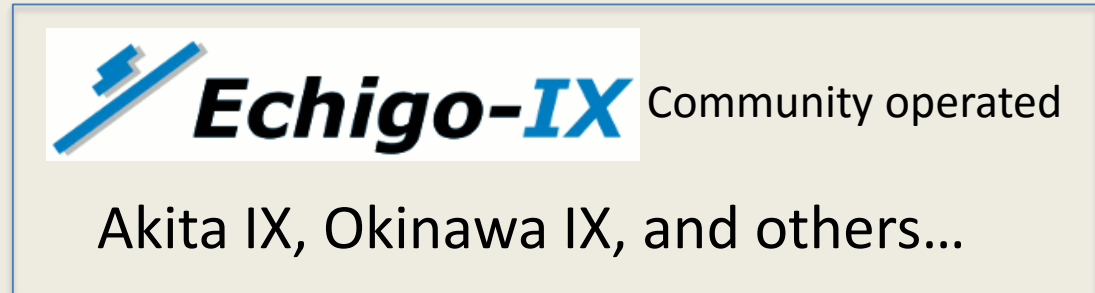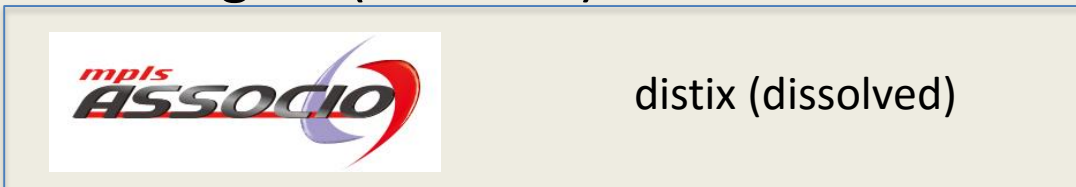
Major city exchange

