

IPv6 Interoperability Development Activity in Japan and the IPv6 Ready Logo Program



Chair of IPv6 Forum IPv6 Ready Logo Committee

The University of Tokyo / WIDE Project

Hiroshi Esaki, Ph.D.

<hiroshi@wide.ad.jp>



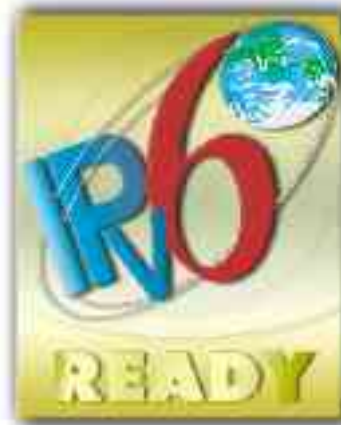
AGENDA

- **IPv6 Forum “IPv6 Ready Logo Program”**
- **Interop. Development Activity in Japan**
 - **Referenced Implementation**
 - **KAME, USAGI and TAHI**
 - **Bind with ISC**
 - **Testbed Operation**
 - **JGN IPv6 Testbed and Interop Lab.**
 - **Networld+Interop Tokyo**
 - **IPv6 Promotion Council Testbeds**

IPv6 Ready Logo Program run by IPv6 Forum



<<http://www.ipv6ready.org>>



September 1, 2003

- 1. Test Specification Released**
- 2. Practical logo program starts**

Contacts:

Hiroshi Esaki <hiroshi@wide.ad.jp>

Jim Bound <jim.bound@hp.com>

Latif Ladid, <latif.ladid@village.uunet.lu>

Structure of Program

- Board of IPv6 Forum
 - Chairperson : Latif Ladid
 - Technical Directorate Chairperson : Jim Bound @HP
- IPv6 Ready Logo Program
 - Chairperson
 - Hiroshi Esaki @ WIDE/IPv6-PC
 - Technical Officers
 - Cesar Viho @ IRISA
 - Benjamin Schultz / Rob Wolff @ UNH-IOL
 - Hiroshi Miyata @ TAHI / Yokogawa

(*) special thanks to Philippe Cousin (ETSI) and to Laurent Toutain (IRISA) for boot strap phase of program and for continuous supporting and contribution

Responsibilities

Chair
Hiroshi ESAKI

Technical

Hiroshi MIYATA

Market

Ben Shultz

Administrative

Cesar Viho

Legal

Philippe Cousin

Face-to-Face Meetings

- 1st Meeting
 - 14th May, 2003 @ Madrid
- 2nd Meeting
 - 21st July @ ETSI Sophia Antipolis
- 3rd Meeting
 - 22nd September @ Brussels
- 4th Meeting (?)
 - 8th December @ Arlington

Objectives

- Phase 1, i.e., minimum requirements testing
 - Encourage every organizations that will deploy IPv6
 - Inform ordinary people of equipment and service interoperability and conformance for equipments and services
- Phase 2, i.e., complete requirements testing
 - Check and ensure the equipment and service interoperability and conformance according to the IPv6 technical standards.

Notes

- Phase 1 program runs, even after the release of Phase 2
- Logo Design
 - Logo of Phase 1 and Phase 2 can be distinguished
 - Phase 1 : Silver background
 - Phase 2 : Gold background
 - Logo includes
 - Serial Number
 - Version number
- List of products approved the IPv6 Ready Logo is published on the Web.

Products for Phase 1 Logo

- Host equipment
- Router equipment
- Operating System (e.g., Linux)
- IPv6 Protocol Stack (e.g., VxWorks)

(*) Application (e.g., mail server) and service (e.g., ISP) is for pending

Application Procedure

- Conformance testing by Self-test
- Interoperability testing with two Routers and two Host
- Fill out application form and send to the following e-mail address with the test log
<ipv6ready-admin@ipv6ready.org>

(*) Self-test base and Interoperability test event base are essentially based on the same testing criteria, which is Phase 1 test specification.

