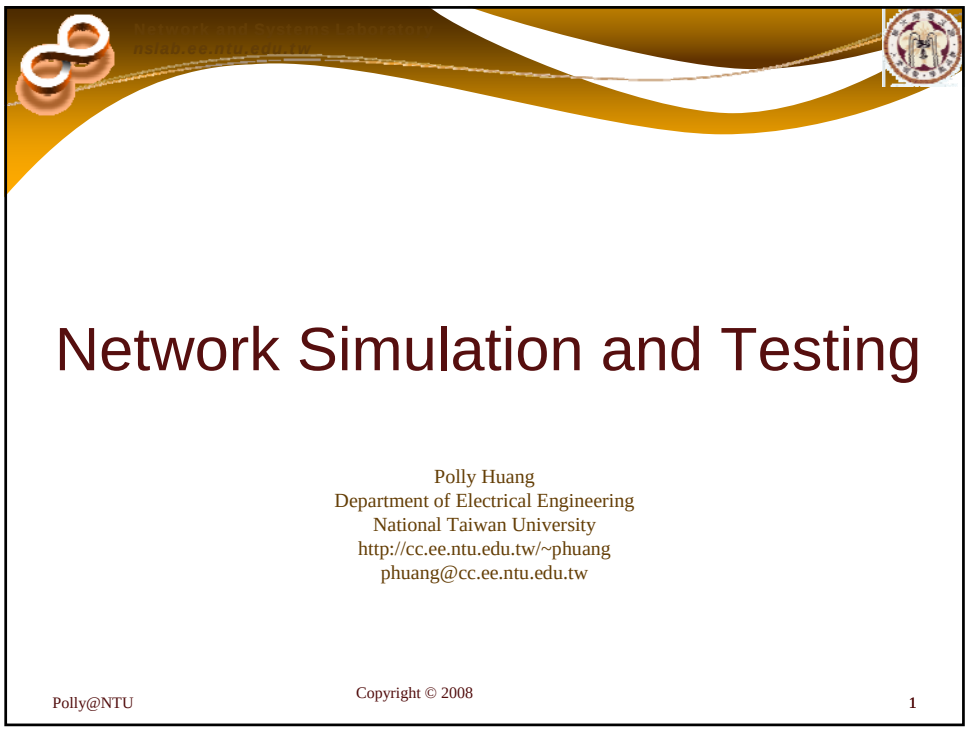

Network Simulation and Testing

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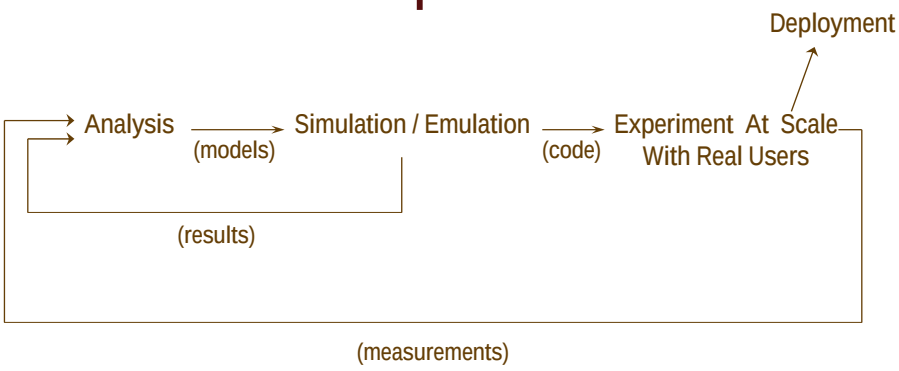
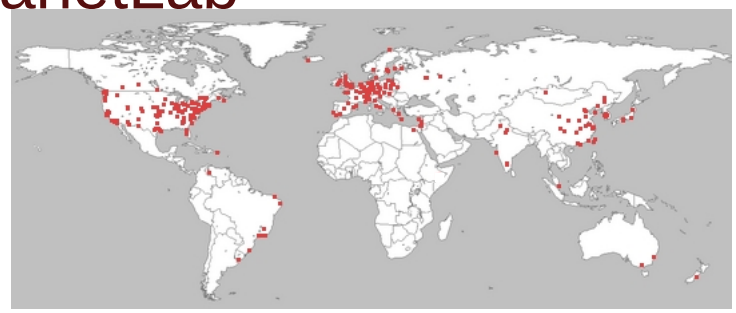
PlanetLab

