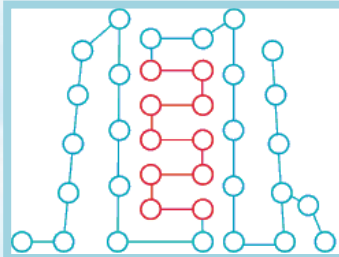


KREONET Testbed as a Service
NExT(Network Experiment Testbed)



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Advanced KREONET Center
Korea Institute of Science and Technology Information

KREONET Testbed as a Service NExT(Network Experiment Testbed)

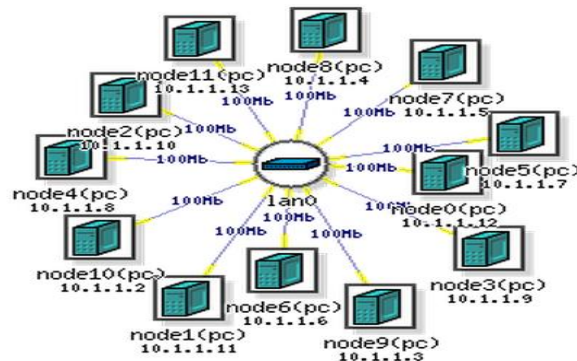
NExT

- Pursuing **networking experimental Infrastructure** to computer/network scientists and engineers
 - Providing the account for project(group account)
 - Sharing the results and replaying the experiment
- Communities
 - Network research communities
 - Industrial companies
 - Universities (for educational use)

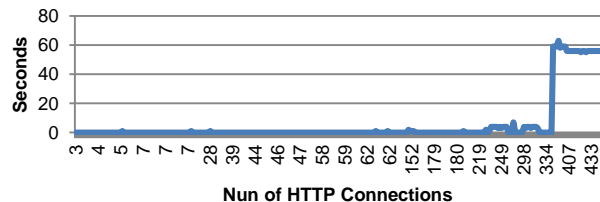
Use Cases

Security Researches

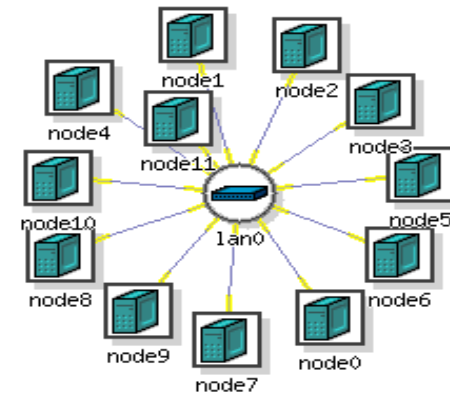
- DDoS attack and defense test
 - Reenacting Slowloris attack and Analyzing the web response time



웹서버 연결 시간



- Malignant code
 - Analyze malignant code on testbed



Network Protocol Researches

- IPv6
 - Testing routing algorithm and security algorithm on IPv6 network
- Multicast
 - Multicast experimentation
- Network Protocols
 - Performance experimentation about TCP or other protocols

Industrial Uses

- Security Company
 - For evaluating their security algorithm
 - Experimentation
 - For evaluating their production