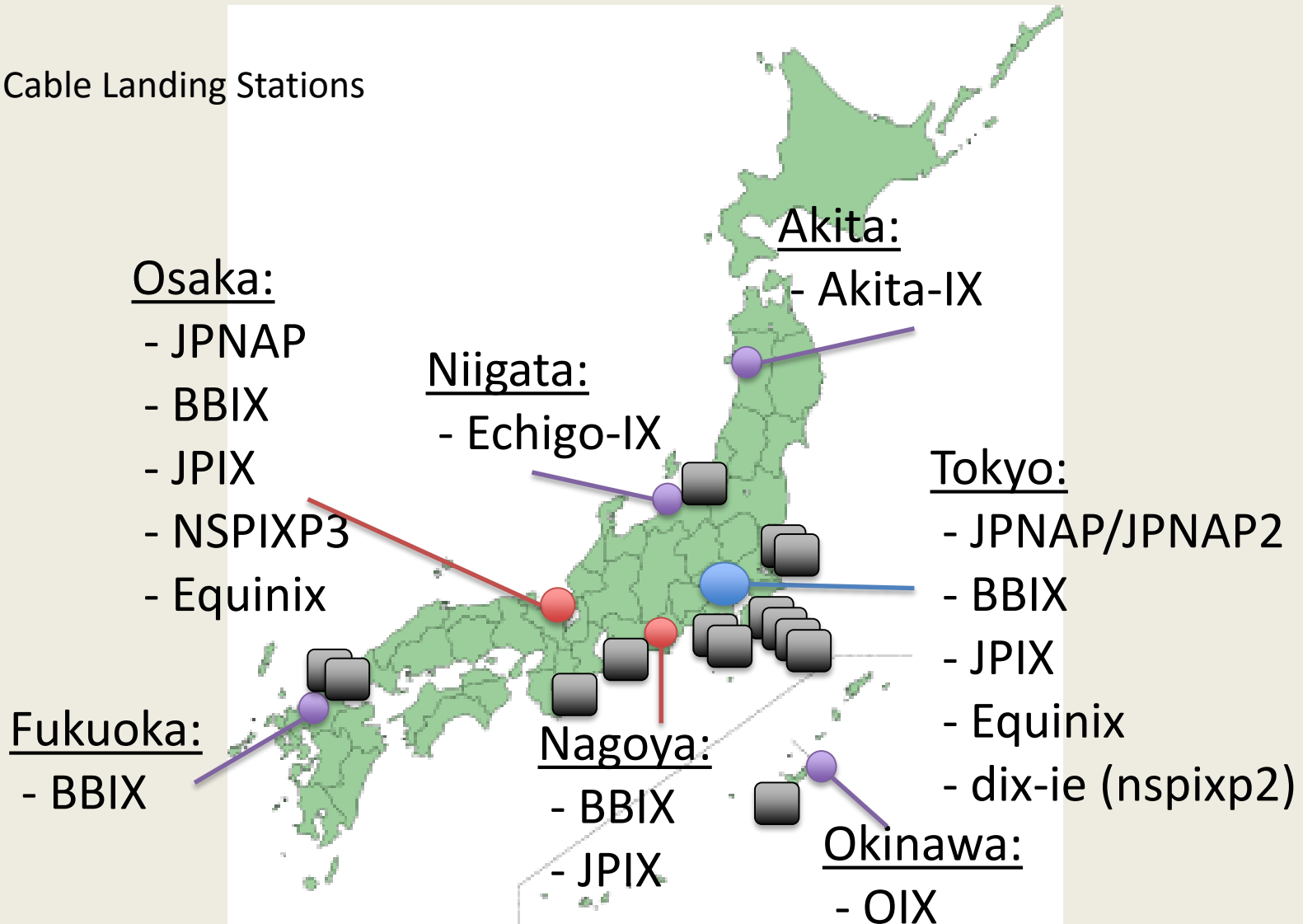### Academic

Global exchange

Equinix

Regional exchange

 Community operated

Akita IX, Okinawa IX, and others…

Inter-region (MPLS-IX)

distix (dissolved)

Distribution throughout the country

Cable Landing Stations

Akita:
- Akita-IX

Osaka:
 - JPNAP
 - BBIX
 - JPIX
 - NSPIXP3
 - Equinix

Niigata:
- Echigo-IX

Tokyo:
 - JPNAP/JPNAP2
 - BBIX
 - JPIX
 - Equinix
 - dix-ie (nspixp2)

Fukuoka:
- BBIX

Nagoya:
 - BBIX
 - JPIX

Okinawa:
- OIX

Major Tokyo Peering Facilities and Exchanges

- KDDI Otemachi (a.k.a Telehouse Tokyo)
  - JPIX

- Equinix TY2
  - EIE, JPNAP, JPIX, BBIX

- NTT <u>Data</u> Otemachi
  - BBIX, EIE, JPIX

- Arteria Com Space I
  - BBIX, EIE, JPIX

Participant Number according to peeringdb
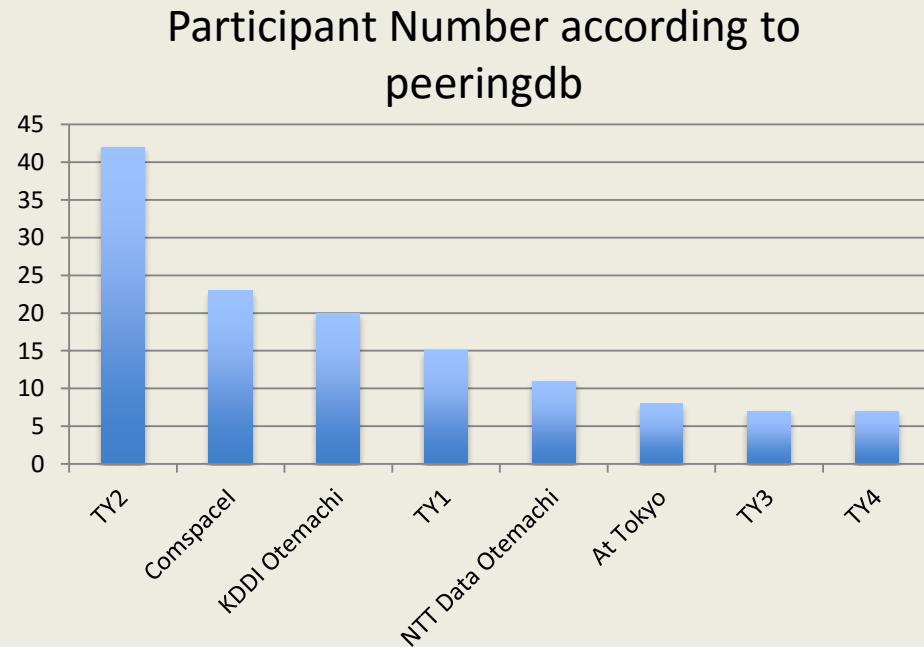
Major IP Transit providers