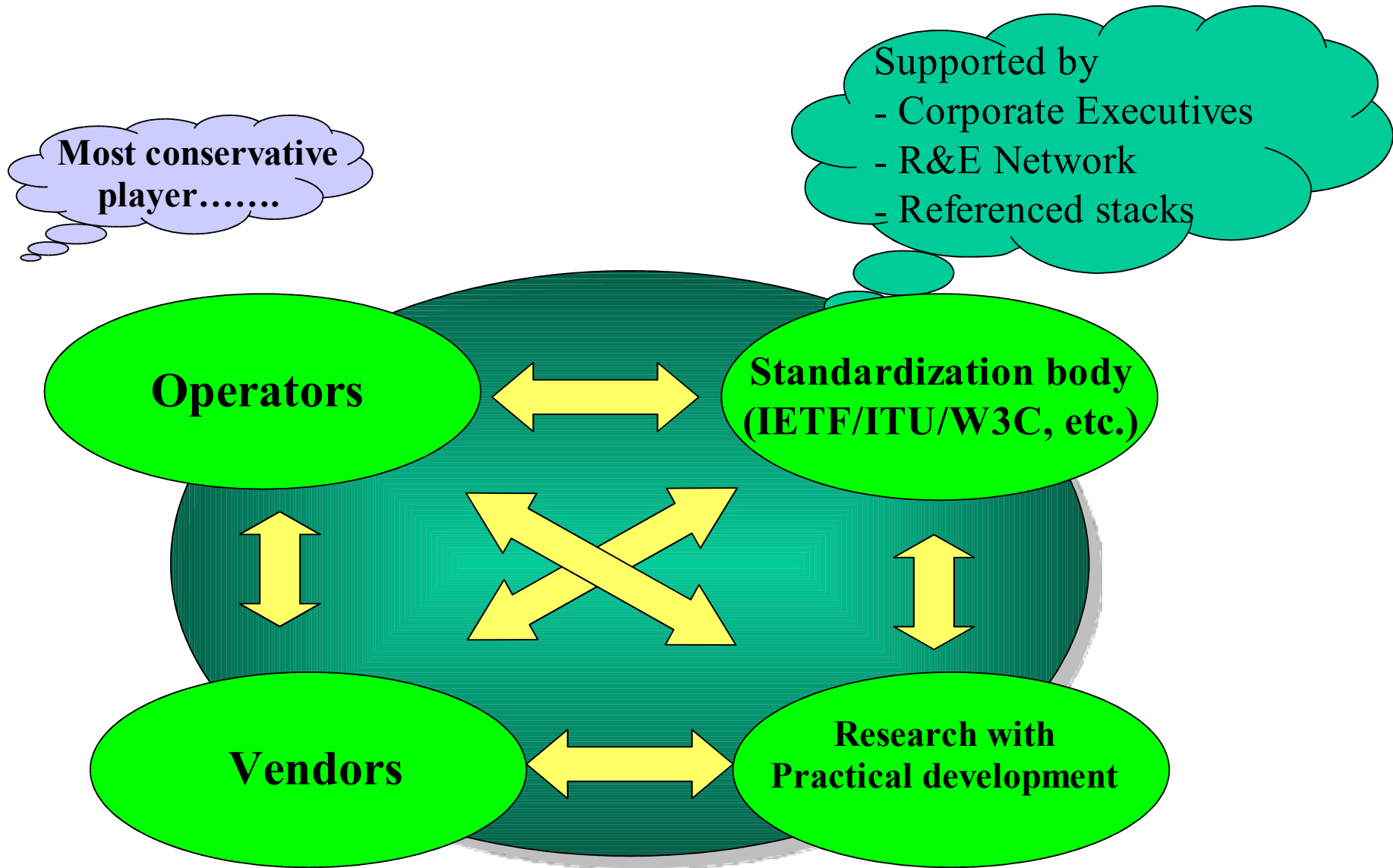
Coverage and Responsibility for Phase 2



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Community interaction in the Internet industry



IPv6 Referenced Implementation

IPv6 Referenced Implementation

KAME IPv6 for *BSD*

- Keio Univ., Univ. of Tokyo, Fujitsu, IJ, NEC
Hitachi,, Toshiba, Yokogawa
- <http://www.kame.net>



USAGI IPv6 for LINUX

- Keio Univ.,Yokogawa, Toshiba, IBM, Sharp,
Hitachi, NTT-Soft, Univ.of Tokyo, HUT
- <http://www.linux-ipv6.org>



TAHI IPv6 Test & Evaluation Software

- Yokogawa, Univ.of Tokyo, NTT Group, Yasukawa,
 - IPv6 Promotion Council Certificate WG
- <http://www.tahi.org>

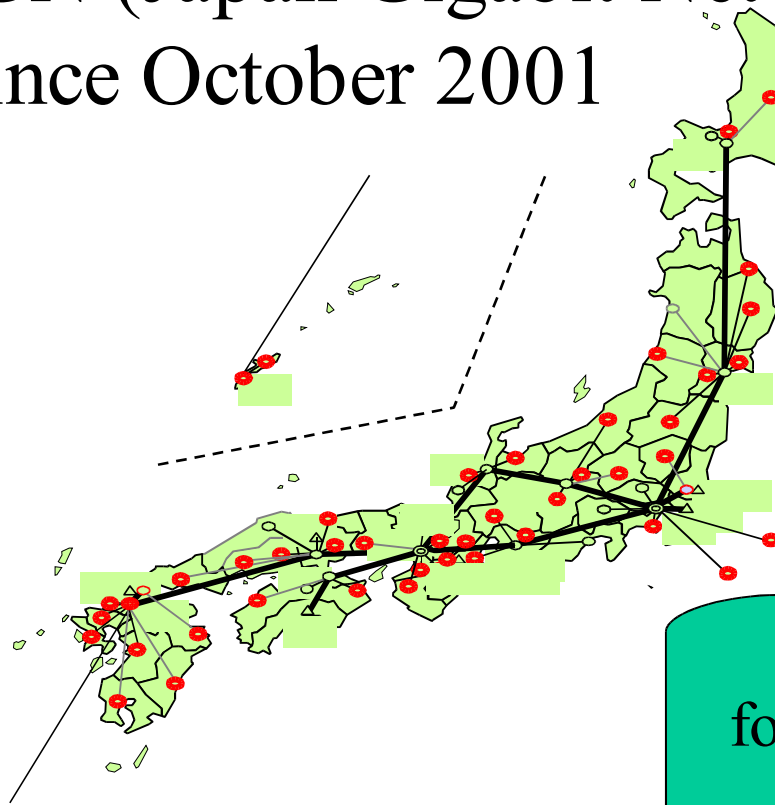


DNS and BIND

- USC-ISI ISC

JGN (Japan Gigabit Network) IPv6 Service

Since October 2001



**IPv6 Routers (multi-vendor);
Cisco, Juniper,
Hitachi, Fujitsu, NEC**

Okayama Lab.
for conformance, interop.,
and performance

JGN IPv6 NOC ; 26 sites

- Otemachi(Tokyo), Dojima(Osaka), Research Center (Tohoku-U, Makuhari, U-Tokyo, Kochi), Giga-Lab (Tsukubam Keihan-na, Okayamam Kokura), Tohoku-U, U-Tokyo, Keio-U, Nagoya-U, Toyama, Ishikawa/JAIST, NAIST, Softpia, Kyoto-U, Osaka-U, KUSA Hiroshima-U, Hiroshima-CU, Kyushu-U, Saga-U, Okinawa

