System Administration HW5
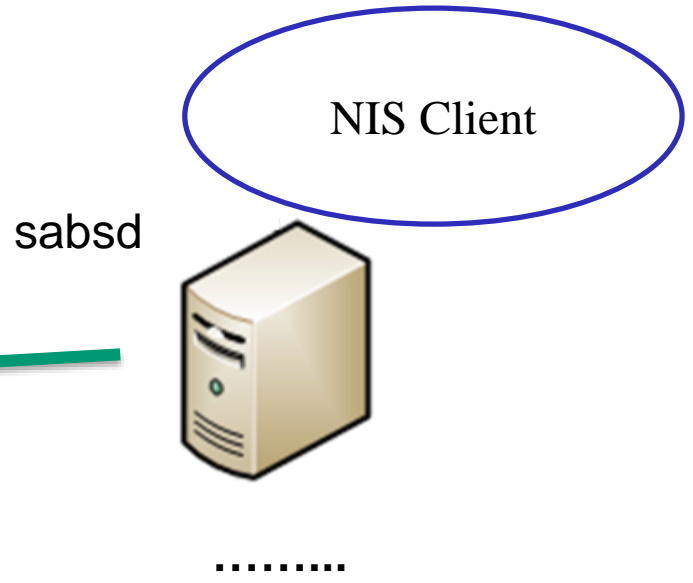## - Micro Computer Center

