A Next Generation Internet-based International Collaboration Research Project

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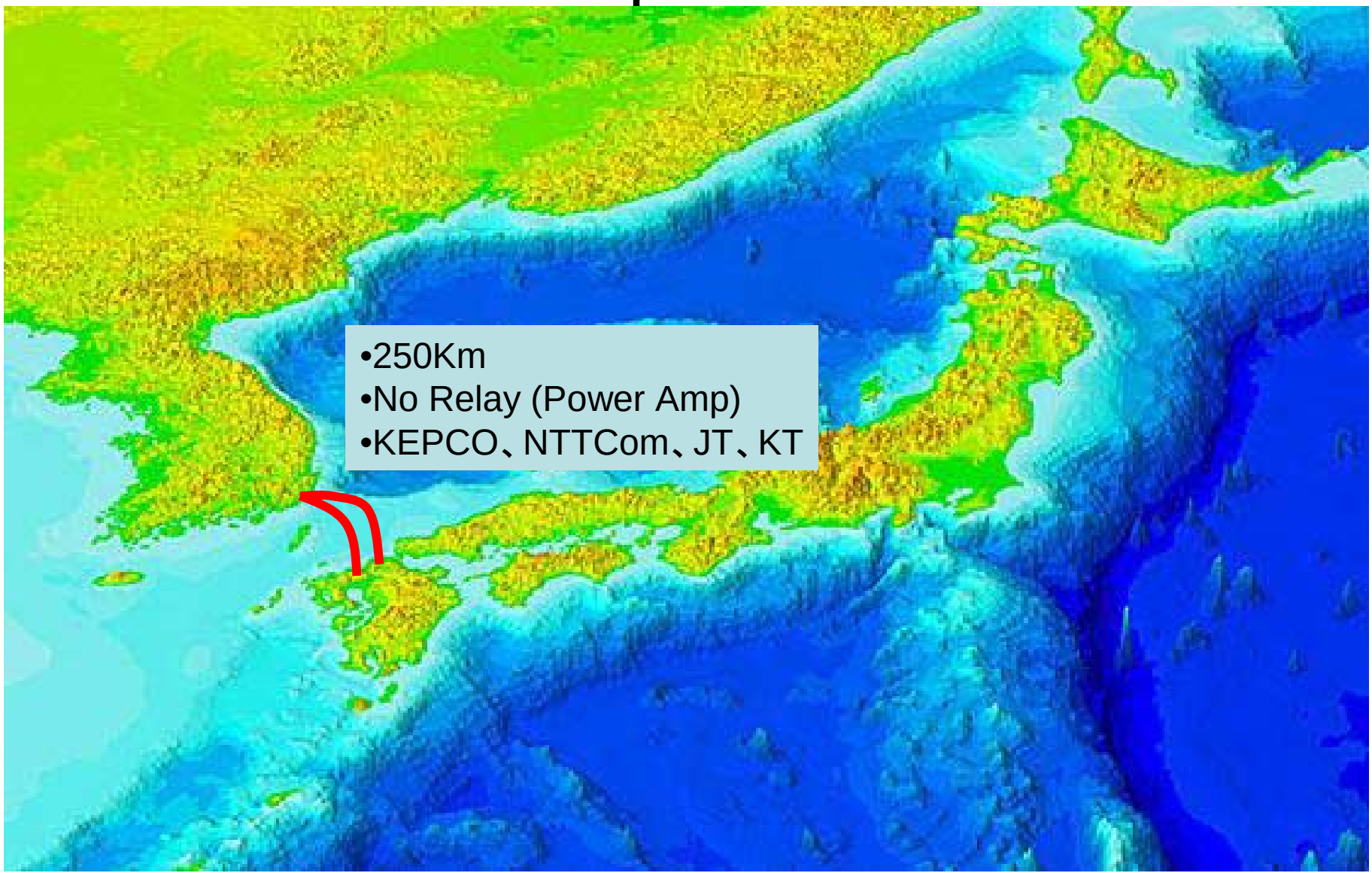
Contents

- Introduction
  - The Back Ground
  - Introduction of Case Studies
- Technical Topics based on Case Studies
- How to collaborate so closely

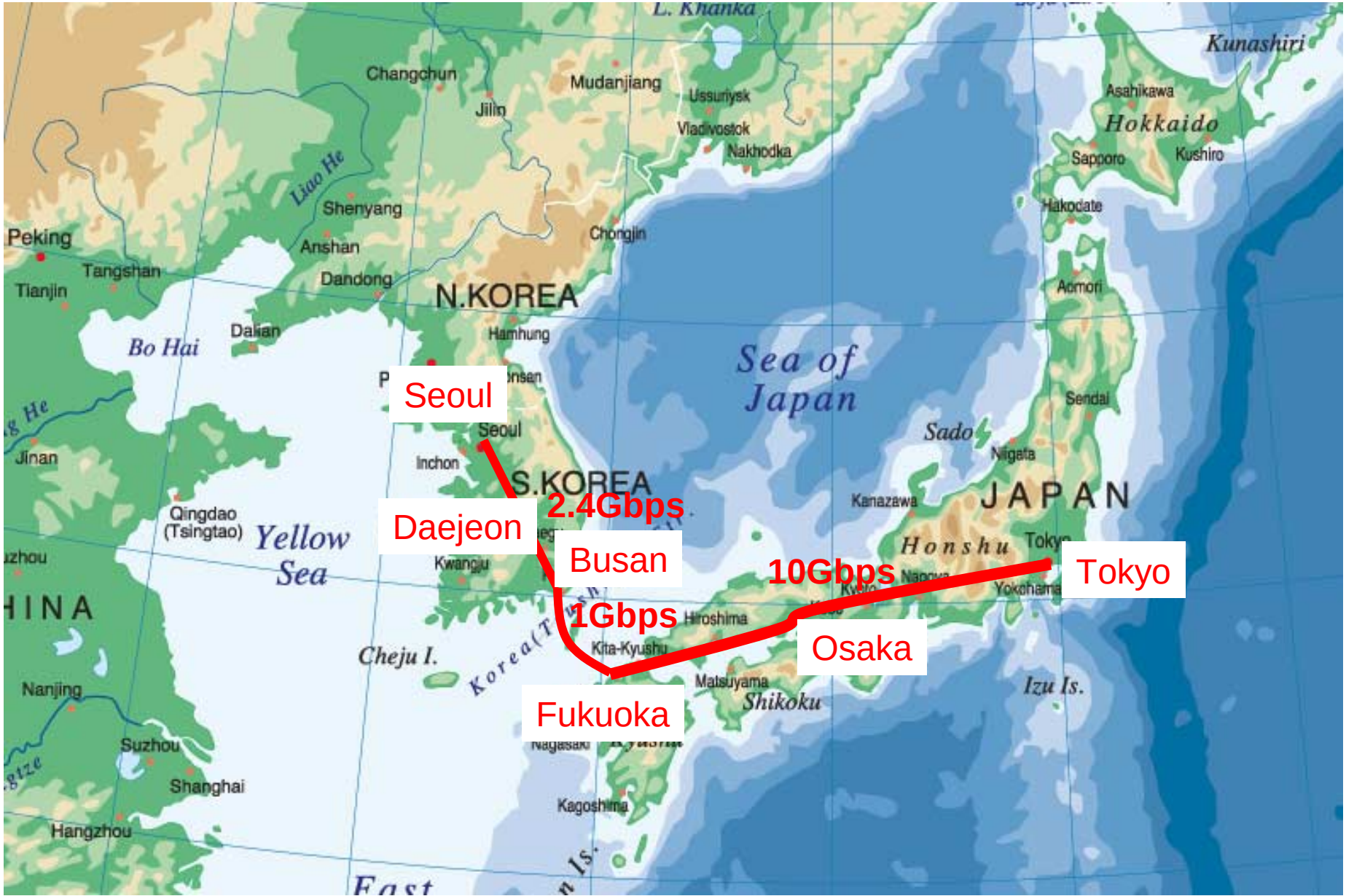
The Background

- Japan and Korea collaboration
  - Internet Infrastructure
  - Case Studies

Everything has been started from these Optical Fibers

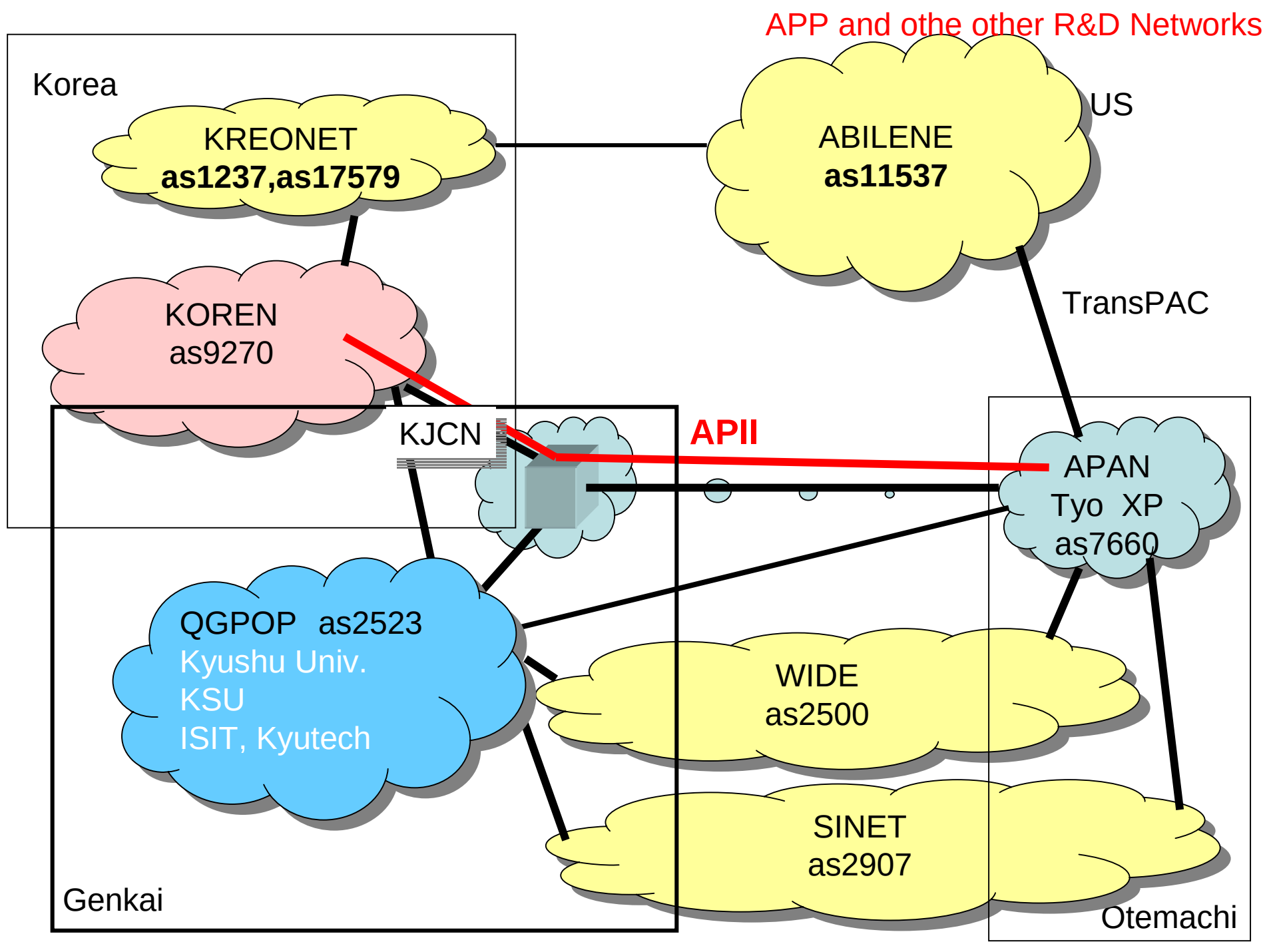


The Network Topology around Japan and Korea

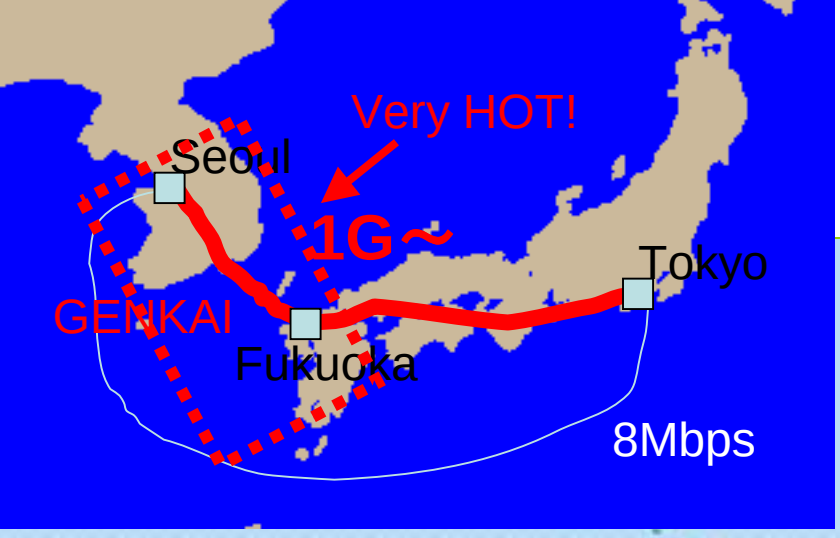


Genkai/Hyunhae Project

- **KJCN**
  - **Korea-Japan DIRECT Optical Fiber Network**
  - **50Gbps – 2.88Tbps**
  - **The service has started since Mar. 2002.**
- **Genkai/Hyunhae Project**
  - **http://genkai.info**
  - **Research Project based on Korea-Japan Rambda IP Network using KJCN**
    - **Digital Media Translation**
    - **GRID**
    - **Distance Learning/Collaboration**
    - **Measurement**
    - **IPv6/QoS/Multicast**
    - **etc**