Project Experiments

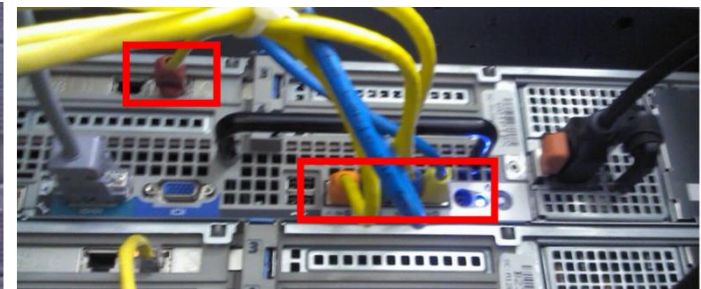
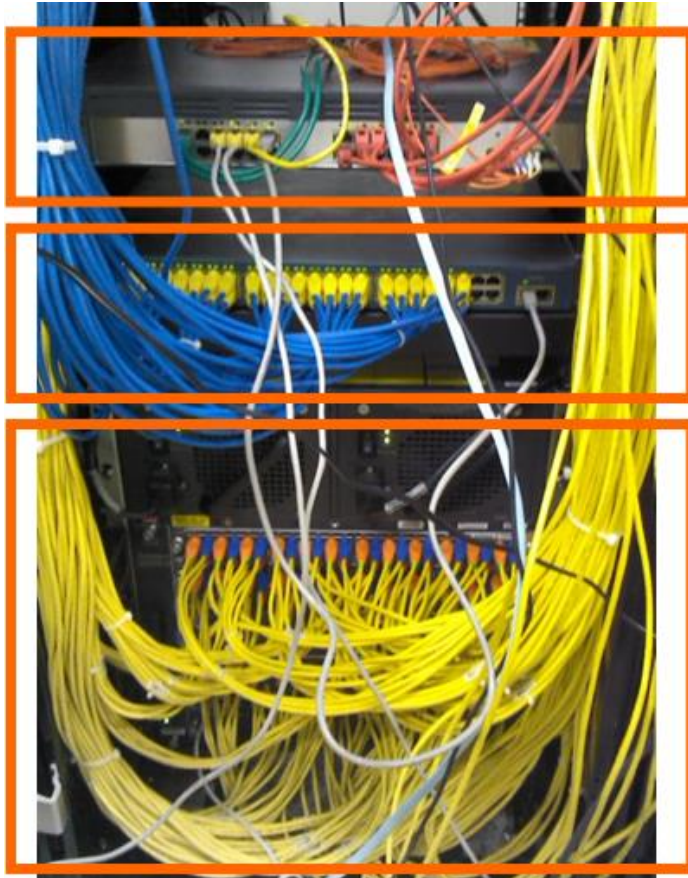
EID	State	Nodes [1]	Hours Idle [2]	Description
urltest	active	1	0	urltest

Project Experiments

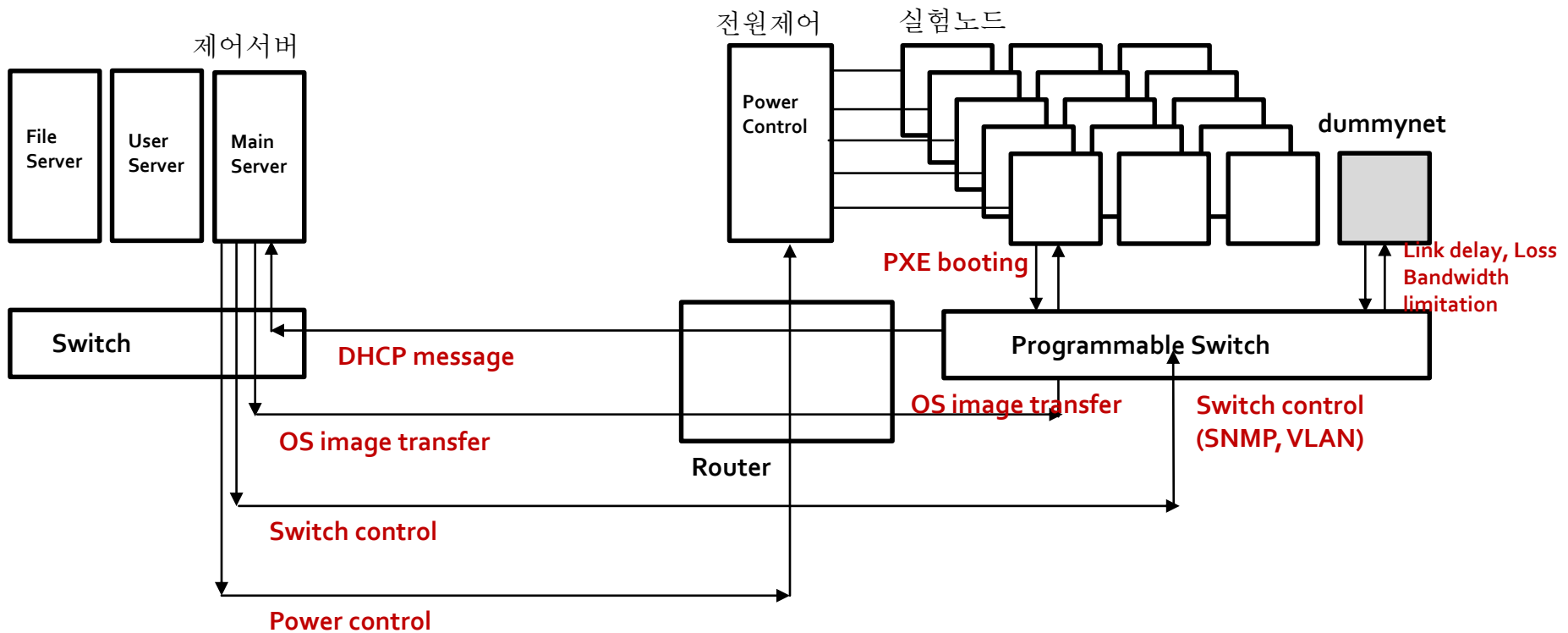
EID	State	Nodes [1]	Hours Idle [2]	Description
Comm	swapped	5		Common-Application
malware	swapped	2		malware test
Plan	swapped	2		Plan
Platform	swapped	8		platform team
TS	swapped	5		Tech-Surpport