Largely based on Larry Patterson's slides

Validation Gap

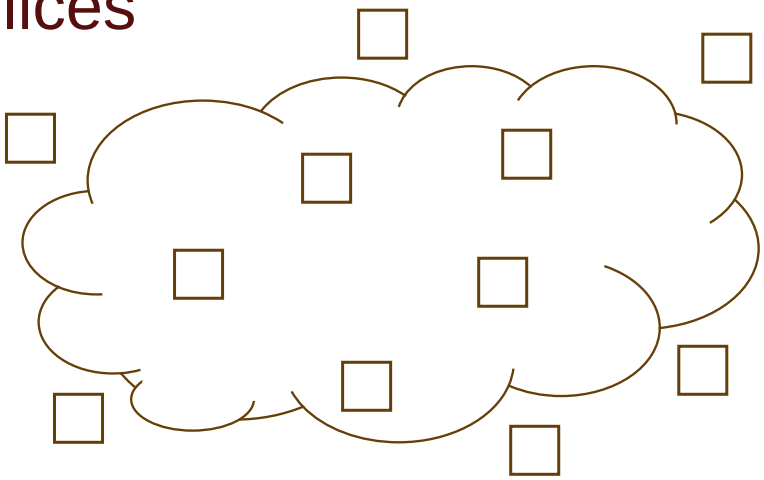


PlanetLab

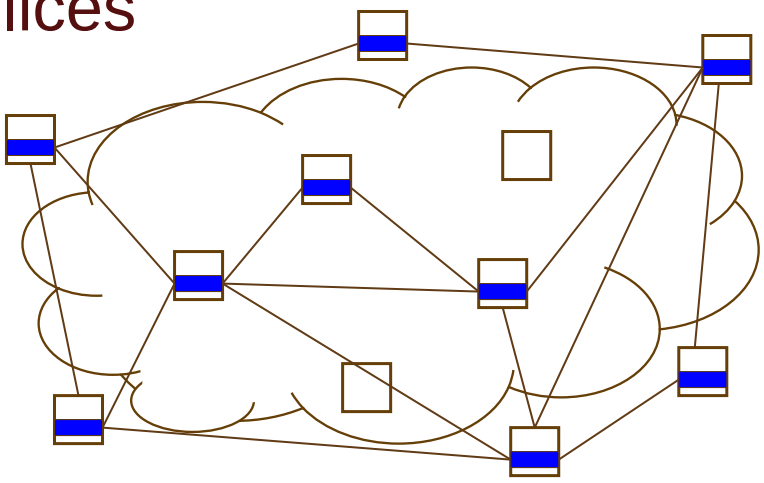


- 800+ machines spanning 400 sites and 40 countries
- Supports *distributed virtualization*
  each of 600+ network services running in their own *slice*