APP and othe other R&D Networks
Korea
KREONET
as1237,as17579
US
ABILENE
as11537
TransPAC
KOREN
as9270
KJCN
APII
APAN
Tyo XP
as7660
QGPOP as2523
Kyushu Univ.
KSU
ISIT, Kyutech
WIDE
as2500
SINET
as2907
Genkai
Otemachi

APII/Genkai/QGPOP



Kyushu QGPOP

Fukuoka

Saga

Oita

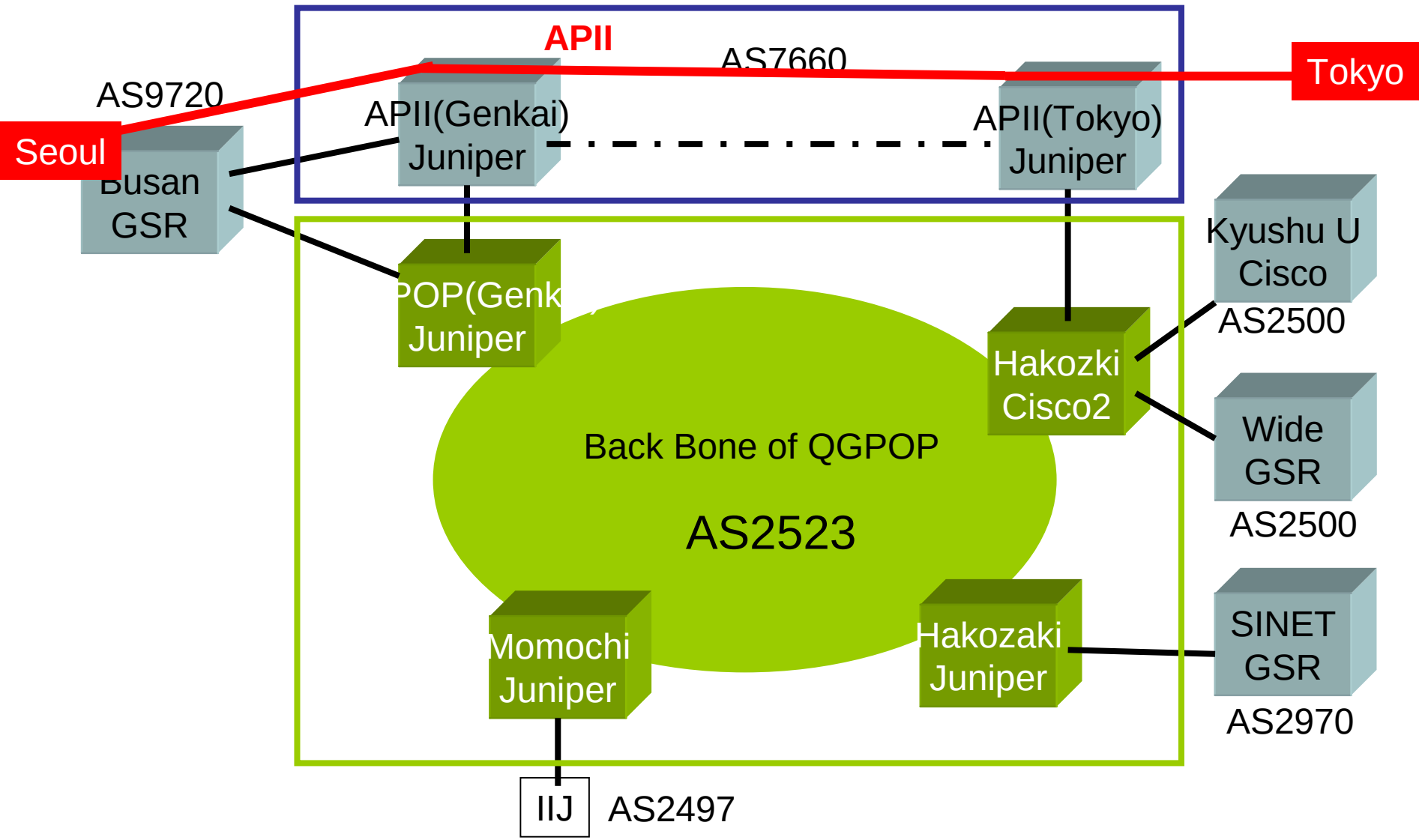
Nagasaki

Miyazaki

Osaka

Tokyo

Network of QGPOP (BGP Peer)

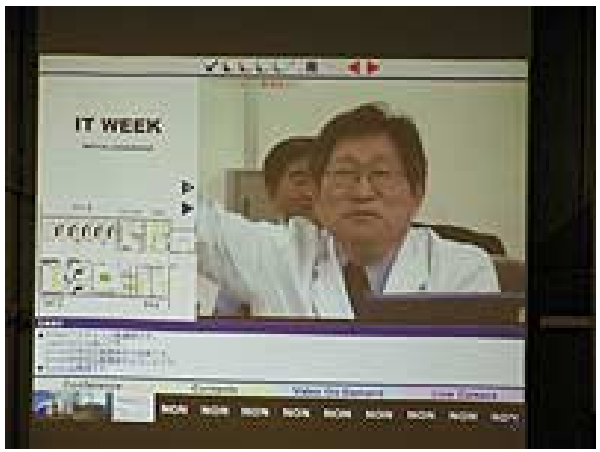


Case Studies I :
e! Project by MPHPT(JP)

- **has been supported by Government**
- **The Mission is to show the advanced IT International Exchange by future technologies.**
- **Main topics is “Human” exchange.**
  - **Education**
  - **Culture**
  - **Business**


IT Week
2003.2.10
2.17
タイムマシンに乗って
未来の日韓交流を体験しませんか
http://www.itweek.info
■date 2003.2.10−2.17
■place ［JAPAN］九州大学・九州産業大学・九州工業大学・財団法人九州システム情報技術研究所 他 ／ ［KOREA］漢陽大学 他
■contents 日韓高速ネットワーク（1Gbps予定）と最新技術による日韓交流［国際遠隔講義、中学校および高校間の国際交流、社会人向IT遠隔セミナー、専門学校遠隔講義、国際企業連携、テレビコンテンツの交換、遠隔医療教育など］／VoD技術を使った日韓交流に関わるコンテンツ配信［自宅でも参加可能］／次世代インターネット（IPv6／マルチキャスト技術
■information http://www.itweek.info
■support&cooperation

ITWeek (http://itweek.info)



NetLifeRium 2003, 13-16 Mar.

近未来の生活
展示会で紹介
ネットライフリウム開幕
あすまで横浜

ネットライフリウム
NETLIFERIUM 2003

Introduction of Case Studies under e! Project

- Remote Lectures
  - Graduate School
  - Class of Freshmen
- e-Learning for Medical
- Exchange Class for Junior High School

Remote Lecture Case Studies

- Remote Lecture of Graduate School
  - one or two Student(s) have presentation of
    - RFC or ID
    - Implementation application based on the documents
    - Q&A
- Remote Lecture of Flesh man (B1)
  - Flesh men(B1) came to my lab on every Tuesday for one semester.
  - They enjoyed talking with foreigner researchers/students with DVTS.
- Both of these were done in regular classes time
  - Practical Classes not a just Remote Lecture as an event.

Regular Lecture of Graduate School

Class of Fresh Students

Flesh men(B1) came to my lab on every Tuesday for one semester.

They enjoyed talking with foreigner researchers/ students with DVTS.

Korean researchers cooperated with this lecture very much.

Medical Education

Exchange of Junior High School

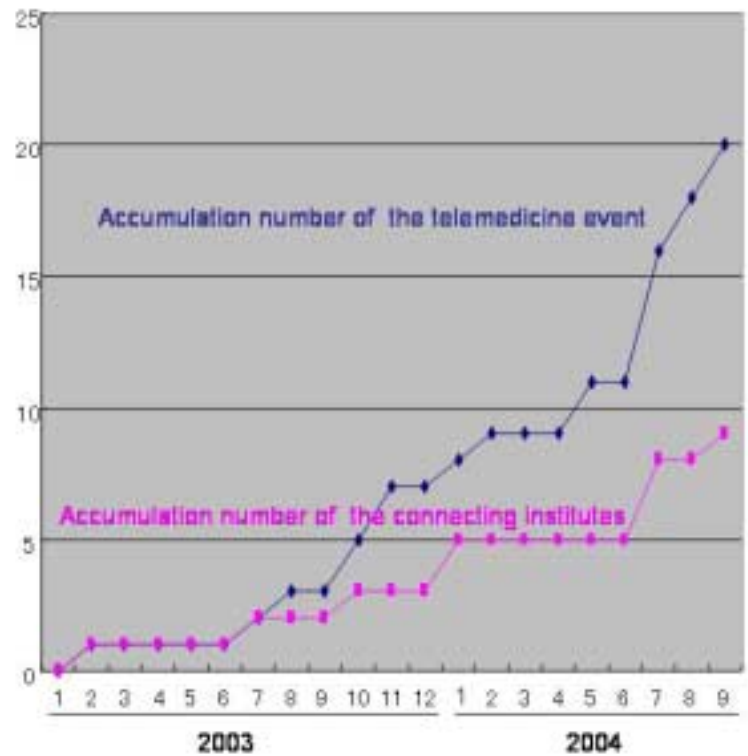
Case Studies II: HOT Activities after e! Project

- Medical Activities
- Global Collaboration
  - International Performance Streaming
  - Asian International Collaboration
    - SC2004
    - Japan & Korean TV Stations' Collaboration

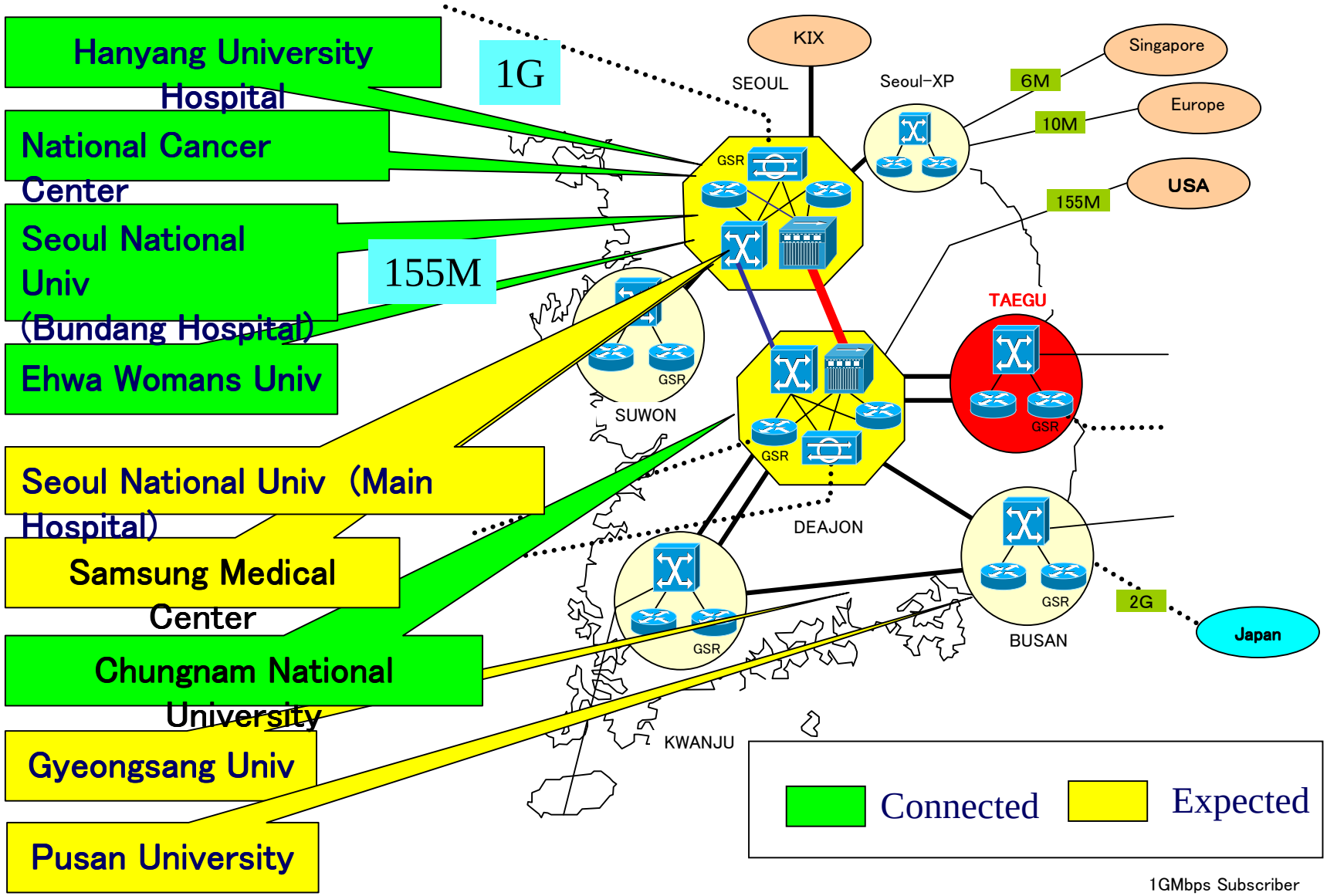
Teleconference between Bundang-Ewha-Kyushu Hospitals

Tel-Medical Achievements in 2003.2 ~2005.1

- Live surgery or technical demonstration
  - 03.8: Laparoscopic gastric surgery (NCC)
  - 03.11 & 04.7: Laparoscopic colon surgery (NCC)
  - 03.11 & 04.5: Neurosurgery (Hanyang)
- Medical conference with digital video
  - 03.2: Nurse conference (Hanyang)
  - 04.5: Transplantation conference (Hanyang)
- Live conference at meeting venue
  - 03.10: APAMI meeting (Daegue)
  - 04.1 & 04.7 : APAN meeting



Extension of connected hospitals



International Performance

The National Center for Korean Traditional Performing Arts

KII network

KOREN

Seoul

Suwon

Daejeon

Daegu

Kwangju

Busan

U.S.

vBNS, Abilene

StarTAP

622M×2

Japan

TransPAC

1G

Tokyo-XP

QGPOP

Kyusue

Busan National Univ.

