CSCI4113

**LAB5 B Notes**

Milan Formanek April 9, 2019

# Configuring rsync between machines B and F

## Rsync has to be installed on both machines B and F:

1 [ root@carriage ~]# yum install rsync

## Then the user group permissions and DM site are pulled from machine B to machine F:

1. [ root@saddle ~]# rsync -avz root@carriage :/etc/ sudoers /etc/ sudoers
2. [ root@saddle ~]# rsync -avz root@carriage :/etc/ shadow /etc/ shadow
3. [ root@saddle ~]# rsync -avz root@carriage :/etc/ passwd /etc/ passwd
4. [ root@saddle ~]# rsync -avz root@carriage :/etc/ group /etc/ group
5. [ root@saddle ~]# rsync -avz root@carriage :/var/www/ /var/www/

## To schedule the DM site to get pulled from machine B to F a crontab rule is set up:

1. [ root@saddle ~]# nano /etc/ crontab
2. File : /etc/ crontab
3. SHELL =/bin/ bash
4. PATH =/ sbin :/bin:/usr/ sbin :/usr/bin
5. MAILTO = root
6. # For details see man 4 crontabs
7. # Example of job definition :

8 # .---------------- minute (0 - 59)

9 # | .------------- hour (0 - 23)

10 # | | .---------- day of month (1 - 31)

11 # | | | .------- month (1 - 12) OR jan ,feb ,mar ,apr ...

12 # | | | | .---- day of week (0 - 6) ( Sunday =0 or 7) OR sun ,mon ,tue ,wed ,thu ,$

13 # | | | | |

1. # \* \* \* \* \* user - name command to be executed
2. 0 \* \* \* \* root rsync -avz root@carriage :/var/www/ /var/www/
3. [ root@saddle ~]# systemctl restart crond
4. [ root@saddle ~]# systemctl enable crond

## The crond deamon is then restarted and enabled.

1. Configuring machine D as the DNS server

To Configure Machine D as the DNS server Bind is installed with:

1 [ root@chase ~]# yum install bind bind - utils

## After that 3 config files have to be set up:

1 [ root@chase ~]# nano /etc/ named . conf

## The named.conf file sets up the basic configuration for the Named deamon. It’s important to set recursion to yes and set up the dundermifflin.com zone correctly.

1. File : /etc/ named . conf
2. options {
3. directory "/var/ named ";
4. recursion yes;

5 listen -on {127.0.0.1; 100.64.21.0 /24; 10.32.21.2 / 24;};

6 allow - query {any ;};

7 };

8

9 zone " dundermifflin .com" {

1. type master ;
2. file " dundermifflin .com.";
3. };
4. [ root@chase ~]# chmod 777 /etc/ named . conf

## Next is the dundermifflin.com. config for the dundermifflin zone:

1. [ root@chase ~]# nano /var/ named / dundermifflin .com.
2. File : /var/ named / dundermifflin .com.
3. $TTL 1H
4. ; any time you make a change to the domain , bump the
5. ; " serial " setting below . the format is easy :
6. ; YYYYMMDDI , with the I being an iterator in case you
7. ; make more than one change during any one day
8. @ IN SOA chase hostmaster (

9 200405191 ; serial

1. 8H ; refresh
2. 4H ; retry
3. 4W ; expire
4. 1D ) ; minimum
5. ; chase . dundermifflin .com serves this domain as both the
6. ; name server (NS) and mail exchange (MX)
7. NS chase . dundermifflin .com.
8. ; MX 10 chase
9. ; define domain functions with CNAMEs
10. dundermifflin .com 300 IN CNAME carriage . dundermifflin .com
11. [www. dundermifflin .com.](http://www.dundermifflin.com/) 300 IN CNAME carriage . dundermifflin .com
12. www2 . dundermifflin .com. 300 IN CNAME saddle . dundermifflin .com.
13. ftp. dundermifflin .com. 300 IN CNAME platen . dundermifflin .com.
14. files . dundermifflin .com. 604800 IN CNAME roller . dundermifflin .com.

24

1. machinea . dundermifflin .com. 604800 IN CNAME router . dundermifflin .com.
2. machineb . dundermifflin .com. 604800 IN CNAME carriage . dundermifflin .com.
3. machinec . dundermifflin .com. 604800 IN CNAME platen . dundermifflin .com.
4. machined . dundermifflin .com. 604800 IN CNAME chase . dundermifflin .com.
5. machinee . dundermifflin .com. 604800 IN CNAME roller . dundermifflin .com.
6. machinef . dundermifflin .com. 604800 IN CNAME saddle . dundermifflin .com.