Facility

NET Facility

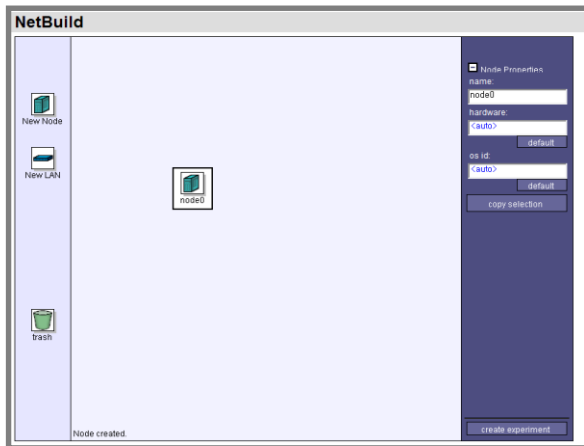
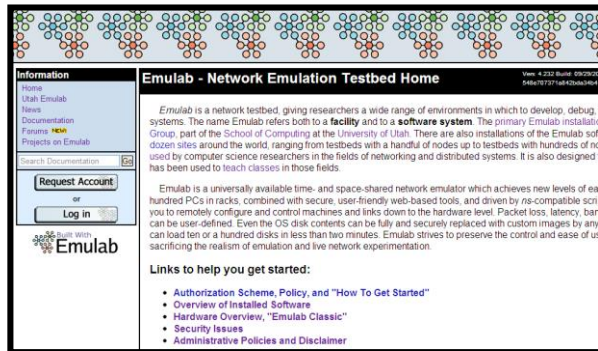