Performance Sites

APII Test-bed(Asia Pacific Information Infra.)

KOREN(KOrea advanced REsearch Network)

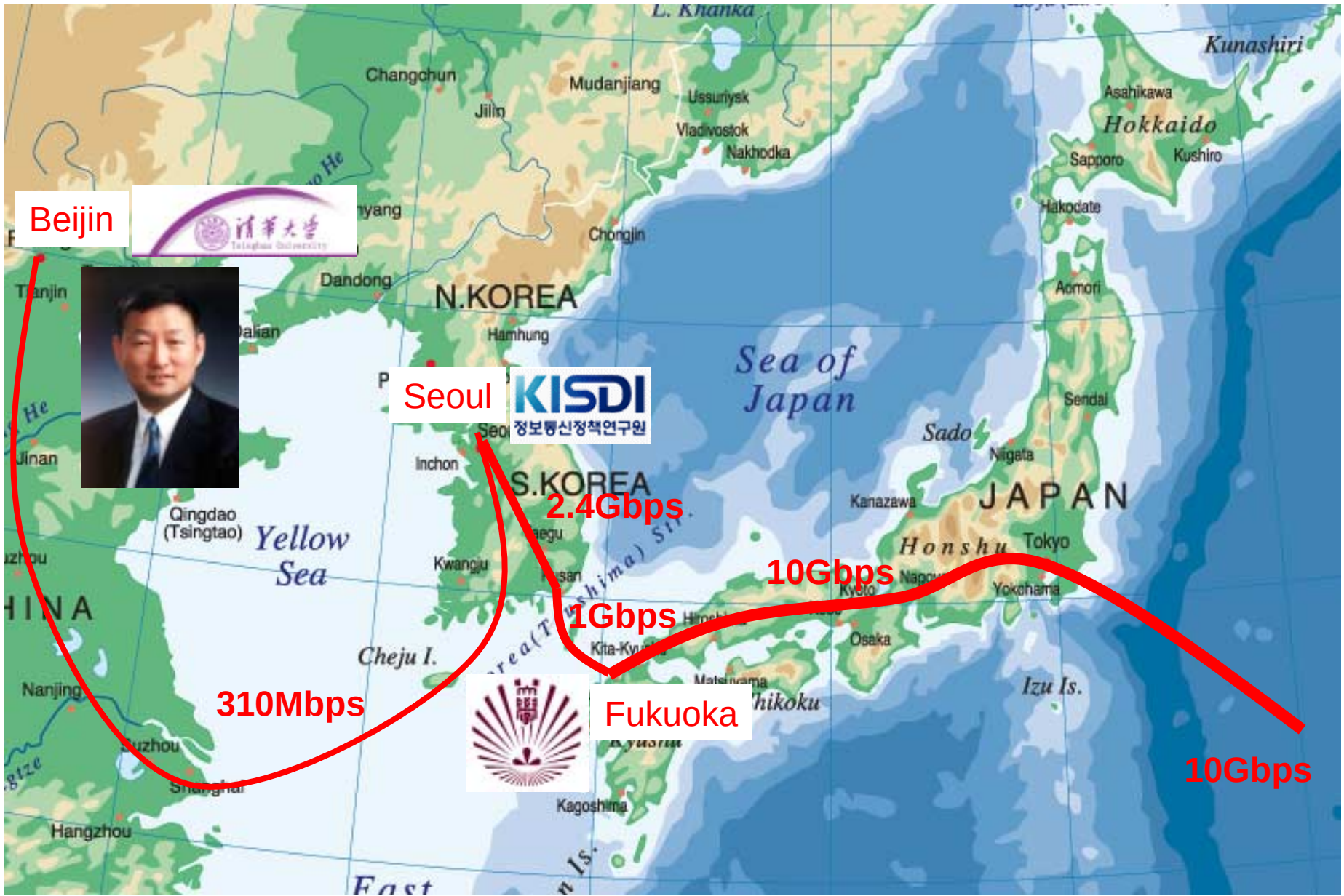
KII Network(KII:Korea Information Infrastructure): ATM network

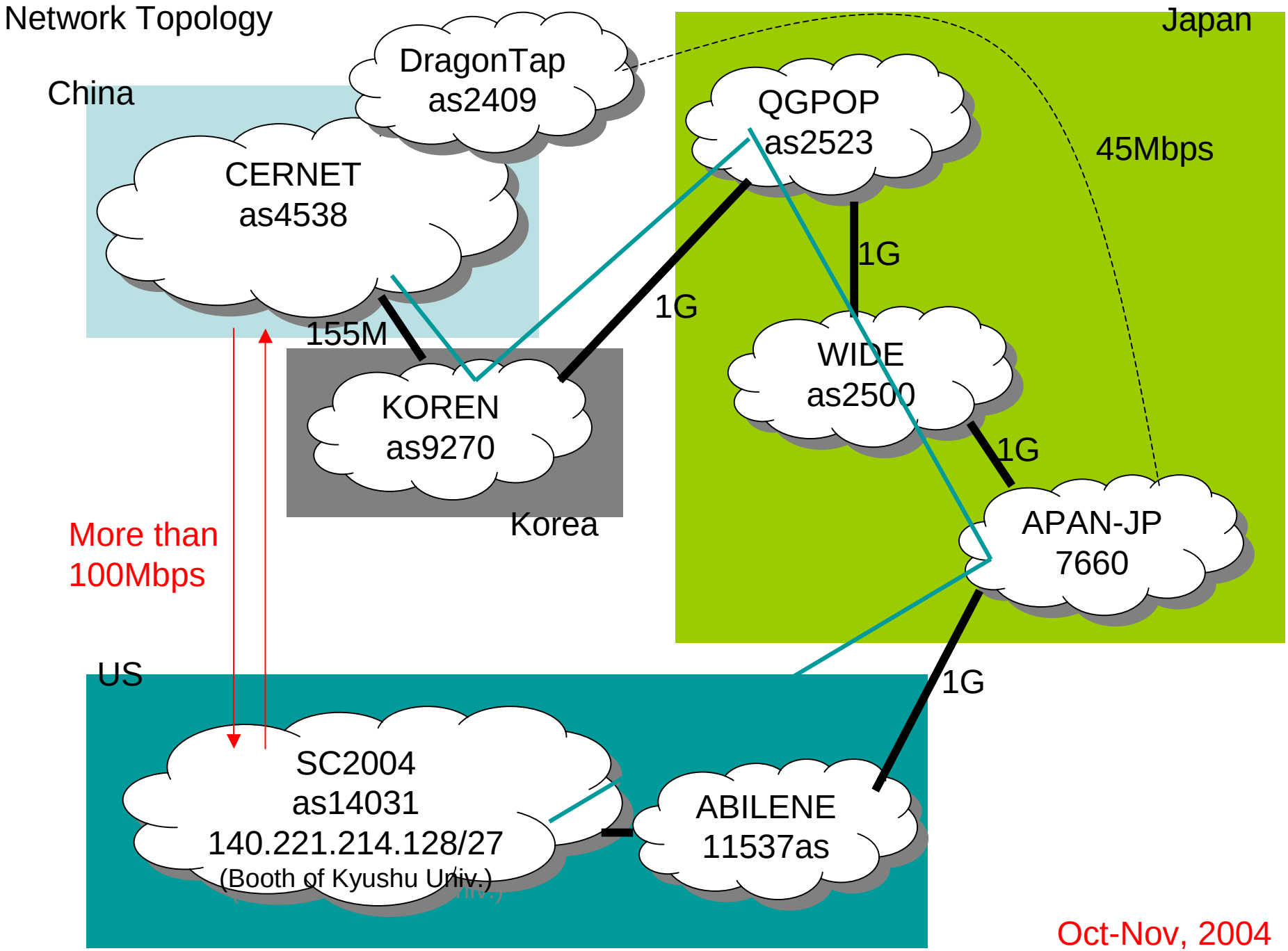
This sheet was written by Jingu KIM.

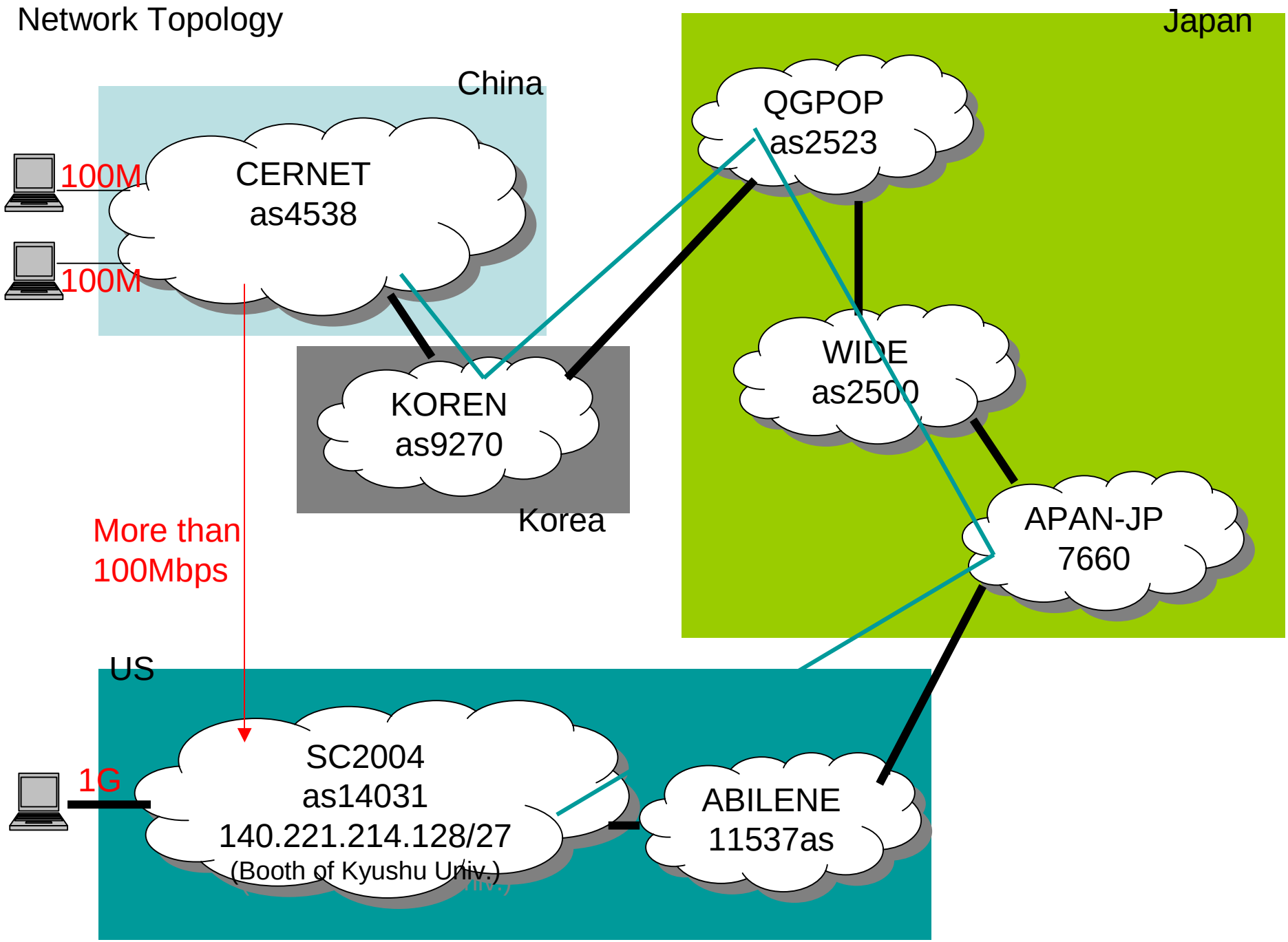
Showing bandwidth to CJK (China, Japan, Korea)

Asian International Collaboration, SC2004

The Network Topology (L1) around CJK




Network Topology
China
DragonTap
as2409
CERNET
as4538
155M
Japan
QGPOP
as2523
45Mbps
1G
1G
WIDE
as2500
1G
KOREN
as9270
Korea
APAN-JP
7660
More than
100Mbps
US
1G
SC2004
as14031
140.221.214.128/27
(Booth of Kyushu Univ.)
ABILENE
11537as
Oct-Nov, 2004


