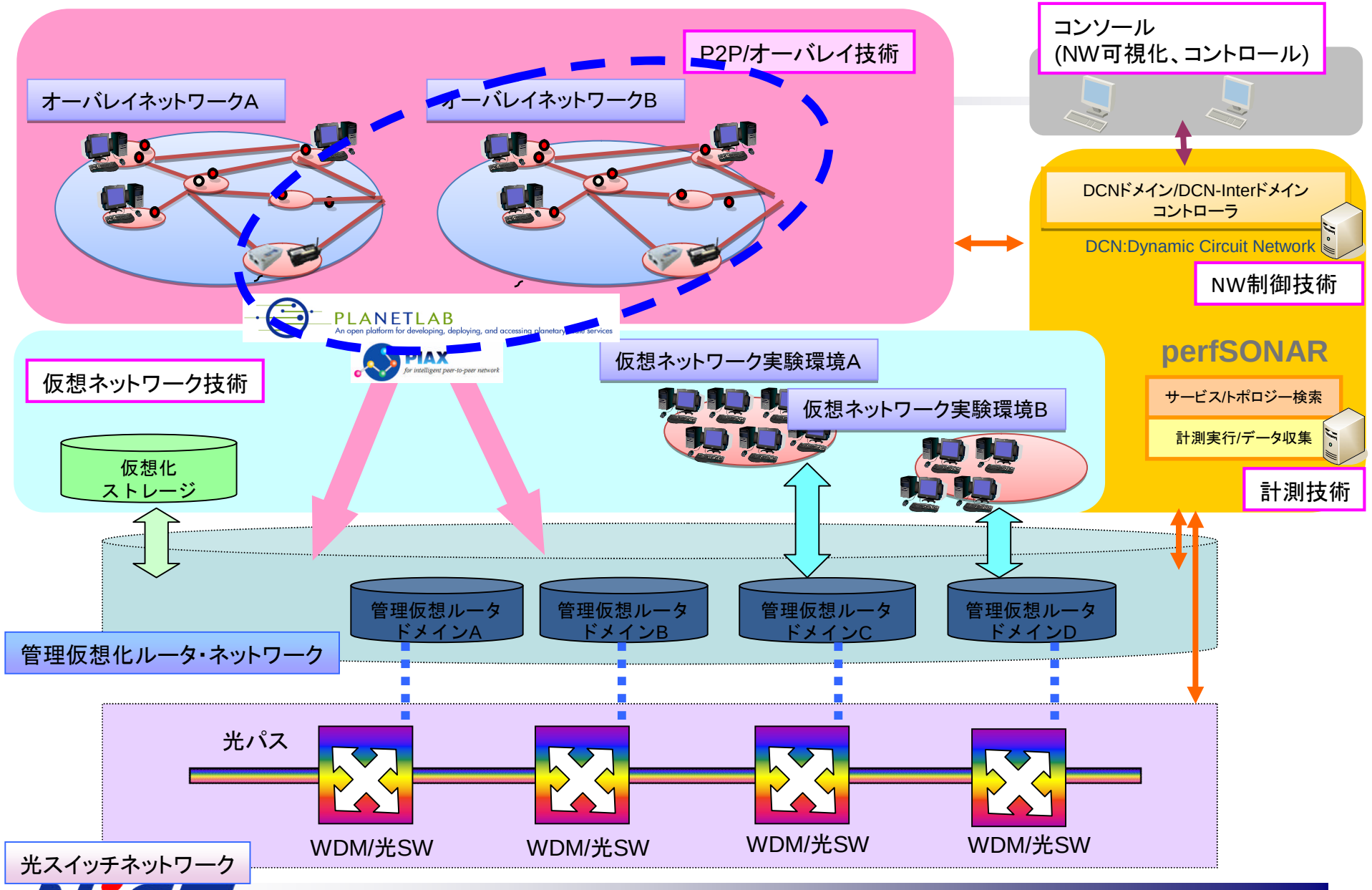
NiCT National Institute of Information and Communications Technology