Interoperability, conformance and performance Evaluation Lab. ; 3 sites

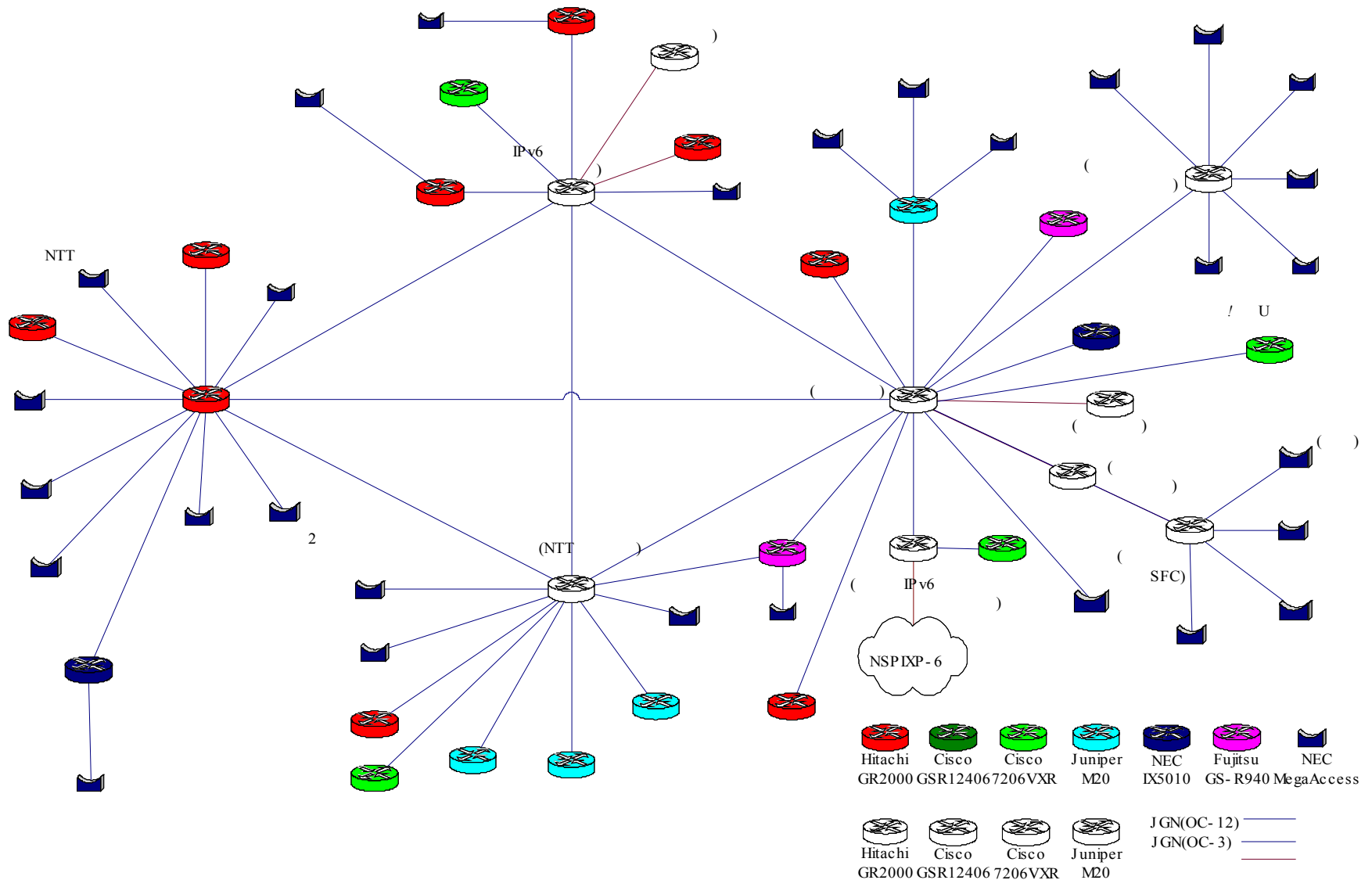
Otemachi, Okayama, Makuhari



Testbed Operation for Interoperability Development

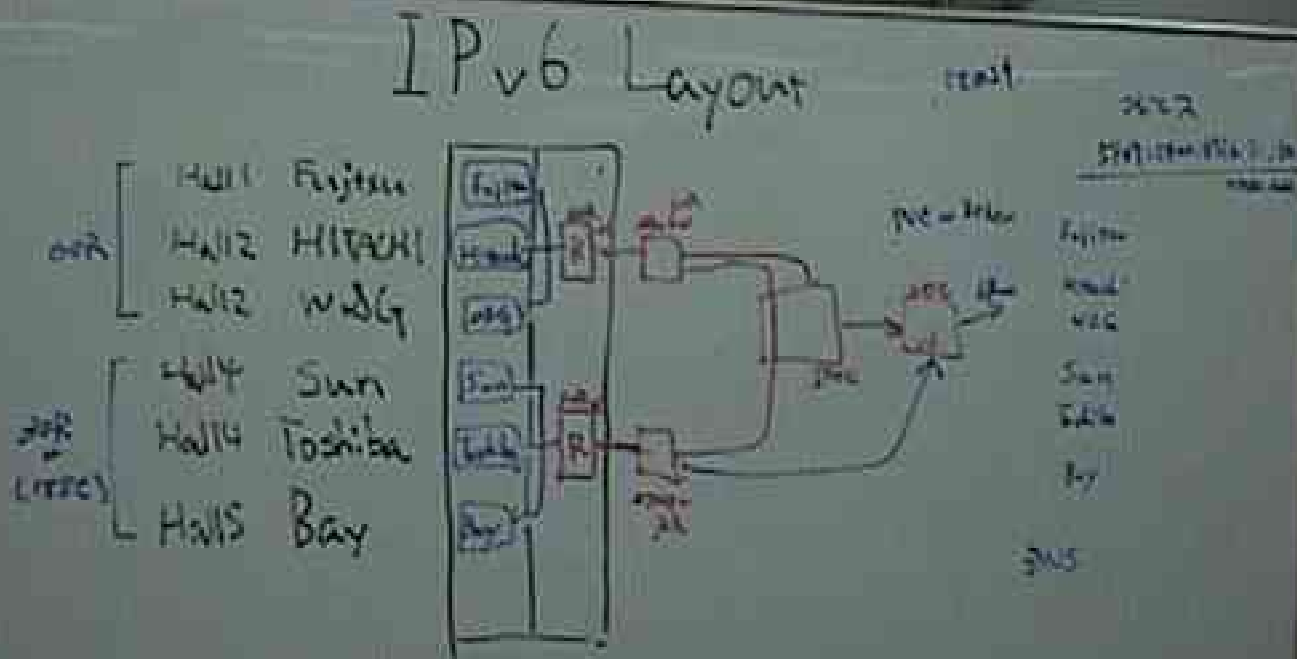
1. JGN IPv6
2. Networld+Interop Tokyo
3. IPv6 Promotion Council Testbeds