Network Topology
Japan
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QGPOP
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APAN-JP
7660
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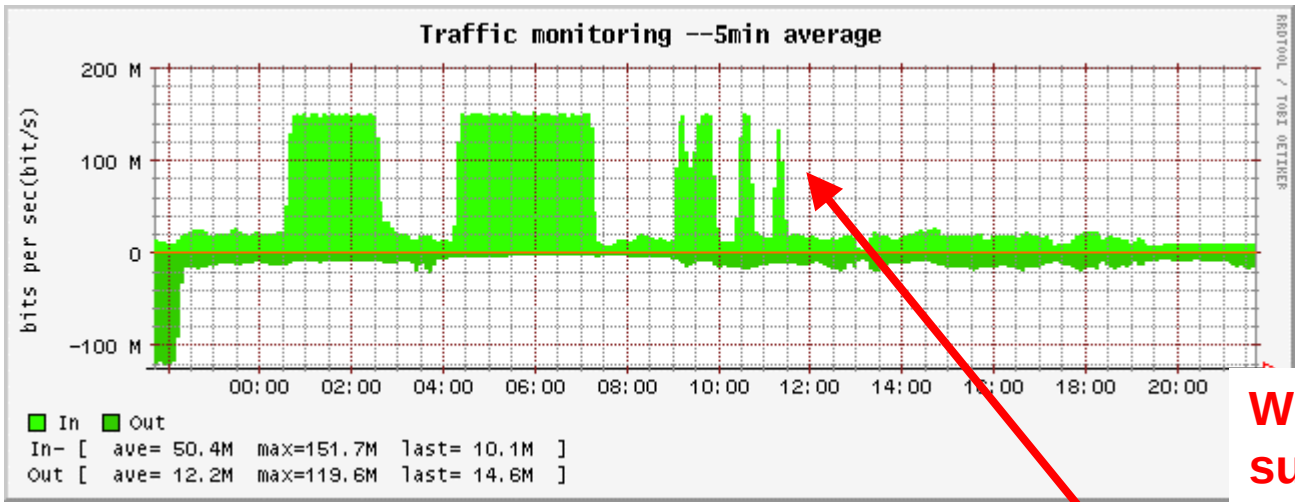
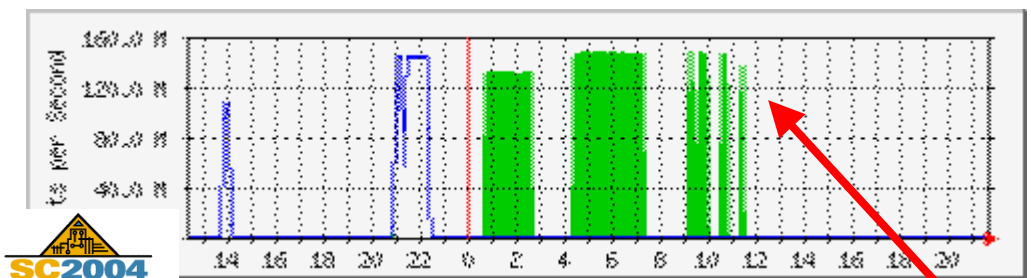
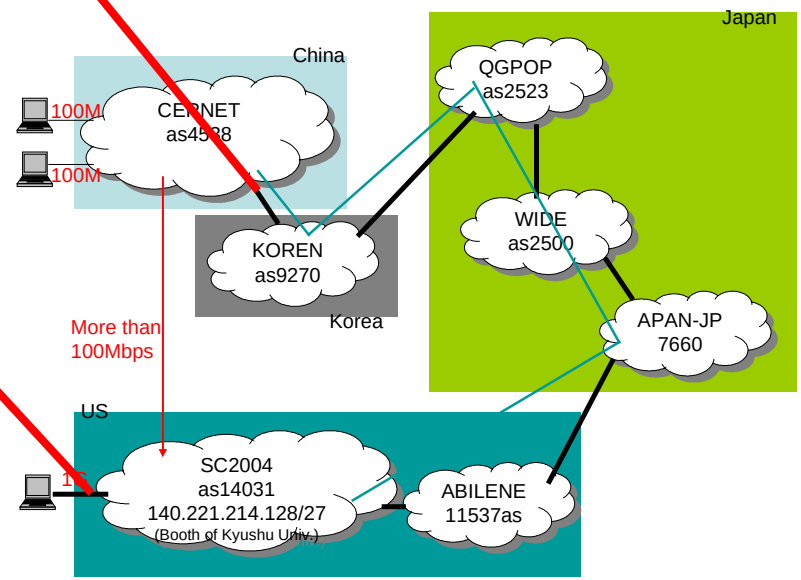
140.221.214.128/27
(Booth of Kyushu Univ.)
ABILENE
11537as

The Result of BWC (9th Nov. 2004)



We showed that we surely got 140Mbps from China to US.



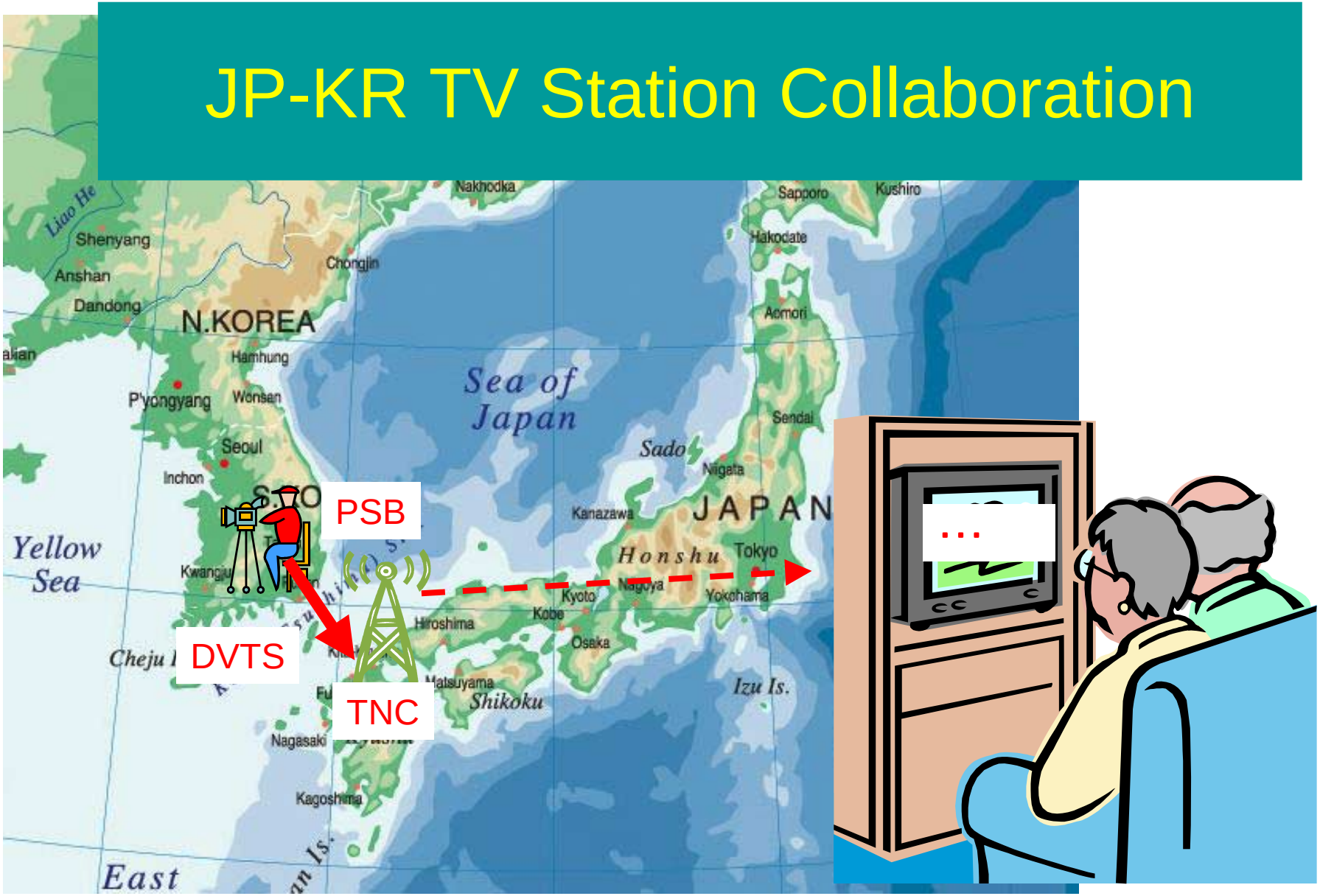


SC2004 PITTSBURGH PA NOVEMBER 6 - 12

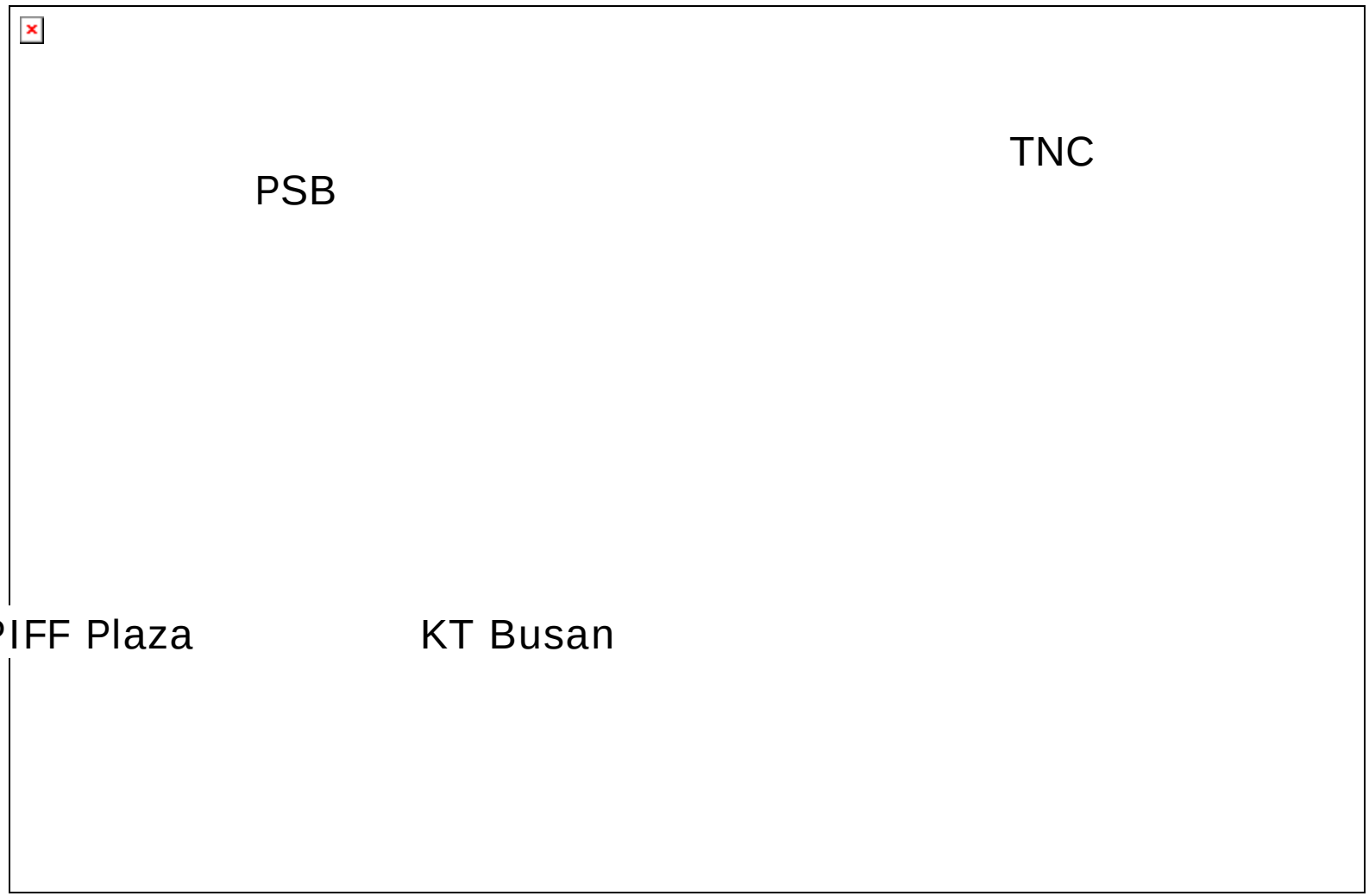
Entry name: Showinig Bandwidth of CJK (China, Japan, Korea)
Organization: Kyushu University and KISDI
Award: Honorable Mention, Breaking Not Only Technical But Cultural Boundaries

