

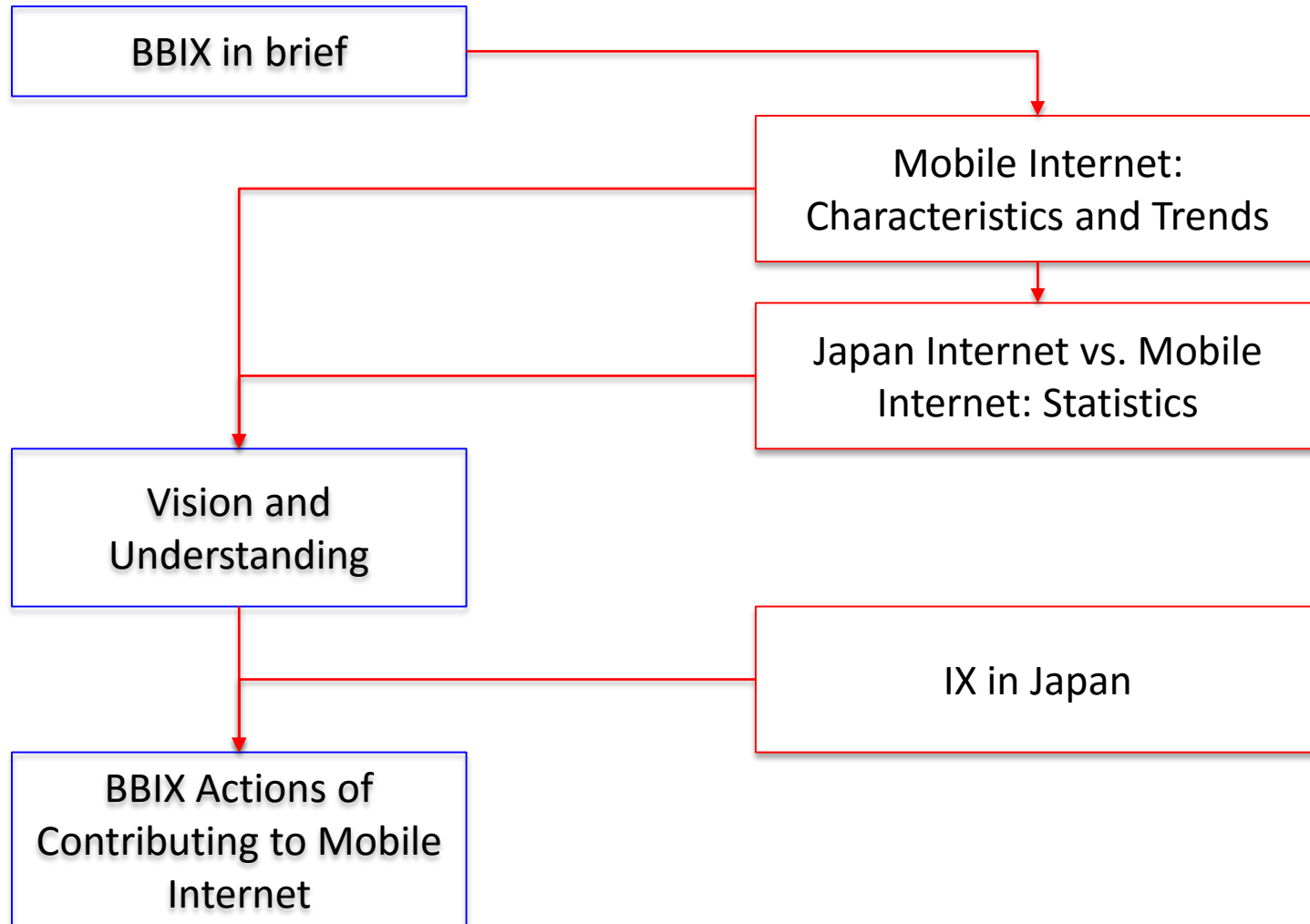
Mobile Internet in Japan and Asia

BBIX's Vision and Mission

Noriyuki Arai, BBIX, Inc.

September 14 2015, HKNOG

Outline



BBIX: an Internet Exchange Provider

A Softbank Group company

- Board members
 - President & CEO – Keiichi Makizono
 - EVP & COO – Michikazu Fukuchi
- Web site
 - <http://www.bbix.net/en>
- Peering DB
 - Exchange Points
 - BBIX Tokyo
 - BBIX Osaka
 - BBIX Nagoya
 - BBIX Fukuoka
 - BBIX Hong Kong / Singapore (since last year)

Quick Facts (2015/09)

- 80+ member ASNs
 - 45+ of Japan
 - 13 of Asia-Pacific area, except JP
 - 20+ of other countries
- 150+ connected ports
 - Almost all 10Gb
 - 4 x 100Gb will be soon deployed

The Trend

MOBILE INTERNET OF JAPAN

Something Different

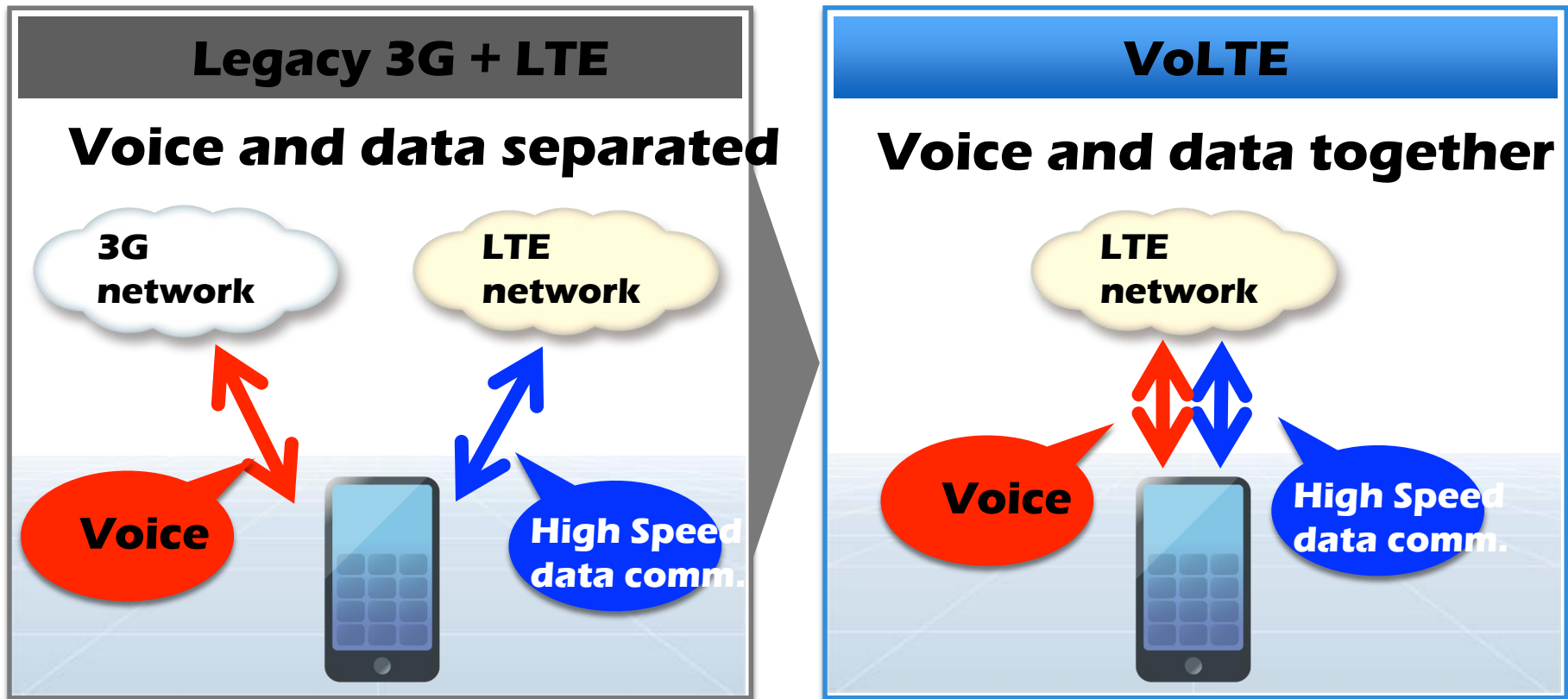
- Subscription
 - 2 years contract is common
 - mobile terminal locked for use with specific carrier's SIM card
 - Discount for the mobile terminal is common
 - but bound with the contract period
 - making a trend of changing terminal every 2 years
 - MNP is common
 - typically with special offers
 - making a lot of people change operator every 2 years. :P
- Data
 - No limitation in monthly use but in speed
 - Speed becomes limited (to 128Kbps) once the total volume exceeds the threshold (e.g. 2GB, 3GB or 7GB per month)

Something Different

- Application
 - Combined with public service facilities
 - e.g. Felica, the e-money card
 - not available for iPhone though
 - Diverse use cases making different group of terminal holders
 - Commodity cellphone
 - Smart phone (mainly Android)
 - iOS family (iPhone, iPad, etc.)
 - not strange that one holds 2 and more cellphone
- MVNO, diverse alternatives
 - Low price
 - Speed limitation