NExT Layout

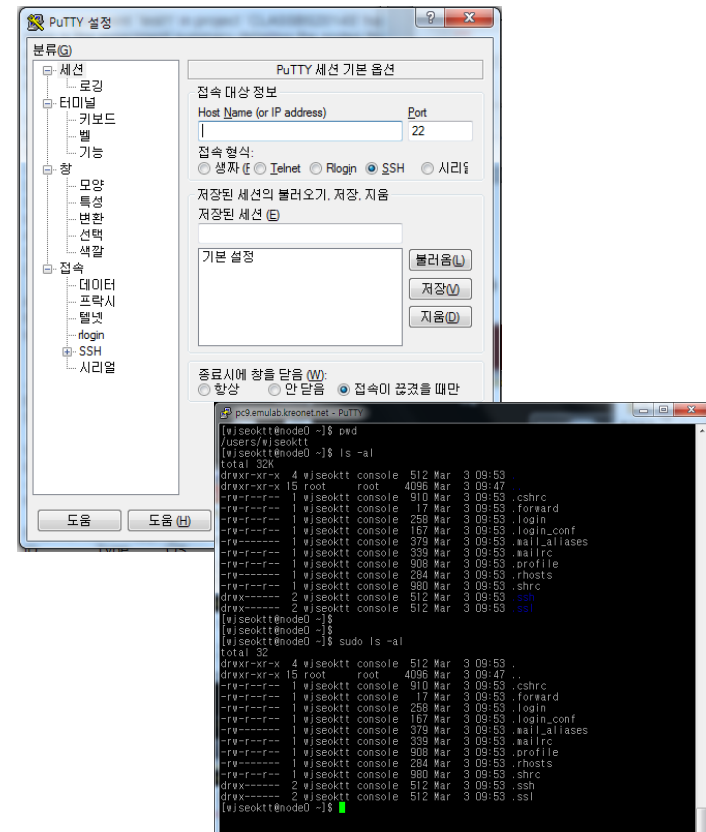


NExT Usage

Access Web and
Create Experiment



Connect via putty and
do as Root permission



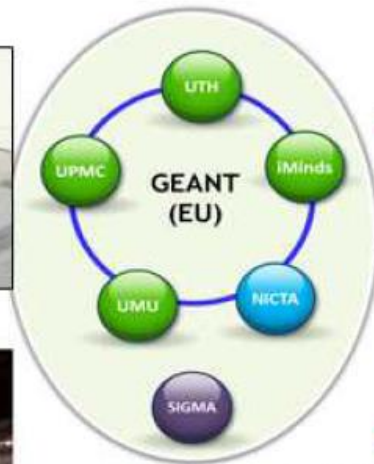
Federation to EU: SMARTFIRE



NITOS Testbed (UTH)

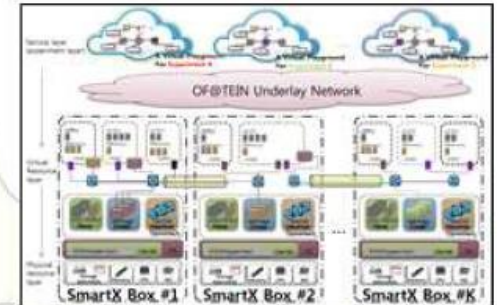
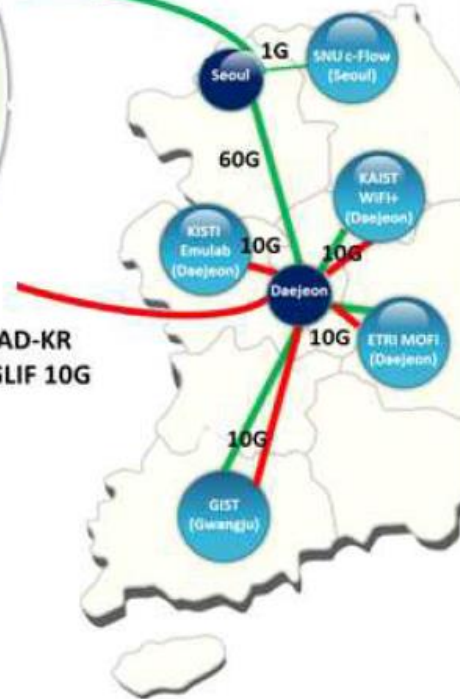


W-iLab.t Testbed (iMIND)



TEIN4 10G / 2.5G

GLORIAD-KR
10G / GLIF 10G



OF@TEIN Testbed (GIST)



Emulation Testbed (KISTI)

KOREA-EU TESTBED Federation Project: **SMARTFIRE**
KOREA(KISTI, ETRI, KAIST, SNU, GIST), France, Belgium, Greece, Spain