- Domestic Carriers
  - NTT Com(OCN and GIN), Softbank, KDDI, Arteria, Tokai, K-opticom

- Domestic non-carriers
  - BIGLOBE, sakura internet, IIJ

- International
  - Telstra(Pacnet), TATA

Tokyo in 2012

- 10G IX ports cost 20,000USD per month (currency rate at the time 1USD=100yen)

- Median IP Transit price 15USD/mbps (Hong Kong at the time was already <10USD)

- No where to talk about peering

Declining interconnection (participants and sessions) and high costs were major barriers for everyone

Some other pain points in 2012

- Almost all international traffic went through the "local tier1" that have international capacity
  - NTTCom(2914), KDDI(2516), IIJ(2497), Softbank(4725)
  - Nobody thought about buying international capacity
- Interconnection between data centers, mobile carriers was really bad
  - Lack of peering was a pain for mobile carriers and clouds

Traffic in Japan
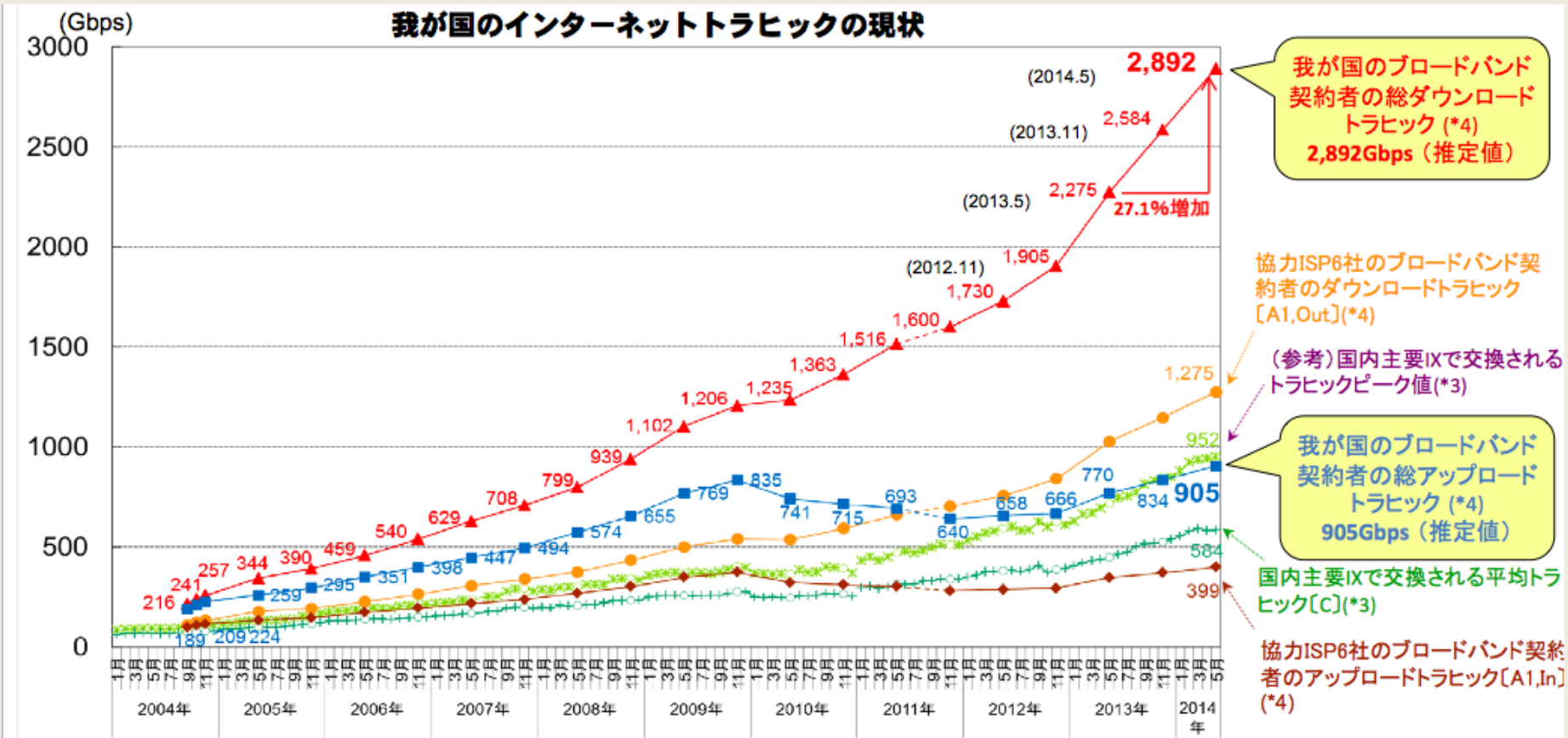
Source: http://www.soumu.go.jp/main_content/000316564.pdf

