

NTT Global IP Network Configuration Tools Overview

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NTT Global IP Network (AS2914)



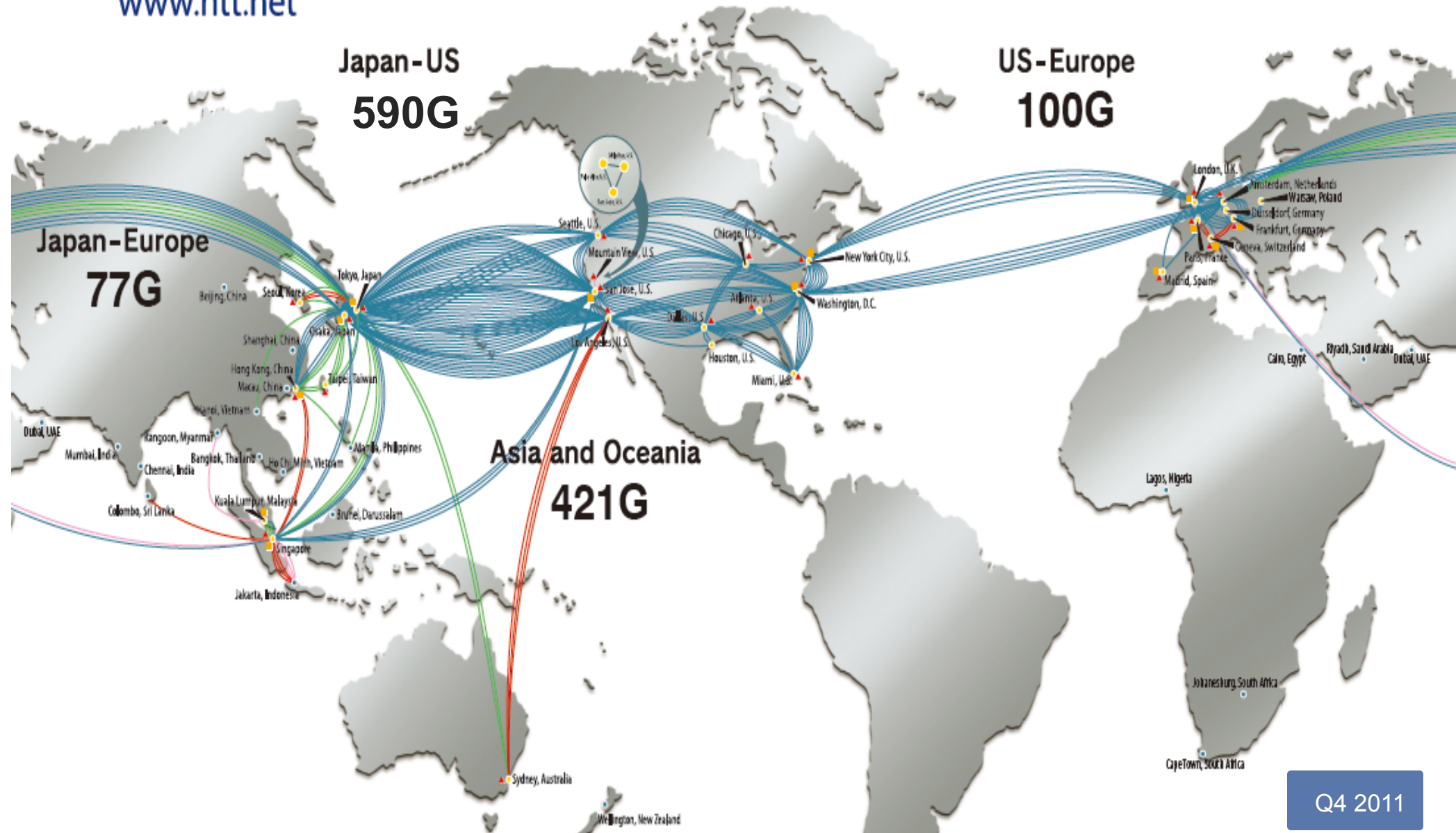
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Japan-US
590G