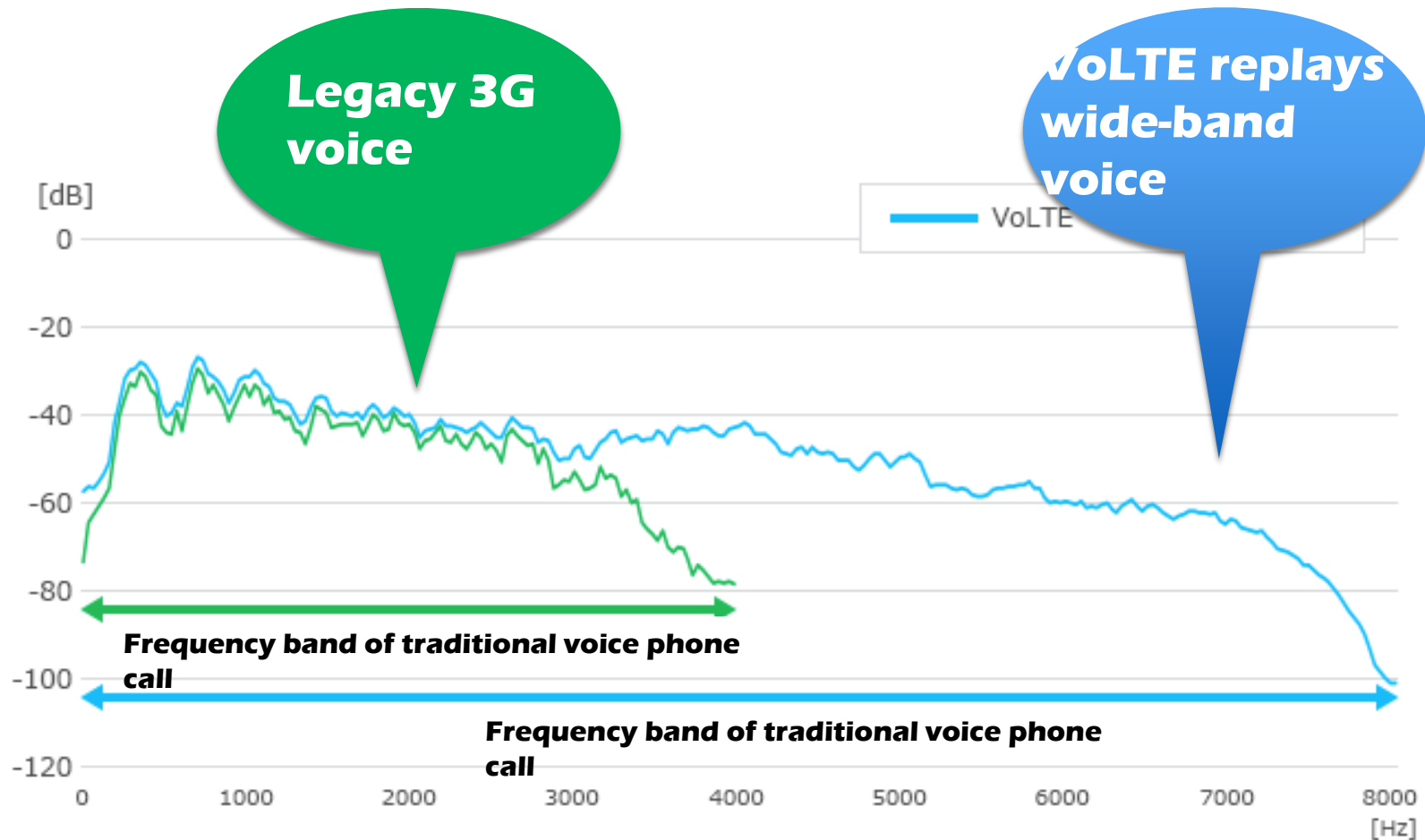
New Trend: VoLTE (since late 2014)

- Enabling high quality voice service over high speed data transmission channel



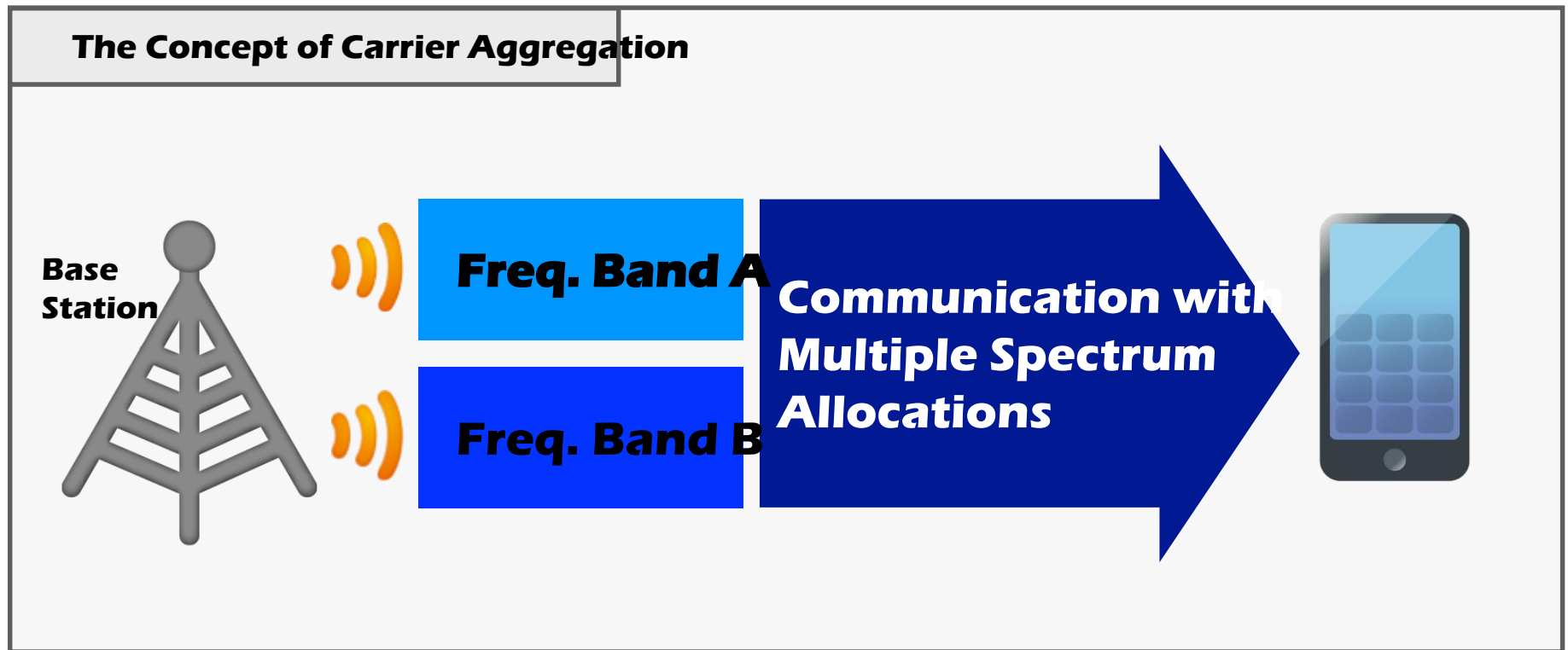
New Trend: VoLTE (since late 2014)

- VoLTE enables high-fidelity replay for high-pitched voice



New Trend: Carrier Aggregation (since mid 2014)

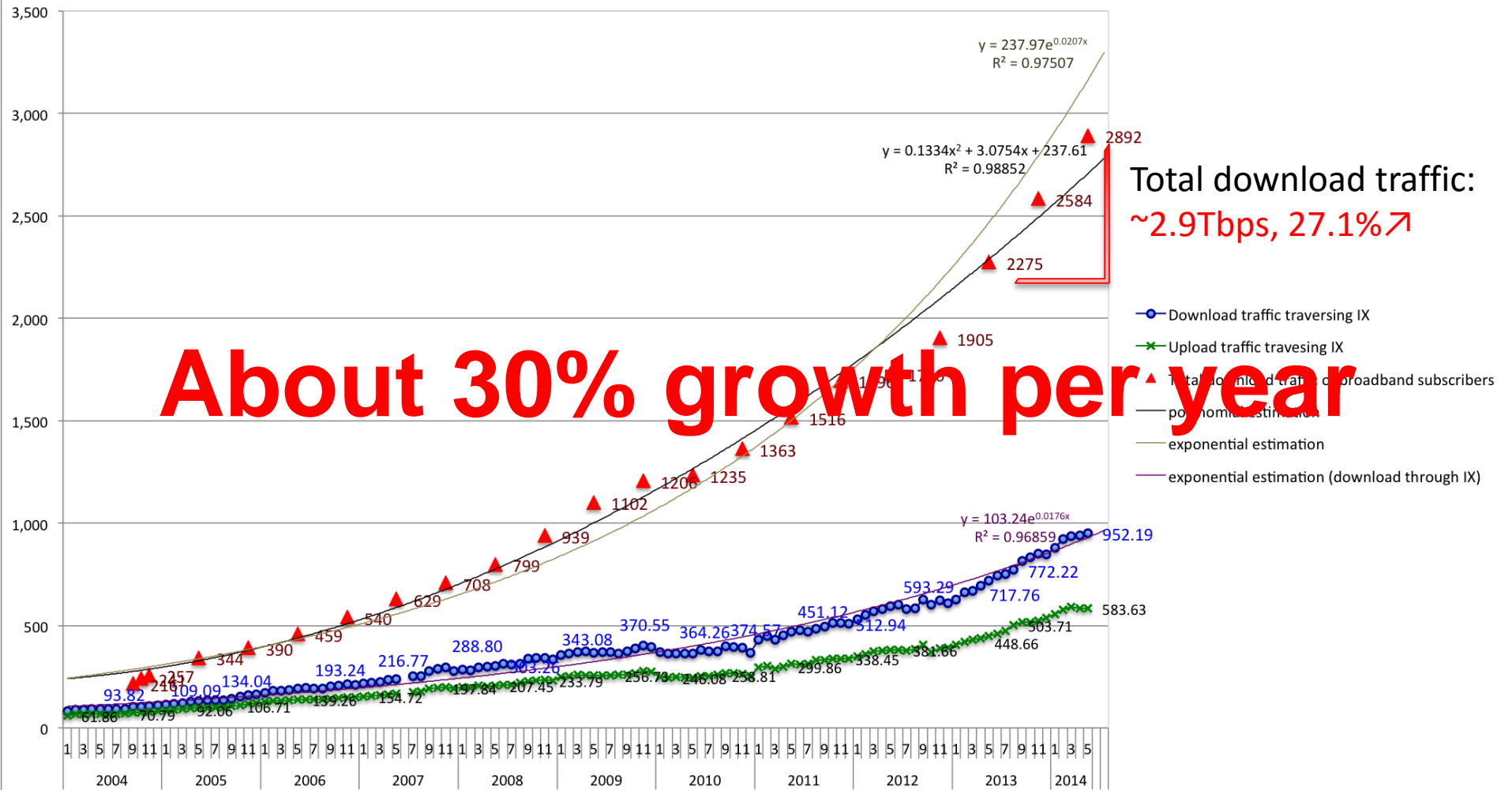
- Aiming at further acceleration of communication
- Enabling high-speed/high-capacity data transfer



Gap between mobile and fixed Internets is being reduced!