Broadband (FTTH, CATV, DSL, FWA) download traffic at
2,892Gbps (1.27x from past year)
Mobile traffic is 621Gbps (1.48x from past year)

What we wanted to happen

- DC
  - Easy to work with, reasonable cross connection, space and power available, good density
- IXP
  - Affordable, with good density
- Metro
  - Affordable 10G wave between DCs
- Subsea
  - Affordable CLS to City POP backhaul

For all this to happen we need to understand each other better:
We needed a community!!!

So what we did was…

- BoFs
  - Companies donated meeting space
  - Internet Week BoF (more official)

- Mailing list
  - Limited to IXP participants

- Presentations
  - JANOG, etc.

Where are we today?

- DC
  - Easy to work with, reasonable cross connection, space and power available, good density 😦
- IXP
  - Affordable, with good density 🙂
- Metro
  - Affordable 10G wave between DCs 😦
- Subsea
  - Affordable CLS to City POP backhaul 😦

DCs and Metro needs some work

Success with peering

- Visible
  - Who's connected where? Peer pressure into filling out proper data on peeringdb
  - Who has what kind of policy
- It's okay to talk about it now
  - Peering is no secret trade
  - More articles, presentations, BoFs, active events
- Easy for both international and domestic
- Stopped ridiculous requirements that drives up costs (more on next slide)

What were we doing wrong in the past?

- Intolerance to outages
  - Expected IXPs to solve our problems for us
  - Whenever a downtime happens we questioned them about why and how they where going to prevent this from happening again
- List of participants and negotiations
  - We expected IXP sales to make a list of participants
  - IXP sales would often intervene (or help) with peering negotiations
- Other complications
  - Never questioned why MD5s were necessary
  - Too many route server feature requests

Recap: key questions
# (very difficult to discuss in our culture)