US-Europe
100G

Japan-Europe
77G

Asia and Oceania
421G



Q4 2011

Global IP Network Map – Q4/2004



Japan - US

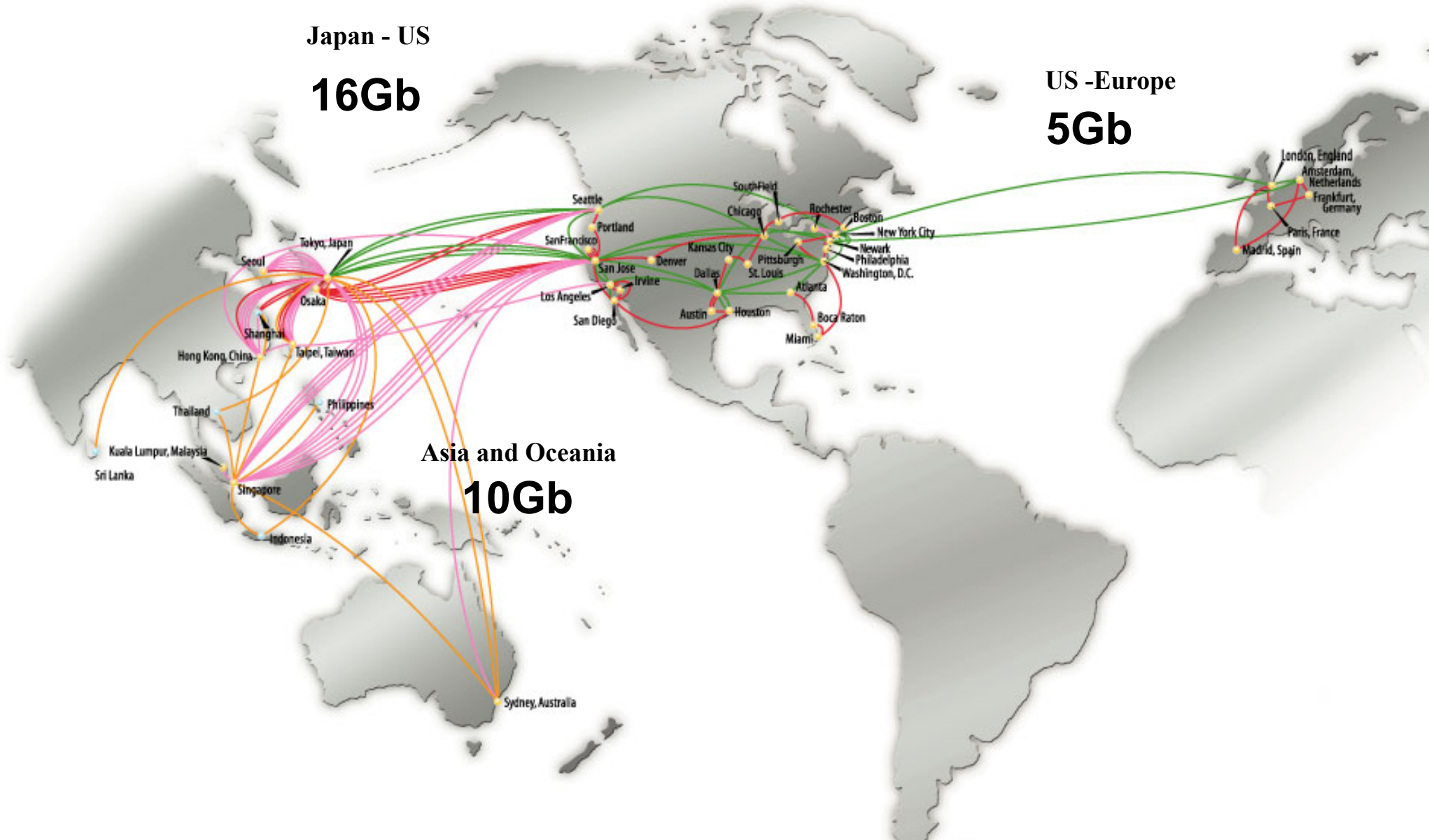
16Gb

US -Europe

5Gb

Asia and Oceania

10Gb



NTT GIN Overview

- Wholesale IP transit network
- 150+ iBGP nodes
- 70+ nodes running full-mesh RSVP-TE
- Roughly 200 other devices managed by configtools
- Bulk of customer ports are 10GE (or Nx10GE)
- Present on 5 continents
- Present in 31 markets

NTT GIN Philosophy

- IP Transit pricing experiences a consistent downward pressure.
 - Underlying costs must be managed in a similar fashion
- Operating Expenses are kept low through a large degree of automation

- SQL database driven
- Data is transformed through platform specific templates
- All configuration is driven from server
 - No persistent manual configuration on devices
 - No 'write mem' on IOS
 - Entire config pushed from disk for IOS-XR and JUNOS
- Text file per device (revision controlled)

What's in the Configtools database?

Management

Interfaces

MPLS

Routing

SNMP Communities

ASN Information

Standard ACL

OOB Ports

IP Addressing

Virtual Interfaces

LAG

Ethernet

MAC Accounting

SONET

LDP

RSVP

RSVP-TE LSP

PWE

ISIS

OSPF

BGP

What are the router requirements?



- SSH access
- Ability to retrieve files via FTP
- Commit/roll back/roll forward capability
- Ability to directly manipulate the startup configuration on devices that do not support the above model

- Automatic customer BGP ACL and max prefix updates
- Tool to load peer/customer configurations on IOS
 - All relevant config (ie. interface, BGP neighbor, policy) is loaded via 'copy ftp: running-config
- Mass update of RSVP-TE LSPs
- Bulk move of interfaces/sub-interfaces
- Seeding of other systems with data (stats system, monitoring system, etc.)
- Complex configurations across multiple devices

What are the benefits of doing this?



- Lower staffing requirements
- Lower error rates
 - Lower risk of catastrophic errors
- Rapid service delivery
 - Rapid service migration
- Automated service delivery
- Minimize peer review
- Configuration consistency
- Reporting

That's great for NTT but what about me?



- This started organically
- Engineers working to make their job easier
- Not a fully funded project at the outset
- Now we have 3 full-time SW developers (2 are former network engineers)

- Avoid manual configurations/hacks in text files – This will bite you
- Still need auditing
 - Can be automated