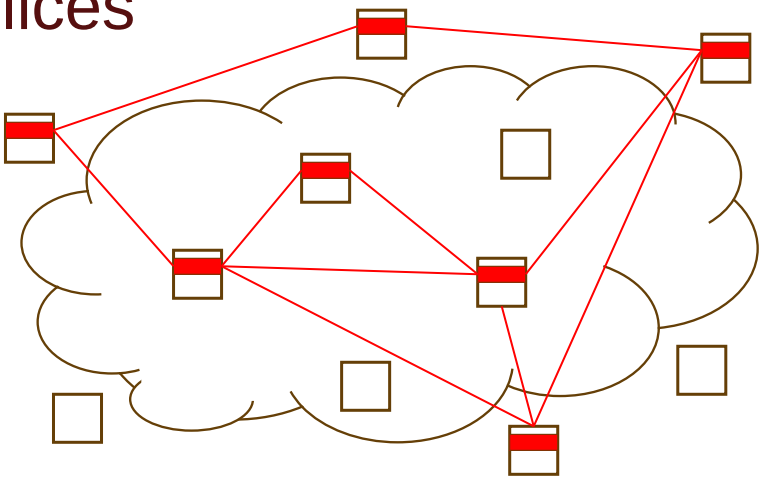
Slices



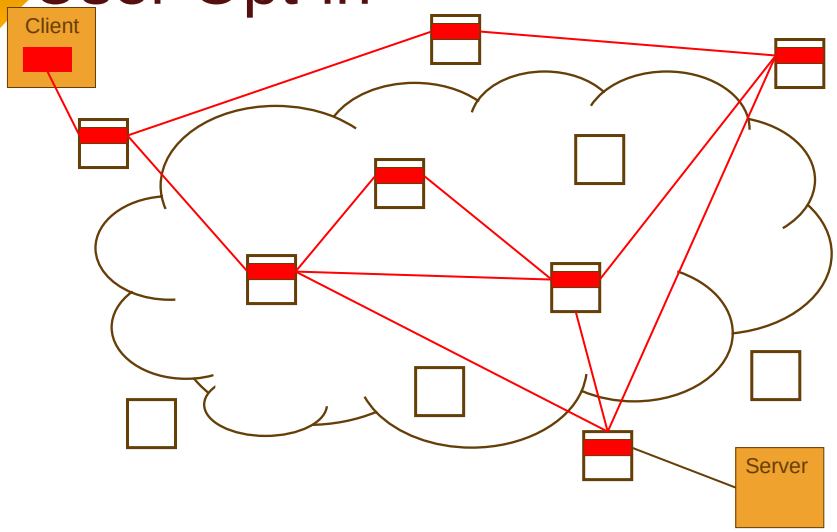
Slices



Slices

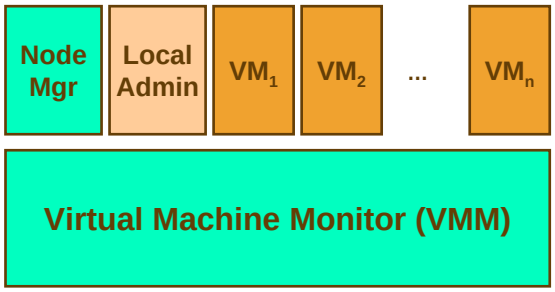


User Opt-in

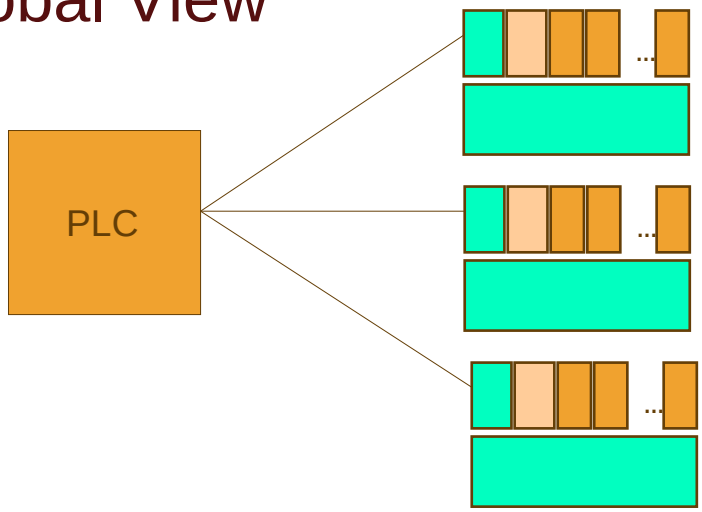


http://coblitz.org/www.princeton.edu/podcast.mp4

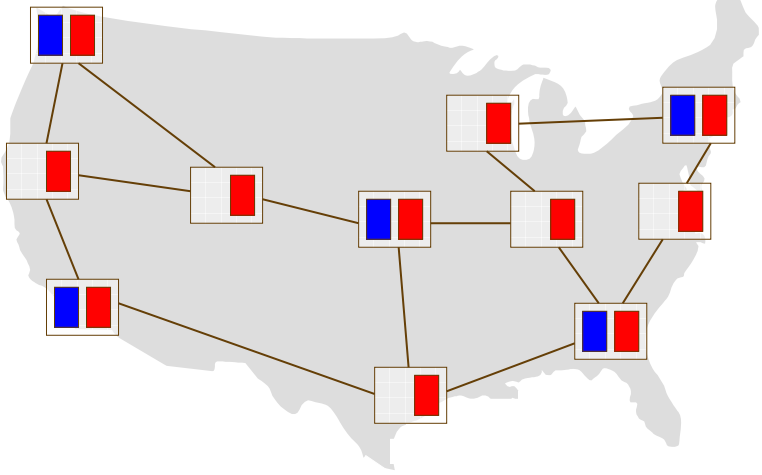
Per-Node View



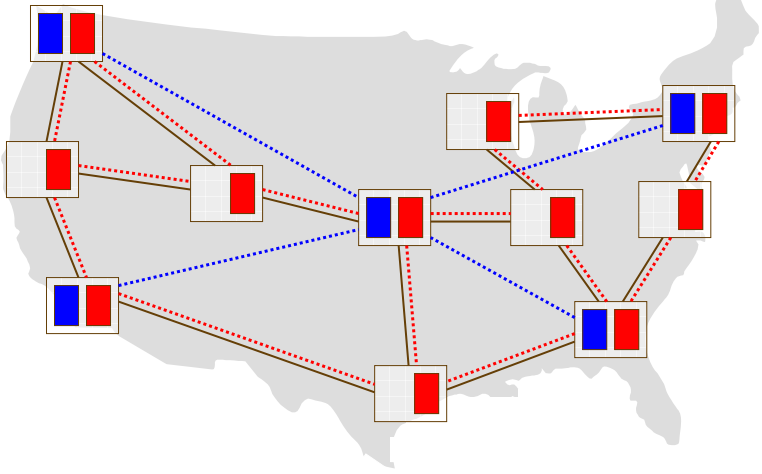
Global View



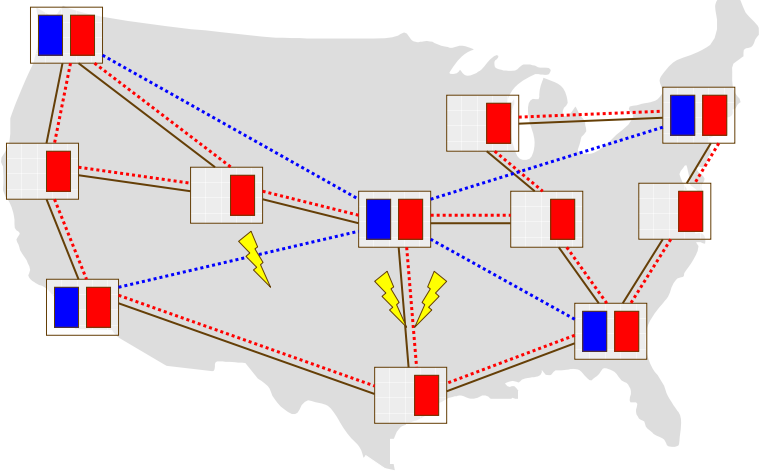