Federation to EU: fed4FIRE

<https://flsmonitor.fed4fire.eu/>

Fed4Fire First Level Support Monitor

Testbed Name	Ping Latency (ms)	GetVersion Status	Free Resources	Internal Status	Aggregated Status
BonFIRE	23.06	no data	no data	SUCCESS	SUCCESS
C-Lab	62.22	SUCCESS	124	SUCCESS	SUCCESS
ExoGENI NICTA	309.06	SUCCESS	19	SUCCESS	SUCCESS
FUSECO	18.58	SUCCESS	8	SUCCESS	SUCCESS
Koren	297.36	SUCCESS	3	SUCCESS	SUCCESS
Kreonet Emulab	306.27	SUCCESS	21	no data	SUCCESS
NETMODE	57.75	SUCCESS	20	SUCCESS	SUCCESS
NITOS Broker	62.88	SUCCESS	77	SUCCESS	SUCCESS
Ofelia (Bristol openflow)	17.50	SUCCESS	-1	SUCCESS	SUCCESS
Ofelia (Bristol vtam)	17.55	SUCCESS	-1	SUCCESS	SUCCESS
Ofelia (i2CAT openflow)	17.48	SUCCESS	5	SUCCESS	SUCCESS
Ofelia (i2CAT vtam)	17.45	SUCCESS	3	SUCCESS	SUCCESS
Planetlab Europe	31.30	SUCCESS	273	SUCCESS	SUCCESS
SmartSantander	58.77	SUCCESS	0	SUCCESS	SUCCESS
UC3M optical	-	SUCCESS	1	no data	FAILURE
Virtual Wall 1	0.29	SUCCESS	92	SUCCESS	SUCCESS
Virtual Wall 2	0.23	SUCCESS	27	SUCCESS	SUCCESS
Virtual Wall 2 (openflow)	0.97	SUCCESS	2	SUCCESS	SUCCESS
w-iLab.t 2	7.41	SUCCESS	97	SUCCESS	SUCCESS

This page automatically updates every 10 seconds. (updated 2 times)

Calendar with testbed maintenances and reservations (contact helpdesk AT fed4fire.eu to add maintenance for a testbed)

Federation: AM API

- GENI AM API v2

- GetVersion()
- ListResources()
- CreateSliver()
- SliverStatus()
- DeleteSliver()
- RenewSliver()
- Shutdown()
- ListSlices()

- Ex) getversion on NET

```
> .../protogeni/test/am/getversion.py
```

```
{'output': ", 'geni_api': 2, 'code': {'protogeni_error_log':  
'urn:publicid:IDN+emulab.kreonet.net+log+a3a248742b9814312fa  
ae7f4fcf66e53', 'am_type': 'protogeni', 'geni_code': o, 'am_code':  
o, 'protogeni_error_url': 'https://www.emulab.kreonet.net/ ....
```

NExT Resource Request

Request via API

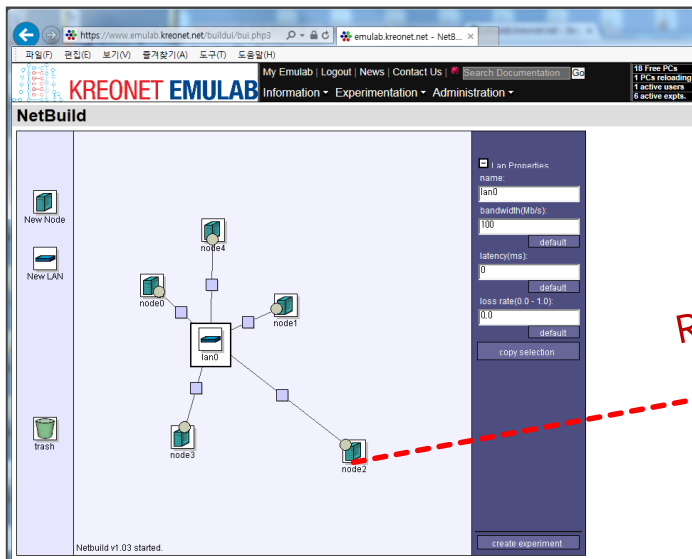
The screenshot shows the SAP S/4HANA Fiori 'Manage Material' app. The 'Material' column is highlighted in yellow. The table lists materials with their descriptions, material numbers, and other attributes.