yihshih / lctseng

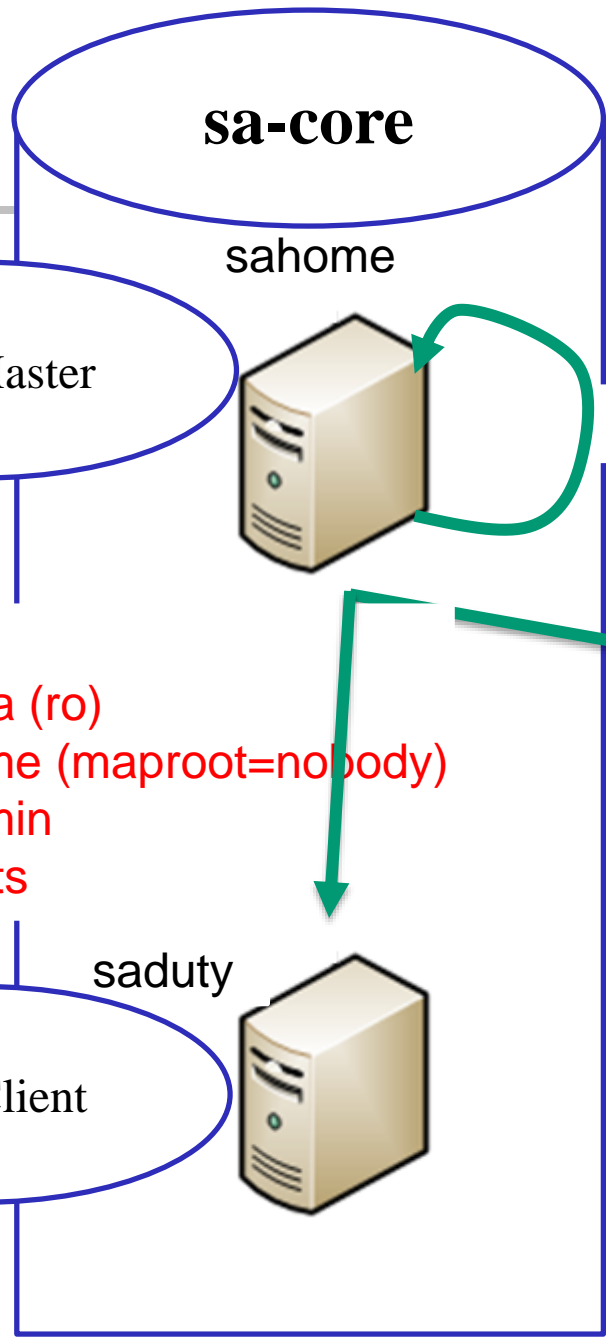**sa-core**

sahome

NIS Master

ypbind
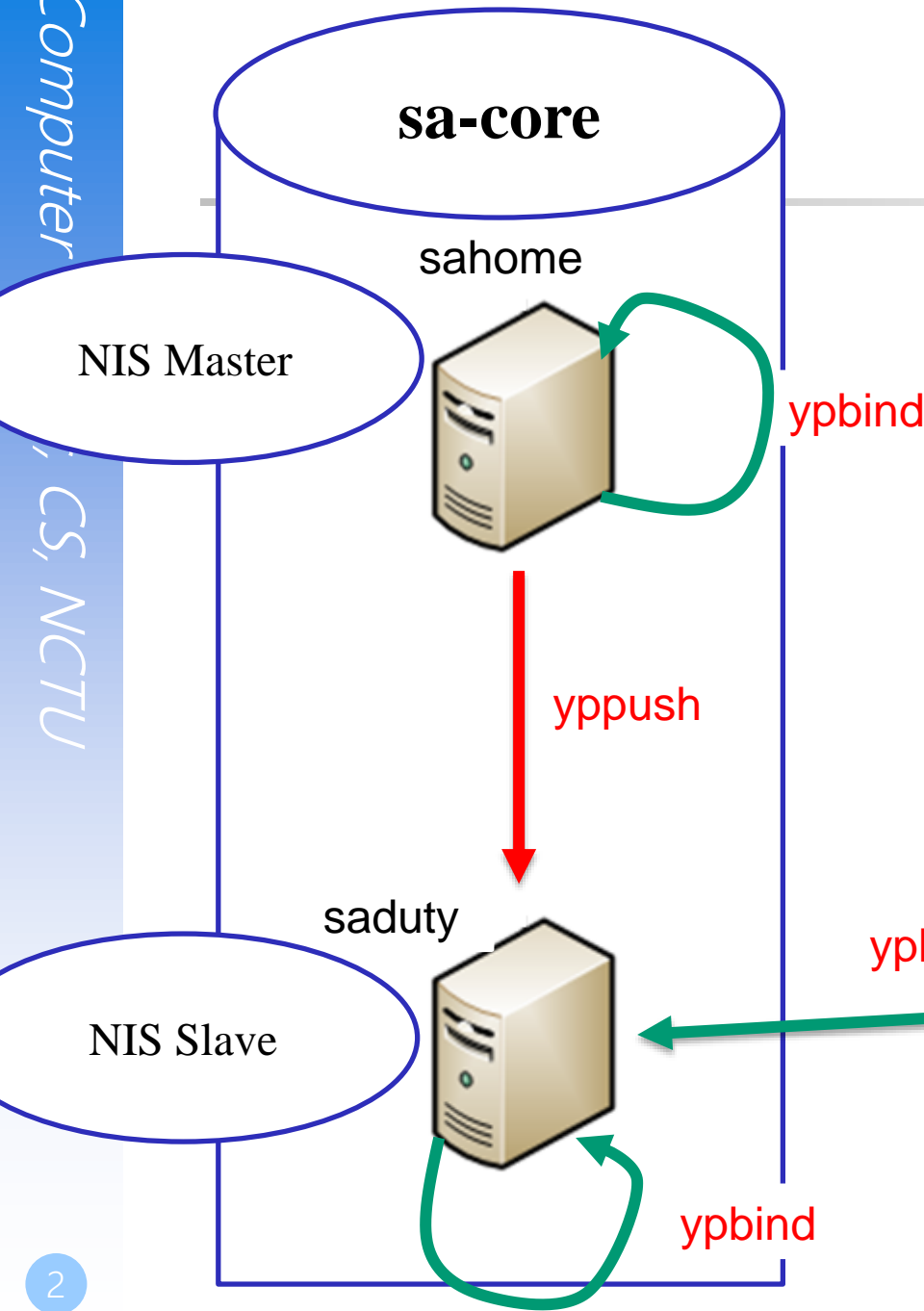
Share these files:
master.passwd
hosts
group
netgroup
ypservers
amd.map or auto_master

yppush

NIS Client

sabsd

saduty

ypbind

NIS Slave

ypbind

....

sa-core

sahome

NFS Master

nullfs

1.Sudoers
2./usr/ports

sabsd

Export
/net/data (ro)
/net/home (maproot=nobody)
/net/admin
/usr/ports

Export
/net/data (ro)
/net/home (maproot=nobody)
/usr/ports

saduty

....