from 10:30 to 11:40 on 8th Jan (Sat.) 2005

JP-KR TV Station Collaboration



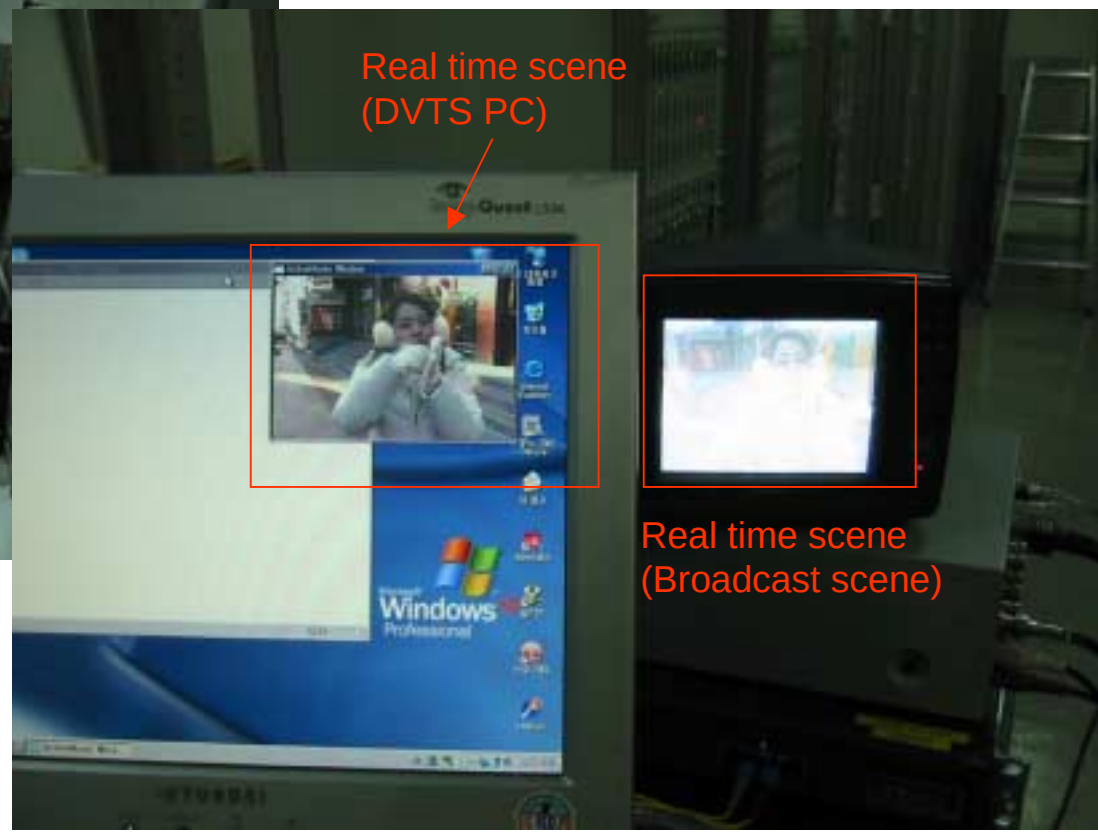
Demo configuration



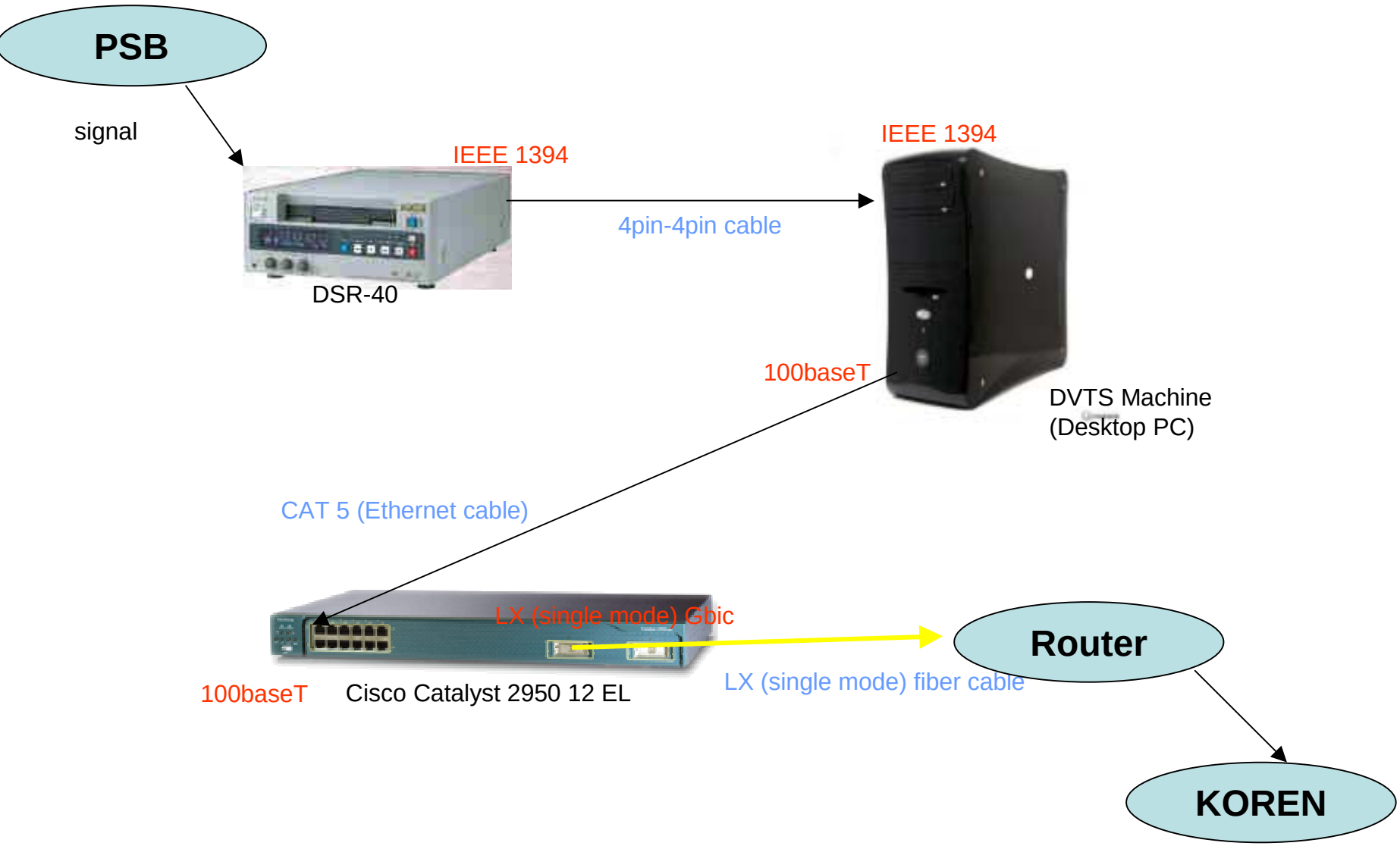
Demo (Geographic) – Korea side

Demo scene – Korea side

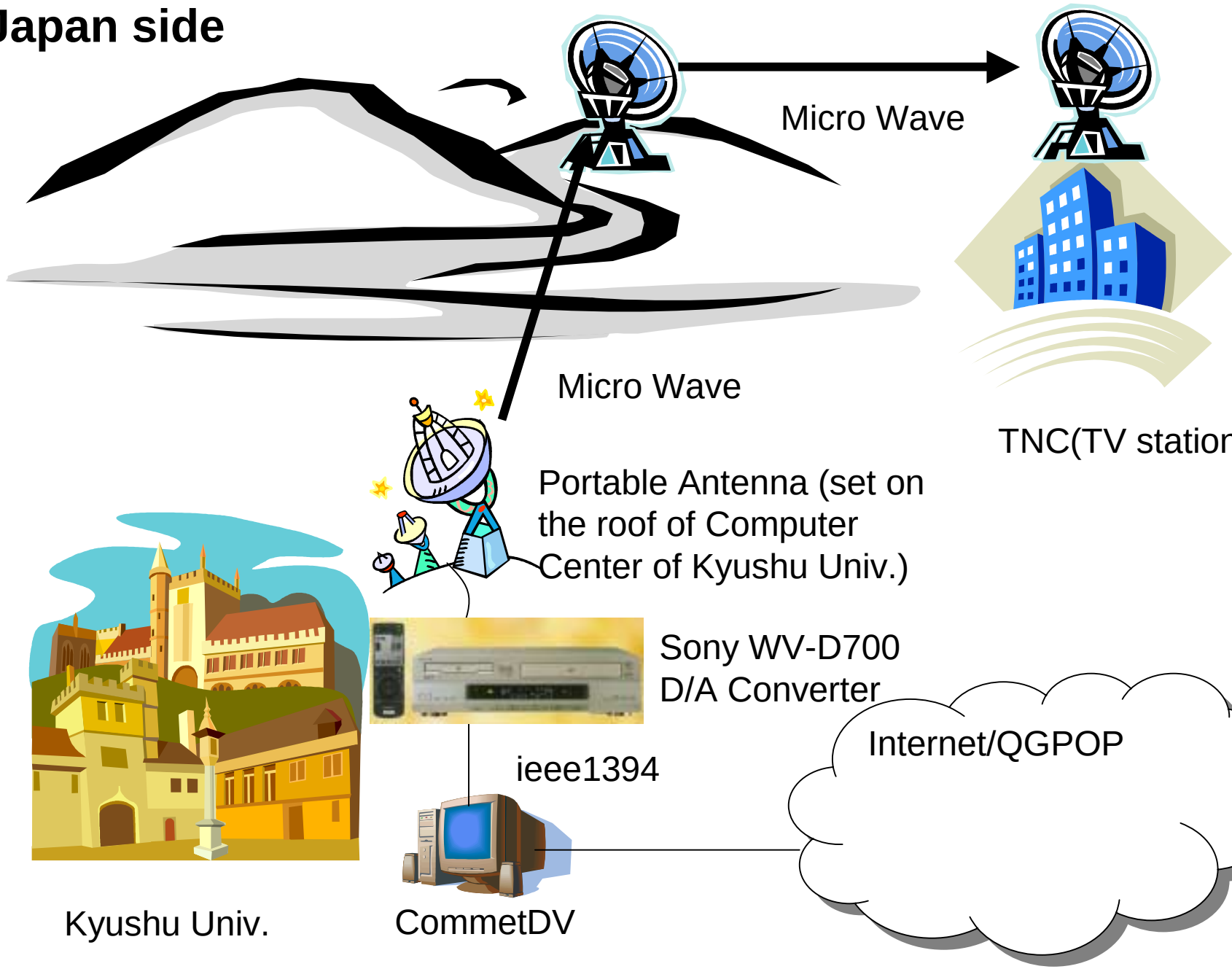
Demo Equipment in KT busan
(DVTS machine, DV converter)



Demo View– Sasang Telephone Dept. (Korea side)



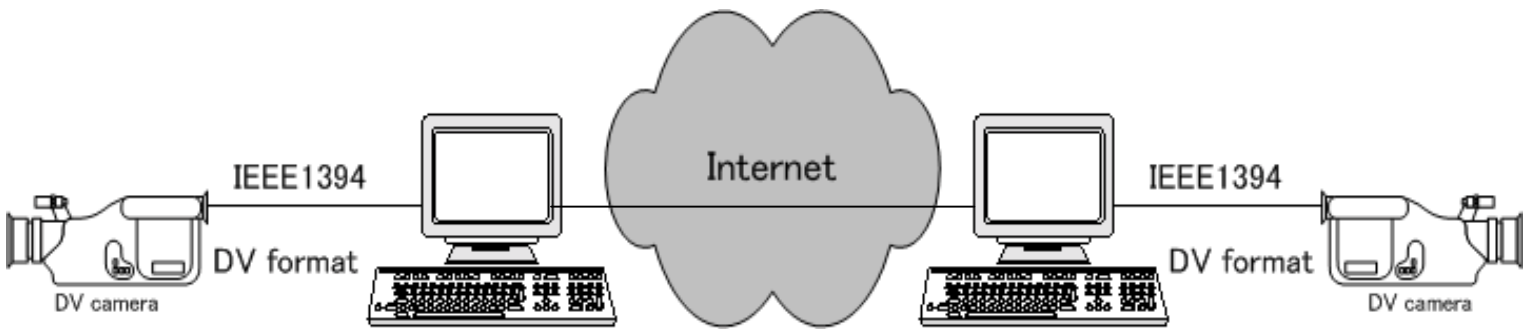
Japan side


Micro Wave
Micro Wave
TNC(TV station)
Portable Antenna (set on the roof of Computer Center of Kyushu Univ.)
Sony WV-D700 D/A Converter
ieee1394
Internet/QGPOP
Kyushu Univ.
CommetDV

Technical Topics based on Case Studies

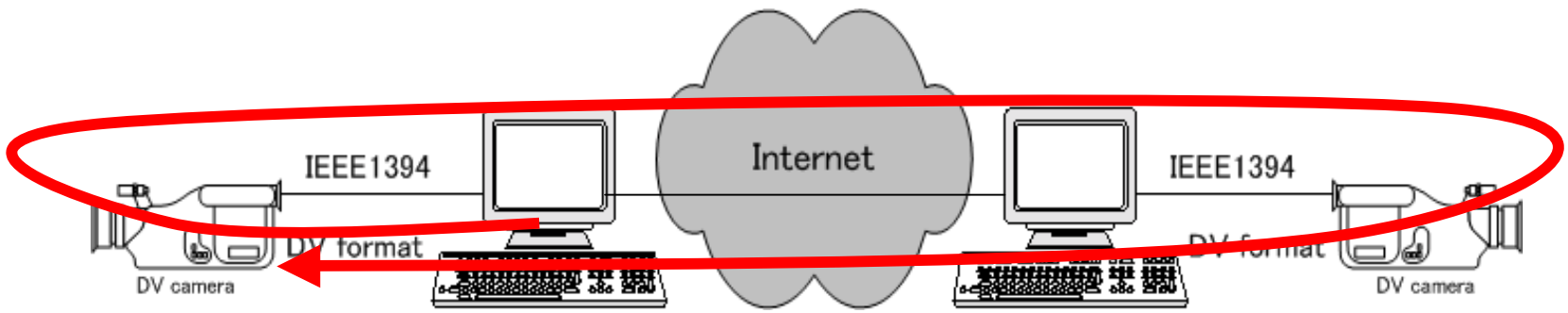
- Application Layer
  - Uni-Point DVTS
  - Multi-Point DVTS
- IP Layer
  - Routing Issues
- Under L2 Layer
  - Equipments Issues
- the other Issues

DV over IP



Very Simple!!