Amount of Internet Traffic in Japan

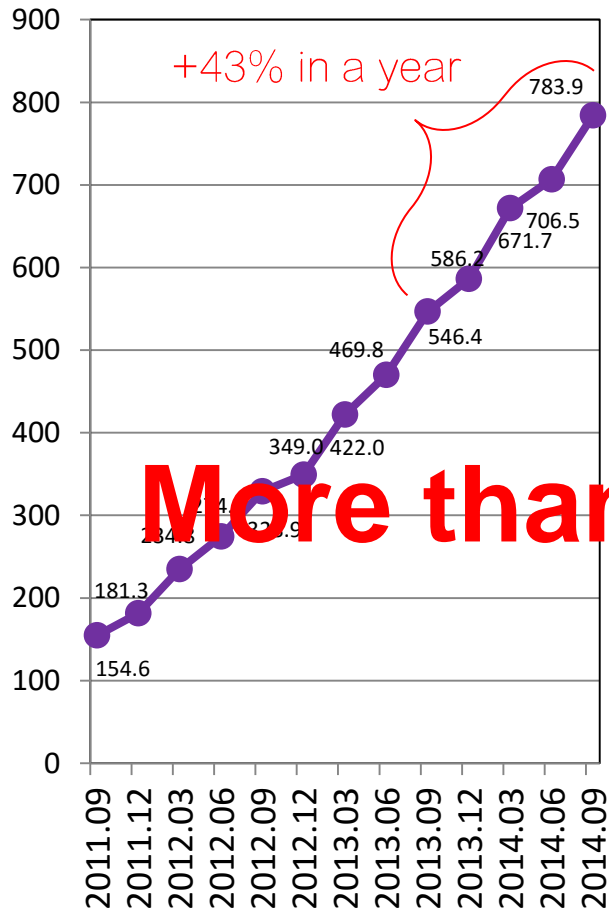
Internet Traffic in Japan during the Recent 10 Years
[Gbps]



Mobile Traffic Trend in Recent 3 Years

Average in Month

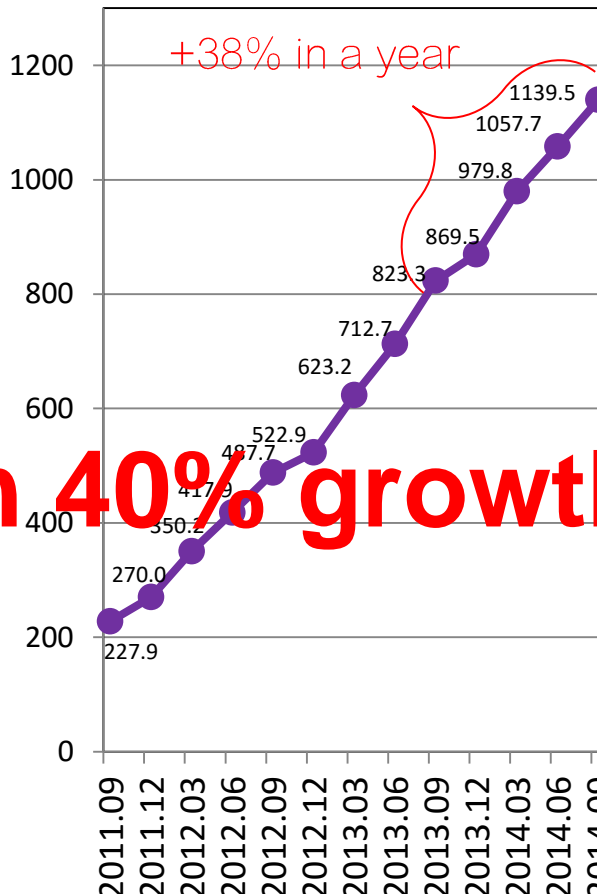
(Gbps)



Peak Hours

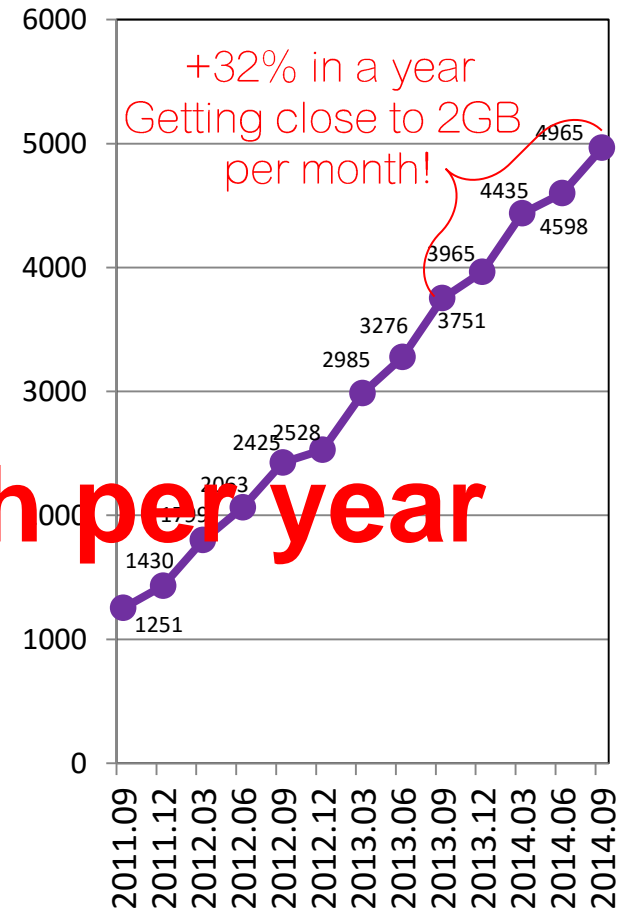
(Gbps)

(Average in 23:00-24:00)



Per subscriber Average

(bps)



More than 40% growth per year

Daily usage (Japan)

Smartphone has become
most used device

134mins



Mobile

44mins



Radio

33mins



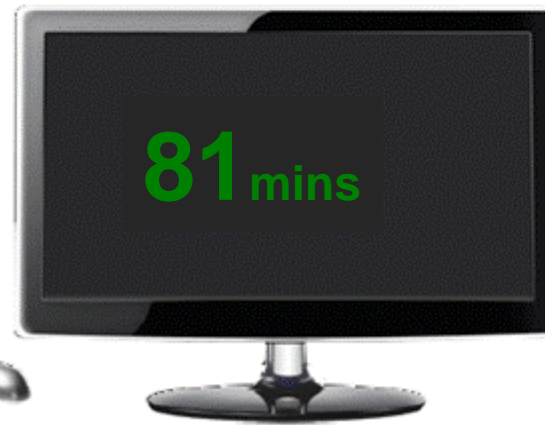
**Magazine
Newspaper**

70mins



Computers

81mins



Television

Average Data Traffic per Smartphone User

(GB/month)

2.9

1.2

0.3

0.3

0.5

0.5

Latin
America

Middle East
&
Africa

East
Europe

West
Europe

North
America



Global No.1



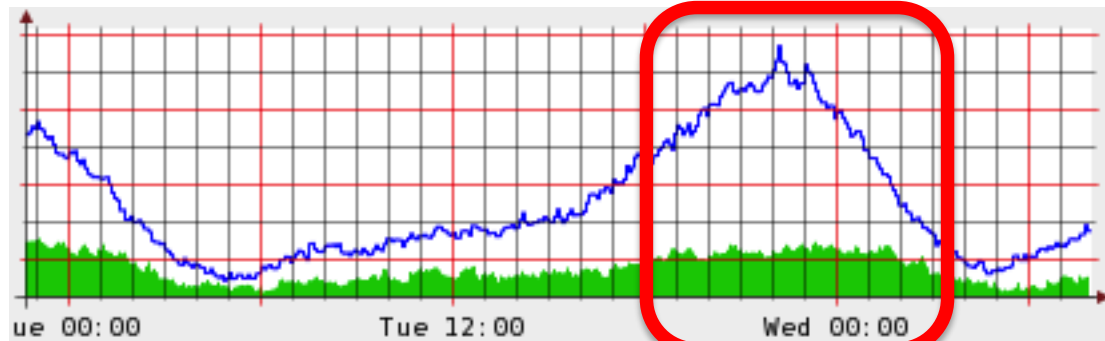
What happens to our backbone?



**Multiple peaks
&
Directional changes**

Traffic shifts even within 24hs!