NFS Client

NFS Client

sa-core

sahome

1. **Only sa-adm can login sa-core.**
2. **Connect to sahome only from saduty**
3. **Connect to sa-core only from sa-bsd**

sabsd

ssh

saduty

ssh

ssh

....
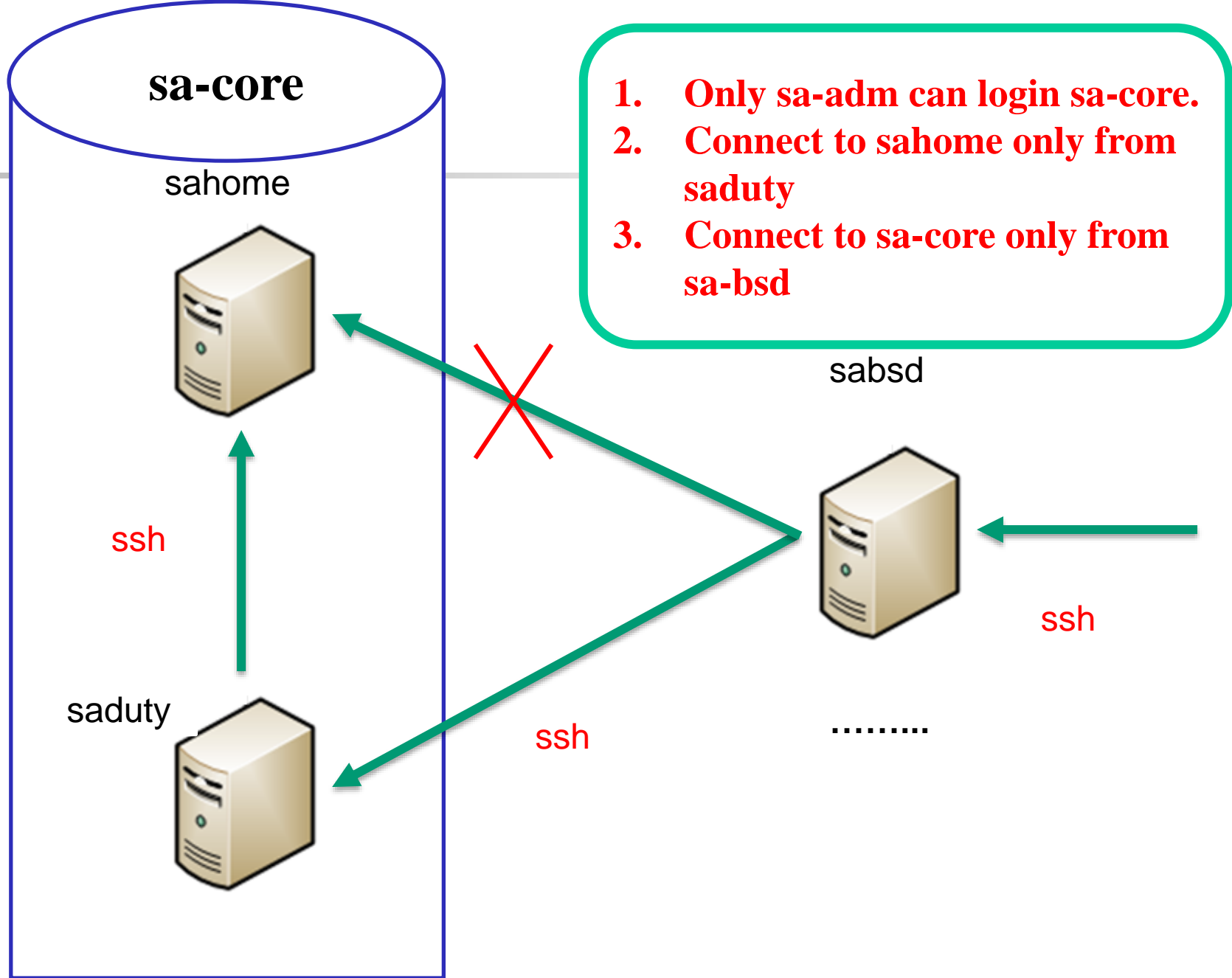
Requirements (1)
- Overview

❑ Machines

- sahome: NFS Server, NIS Master Server, (NIS Client)
- saduty: NIS Slave Server, (NIS/NFS Client)
- sabsd: (NIS/NFS Client)

❑ Groups

- sysadm: can access /net/data/sata, can sudo everything but **su** and any shells
- nctucs: everyone

❑ Netgroups

- sa-adm: admin **users**, can login **sa-core**
- sa-core: core **machines** (sahome and saduty)
- sa-bsd: all freebsd **machines (sahome, saduty, sabsd)**

Requirements (2) - sahome

❑ nullfs

- /net/home -> /vol/home
- /net/data -> /vol/data
- /net/admin -> /vol/admin

❑ NIS

- Bind priority: sahome>saduty

❑ login

- sa-adm only
- Only from saduty

Requirements (3)
- saduty

❑ NFS

- /net/home -> sahome:/vol/home (maproot=nobody)

- /net/data -> sahome:/vol/data (ro)

- /net/admin -> sahome:/vol/admin (ro)

❑ NIS

- Bind priority: saduty>sahome

❑ login

- sa-adm only

Requirements (4)
- sabsd

❑ NFS

- /net/home -> sahome:/vol/home (maproot=nobody)
- /net/data -> sahome:/vol/data (ro)

❑ NIS

- Bind priority: saduty>sahome

❑ login

- All

Requirement (5)

❑ All machines share /net/data/sudoers

❑ All user's home directory must be in /net/home except root