Routers on the JGNv6



Networld+Interop Tokyo

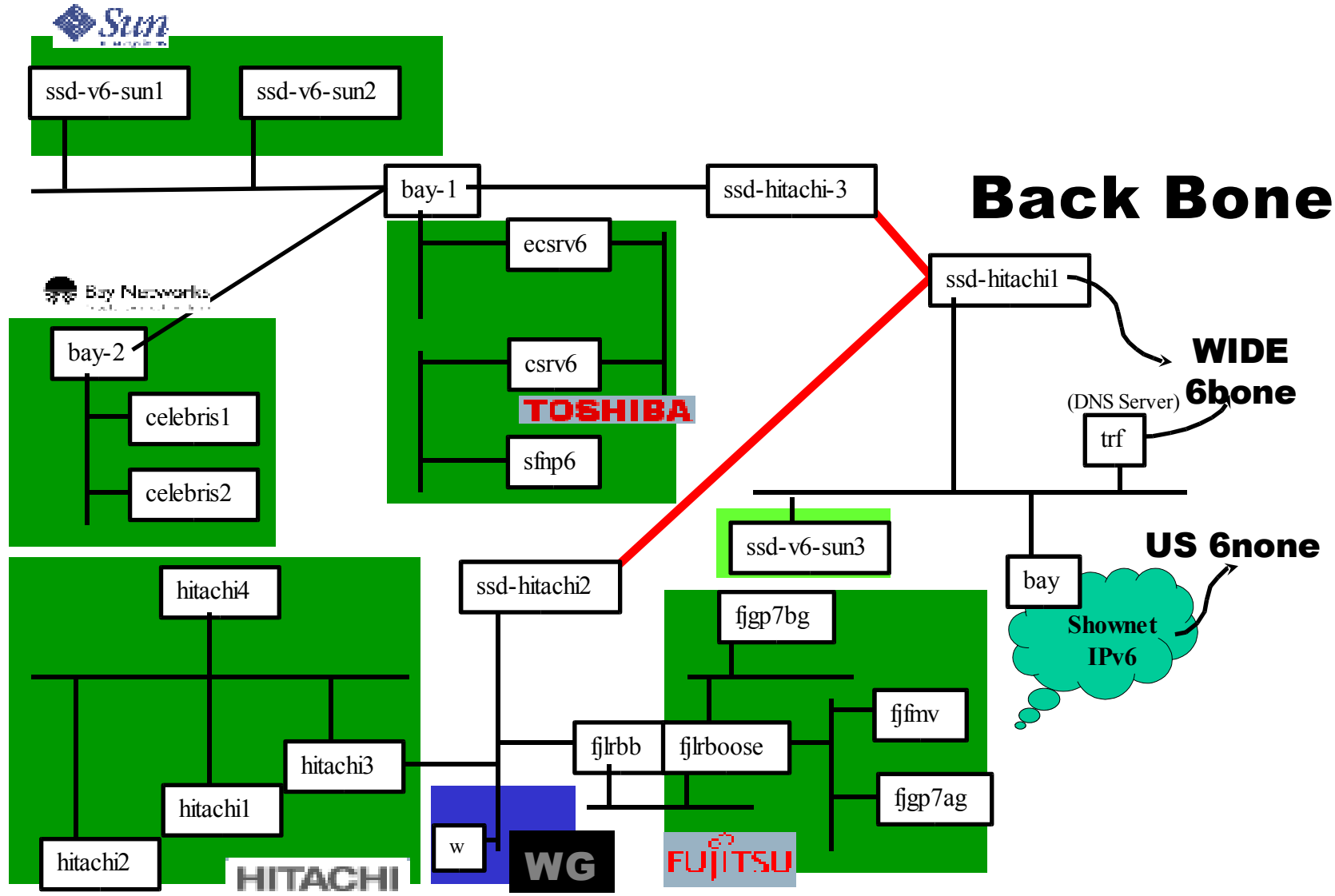
IPv6 at Shownet



Since 1997

1997

Networld+Interop Tokyo IPv6 SSD Network

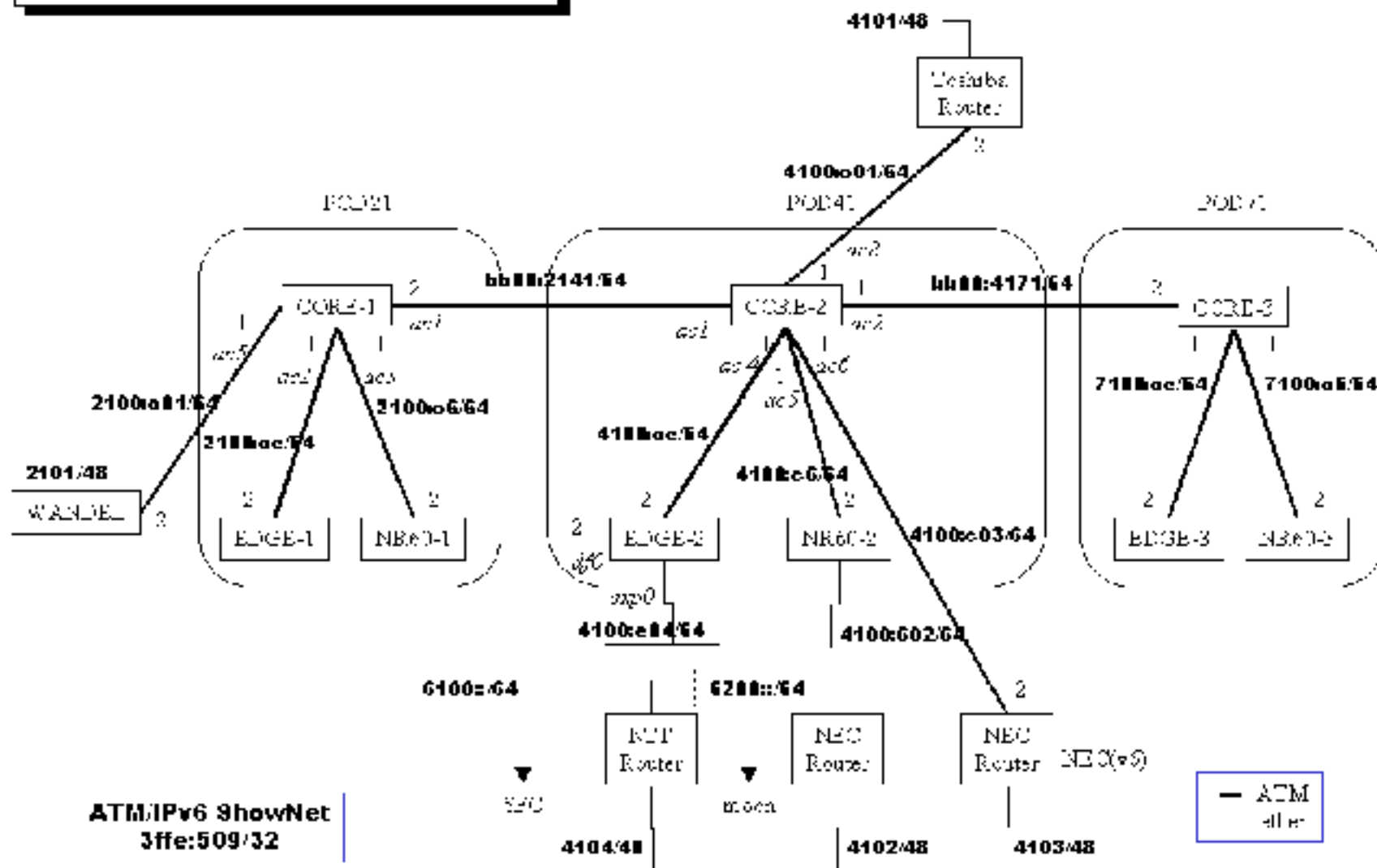


May 1998

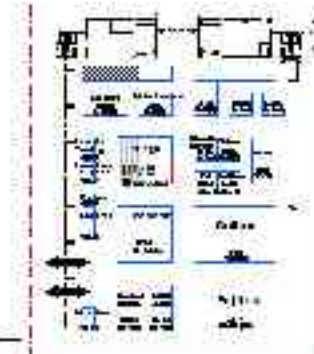
1998年5月24日
Ver1.6

Network+Interop'98 Tokyo

IPv6/ATM ネットワーク構成図 (IPv6)