Deployed in NLR & Internet2



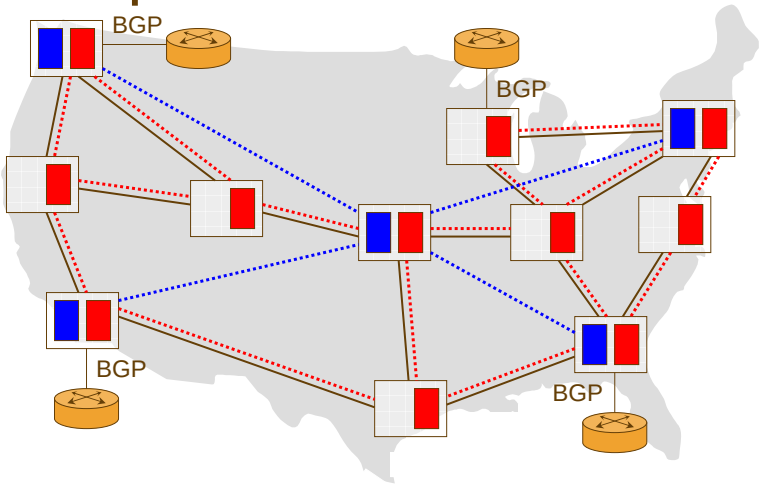
Arbitrary Virtual Topologies



Exposes Network Failures



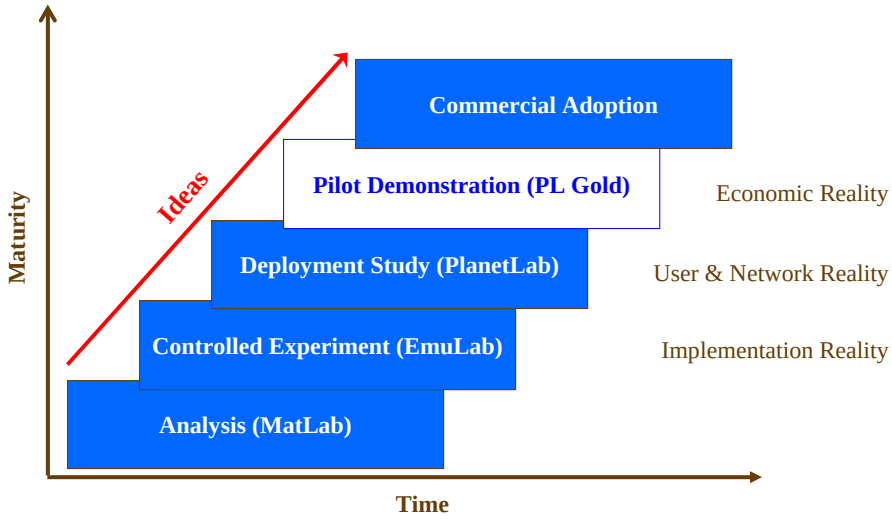
Participate in Internet routing



Usage Stats

- Users: 2500+
- Slices: 600+
- Long-running services: ~20
  - content distribution, scalable large file transfer,
  - multicast, pub-sub, routing overlays, anycast,…