The Problem 1: Audio Echo

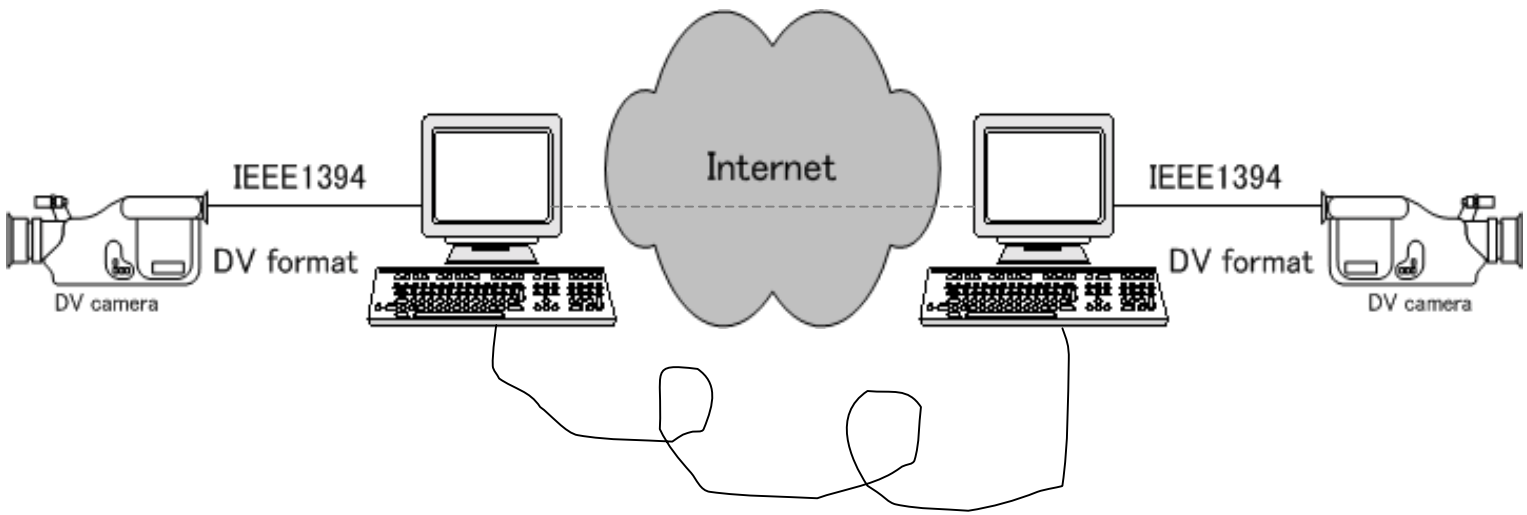


Audio Echo Cancel

just point to point

Audio Quality was almost perfect.

The Problem 2: Guarantee of Stable Network (Bandwidth)



Troubles during International Performance

The National Center for Korean Traditional Performing Arts

KII network

KOREN

Seoul

Suwon

Daejeon

Daegu

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Busan National Univ.

U.S.

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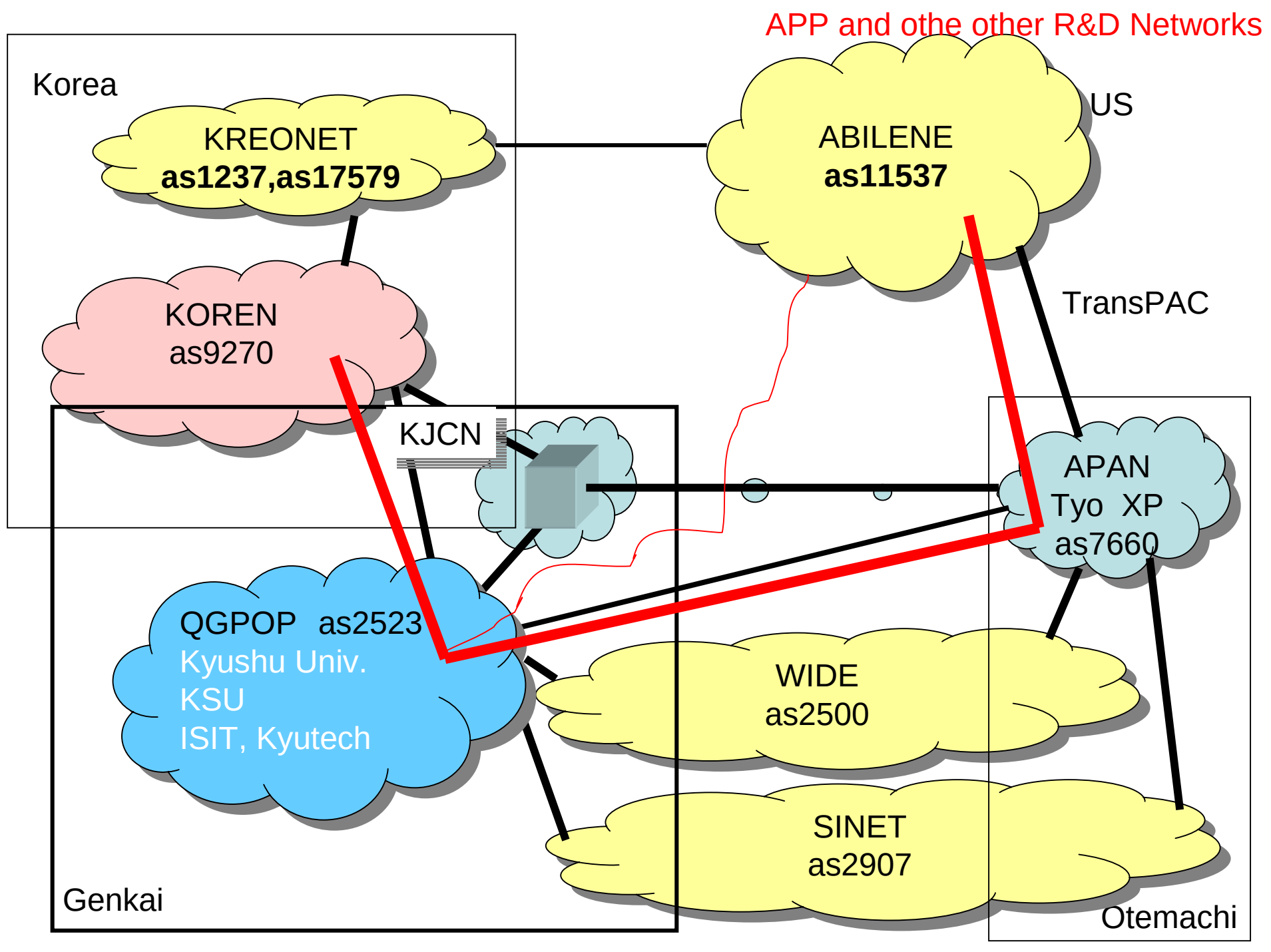
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QGPOP as2523
Kyushu Univ.
KSU
ISIT, Kyutech
WIDE
as2500
SINET
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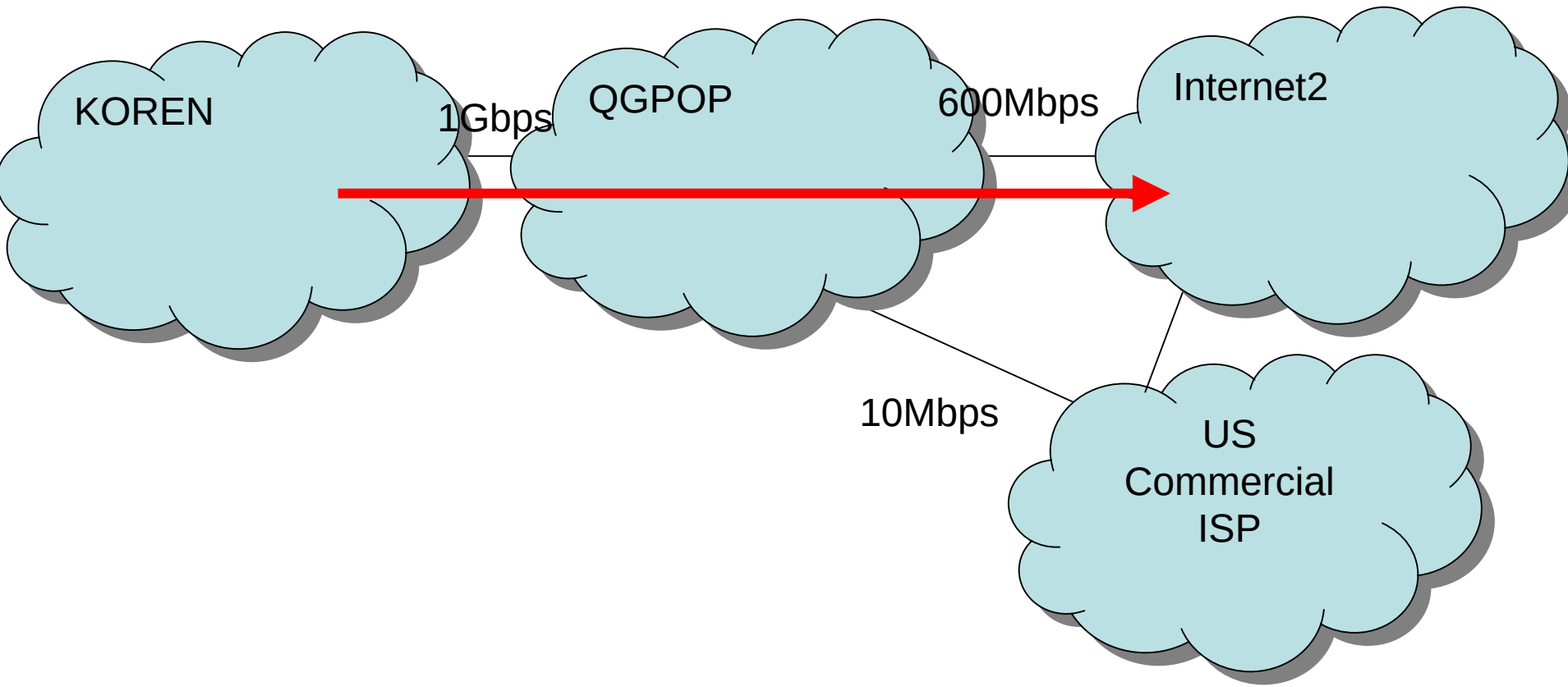
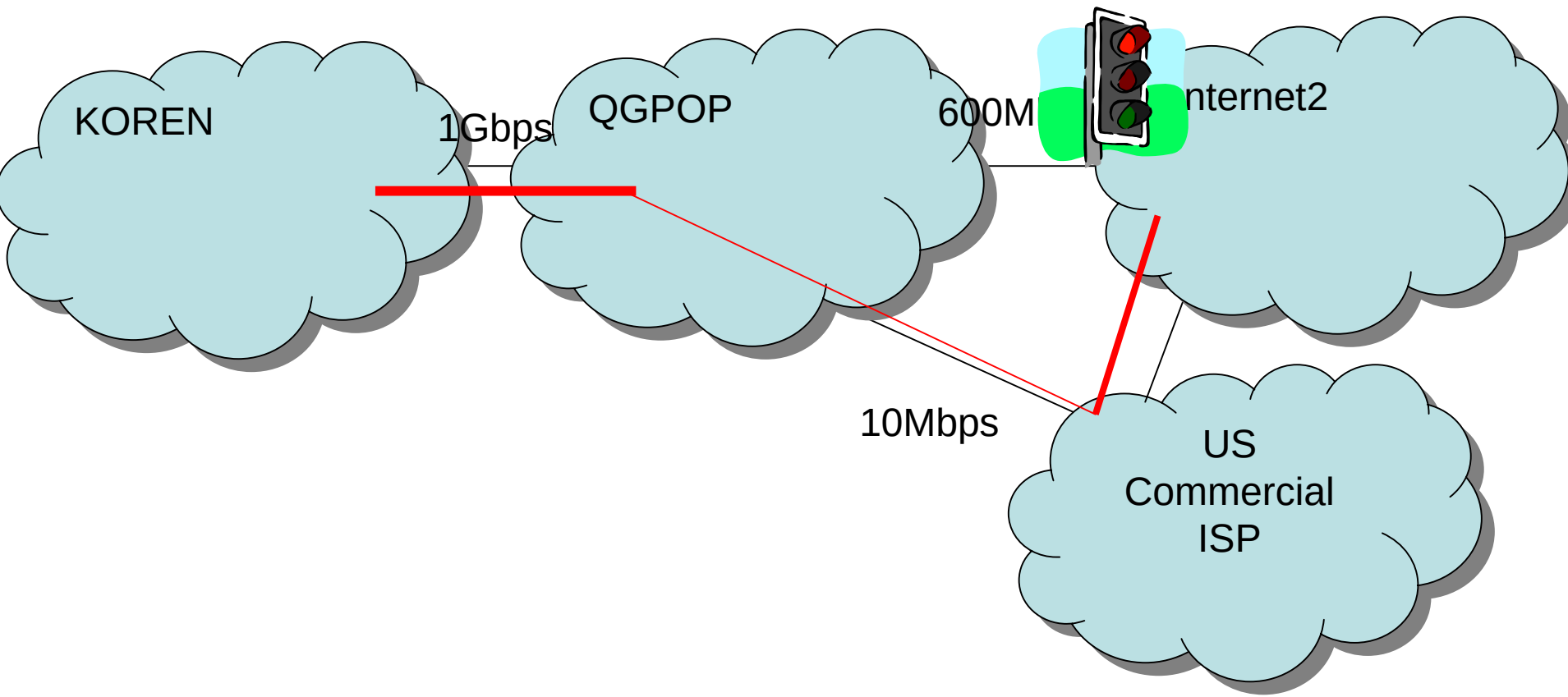
Genkai
Otemachi