IPv6 Showcase in 2000

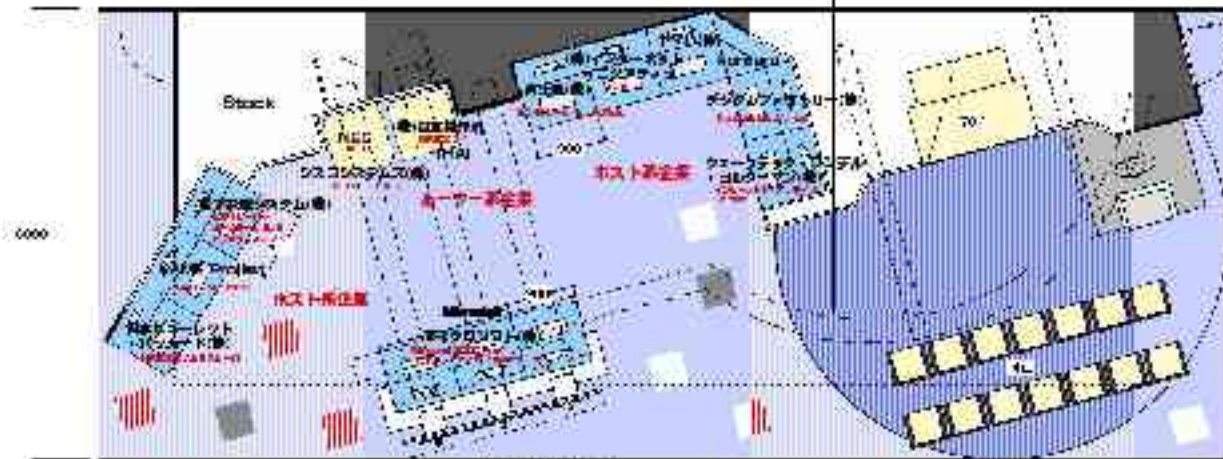


Title

Scale

1 : 50

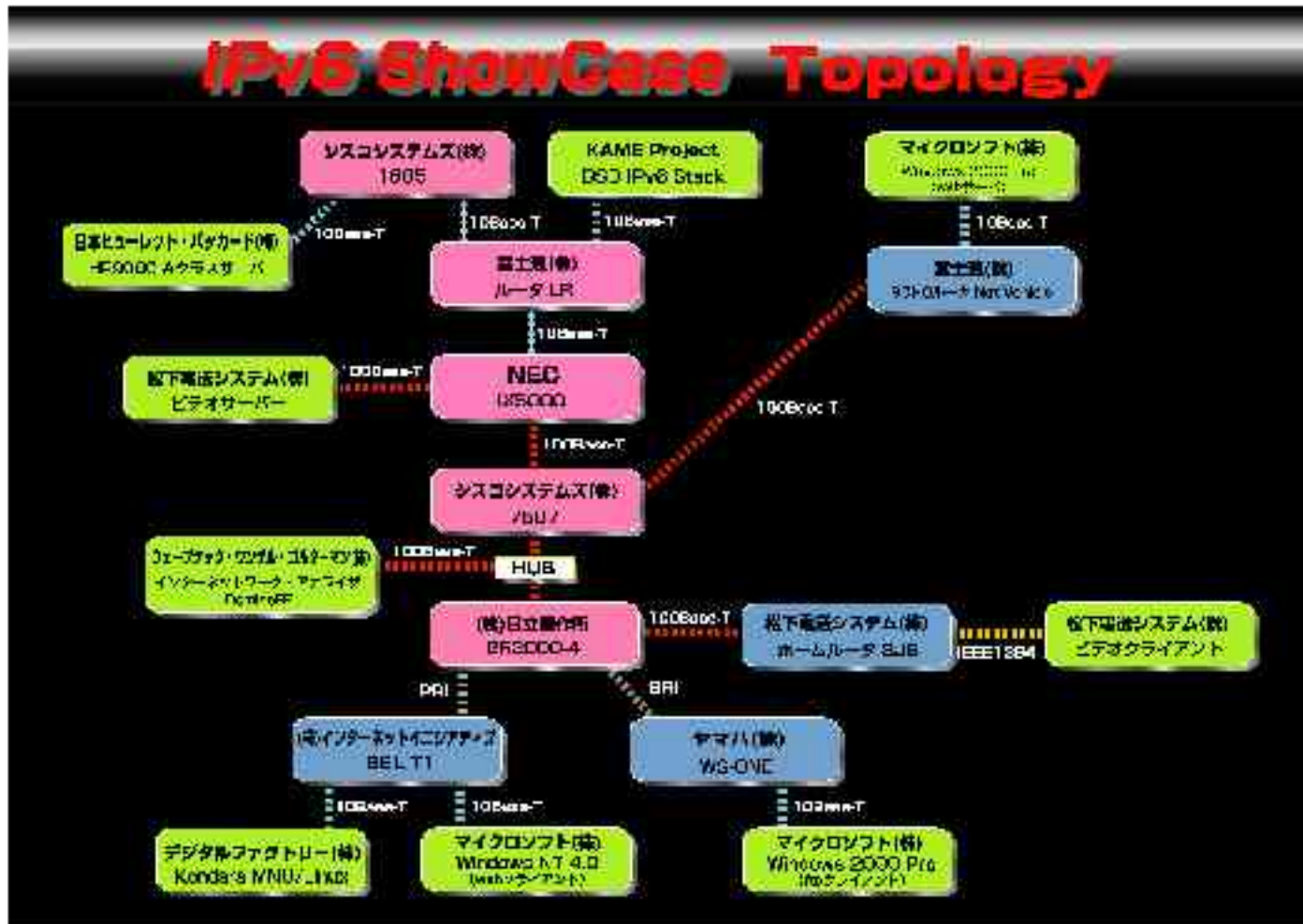
Memo



IPv6 Showcase
トビロシー