- Bytes-per-day: 4 TB
  - 1Gbps peak rates not uncommon
- Unique IP-addrs-per-day: 1M

Deployment Gap



Case Study: Content Distribution

Scalable Algorithms
(Simulation)

↓

CoDeeN
(Deployed on PlanetLab)

↓

CoBlitz
(Pilot Demonstrations)

↓

?

60-91% better throughput

25 million hits per day

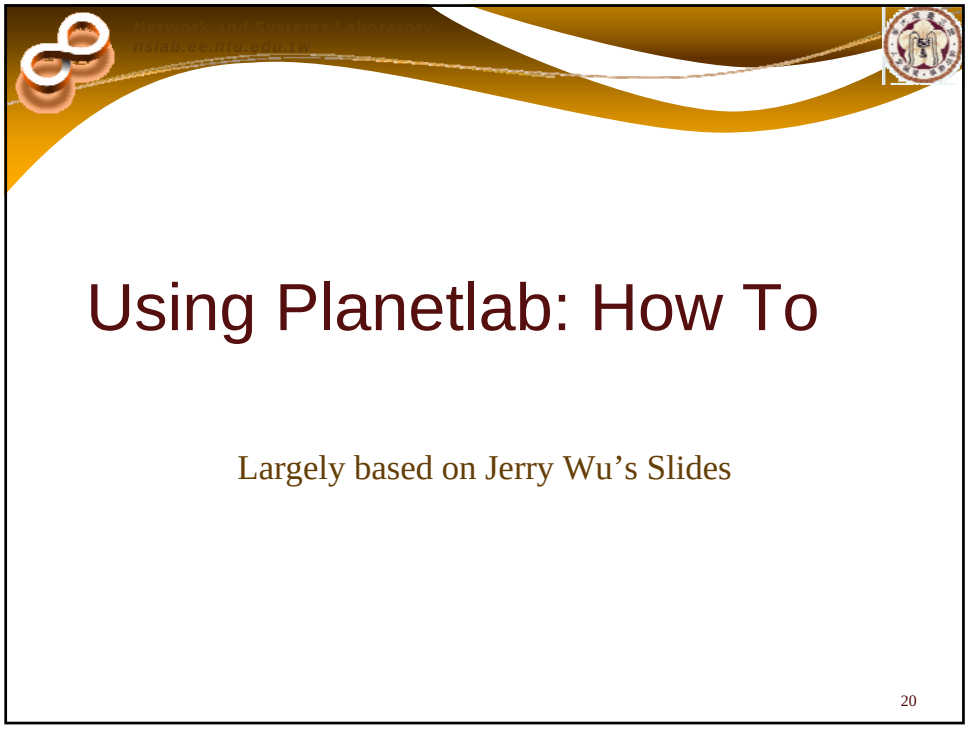
University Channel
Fedora Core
CiteSeer
European Telco