- Why do you connect to an IXP?
  - To peer

- Are we doing things that help peering?
  - If not, do it

- Are we doing anything to discourage interconnection?
  - If so, stop doing it

Metro: the next challenge
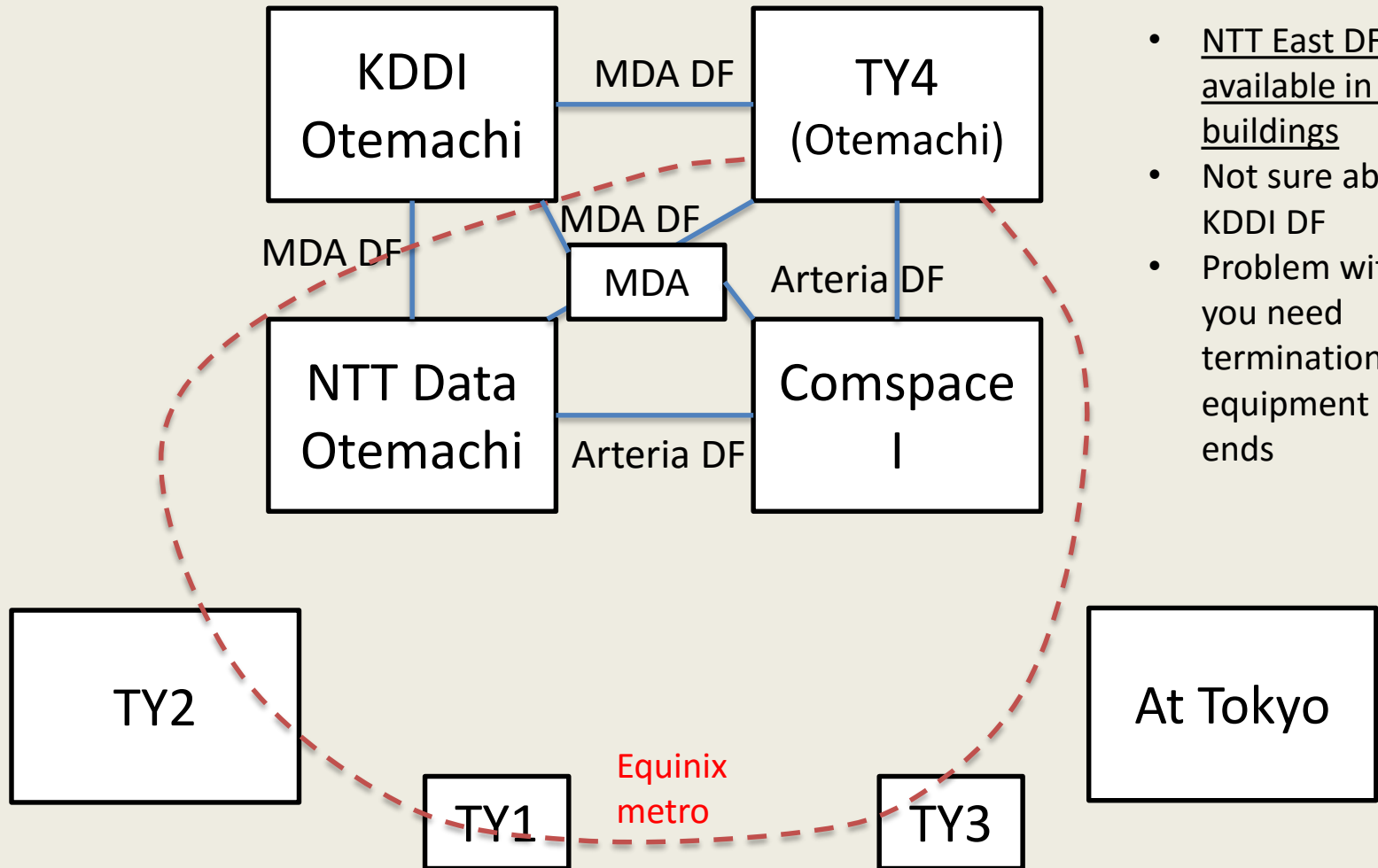
- NTT East DF available in all buildings
- Not sure about KDDI DF
- Problem with DF is you need termination equipment at both ends