	Material	Type	Unit	Unit of Measure	Material Group
1	10000000000000000000	Material	1	1	10000000000000000000
2	10000000000000000000	Material	1	1	10000000000000000000
3	10000000000000000000	Material	1	1	10000000000000000000
4	10000000000000000000	Material	1	1	10000000000000000000
5	10000000000000000000	Material	1	1	10000000000000000000
6	10000000000000000000	Material	1	1	10000000000000000000
7	10000000000000000000	Material	1	1	10000000000000000000
8	10000000000000000000	Material	1	1	10000000000000000000
9	10000000000000000000	Material	1	1	10000000000000000000
10	10000000000000000000	Material	1	1	10000000000000000000
11	10000000000000000000	Material	1	1	10000000000000000000
12	10000000000000000000	Material	1	1	10000000000000000000
13	10000000000000000000	Material	1	1	10000000000000000000
14	10000000000000000000	Material	1	1	10000000000000000000
15	10000000000000000000	Material	1	1	10000000000000000000
16	10000000000000000000	Material	1	1	10000000000000000000
17	10000000000000000000	Material	1	1	10000000000000000000
18	10000000000000000000	Material	1	1	10000000000000000000
19	10000000000000000000	Material	1	1	10000000000000000000
20	10000000000000000000	Material	1	1	10000000000000000000
21	10000000000000000000	Material	1	1	10000000000000000000
22	10000000000000000000	Material	1	1	10000000000000000000
23	10000000000000000000	Material	1	1	10000000000000000000
24	10000000000000000000	Material	1	1	10000000000000000000
25	10000000000000000000	Material	1	1	10000000000000000000
26	10000000000000000000	Material	1	1	10000000000000000000
27	10000000000000000000	Material	1	1	10000000000000000000
28	10000000000000000000	Material	1	1	10000000000000000000
29	10000000000000000000	Material	1	1	10000000000000000000
30	10000000000000000000	Material	1	1	10000000000000000000
31	10000000000000000000	Material	1	1	10000000000000000000
32	10000000000000000000	Material	1	1	10000000000000000000
33	10000000000000000000	Material	1	1	10000000000000000000
34	10000000000000000000	Material	1	1	10000000000000000000
35	10000000000000000000	Material	1	1	10000000000000000000
36	10000000000000000000	Material	1	1	10000000000000000000
37	10000000000000000000	Material	1	1	10000000000000000000
38	10000000000000000000	Material	1	1	10000000000000000000
39	10000000000000000000	Material	1	1	10000000000000000000
40	10000000000000000000	Material	1	1	10000000000000000000
41	10000000000000000000	Material	1	1	10000000000000000000
42	10000000000000000000	Material	1	1	10000000000000000000
43	10000000000000000000	Material	1	1	10000000000000000000
44	10000000000000000000	Material	1	1	10000000000000000000
45	10000000000000000000	Material	1	1	100000000