THE UNIVERSITY OF TOKYO

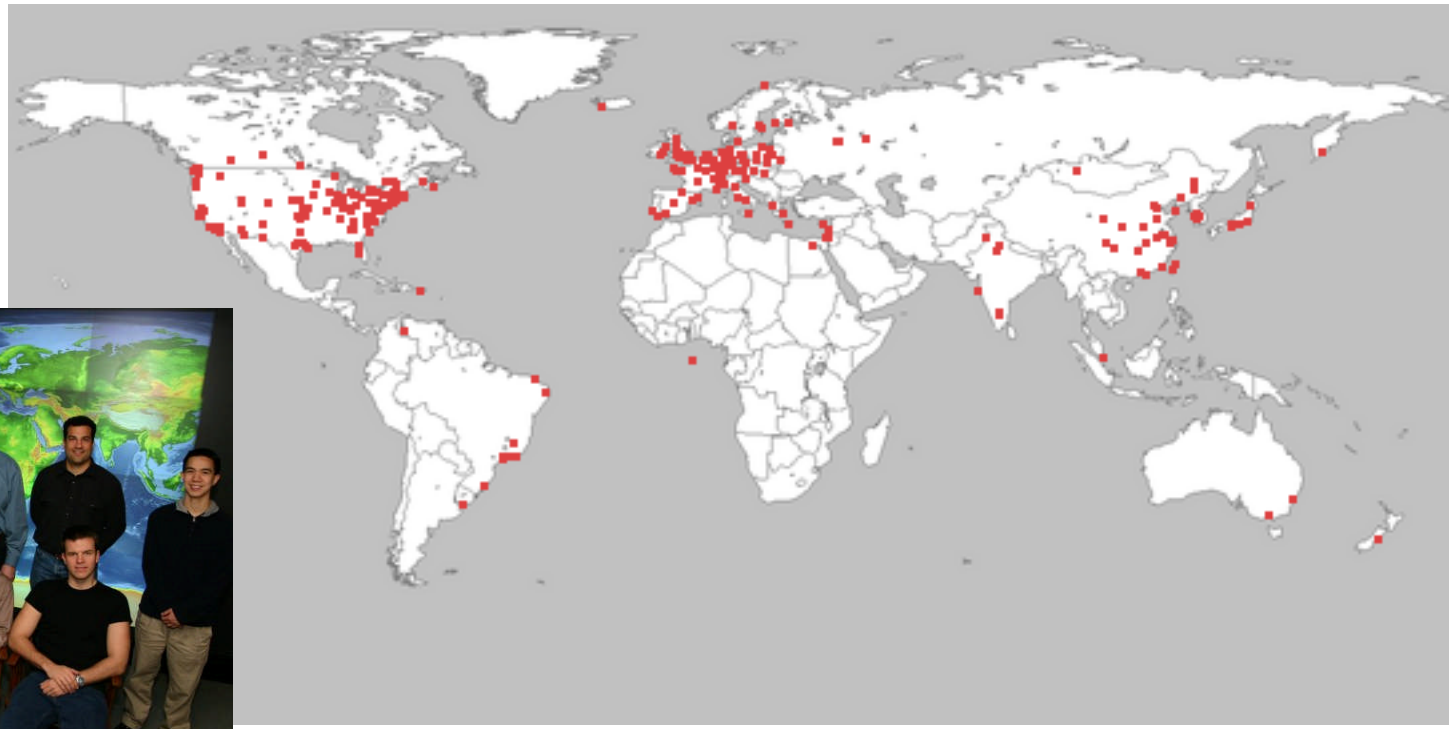
PlanetLabオーバーレイネットワーク プラットフォーム

JGN2plusサービスプラットフォーム



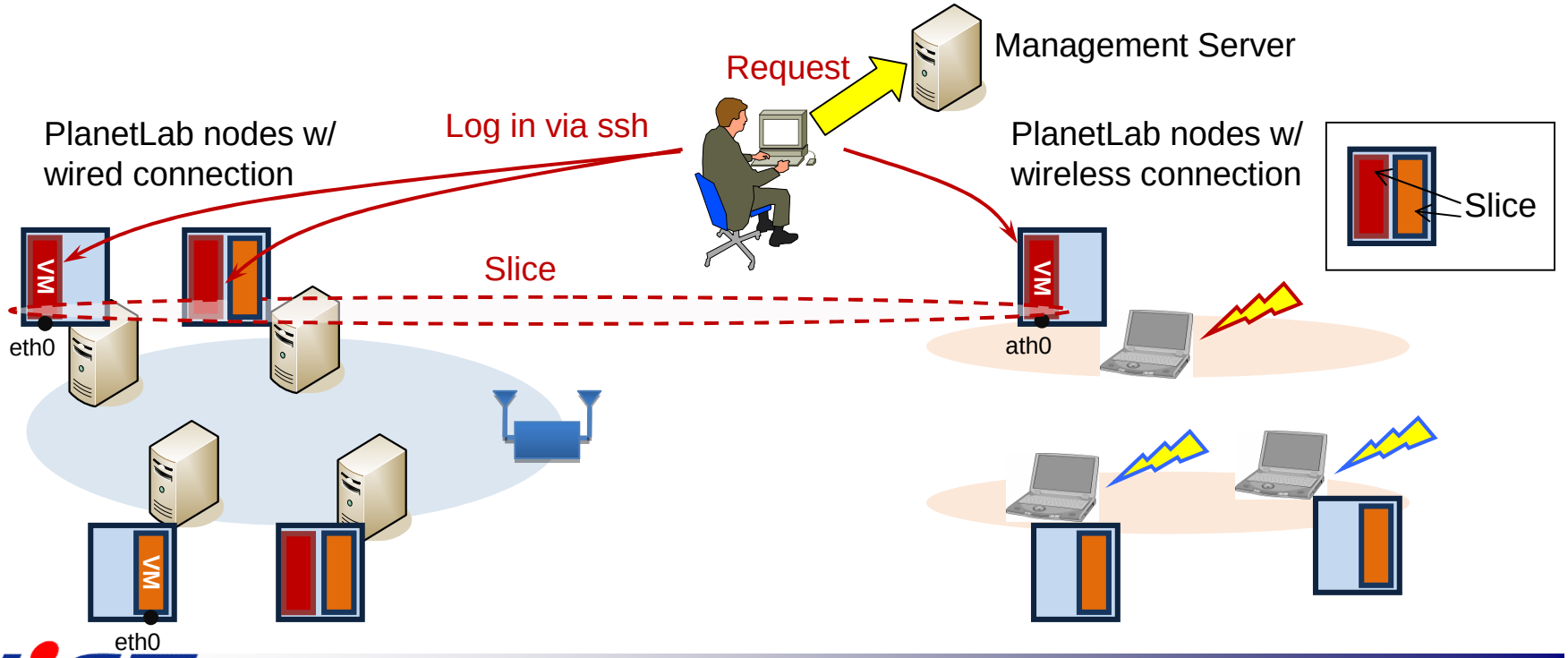
PlanetLab: オーバーレイプラットフォーム
(Public PlanetLab)

- The largest and most popular overlay network test-bed
- Operated by Princeton Univ. and PlanetLab Consortium
- Currently consists of 900+ nodes at 450+ sites
- 800+ Projects/ 1000+ Researchers
  - 180+ high-level academic publications enabled



PlanetLab Model: VM and Slice

- VM: Each node can serve multiple VMs (Virtual Machines)
  - Linux Vserver
- Slice: A set of VMs is allocated to a user (experimenter)
  - A user can build his own experimental environment on socket API



PlanetLab Applications

CoMon: monitoring slice-level statistics

Over 400 nodes

http://summer.cs.princeton.edu/status/index_slice.html