PlanetLab: Two Perspectives

- Useful research platform
- Prototype of a new network architecture

More Information

- www.planet-lab.org
- codeen.cs.princeton.edu/coblitz



Using Planetlab: How To

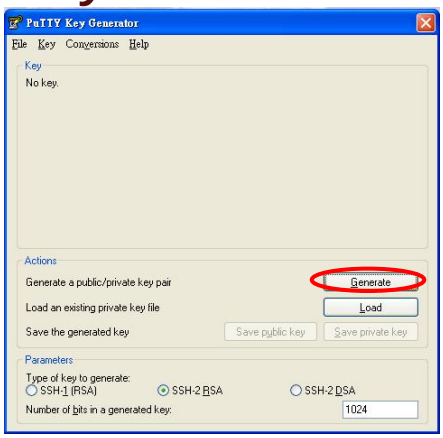
Largely based on Jerry Wu's Slides

Create an Account

- http://www.planet-lab.org
- Create an account

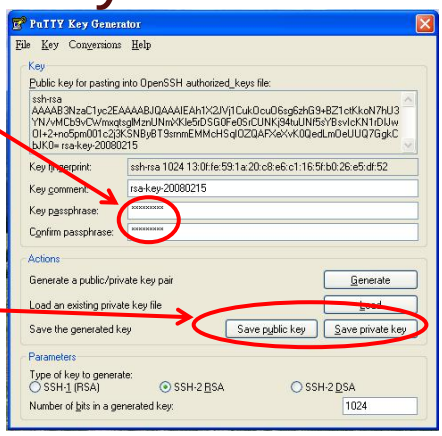
Generate RSA Key Pairs

- Prepare an RSA key pair
- Use PuTTygen
  - Google and download it!
  - Generate your key-pair



Generate RSA Key Pairs

- Set pass-phrase
- And save
  - Public and private keys



Create a Slice

- Ask the manager of a planetlab node to create a slice for you (e.g. Your TA)

- You have to provide
  - Your account
  - Your public & private keys
  - Purpose of usage