What BIGLOBE does today
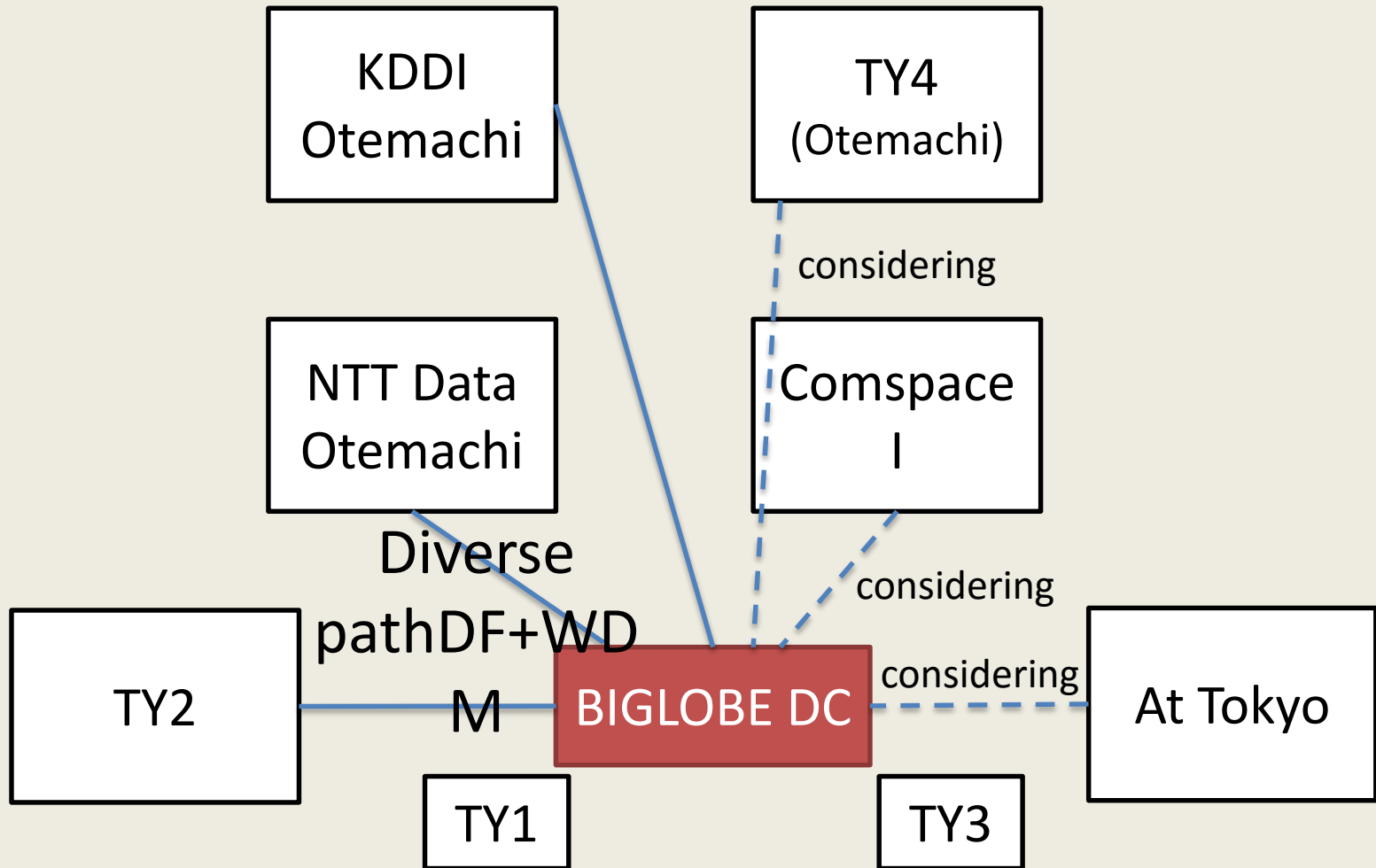
My guess (I may be wrong)

- Solving the metro problem may give us more choice in data centers
  - the "everyone wants to be at TY2" issue
  - The toughest issue in Japan is power, and yet we try to crunch into old buildings with power shortages and no space
- Grey fiber services may help greatly with interconnection
  - Easier cross building PNIs, help smaller ISPs connect to more IXPs
  - But no service significant enough to make a difference exists today

Questions for HKNOG

- What are challenges in Hong Kong today?

- Will we be able to discuss and address interconnection issues for all of Asia? Will people find this useful?

- Any ideas to bring the 2 communities HK and JP closer together?

Peering Ops communities

- JANOG and regional NOGs
  - Open to everyone. JANOG usually January and July
- Peering in Japan BoFs (began 2012)
  - 1-2 times a year at JANOG or Internet Week(usually November)
  - Google groups list. Limited to IX participating AS operators only
- IXP users' meetings

Unfortunately most are Japanese language based