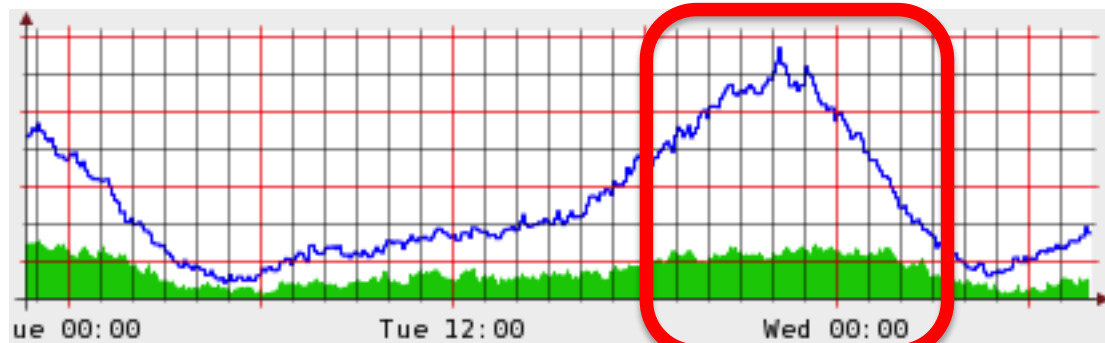
Graph for FNO



Peak once at night

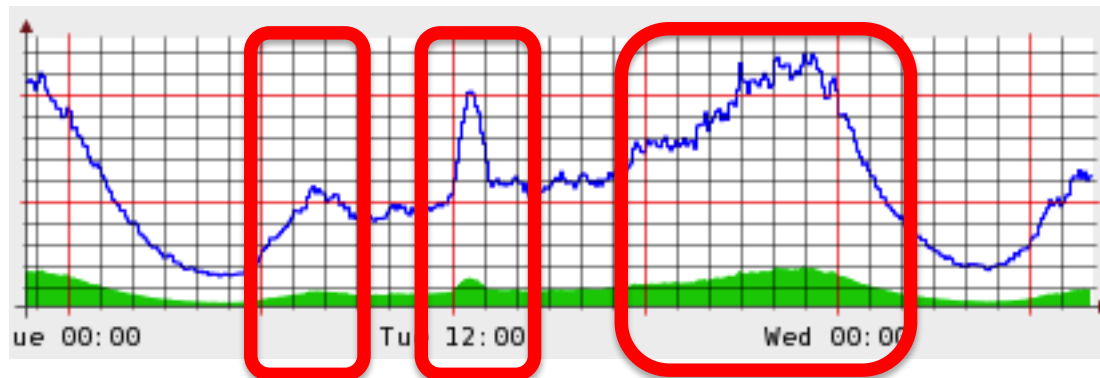
Traffic shifts even within 24hs!