東京社一画

15000

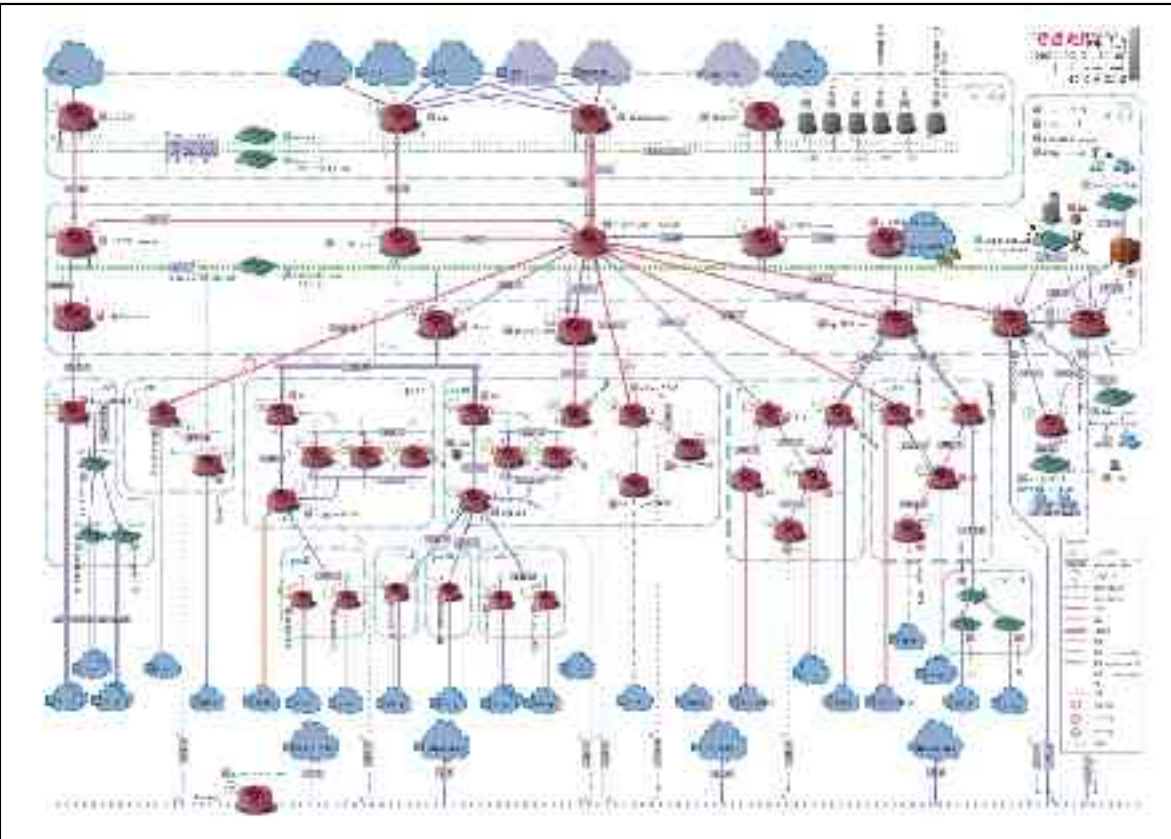
IPv6 Showcase in 2000



B1サイズ728×1030

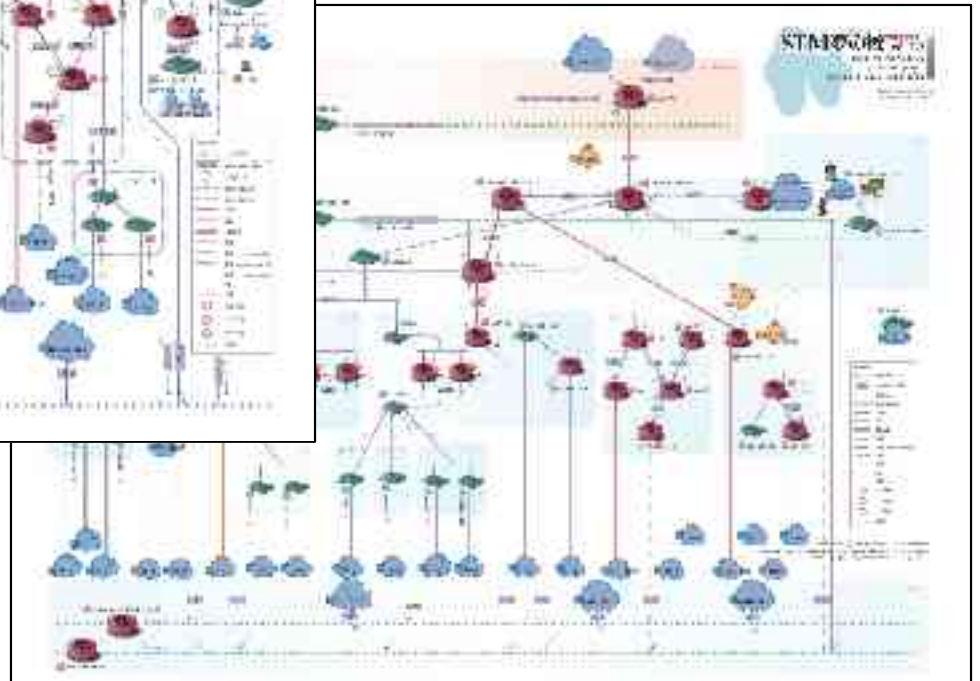
2001 Network Config.