#	Slice Name	1-min Transmit	15-min Transmit	1-min Receive	15-min Receive	Num Procs	Phys Mem MB	Virt Mem MB	CPU %	MEM %	Long Ports	Snap Ports	# Nodes
1	princeton_comon	1231	1237	2184	2280	31795	65335.2	128798.9	130.3	4366.7	2072	37085	514
2	root	0	0	0	0	27300	41025.1	195898.8	1117.7	2916.9	16097	101187	514
3	ntp	0	0	0	0	516	2035.5	2015.5	0.0	140.2	0	0	513
4	rpc	0	0	0	0	513	272.9	852.6	0.0	9.2	0	0	513
5	rpcuser	0	0	0	0	513	341.8	884.1	0.0	18.5	0	0	513
6	princeton_coblitz	243080	323831	209908	283069	21230	46079.8	81234.1	1710.1	2622.0	34338	124934	510
7	princeton_slicestat	2198	2252	829	831	4041	3021.9	7914.3	0.0	199.8	973	75045	503
8	smmsp	0	0	0	0	504	983.4	3432.5	0.0	63.0	0	0	503
9	princeton_coblitztest	2419	6323	2525	6891	19727	40171.3	91144.9	79.2	2526.1	11620	57402	485
10	princeton_codeen	100964	106060	103641	101134	19852	32428.4	59468.6	2129.2	2230.5	85228	171534	485