❑ Auto-start all services

❑ Auto-mount all folders with amd or autofs

❑ User can change password on NIS Clients

Rup

❑ You can run rup on all servers.

```
16:25 hwchiu@sahome [~] >rup
saduty              4:25pm  up              1:13,   load average: 0.00 0.00 0.00
sabsd               4:25pm  up           33 mins,   load average: 0.00 0.00 0.00
sahome              4:25pm  up            4 mins,   load average: 0.04 0.26 0.16
```

Ports tree

❑ Sahome exports its /usr/ports.

❑ Write /etc/make.conf

- DISTDIR
- WRKDIRPREFIX

❑ Write a program which will update its ports tree.

- It must be automatically executed at 1:30 A.M everyday on sahome.

Log server

❑ Sahome as a Log server.

❑ Write a program which will record the ssh information everyday.

- When

- Who

- Where

- Ex: Dec 14 17:26:10 hwchiu login saduty fail from 192.168.157.139

❑ The program must be automatically executed at 11:50 P.M. everyday on sahome.

Log server (continue)

❑ Your program should write the result to /net/data/ssh/

❑ The filename should follow the rule

- Year_Month_Day
- Example. 2013_Dec_13

```
/net/data/ssh/
├── 2013_Dec_13
├── 2013_Dec_14
└── 2013_Dec_15
```

Step 1
- Setup sahome as NIS Master Server

❑ Edit /etc/rc.conf

- nis_server, nisdomainname, yppasswdd

❑ Edit /var/yp/Makefile

- #NOPUSH = "True"
- HOSTS = $(YPDIR)/hosts
- GROUP = $(YPDIR)/group
- AMDHOST = $(YPDIR)/amd.map

