Developing Programs on PlanetLab
Outline

• Introduction to PlanetLab
• Work on PlantLab
  1. Registration an account
  2. Login PlanetLab
  3. Login Nodes
• Network Programming
  – Program Development
  – Network Programming
  – Copy programs
• Practice

http://www.csie.nuk.edu.tw/~wuch/course/csf641/demo/
PlanetLab

An open platform for developing, deploying, and accessing planetary-scale services
– 864 nodes at 447 sites (May 25, 2008)
– http://www.planet-lab.org/
User’s Documents on PlanetLab

• User’s Guide
  – http://www.planet-lab.org/doc/guides/user

• FAQ
  – http://www.planet-lab.org/FAQ

• PlanetLab Documentation
  – http://www.planet-lab.org/tutorial
Welcome to PlanetLab

http://www.planet-lab.org/
General Steps to Work on PlanetLab

1. Join PlanetLab
   1a. Create an account
   1b. Verify account registration
   1c. Wait for PI’s approval

2. Upload public key
   2a. Generate public key and private key
   2b. Login to PlanetLab
   2c. Upload public key to PlanetLab

3. Login to a PlanetLab node
   3a. Preparation of PI
      - Create a slice
      - Add people to the slice
   3b. Manage Slice - add nodes
   3c. Login
1a. Create an Account

Account Registration: ‘National University of Kaohsiung’ Site
1b. Verify Account Registration

Please verify that you registered for a PlanetLab account with the username nukp2p@gmail.com by visiting:

https://www.planet-lab.org:443/db/persons/register.php?id=17339&key=7qEtSnGtn8Jf%2BMlqNkmS0PlfGKypdZHqD3eZ2iNE%3D

If you did not register for a PlanetLab account, please ignore this message, or contact PlanetLab Support <support@planetlab.org>.
1c. Wait for PI’s Approval - Enable Users

P2P NUK <nukp2p@gmail.com> has signed up for a new PlanetLab account at National University of Kaohsiung and has requested their roles: user.

To deny the request or enable the account, visit:

https://www.planet-lab.org/443/db/persons/index.php?id=17339
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2a. Generate Public/Private Keys by PuttyGen

- Download and Invoke PuTTY Key Generator (puttygen.exe)
2a. Generate Keys (cont.)

1. Choose ‘Key passphrase’
   - Like password

2. Click ‘Generate’

3. Save the keys
   - nukp2p-public.key
   - nukp2p-private.ppk

4. Export to OpenSSH key
   - nukp2p-private
     (used under Linux/Cygwin)

The public key file (nukp2p-public.key) generated by PuttyGen need be converted to OpenSSH format (nukp2p-public.pub) – manual editing
2a. Generate Keys - Edit the Public Key File

1. Change to ‘ssh-rsa’

2. Change to your login name i.e. nukp2p@gmail.com

3. Merge all lines into a single line

Top: original file (nukp2p-public.key)
Bottom: result file (nukp2p-public.pub)
2a. Generate Keys by ssh-keygen

- Use `ssh-keygen` on Linux or Cygwin:
  - `ssh-keygen -t rsa -f mykeyfile`
  - Ask for a passphrase:
    - similar to a password
    - good for 10-30 characters long
    - can be a phrase with a series of words, punctuation, numbers, whitespace, or any string of characters
  - Two files: a private key named `mykeyfile` and a public key named `mykeyfile.pub`

```
$ ssh-keygen -t rsa -f nukp2p
Generating public/private rsa key pair.
Enter passphrase (empty for no passphrase):
Enter same passphrase again:
Your identification has been saved in nukp2p.
Your public key has been saved in nukp2p.pub.
The key fingerprint is:
Make sure the email address is correct before uploading: nukp2p@gmail.com
```
2b. Login to PlanetLab

http://www.planet-lab.org/
2b. Login to PlanetLab - My Account
2c. Upload the Public Key to PlanetLab

1. Click ‘My Account’
2. Click ‘Manage Keys’
3. Upload new key
4. See the key
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3a. Preparation of PI

Create a Slice

Add People to Slice
3b. Manage Nodes – by PI
3b. Manage Nodes – by Users
3b. Mange Nodes - Add Nodes
3c. Login by PuTTY / PieTTY

http://www.chiark.greenend.org.uk/~sgtatham/putty/download.html
http://www.csie.ntu.edu.tw/~piaip/pietty/
3c. Login by ssh under Linux/Cygwin

• Login to the host
  ssh -l nuk_p2p -i nukp2p_private planetlab1.csie.nuk.edu.tw

• Copy file to the host
  scp –i nukp2p_private localfile
    nuk_p2p@planetlab1.csie.nuk.edu.tw:. 