#	Slice Name	1-min Transmit	15-min Transmit	1-min Receive	15-min Receive	Num Procs	Phys Mem MB	Virt Mem MB	CPU %	MEM %	Long Ports	Snap Ports	# Nodes
11	pl_netflow	578	505	37	42	6972	29667.5	81371.7	525.3	1954.6	597	805	474
12	pl_sirius	0	0	0	0	454	2109.5	4179.7	5.2	138.8	470	683	454
13	ethzcs_q	7031	6851	4595	4542	2146	5160.2	12265.0	214.2	308.9	50125	201406	445
14	ufl_ipop	2007	1422	1777	1384	2851	13200.3	29326.5	139.0	904.7	1227	1893	443
15	unine_splay	0	0	0	0	442	1201.6	2462.4	0.0	85.1	537	614	442
16	unine_splay_dev	0	0	0	0	443	4218.0	13604.2	0.0	288.1	0	48	440
17	ufl_ipopvivaldi	1774	1568	1572	1503	2537	13248.9	27751.1	82.8	907.7	1224	2007	437
18	umd_scriptroute	436	477	192	211	1550	1537.5	3719.0	5.6	100.9	1437	1440	426
19	nyu_d	178633	164031	53184	52508	2192	12004.4	76128.4	5607.9	801.9	4079	7023	423
20	arizona_stork_install	3	0	147	128	2124	7961.8	13839.7	40.4	492.1	514	2504	420

PlanetLab-related Activities in NICT

(1) PlanetLab Japan (Public)

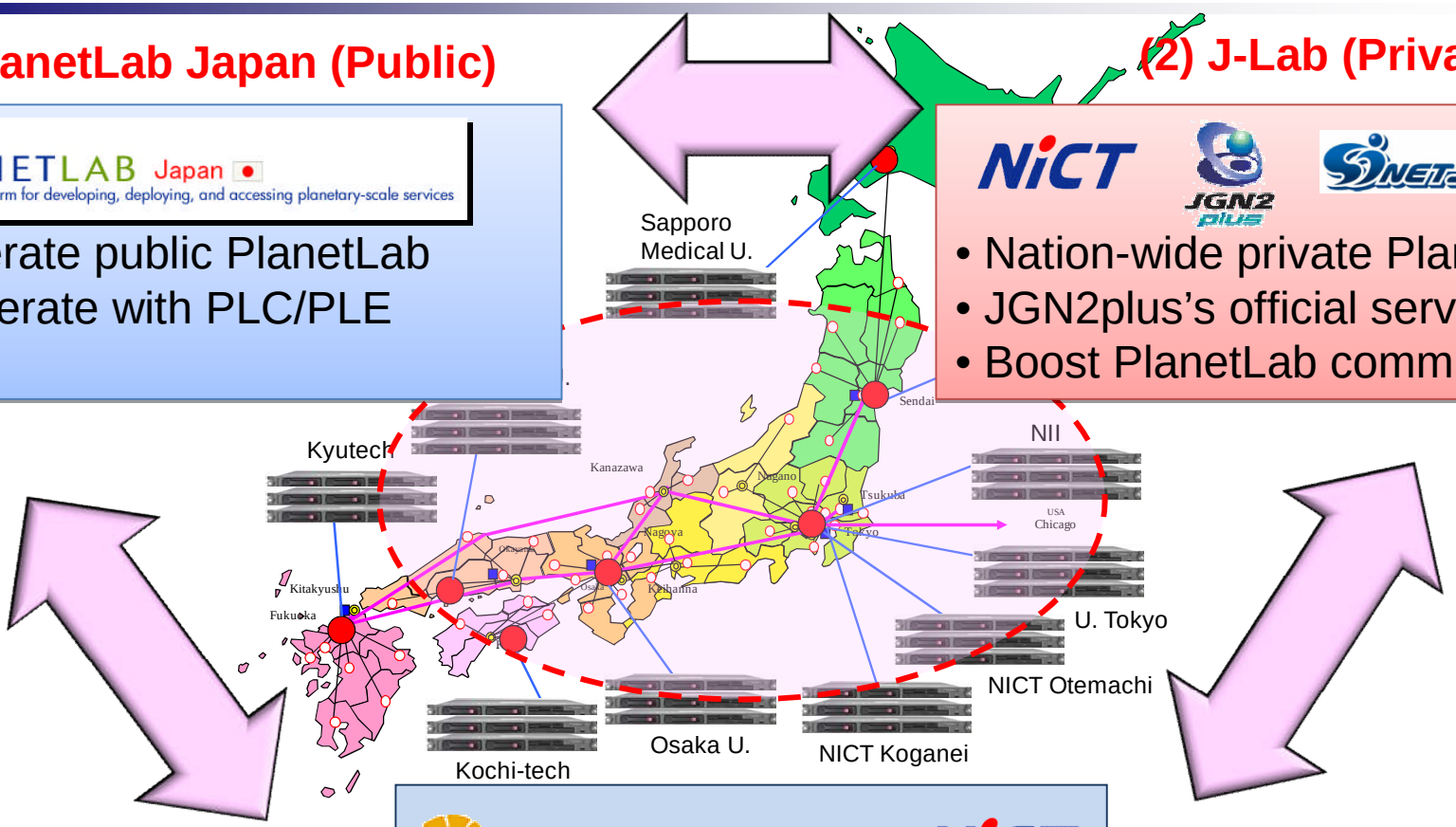
PLANETLAB Japan
An open platform for developing, deploying, and accessing planetary-scale services