Graph for FNO



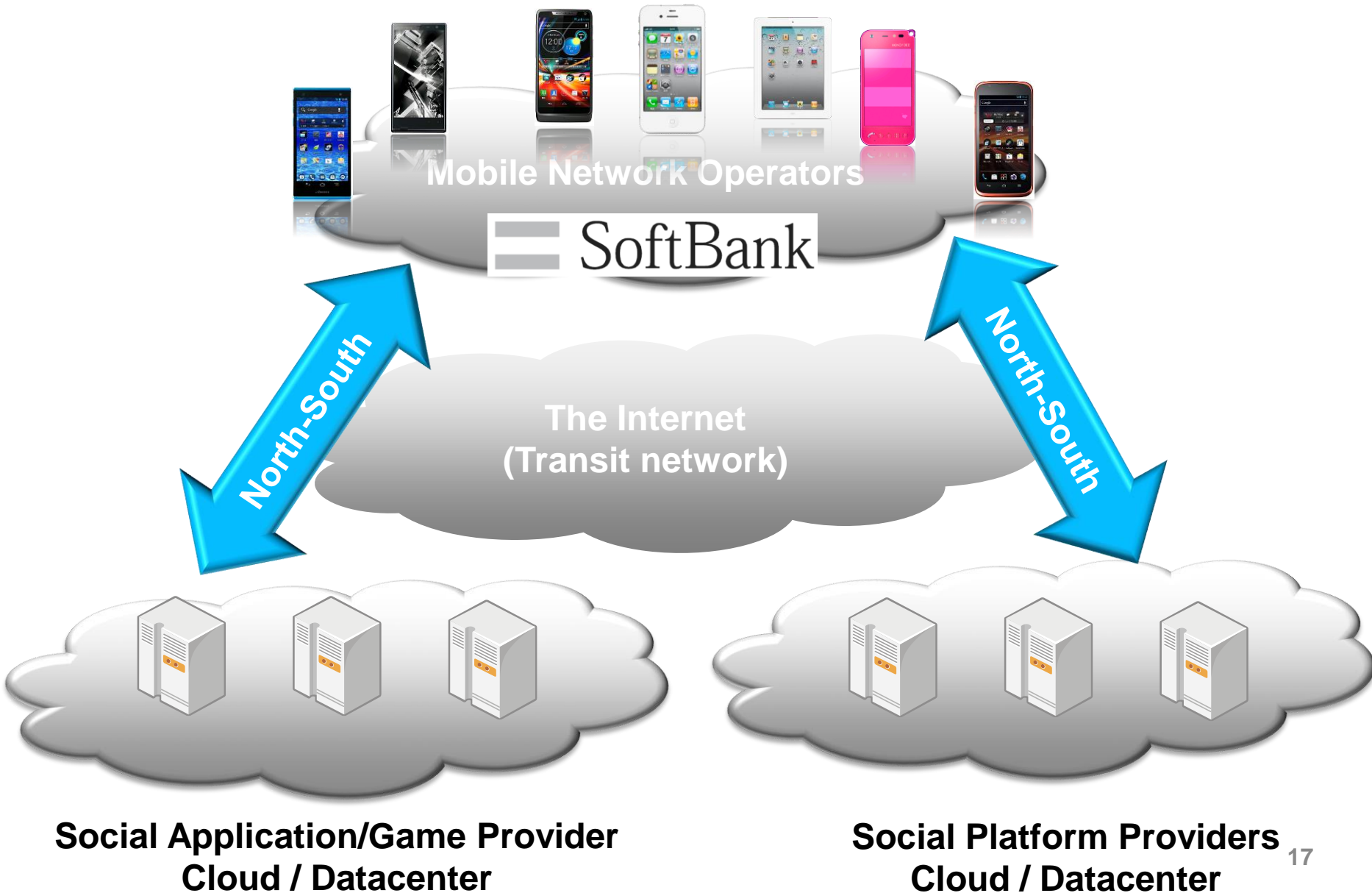
Peak once at night

Graph for MNO

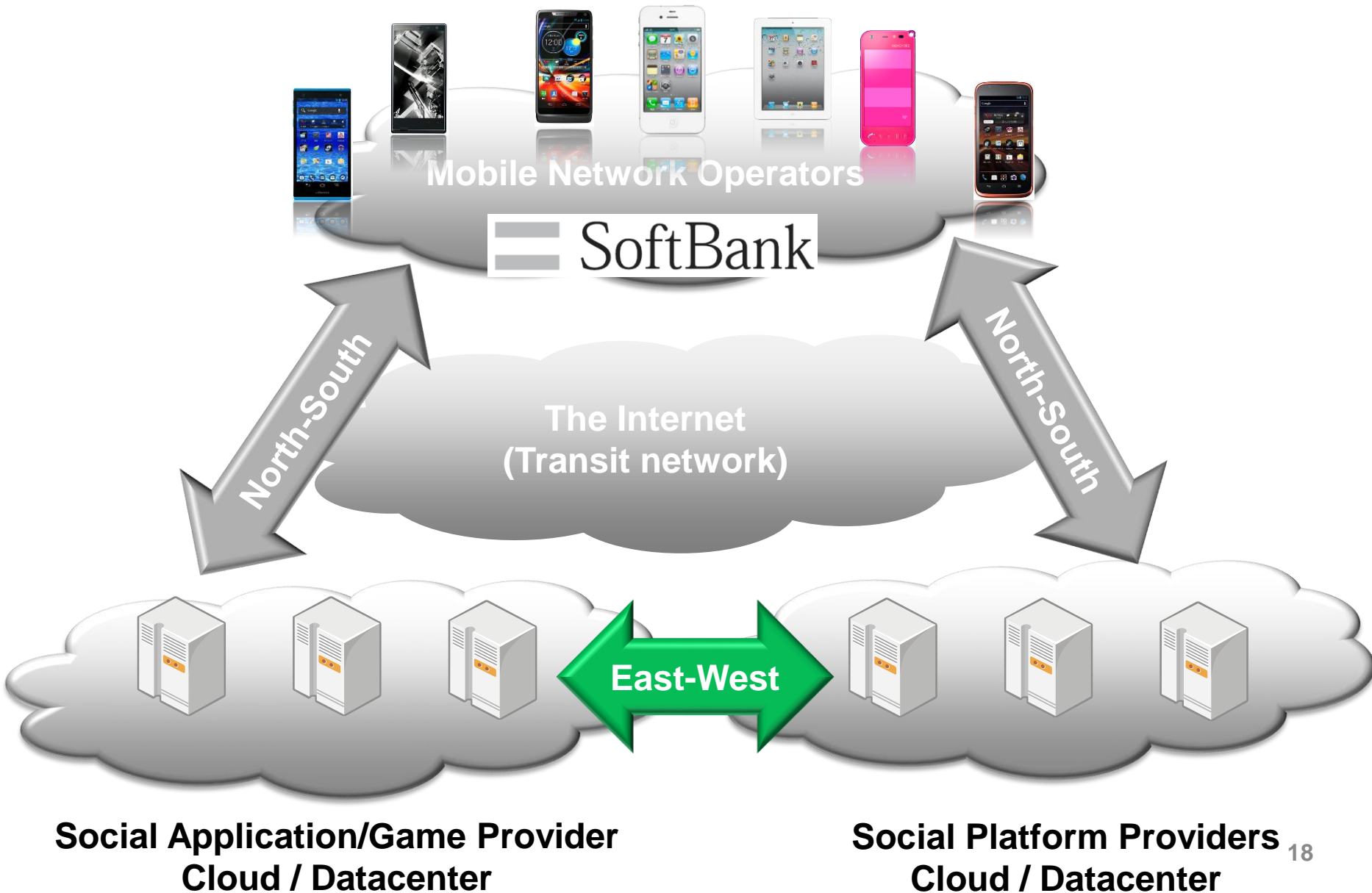


Multiple peaks

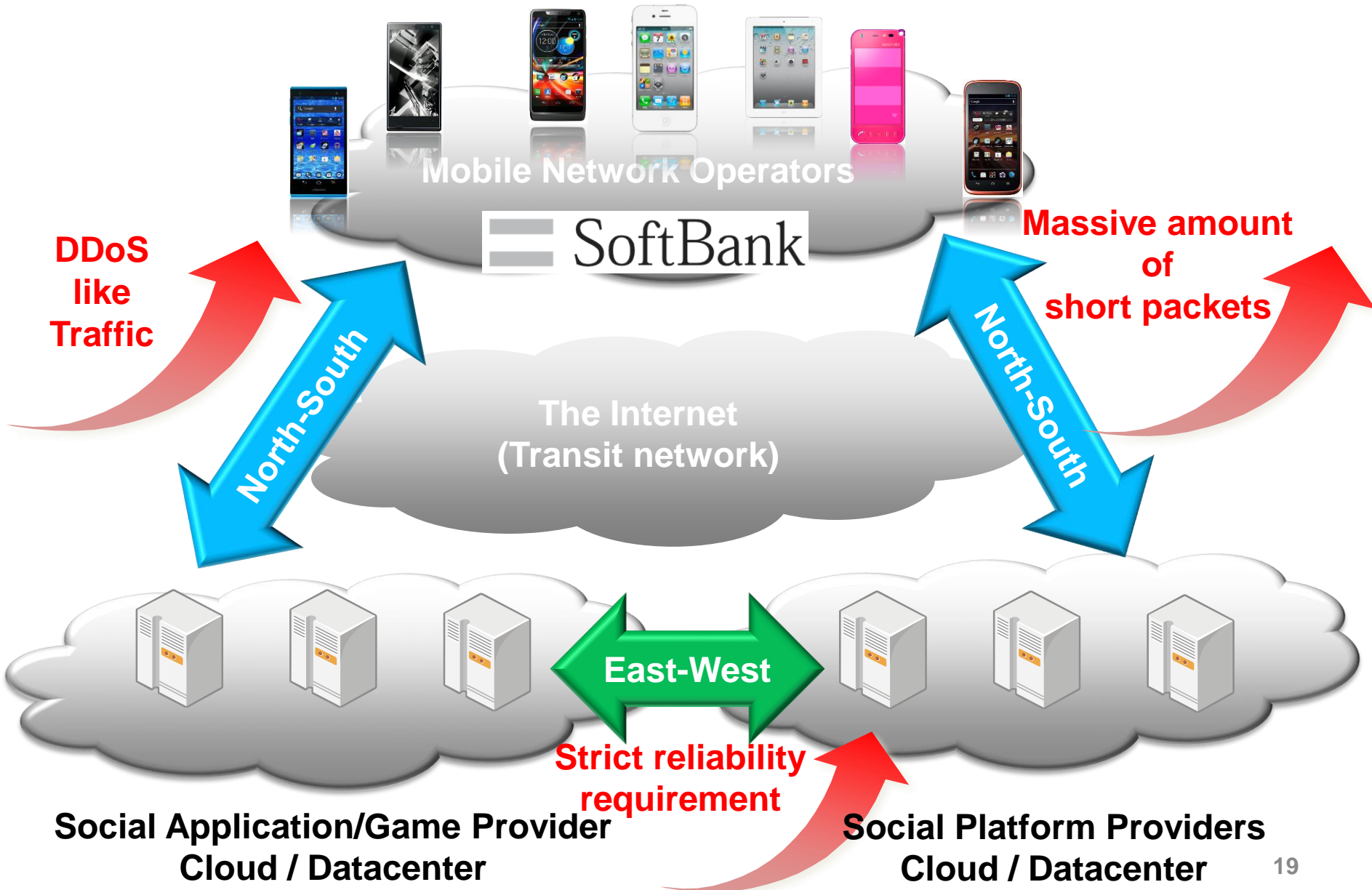
North-South Traffic



East-West Traffic



North-South Traffic

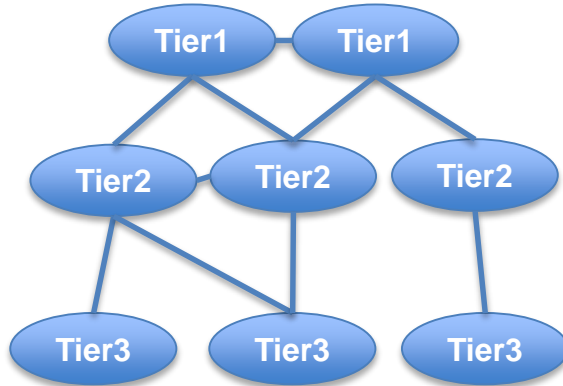


Transit network became “bottleneck”