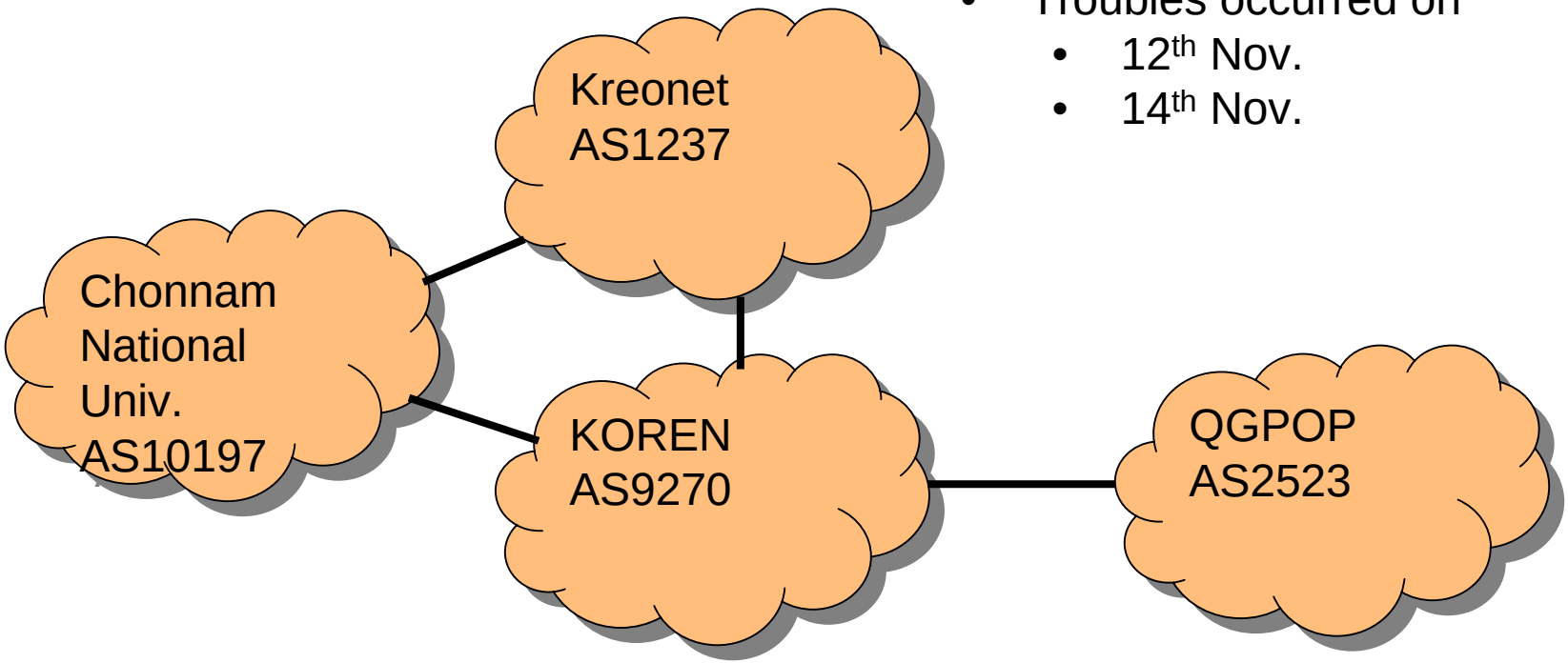
What happened during DancingQ



What happened during DancingQ



Exchange of Junior High School had some troubles

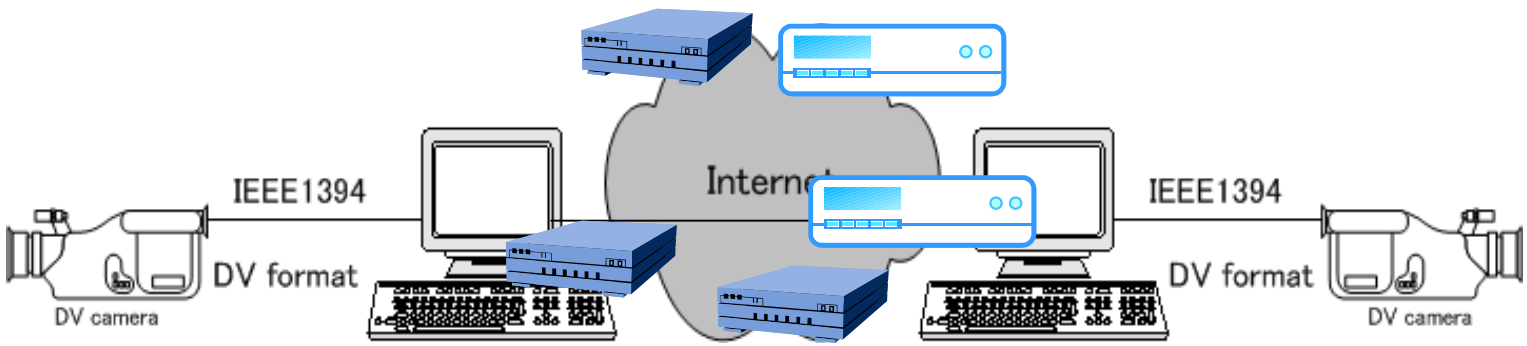


- Troubles occurred on
  - 12th Nov.
  - 14th Nov.

2003/11/10 10:26:19: UPDATE : 168.131.0.0/16 133.69.134.209 2523 9270 1237 10197
2003/11/12 08:04:17: UPDATE : 168.131.254.40/30 133.69.134.209 2523 9270 1237 10197
2003/11/12 09:24:48: UPDATE : 168.131.0.0/16 133.69.134.209 2523 9270 10197
2003/11/14 10:45:50: UPDATE : 168.131.0.0/16 133.69.134.209 2523 9270 1237 10197
2003/11/14 11:01:20: UPDATE : 168.131.254.40/30 133.69.134.209 2523 9270 1237 10197
2003/11/14 11:06:20: UPDATE : 168.131.0.0/16 133.69.134.209 2523 9270 10197

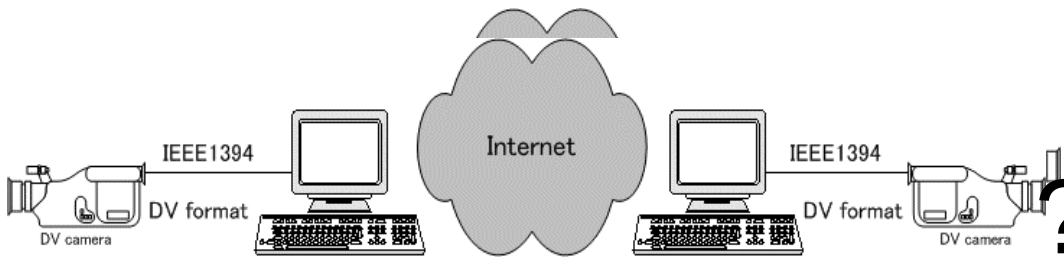
Watching the Internet Routing Table is important.

Layer 2 Equipments Issue



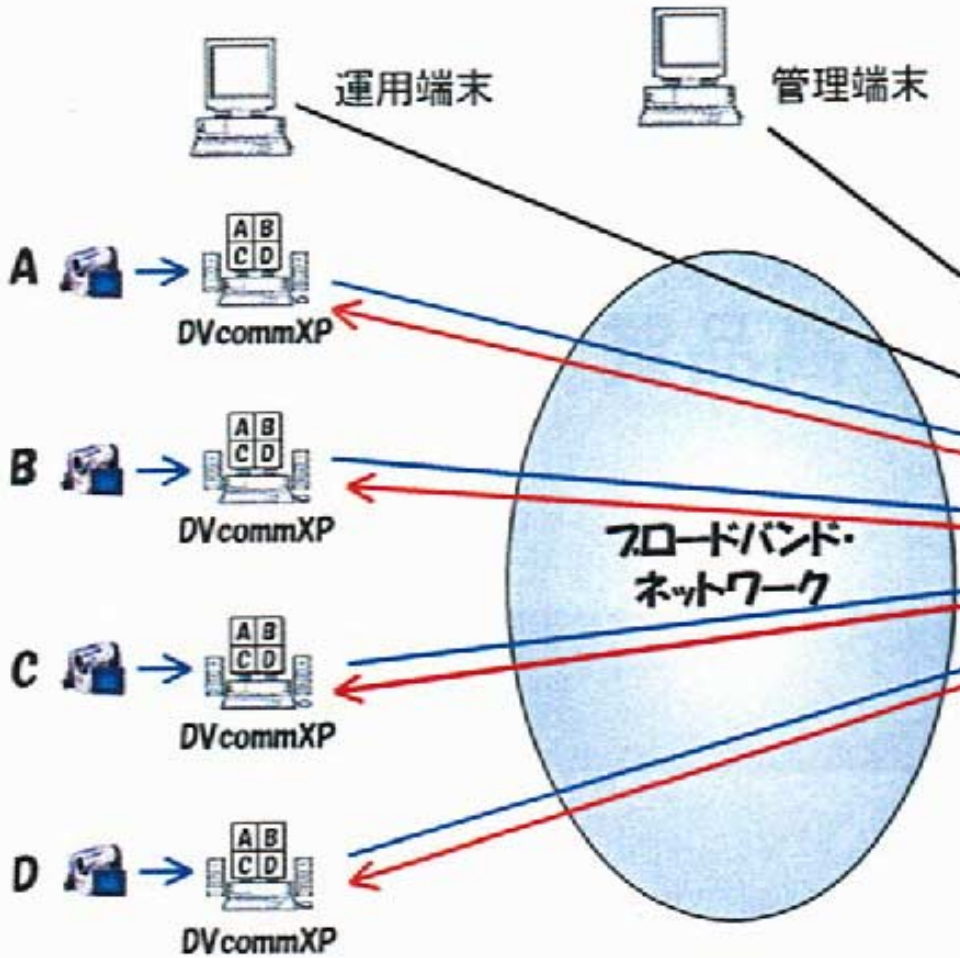
There are so many kinds of Ethernet Switches, Cheap, Expensive… But Please select REASONABLE one. And Please DON'T USE Too Cheap one.

How to Multipoint?



???MCU???