- Operate public PlanetLab
- Federate with PLC/PLE

(2) J-Lab (Private)

NiCT JGN2 plus SINET3

- Nation-wide private PlanetLab
- JGN2plus's official service
- Boost PlanetLab community



(3) CoreLab (Research)

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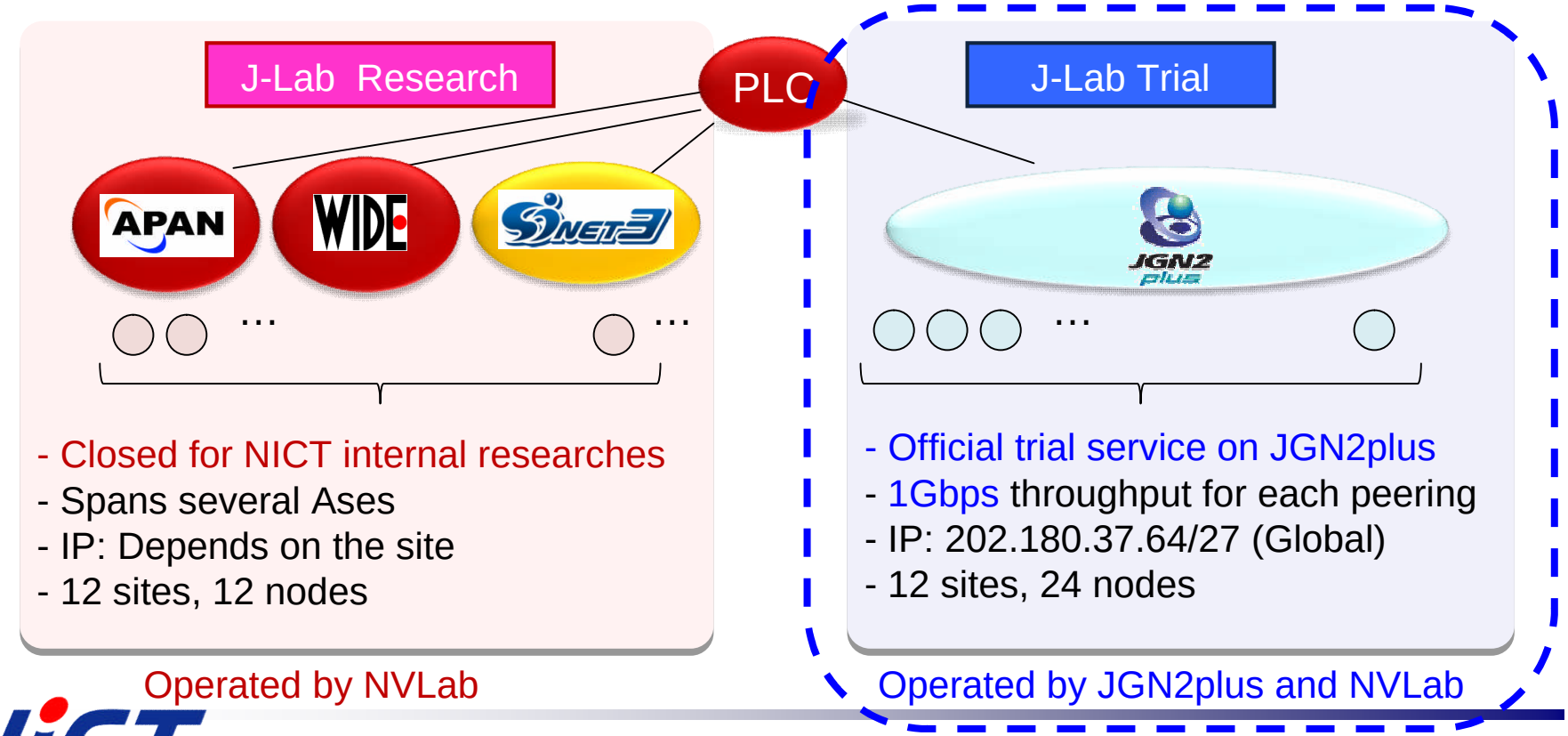
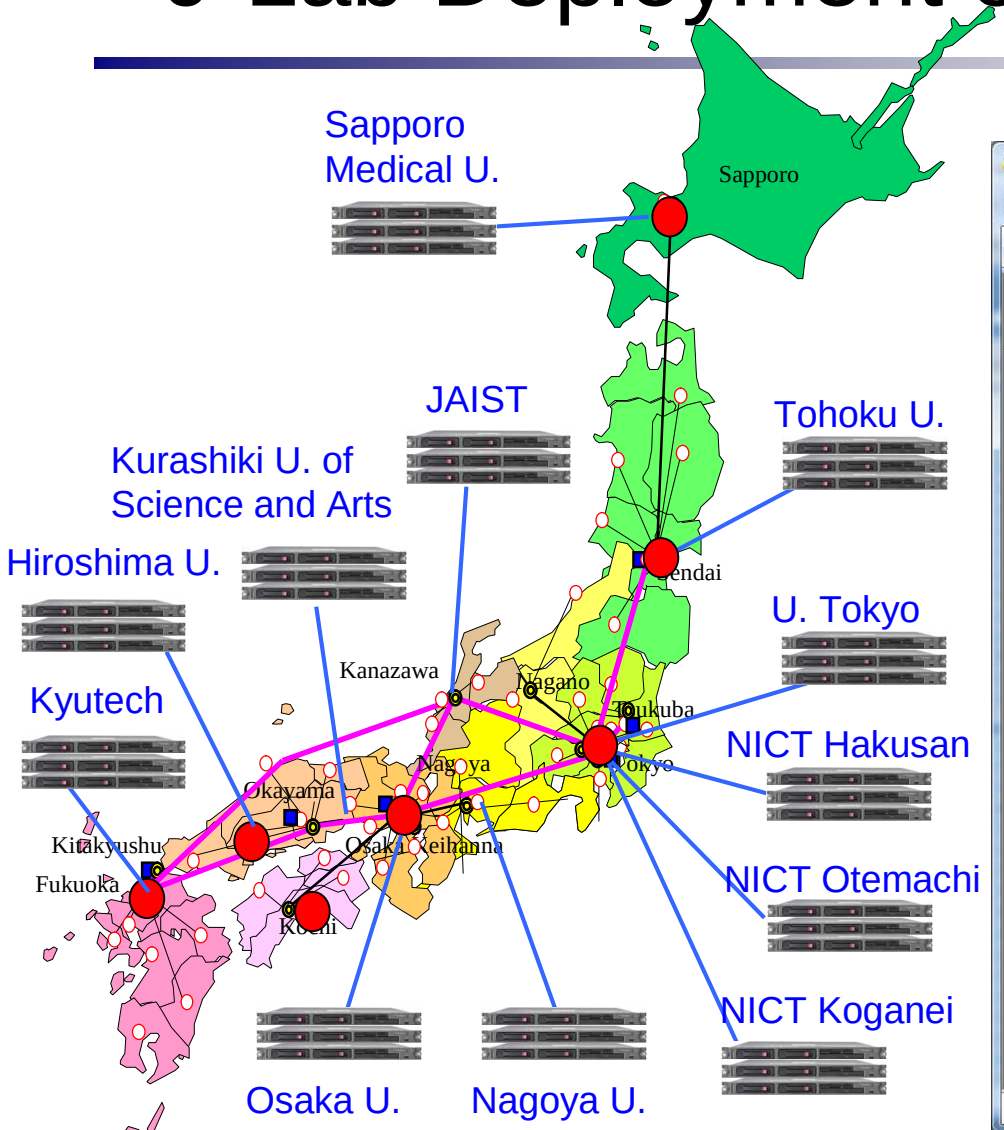
- Network virtualization research
- Prototype of virtual routers
- Will be open for R&D community