KREONET TESTBED



Request via GUI

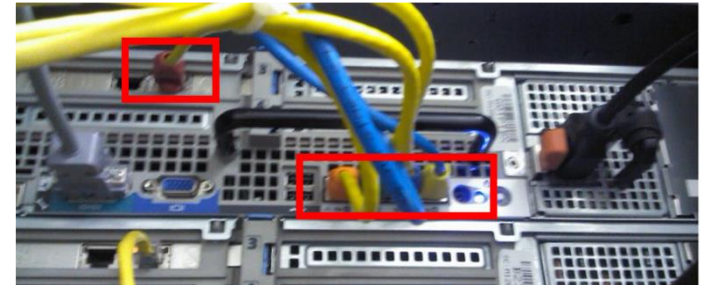
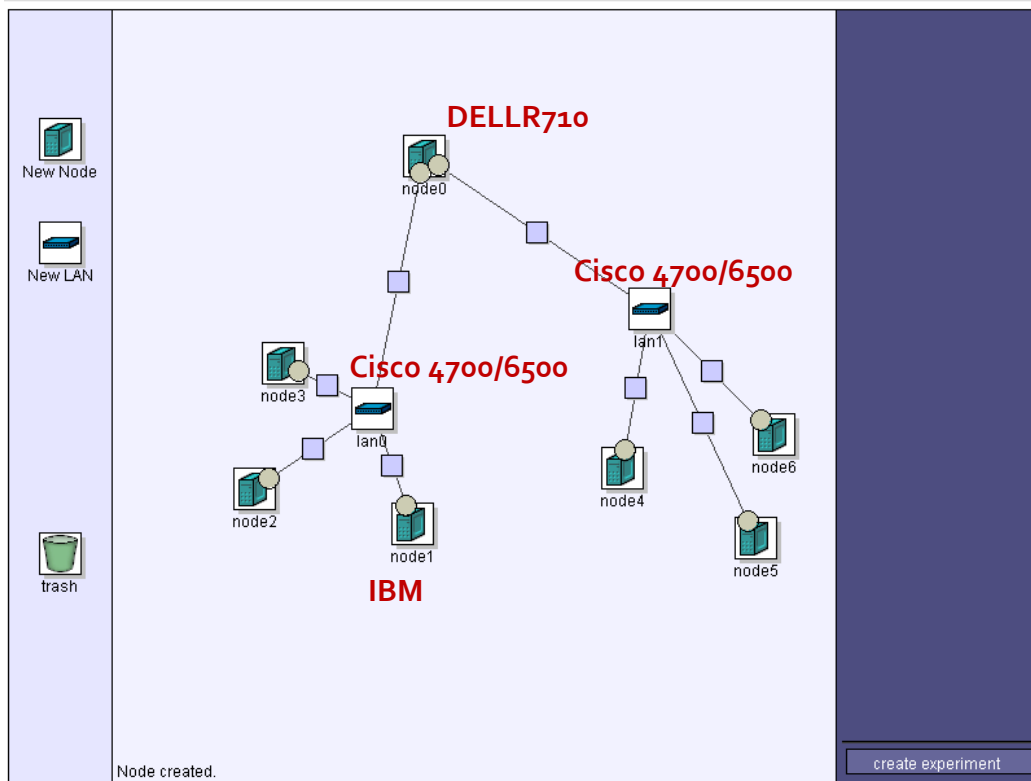


Introduction for ONOS WG Use

Available Resources

- Dell R710 : 4대
 - 4 NICs
- IBM x3550 : 9대
 - 1 NIC
- Operating System(Images)
 - Ubuntu 12, 14, 15 (recommended)
 - Centos 5.5, 6.3, 7.1
 - FreeBSD 8.2