❑ Create /var/yp/hosts, /var/yp/group…etc

- Edit /var/yp/master.passwd & /var/yp/group to create your accounts
- Edit /var/yp/hosts to fit your environment

❑ Initial and start services

Step 2
- Setup NIS Clients

❑ Add NIS Servers' IP to /etc/hosts

❑ Edit /etc/master.passwd & /etc/group

- vipw

❑ Edit /etc/nsswitch.conf

- hosts : files nis dns

❑ Edit /etc/rc.conf

- nis_client, nisdomainname, ypbind

❑ Testing tools

- ypcat
- ypwhich

Step 3
- Setup NFS environment

❑ Nullfs (NFS Server)

- $ mount_nullfs /vol/home /net/home

- In **/etc/fstab**: /vol/home /net/home nullfs rw 2 2

❑ Edit /etc/exports (NFS Server)

❑ Edit /etc/rc.conf

- amd or autofs (NFS Client)

- nfs_server, mountd (NFS Server)

❑ Edit amd.map (NIS Server)

Step 4
- Setup saduty as a NIS Slave Server

❑ Edit /etc/rc.conf

- nis_server, nisdomainname, ypxfrd
- Modity ypbind sequence (on every clients)

❑ Edit /var/yp/ypservers (on cshome)

❑ Initial and (re)start services

Step 5
- Finishing

❑ sudoers (/usr/local/etc/sudoers)

- Including other sudoers file from /net/data/sudoers

- man sudoers to see more about "include".

❑ sahome:/etc/hosts.allow

- sa-adm only can login sahome from saduty.

❑ /net/data/sata

- sysadm only/

❑ Login permissions

- only sa-adm can login sa-core.

After NIS & NFS servers.

- ❑ Rup.
- ❑ Ports tree.
- ❑ Log server.

Let's hack into the Kernel

❑ Build another kernel by yourself

❑ Make your kernel smaller by 10%

- ls -l /boot/kernel/kernel

❑ Make sure everything is still okay

- At least for this homework!

```
[W3] > ls -l /boot/kernel.old/kernel
-r-xr-xr-x  1 root  wheel  21156391 11 12  2014 /boot/kernel.old/kernel*
9:10pm lctseng@lctseng(192.168.234.139)[/]
[W3] > ls -l /boot/kernel/kernel
-r-xr-xr-x  1 root  wheel  15611133 12 10 20:34 /boot/kernel/kernel*
```

```
21:18 lctseng@lctseng(192.168.234.139)[~]
[^_^]   > uname -a
FreeBSD lctseng.nasa 10.1-RELEASE FreeBSD 10.1-RELEASE #0: Thu Dec 10 20:32:15 CST 20
15    root@lctseng.nasa:/usr/obj/usr/src/sys/SABSD  amd64
```

Help! The kernel source is missing…

❑ Reinstall Freebsd and select 'src' to install source codes

❑ Fetch from official site

- ftp://ftp.freebsd.org/pub/FreeBSD/releases/amd64/10.1-RELEASE/src.txz

- Download it and extract
    - ➢ tar -C / -xzf src.txz
    - ➢ Wait for a very long time

Help

❑ Go to bsd*.cs.nctu.edu.tw

❑ IRC channel #nctuNASA on freenode

❑ Email ta@nasa.cs.nctu.edu.tw

❑ Goto CSCC to ask professional 3F!

Appendix

Appendix A – mount_nullfs

❑ **$ man exports**

A host may be specified only once for each local file system on the server and there may be only one default entry for each server file system that applies to all other hosts.

❑ **The command**

- mount_nullfs <origin> <new_path>
- For example
  - ➢ *% mkdir /home/allhome*   make a directory for Real NFS Home
  - ➢ *% mkdir /home/for_nis*   make a directory for NFS Home exports
  - ➢ *% mount_nullfs /home/allhome /home/for_nis*   mount it

❑ **Use it in /etc/fstab**

- Change the fstype to nullfs
- For example
  - ➢ */home/allhome /home/for_nis nullfs rw 2 2*