J-Lab: Private PlanetLab as a JGN2plus Trial Service

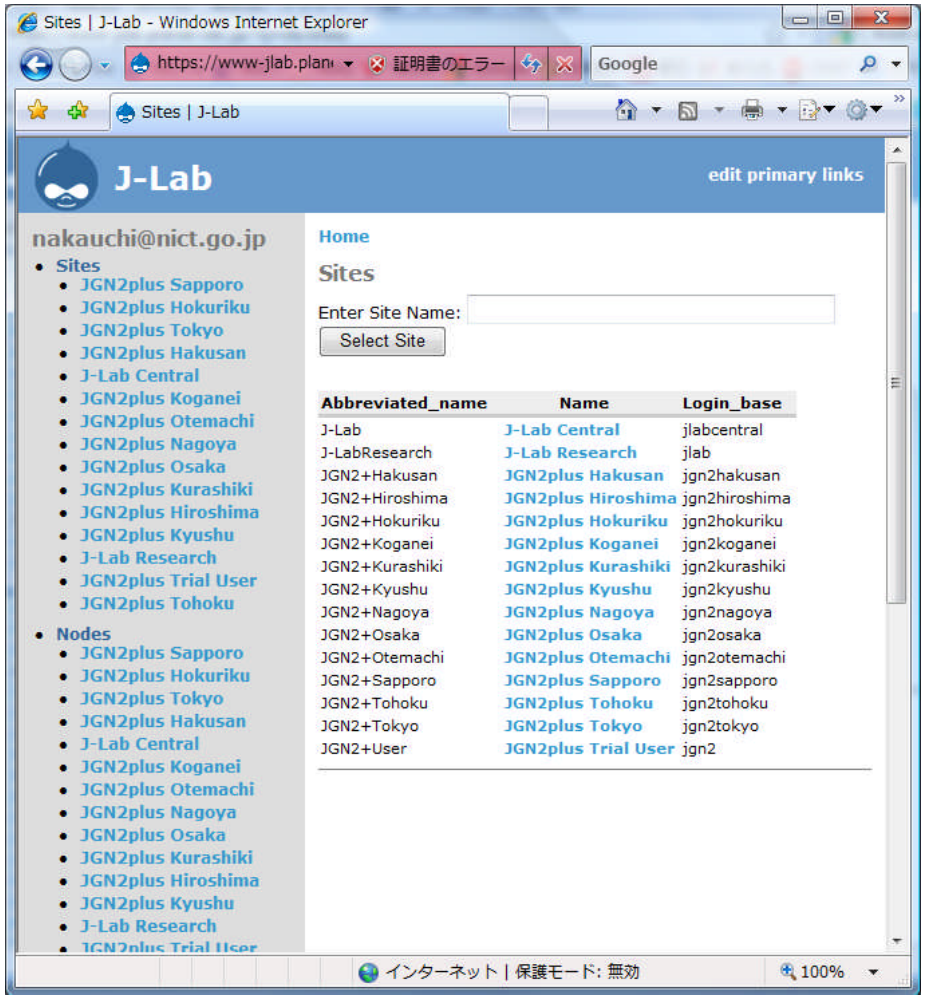
- Goal: Boost PlanetLab community in Japan
- Open for roughly 100 user projects on JGN2plus
- Sandbox for new functions and applications
- Currently vanilla PlanetLab (MyPLC4.2 on Fedora8)