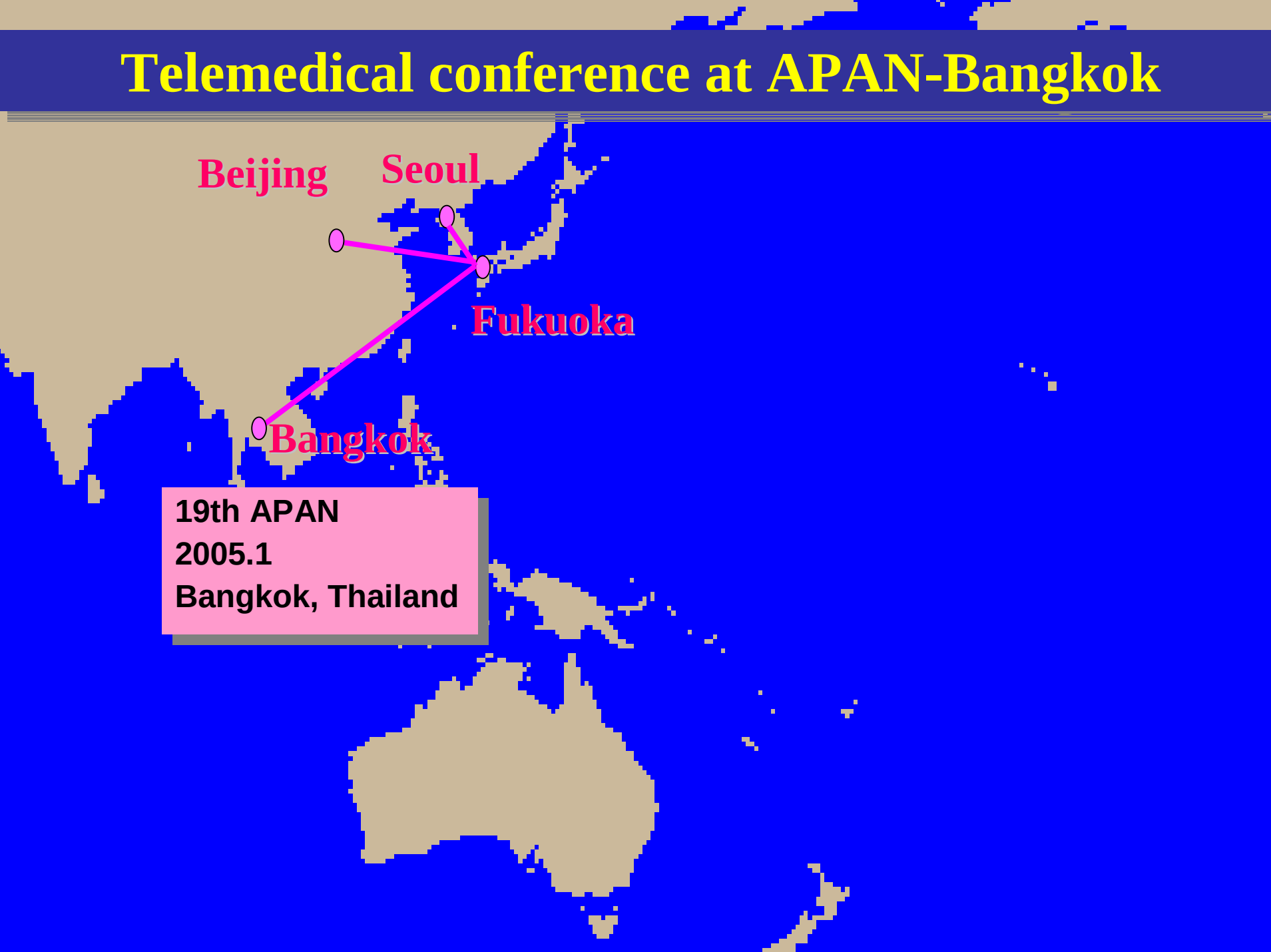
New Technology for DVTS
DV Ouatre



- Commercial Products
- All of process are Software base
- High Video Quality

Unicast, Multicast,IPv4, IPv6

Telemedical conference at APAN-Bangkok

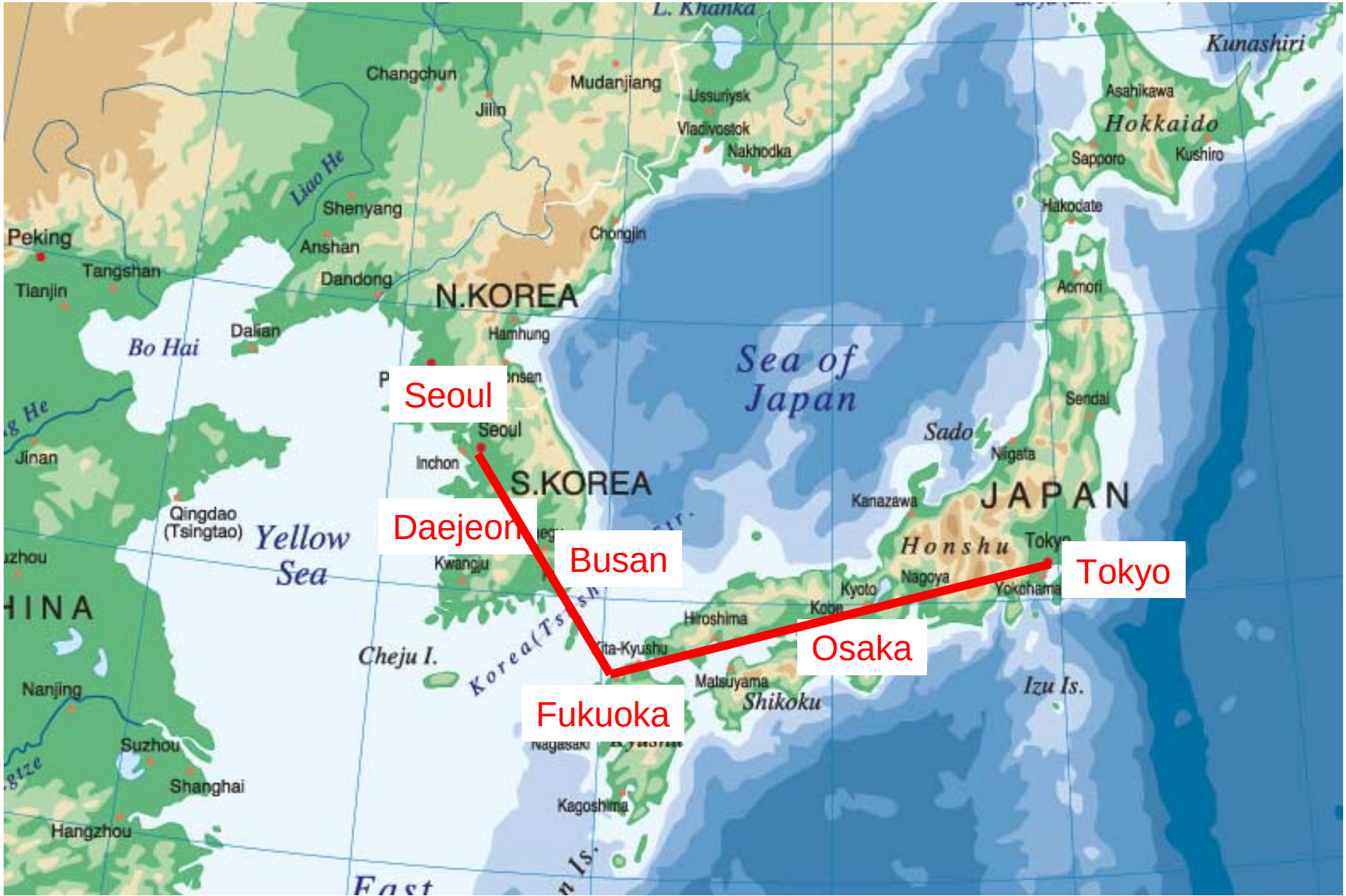


During the last APAN (Jan. 2005), we connected Thailand (venue) , Japan, Korea and China by DVTS using Quatre.

How to collaborate so closely

- Distance
  - more than 20msec (FUK – HND)
  - less than 20msec (FUK –ICN)
- Many Chances
  - Optical Fibers
  - Fund from Government

The Network Topology around Japan and Korea



Foundation for Japan-Korea Internet from Governments

- e! (MPHPT)
  - advanced case studies with advanced IT.
- JSPS/KOSEF
  - Core Program for the Next Generation Internet
    - Kyushu Univ. (JP)
    - Chungnam National Univ. (KR)
    - Support of research exchange expenses
      - travel
      - work shop

Genkai Association has been established on Oct. 2002.

Jul. 2001

Dec. 2002

May. 2002

Nov. 2001

Mar. 2002

Aug. 2001

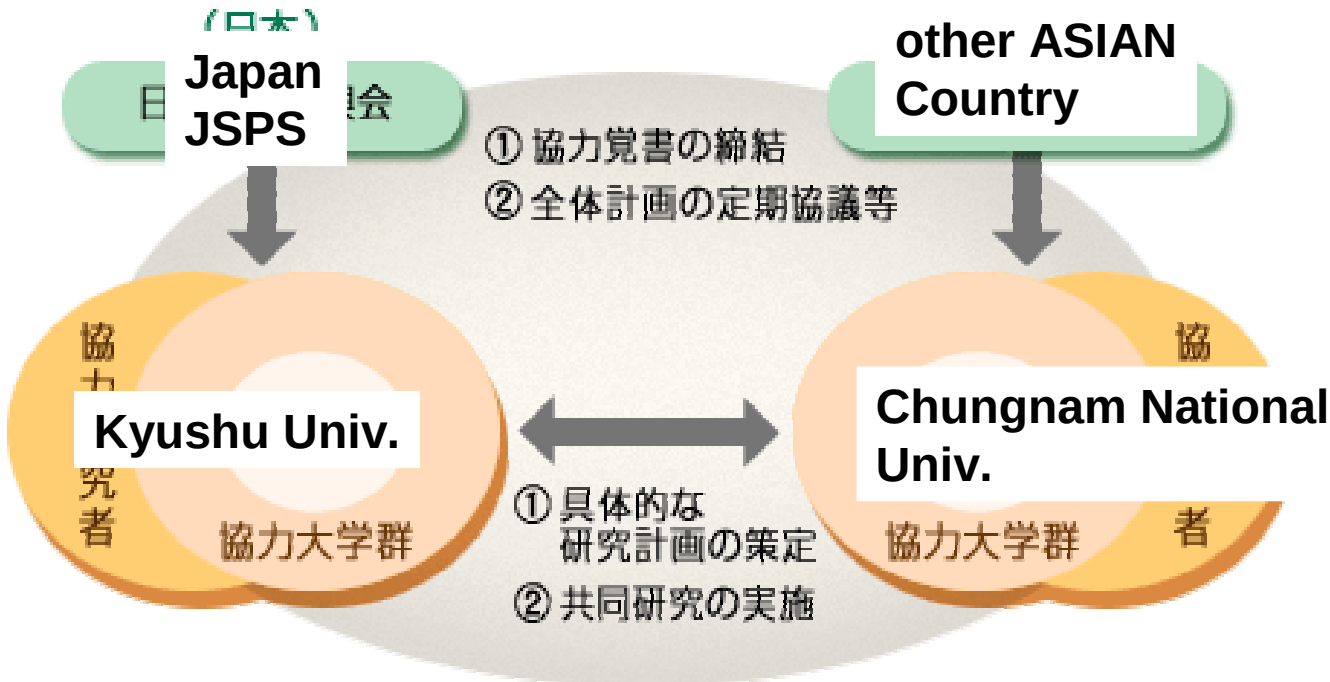
Oct. 2002

Aug. 2001

From Jul. 2001 to Dec. 2002（1.5 year）

What is Core Program?

- Core Program is leaded by JSPS.
- http://www.jsps.go.jp/j-bilat/core/index.html

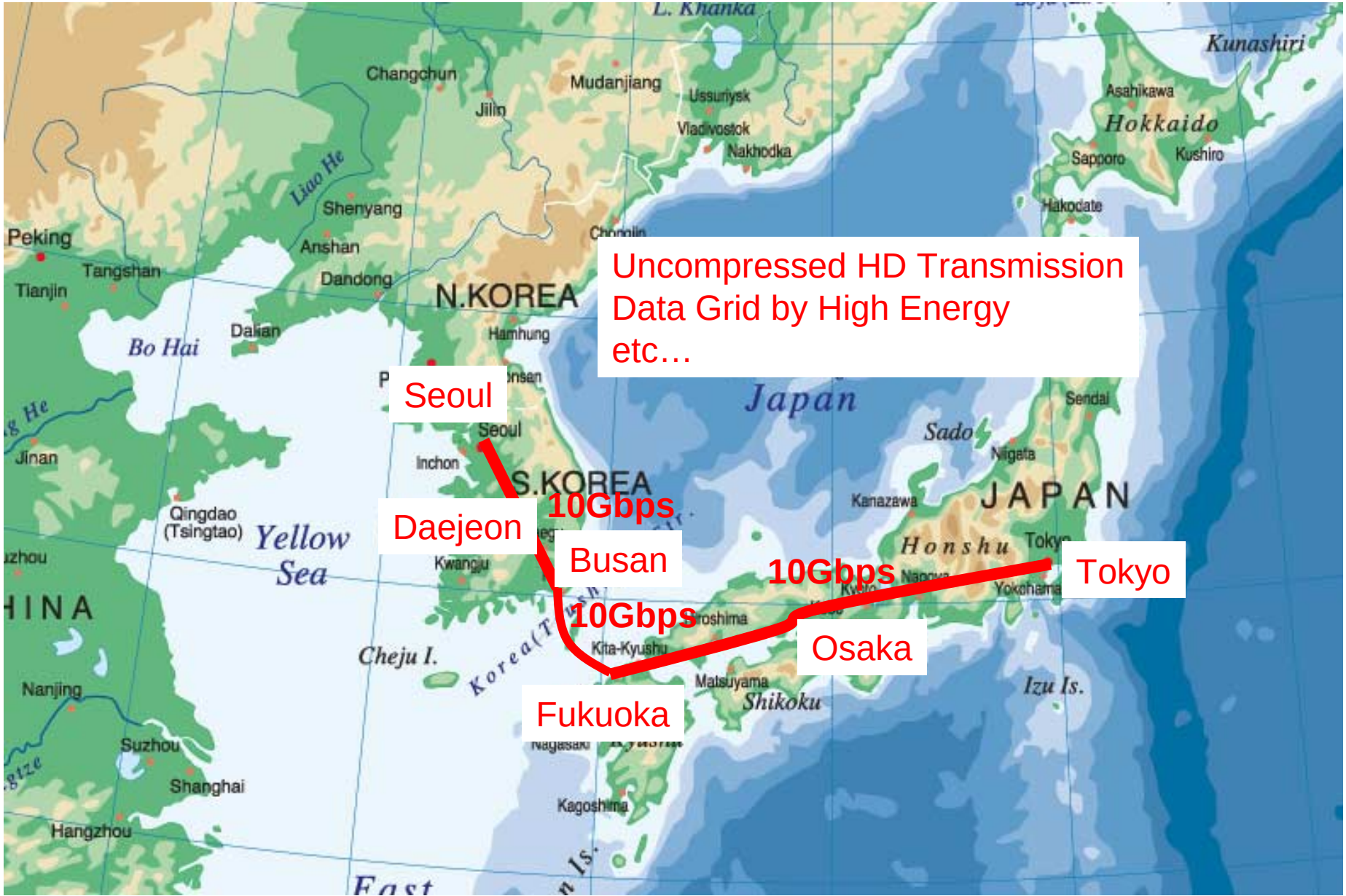


Pictures of Core Program's Seminar

Conclusion

- Good Technologies
  - International Collaborations
- Good Partners
  - Human Relationship of all over the world
- Good Fund
  - Governments Supports

Current Issue : 10Gbps Upgrade between JP and KR



Thank You Very Much!!

Koji OKAMURA
Kyushu Univ.
oka@ec.kyushu-u.ac.jp