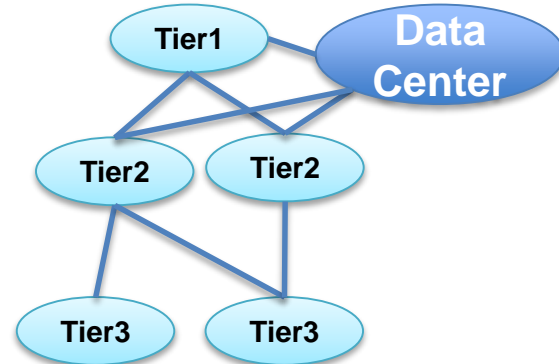


The Age of Internet Transition

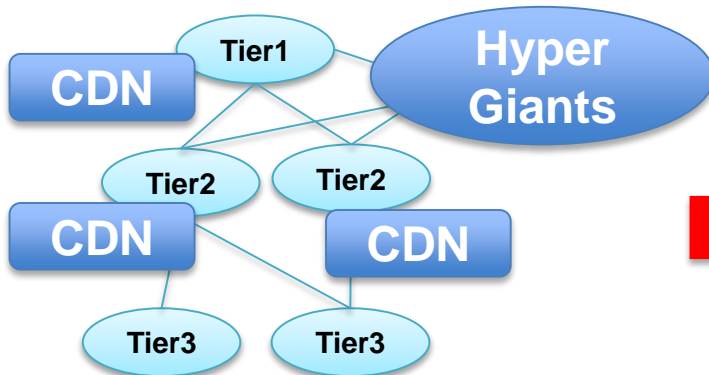
1st Starting of the Internet



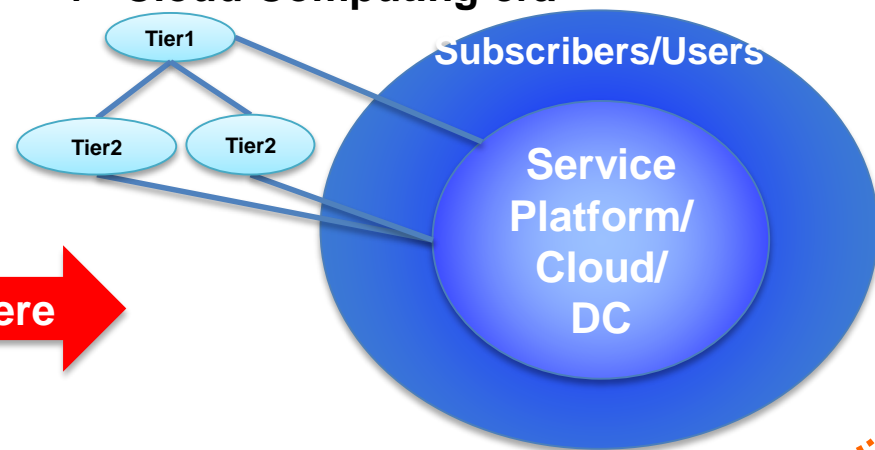
2nd Rising Data Centers



3rd Hyper Giants era



4th Cloud Computing era



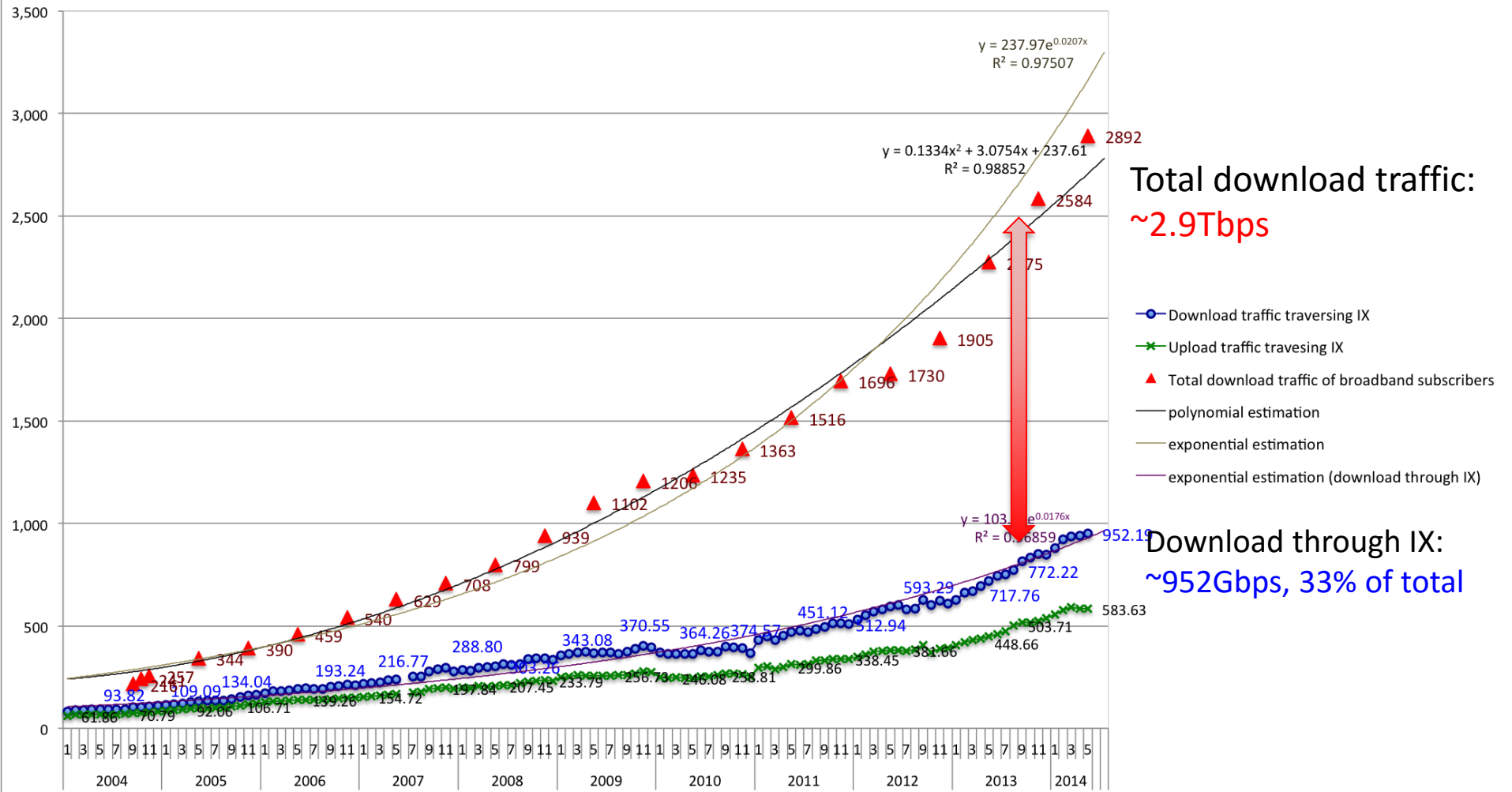
We are here

Hieratical Structure of the Internet will be **replaced soon by**
“Direct Connection” between Subscribers and Contents.

The Mission

BBIX IN THE AGE OF TRANSITION

Internet Traffic in Japan during the Recent 10 Years [Gbps]

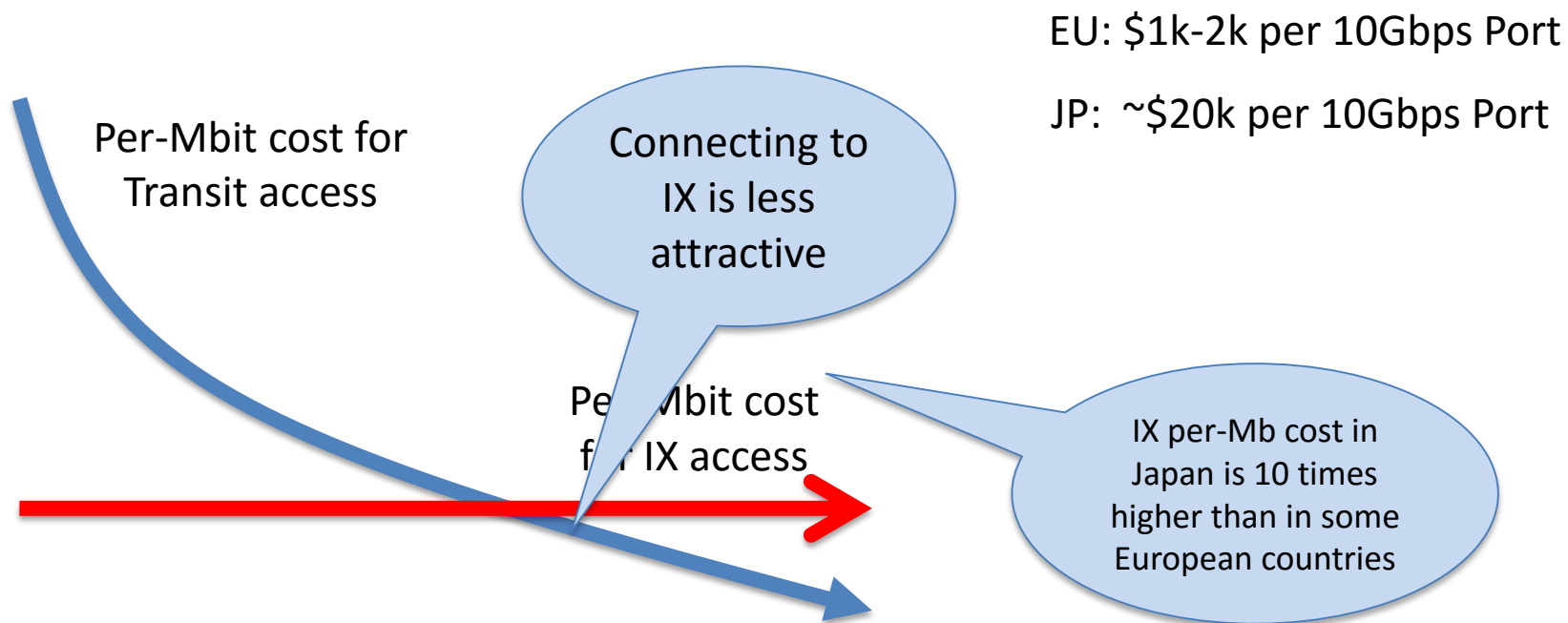


What Happens in Japan

Transit price is getting down dramatically



Per-port (with certain bandwidth) price for IX connection is quite high in Japan!