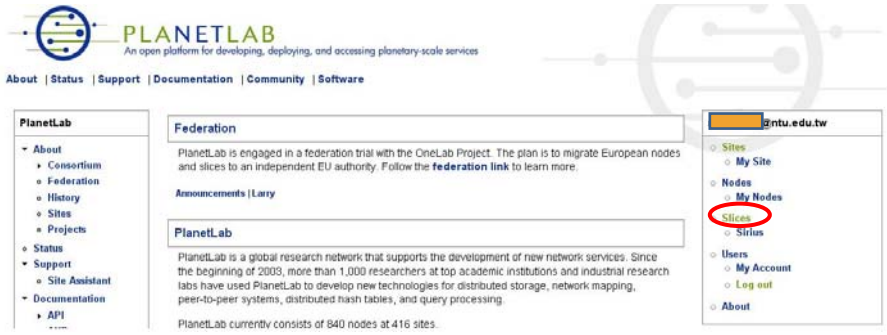
  To the manager to create a slice

After You have a Slice

- Login to the site
  - http://www.planet-lab.org

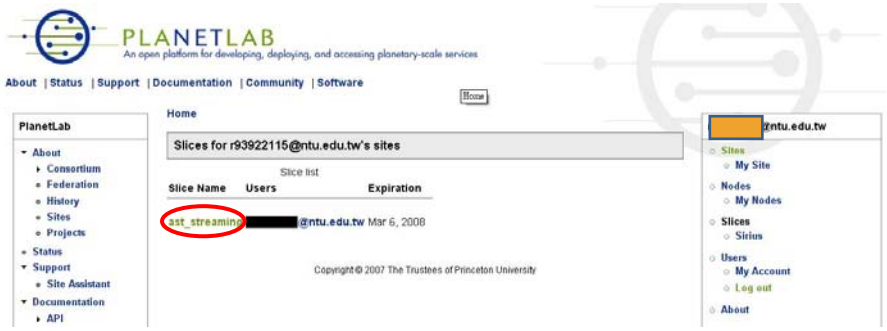
Enter Management Page

- Then click on “Slices” link



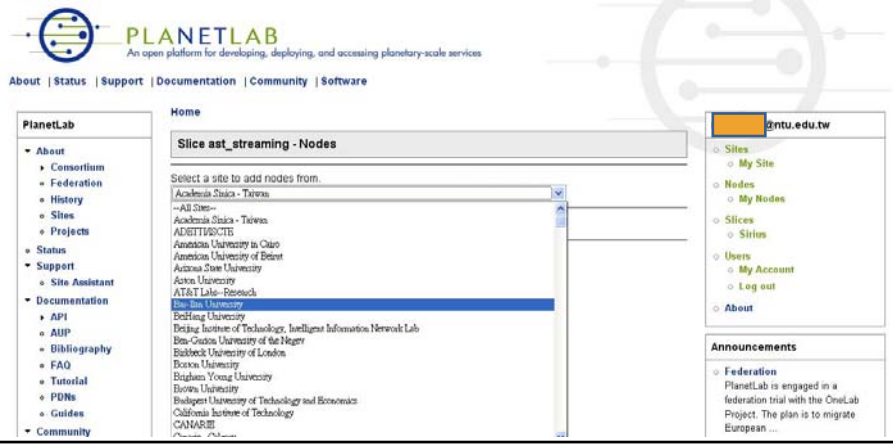
Enter Management Page

- Click your slice to enter the management page



Add Nodes to Your Slice

- There are plenty of nodes!



The TA Will Prepare

- Your PlanetLab login account and password
  - username: 'netsim_team#@nslab.ee.ntu.edu.tw'
  - password: emailed to each team
- Your slice name
  - “ntuee_team#”

You Need To

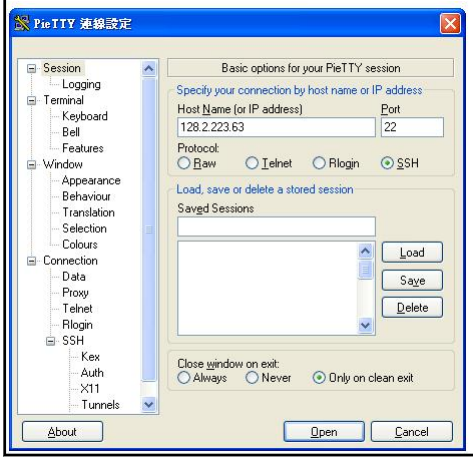
- Create and upload your **public key** to your team account in PlanetLab
  - **Complete this task of Lab 1 today!**
- Login to by slice name and the passphrase of public key
  - adam.ee.ntu.edu.tw
  - eve.ee.ntu.edu.tw
- Add nodes to your slice and login into the nodes
  - **Complete Lab 1 & Lab 2 next Friday!**
- Install program to the nodes on your slice
- Run an example experiment

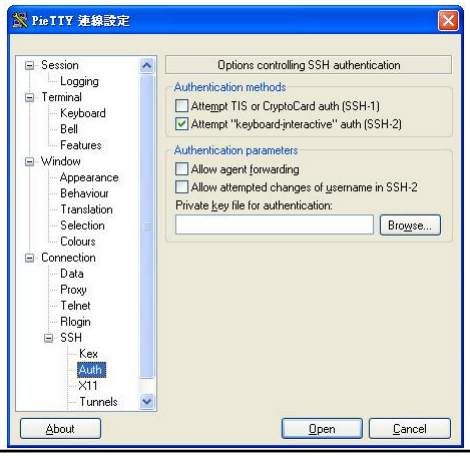
Login into a Node

- After adding some nodes, you have to wait several days before login into it!
- You can use either
  - Your PC with MS windows system
  - An UN*X server and command line

Login Through Windows PCs

1. Find the target node's IP address
2. Choose your authentication file (RSA private key)





Login Through UN*X PCs

- # *ssh -v -i* <RSA private key path> *-l* <username> <target node address>
- You may have to enter the passphrase (like a password, issued by TA)!

Upload Program to UN*X PCs

- Only Linux-compactable executive files are allowed
- # *scp -i* <RSA private key path> <your file>
  <user name>@<target node address>*:*<remote path>

Questions?