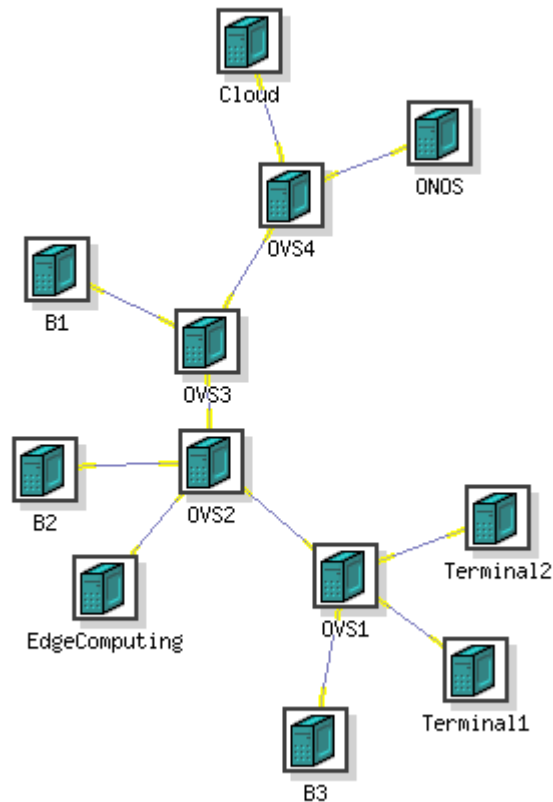
Creating Experiment



Creating Account

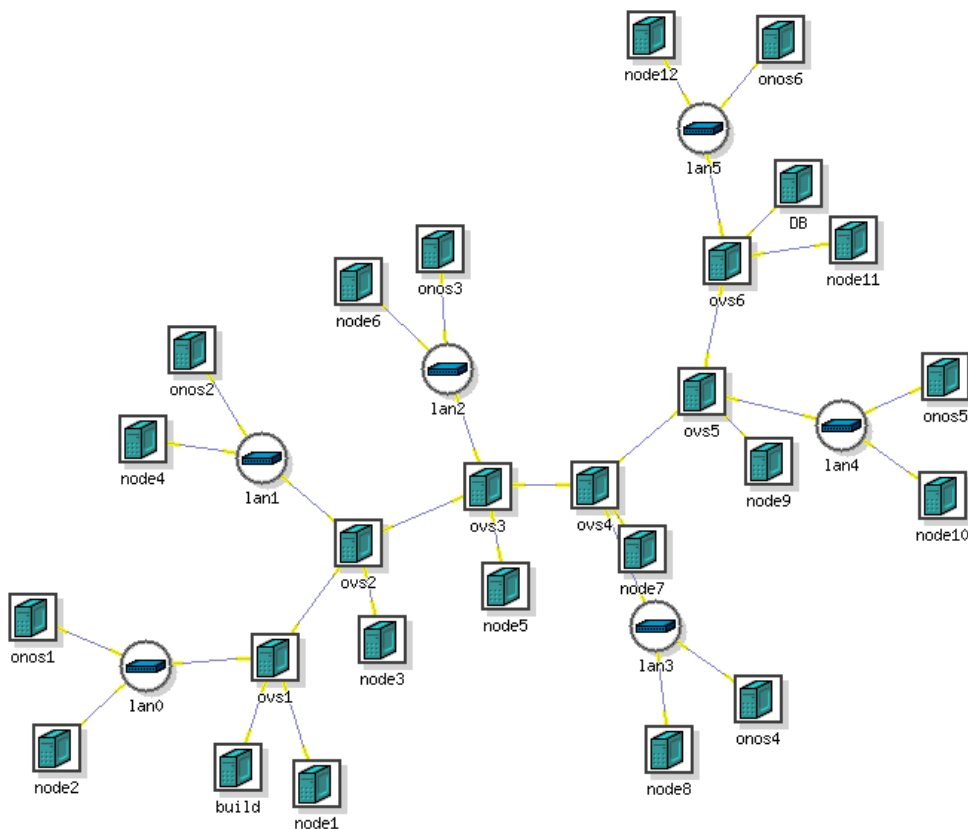
- Creating New Project Account to Admin
 - Accept member's account
 - Manage all
- Creating Experiments
 - Members creates Experiments,
 - or Admin create Experiments

Example 1



- SDN APP 개발 공용 환경
- ONOS controls OVS
- ONOS provides REST API
- 제주대, 전남대, KISTI
- Dell R710, and Dell R720
- Cisco 4700/6500
- UBUNTU 14
- (Invisible Node) FBSD 8.3 made intended latency over OVSs
 - Run DummyNet for Delay

Example 2



- ONOS controls OVS
- UBUNTU 14
- 카이스트
- Dell R710 and IBM
- Cisco 4700/6500
- Testing APP security for researches

Contact to wjseok@kisti.re.kr

Question or Comment