IPv4 and IPv6 using VLAN



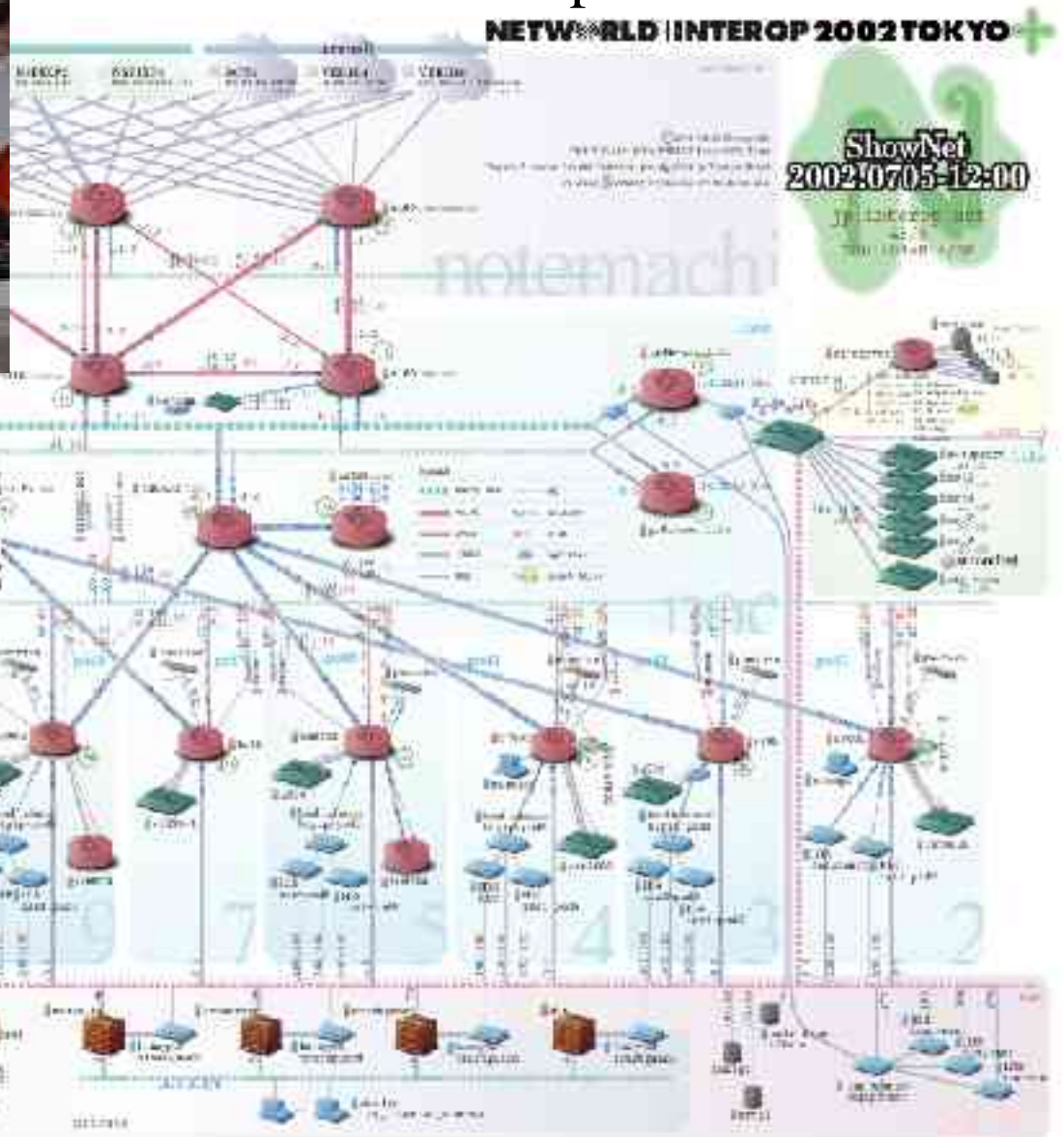
IPv4

IPv6





IPv4/IPv6 Network Configuration 2002 with full dual stack operation



IPv6 Deployment at N+I Tokyo

1994 IETF picked SIPP as IPv6

1996 :

1996 : First IPv6 support (only in shownet)

1997 : as an SSD, 6bone, KAME/GR@ATL

1998 :

1999 : IPv6 (with VLAN) for every booth

2000 : IPv6 Showcase

2002 : IPv6/IPv4 Dual Stack

↑ Prototypes
↓ Commercial Products

V6 Promotion Council



- Four Working Groups
 - Application WG
 - Telecom SWG
 - Train-Mobile TF (for IETF2002)
 - Building Automation SWG (started 4Q 2002)
 - Sensor Networking SWG (started from 3Q 2003)
 - Testbed WG
 - Design, establish and operation of IPv6 testbed
 - IPv6 Migration SWG (started from 3Q 2003)
 - V6 core technology WG
 - Basic and platform technology development
 - Strategy WG
 - Security SWG
 - Certificate SWG ➔ engine for IPv6 Ready Logo Program

IPv6 Promotion Council Test-bed

- working with commercial players -

- Carriers/ISP : NTT groups, Yusen, IP_Revolution, Tokyo Metallic, JCN, Biglobe, Nifty, etc.,
- Operating System : Microsoft, BSD, Mac, Sun, Linux, and etc.
- Data Center : NTT Communications, and others
- DRM : KeelNetworks
- CDN : Accelier
- VoIP : SoftFront
- Wireless : NOKIA, SHARP, NTT-DoCoMo, J-Phone
- Cable Modem : Panasonic, Hitachi and etc.,
- Sensor node : Yokogawa
- Satellite : JCSAT/NTTSC
- Game gear : SONY(Play Station 2)
- Security (IPSec/IKE/PKI/IDS/DDoS) : INTEC and others

Legacy ISPs

IPv6 net.