As we know the importance of connectivity

Network

- Backbone
- FNO
- MNO



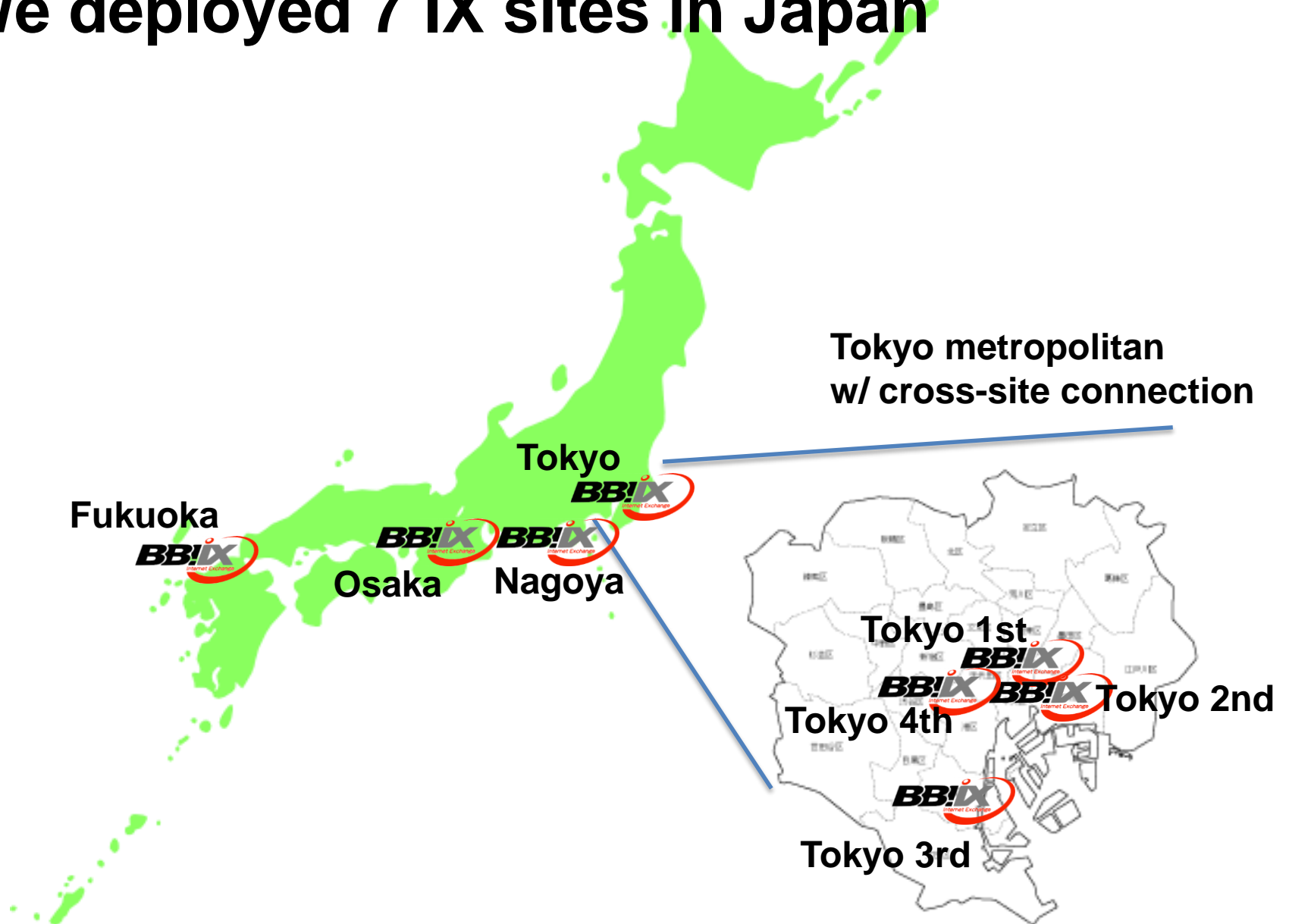
Contents

- Large portals
- Search engines
- CDN
- SNS
- Clouds

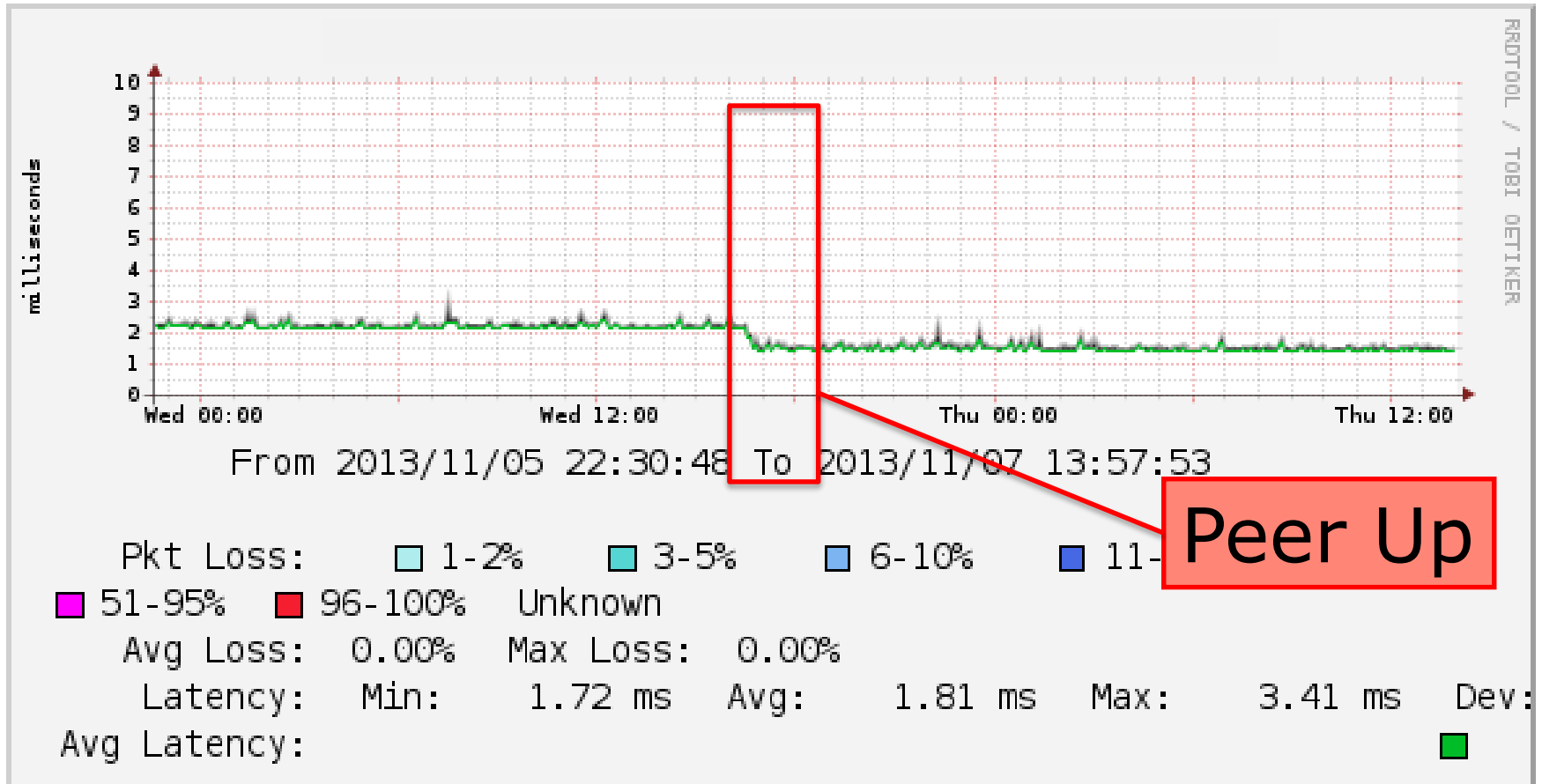
BBIX provides IX services with the **global-standard pricing**, while keeping the made-in-japan quality

