Exercise 4 – NFS and NIS

Announced Date: 2006/12/20

Due Date: 2007/1/3

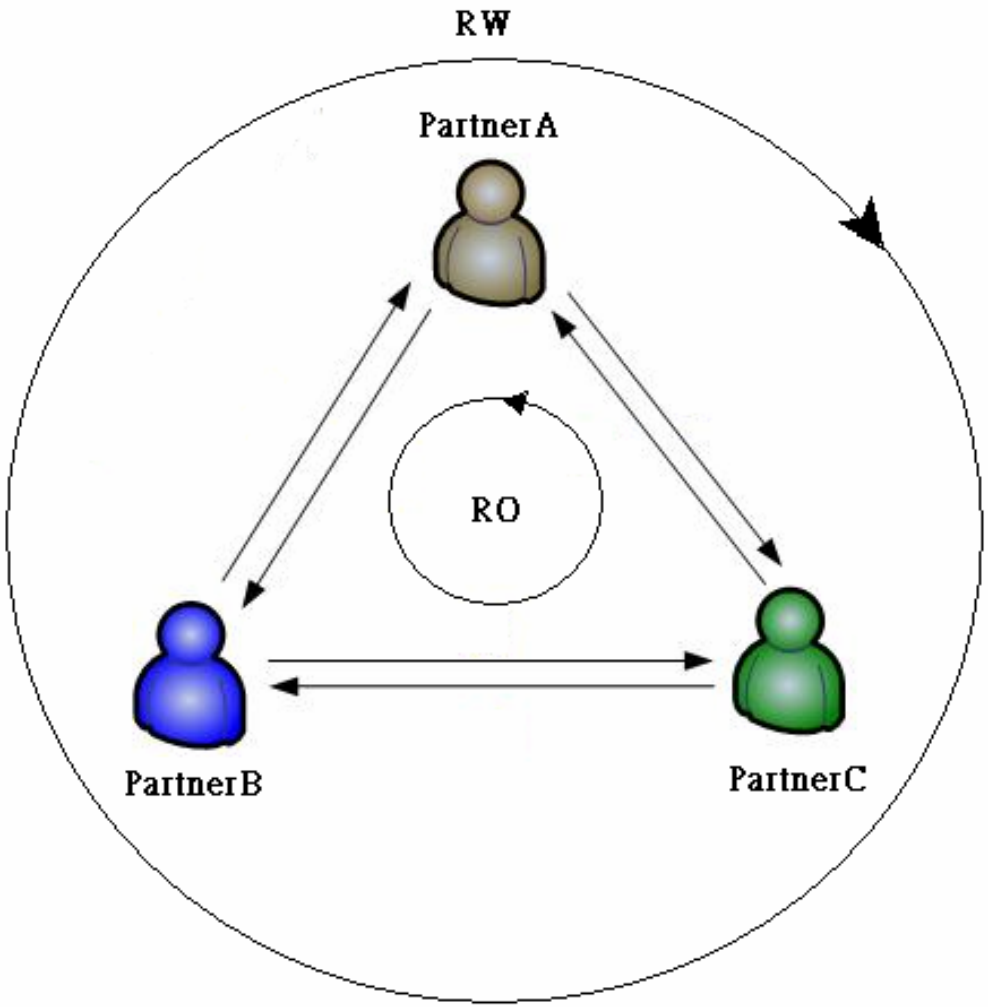
Outline

- Team Work - Find at most two partner to finish this job
- Labs
  - Lab1 – NFS exports and mount
  - Lab2 – NIS servers and clients
  - Lab3 – NIS, NFS, and amd
- Bonus
  - Bonus1 – NIS slave server
  - Bonus2 – Backup
- Appendix
  - Appendix A – mount_nullfs

Labs

Lab1 – NFS exports and mount(1)

- Goal:
  - Export NFS
  - Import NFS
- Requirement:
  - Mount NFS with correct exports permission
- Triangle relationship
- Arrow is the direction of exports



Labs

Lab1 – NFS exports and mount(2)

- For PartnerA
  - Make directories as following names
    - ***% mkdir /home/partnerA***
    - ***% mkdir /home/partnerB***
    - ***% mkdir /home/partnerC***
  - Export /home/partnerA (Relation as previous picture)
    - Modify ***/etc/exports***
    - Read-Only for partnerB, Read-Write for partnerC
  - Edit /etc/fstab to mount partnerB and partnerC via NFS
  - Try to Create Files in these two NFS
    - PartnerA can write /home/partberB, cannot write /home/partnerC
- Similarly for PartnerB and PartnerC

Labs

Lab2 – NIS servers and clients(1)

- Goal:
  - NIS master servers, and clients
- Requirement:
  - Share ***master.passwd***, ***passwd***, and ***group***
  - Three NIS accounts, you can choose names you like
  - The group of these accounts is written in NIS group
  - All NIS accounts can login all NIS clients, but only admin user (the user in NIS master server) can login the NIS master server
  - No need to take care the home directories, and other filesystems