Conventional ISP networks

CDN, Contents Delivery Network
Network management
IPv6 help desk

IPv6 tesbed

Peering with
commercial
ISPs

NTT C IPv6 backbone

Tokyo iDC

Optical

wireless

Digital broadcast

Authentication
PKI, Security

IP-Tel

Home
router

Streams

Wireless

MIPv6
NEMO

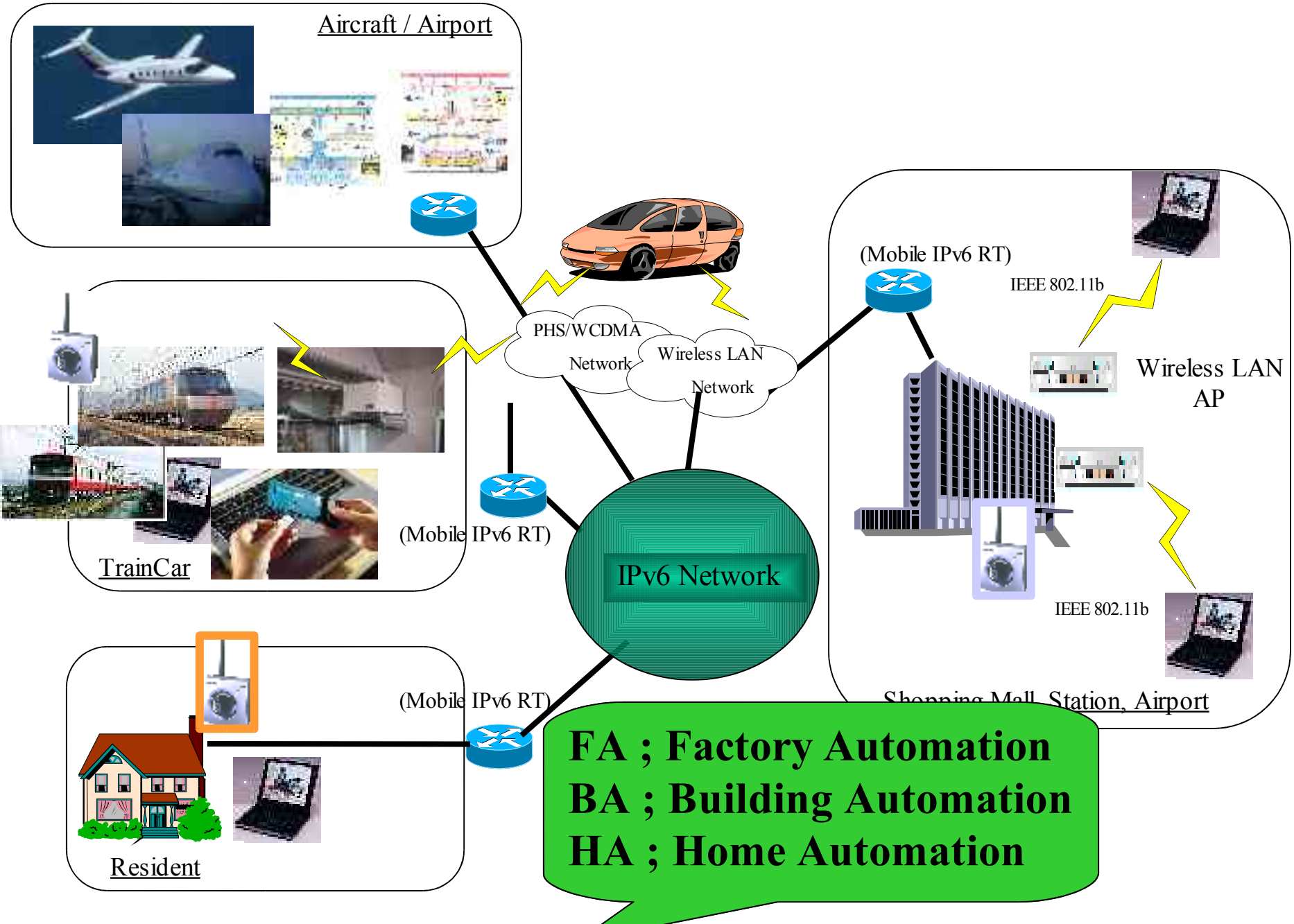
High Speed
routing

Digital Broadcast

Bi-directional
video chat

Net
IDS

Integration of IP Technology with Real-Space



SONY Broadband Solutions

Video chat system using PS2

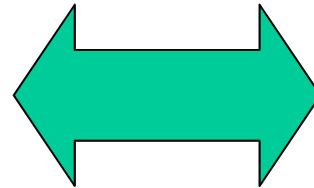


Ubo Project

Peer-to-Peer video chat system



Via IPv6 net.



Sanyo

Wireless LAN IPv6 Digital Camera



Digital camera works as video
Communication gadget ☺



Internet-Node by Yokogawa



MP3 music file download for
audit by customer at CD Shop



Voice guide using IR bar-code
reader

NOKIA Research Center

PDA with MIPv6+IPSec+RFID+WirelessLAN



Application examples
School
Train
SCM
Corporate office



SCM,
Supplied Chain
Management

Other products

- prototypes and for commercial -



NEC Web-camera



360 degree camera



KDDI Quality Meeting



Panasonic: Web-camera



RuffSystems (DVTS)



KDDI Home server

Other products

- prototypes and for commercial -



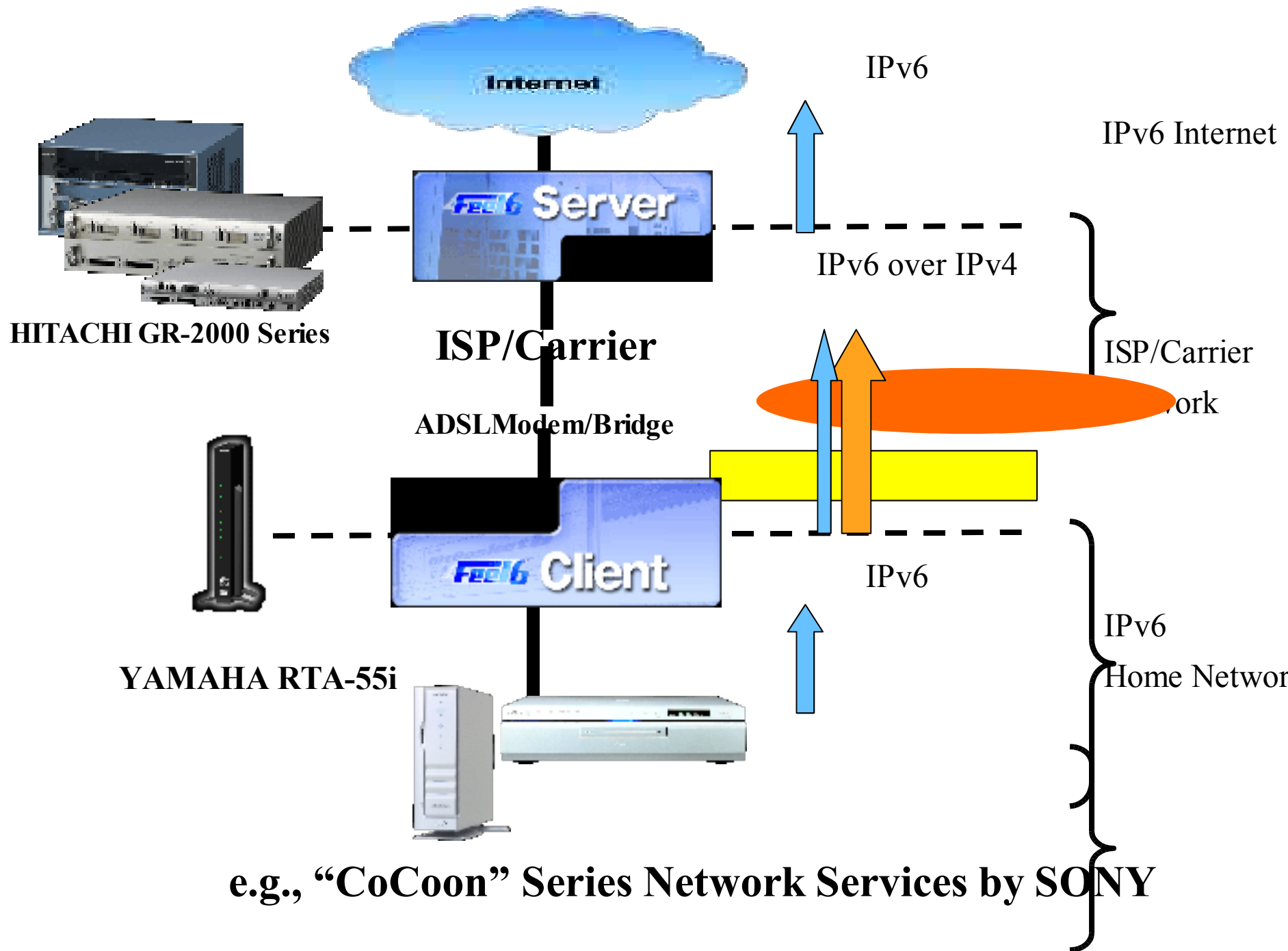
Mitsubishi Information
Network



Digital Cinema Consortium



KNOPIX



Summary

- IPv6 Forum “IPv6 Ready Logo Program”
 - Global unique test specification/criteria
 - Global collaboration
 - Encourage the deployment of IPv6 technology
- Interoperability development in Japan
 - Reference implementation
 - Testbed operation
 - Shipment of non-computer products



THANK YOU

.....Oh, by the way,.....

“5th TAHI/v6PC Test Event



- January 19-23, 2004.
- Makuhari (near downtown Tokyo), JAPAN
- <http://www.tahi.org/>

by Hiroshi Esaki <hiroshi@wide.ad.jp>