J-Lab Deployment on JGN2plus

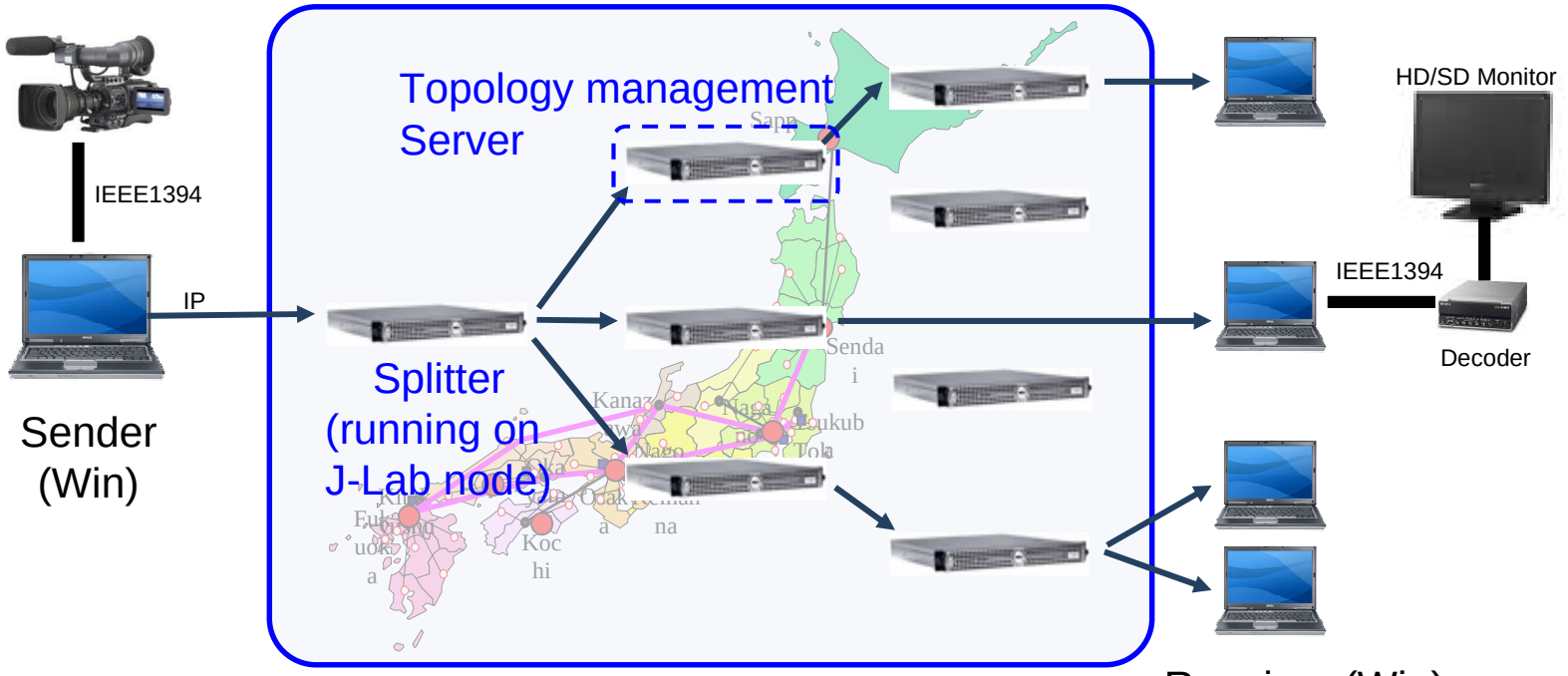


https://www-jlab.planet-lab.jp/



利用例：Overlay HDV Distribution

- HDV/DV video distribution (～30Mbps) over JGN2plus
- Overlay multicast: split a video stream with reasonable CPU load
- Windows media, FEC, UDP/TCP, and CLI/GUI are also supported
- Centralized topology management with web interface



メリット・デメリット

メリット:

- Princeton大学との利用契約締結が不要（ Public PlanetLabの場合，民間企業は有料）
- JGN2plusのコア網に直収されるため，広帯域アプリケーションで利用可能

デメリット:

- 単一L2セグメント内への展開なので，「広域」「超分散」「多様性(heterogeneity)」などを目的とした実験には適さない
  - → 本サービスの試用後にPublic PlanetLabに移行を促進
  - → もしくはCoreLab トライアルユーザ

利用方法

- 利用申請の受付
  - JGN2plusの電子申請より受付け．以降担当者が対応
- アカウントの割振り (PlanetLab)
- スライスの割付け
  - スライス作成，使用ノード申請
- テストベッド利用の開始
  - SSHで上記ノードにログイン

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