Labs

Lab2 – NIS servers and clients(2)

- Settings for NIS master server(1)
  - Copy /var/yp/Makefile.dist to ***/var/yp/Makefile*** (original is a symbolic link)
  - Comment out this line in the Makefile
    - ***NOPUSH = "True“ ➔ #NOPUSH = “True”***
  - To ensure NIS master server reads the shared files from NIS, please modify the GROUP variables to be read from /var/yp/
    - GROUP = $(***YPDIR***)/group
  - Copy ***master.passwd***, ***group*** from /etc/ to /var/yp/

Labs

Lab2 – NIS servers and clients(3)

- Settings for NIS master server(2)
  - Modify ***master.passwd***
    - Delete system accounts, and add three NIS accounts
      - You can use the names you like, but not be the same as system's accounts
    - Their home directories in ***/nis/home/*** (Will be done in Lab3)
  - Modify ***group***
    - Add a NIS group
  - Build NIS master server
    - Set domainname
    - Modify ***/etc/rc.conf***
    - ***% ypinit –m <domainname>***
    - Start NIS Master Server

Labs

Lab2 – NIS servers and clients(4)

- Settings for NIS clients
  - Set domainname
  - Modify ***/etc/rc.conf***
  - Modify ***/etc/hosts***
    - Add the entry of the NIS server
  - Modify ***/etc/group***
  - Modify ***/etc/master.passwd***
  - Start NIS Client
  - Note: The NIS master server also needs to be an NIS client, but only admin can login

Labs

Lab3 – NIS, NFS, and amd(1)

- Goal:
  - Continue after Lab2, using NFS as NIS home
- Requirement:
  - Pick a machine different from the NIS master server to export NFS
  - Export Read-Write for all
  - maproot=***nobody*** for all clients, but ***root*** for NIS master server
  - Because /etc/exports cannot export one device, please use ***mount_nullfs*** to mount this filesystem to ***/nis/home***
  - NFS clients should let NIS users see their home directories at ***/nis/home/***
    - ***Directly*** mount on /nis/home
    - Symbolic ***link*** /nis/home to the amd mount point

Labs

Lab3 – NIS, NFS, and amd(2)

- Add some files on the NIS master server
  - Modify the AMDHOST variables to be read from /var/yp/
    - AMDHOST = $(***YPDIR***)/amd.map
  - Copy ***amd.map, netgroup*** from /etc/ to /var/yp/
  - Modify ***amd.map***
    - NFS machine doesn't need to mount it, because it should mount by mount_nullfs
  - Modify ***netgroup***
    - Use ***netgroup*** to export the NFS, and so add one new client is easy
    - Also, you can add admins in one netgroup for NIS master to set in the master.passwd (***Optional***)
  - Rebuild NIS database

Labs

Lab3 – NIS, NFS, and amd(3)

- Export NIS Home
  - Use ***mount_nullfs*** to mount this filesystem to ***/nis/home***
  - Modify ***/etc/exports***
    - Export /nis/home to all, specify the ***maproot*** option.
  - Modify ***/etc/rc.conf***
  - Run NFS server
- Run amd on all machines
  - Modify ***/etc/rc.conf***
  - Start amd
  - Note: In amd_flags, set the mapname as amd.map, it will automatically search the NIS, you can man amd.conf and see the map_type for more information.

Bonus

Bonus1 – NIS slave server

- Goal:
  - Pick the machine, which is neither the NFS server nor the NIS master server, and build the NIS slave server.
- Requirement:
  - The NIS slave server can bind itself
- Settings for the NIS slave server
  - Set domainname
  - Modify ***/etc/rc.conf***
  - ypinit -s <master> <domainname>
  - Start NIS Slave Server
  - You can read this for more details
    - http://www.tw.freebsd.org/doc/zh_TW.Big5/books/handbook/network-nis.html

Bonus

Bonus2 – Backup

- Goal:
  - Backup all data on the NIS system, including NIS database, and Homes of NIS accounts
- Requirement
  - NIS master server exports Backup via NFS, and all ***read-only***, maproot=***nobody***
- Settings for the Backup
  - Use ***mount_nullfs*** to mount this filesystem to ***/nis/backup***
  - Export /nis/backup
    - Modify configuration files and run NFS server
  - Mount /nis/backup by amd
    - Write amd map in the NIS ***amd.map***
    - Update NIS database

Appendix

Appendix A – mount_nullfs

- The command
  - mount_nullfs <origin> <new_path>
  - For example
    - ***% mkdir /home/for_nis*** make a directory for NIS Home
    - ***% mkdir –p /nis/home*** make a mount point for NIS Home
    - ***% mount_nullfs /home/for_nis /nis/home*** mount it
- Use it in /etc/fstab
  - Change the fstype to nullfs
  - For example
    - ***/home/for_nis /nis/home nullfs rw 2 2***