We deployed 7 IX sites in Japan

Tokyo metropolitan
w/ cross-site connection

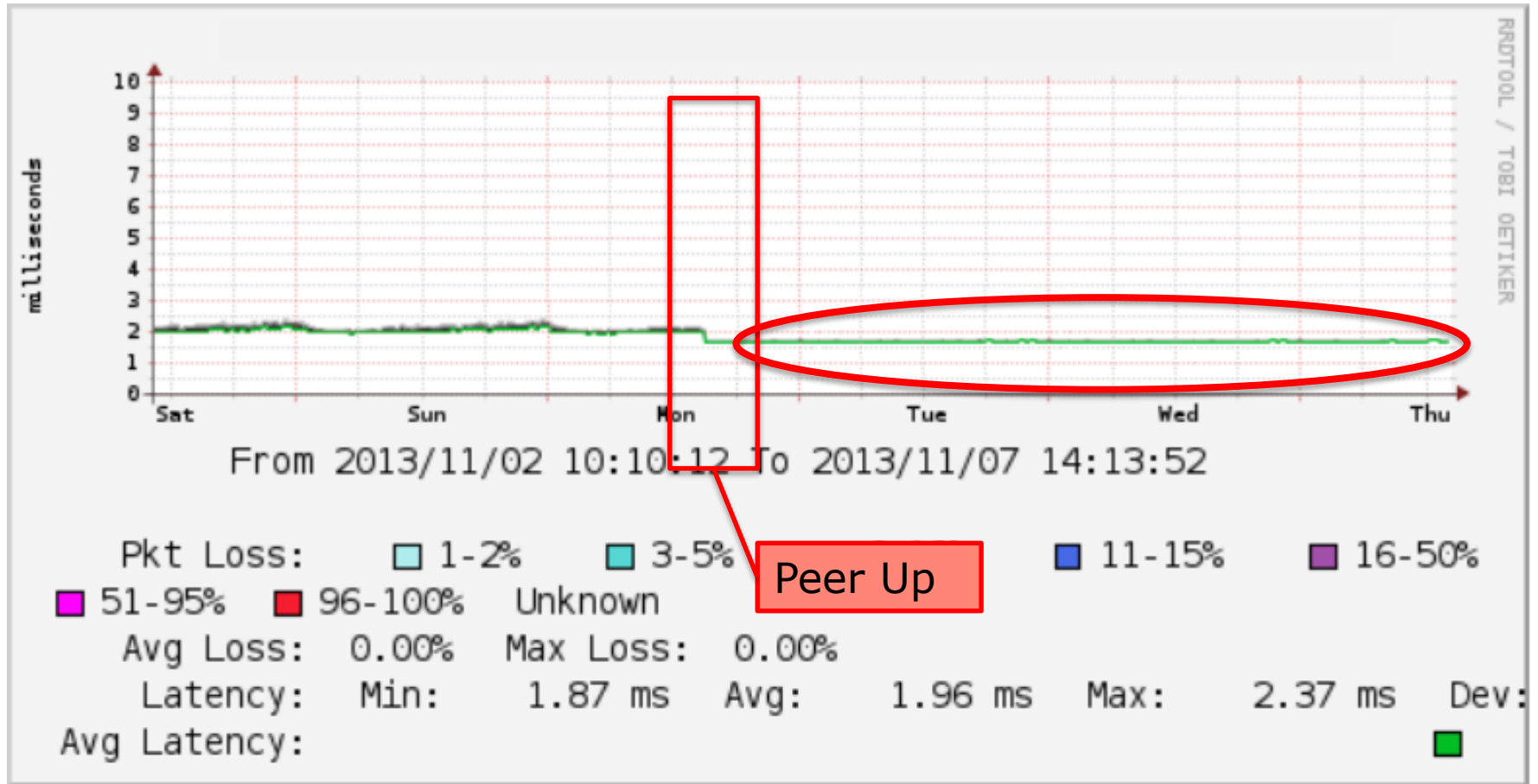


Improvement after peering through BBIX



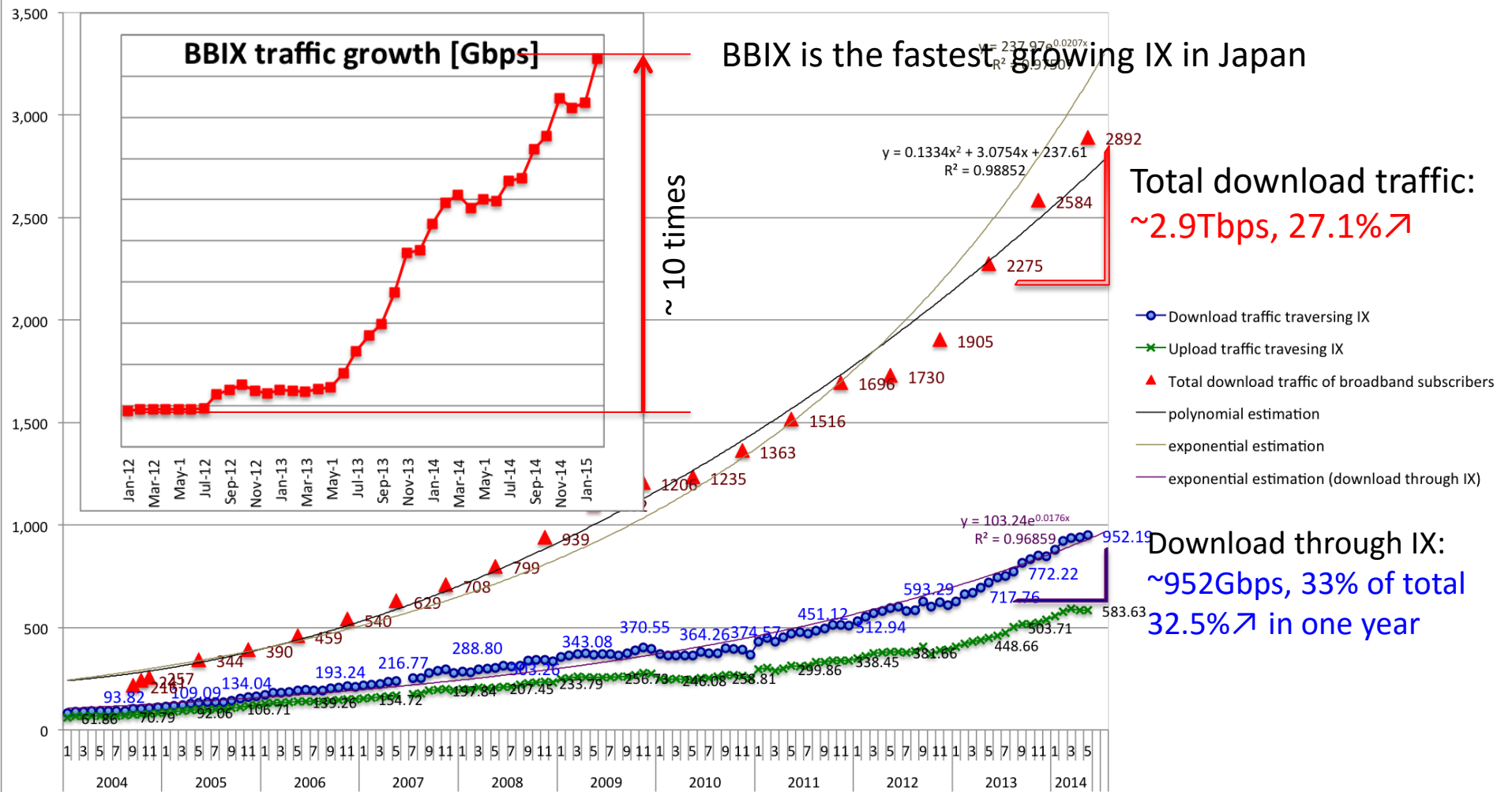
30% reduction of latency

Improvement after peering through BBIX



Getting rid of jitter

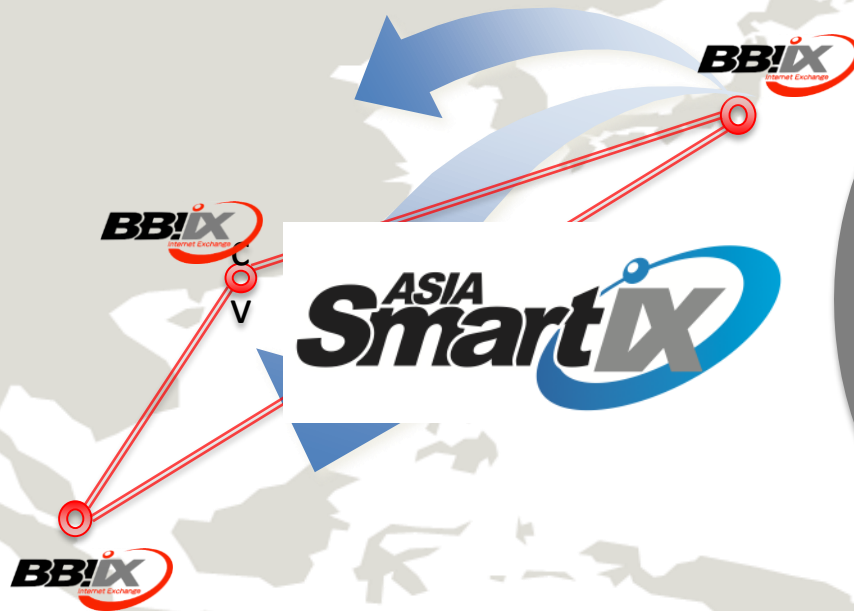
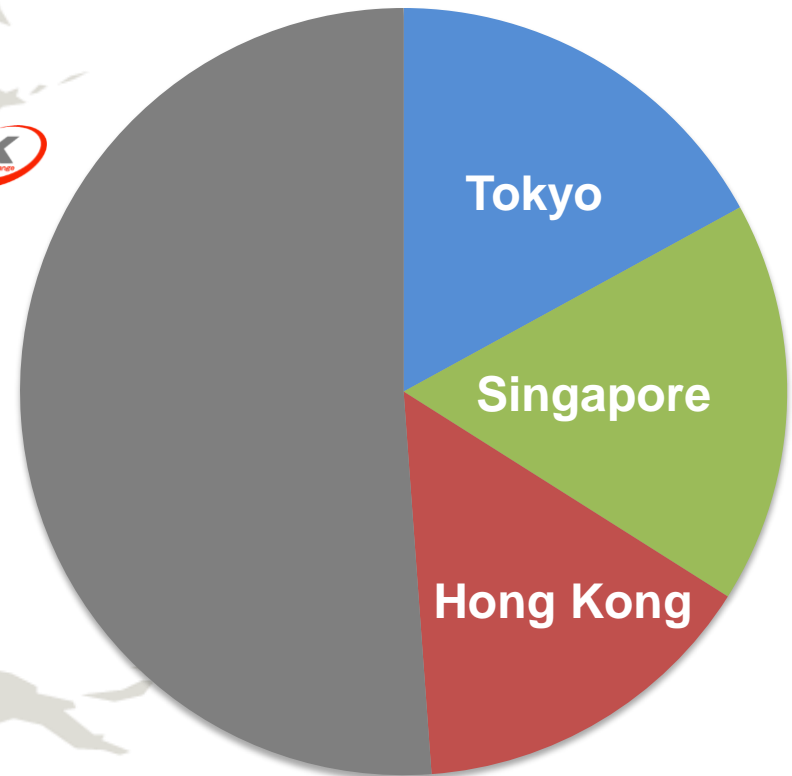
Internet Traffic in Japan during the Recent 10 Years [Gbps]



Contribute our vision & effort to East Asia

- Reduced latency and jitter
- Improved stability and redundancy
- Fitting traffic pattern, with or without inter-site transport
- Reasonable cost

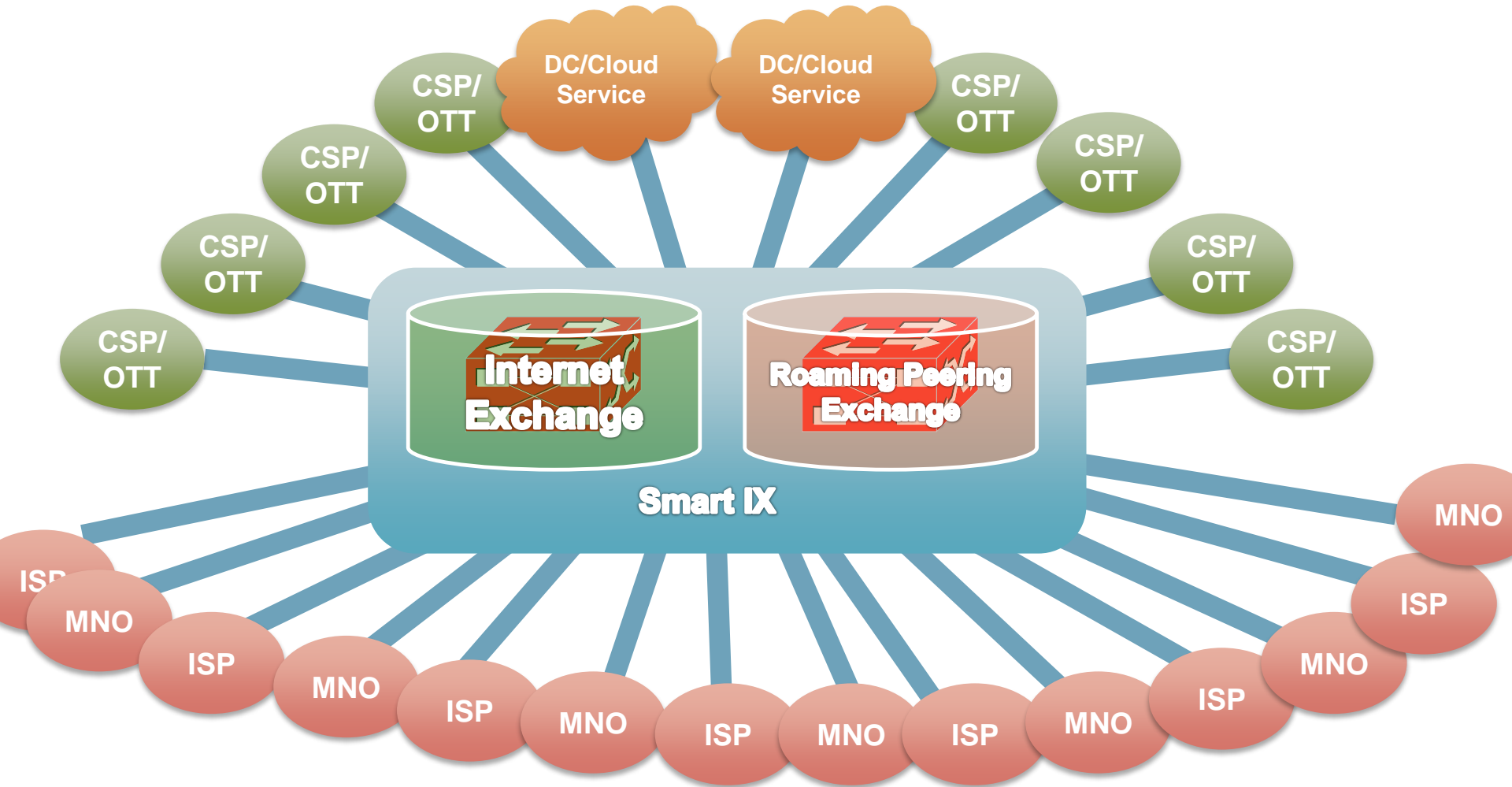
Amount of traffic by cities



SmartIX Service Specification

- Basic
 - IX: Distributed Internet Exchange
 - RPX: Roaming Peering Exchange (for MNO)
- Optional
 - Route server
 - Inter-node connectivity
 - VLAN

Smart IX serves for all the players equally



Connected directly, completely flat!!

Contribute for better Internet connectivity in Asia and in the World





“No Peering, No Internet”