31

32

1. ; just in case someone asks for localhost . schroder .net
2. localhost IN A 127.0.0.1
3. ; our hostnames , in alphabetical order
4. router . dundermifflin .com. IN A 100.64.0.21
5. carriage . dundermifflin .com. IN A 100.64.21.2
6. platen . dundermifflin .com. IN A 100.64.21.3
7. chase . dundermifflin .com. IN A 100.64.21.4
8. roller . dundermifflin .com. IN A 100.21.32.2
9. saddle . dundermifflin .com. IN A 100.64.21.5
10. [ root@chase ~]# chmod 777 /var/ named / dundermifflin .com.

## This file contains the ip bindings for the local dundermifflin.com domain as well as set chase as the Name Server for the network.

Last is the named.ca file containing information on DNS servers resolving domains not dundermifflin.com. This file can be downloaded from [https://www.internic.net/](https://www.internic.net/domain/named.root) [domain/named.root](https://www.internic.net/domain/named.root).

1. [ root@chase ~]# nano /var/ named / named .ca
2. File : /var/ named / named .ca
3. ; This file holds the information on root name servers needed to
4. ; initialize cache of Internet domain name servers
5. ; (e.g. reference this file in the " cache . <file >"
6. ; configuration file of BIND domain name servers ).
7. ;
8. ; This file is made available by InterNIC
9. ; under anonymous FTP as
10. ; file / domain / named . cache
11. ; on server FTP. INTERNIC .NET
12. ; -OR - RS. INTERNIC .NET
13. ;
14. ; last update : March 13, 2019
15. ; related version of root zone : 2019031302
16. ;
17. ; FORMERLY NS. INTERNIC .NET
18. ;
19. . 3600000 NS A.ROOT - SERVERS .NET.

20 A.ROOT - SERVERS .NET. 3600000 A 198.41.0.4

21 A.ROOT - SERVERS .NET. 3600000 AAAA 2001:503: ba3e ::2:30

1. ;
2. ; FORMERLY NS1.ISI.EDU
3. ;
4. . 3600000 NS B.ROOT - SERVERS .NET.

26 B.ROOT - SERVERS .NET. 3600000 A 199.9.14.201

27 B.ROOT - SERVERS .NET. 3600000 AAAA 2001:500:200:: b

1. ;
2. ; FORMERLY C.PSI.NET
3. ;
4. . 3600000 NS C.ROOT - SERVERS .NET.

32 C.ROOT - SERVERS .NET. 3600000 A 192.33.4.12

33 C.ROOT - SERVERS .NET. 3600000 AAAA 2001:500:2:: c

1. ;
2. ; FORMERLY TERP .UMD.EDU
3. ;
4. . 3600000 NS D.ROOT - SERVERS .NET.

38 D.ROOT - SERVERS .NET. 3600000 A 199.7.91.13

1. D.ROOT - SERVERS .NET. 3600000 AAAA 2001:500:2 d::d
2. ;
3. ; FORMERLY NS. NASA .GOV
4. ;
5. . 3600000 NS E.ROOT - SERVERS .NET.

44 E.ROOT - SERVERS .NET. 3600000 A 192.203.230.10

1. E.ROOT - SERVERS .NET. 3600000 AAAA 2001:500: a8 ::e
2. ;
3. ; FORMERLY NS.ISC.ORG
4. ;
5. . 3600000 NS F.ROOT - SERVERS .NET.

50 F.ROOT - SERVERS .NET. 3600000 A 192.5.5.241

1. F.ROOT - SERVERS .NET. 3600000 AAAA 2001:500:2 f::f
2. ;
3. ; FORMERLY NS.NIC.DDN.MIL
4. ;
5. . 3600000 NS G.ROOT - SERVERS .NET.

56 G.ROOT - SERVERS .NET. 3600000 A 192.112.36.4

57 G.ROOT - SERVERS .NET. 3600000 AAAA 2001:500:12:: d0d

1. ;
2. ; FORMERLY AOS.ARL. ARMY .MIL
3. ;
4. . 3600000 NS H.ROOT - SERVERS .NET.

62 H.ROOT - SERVERS .NET. 3600000 A 198.97.190.53

63 [ root@chase ~]# chmod 777 /var/ named / named .ca

## After this is done the Named demon has to be started and enabled to run on boot:

1. [ root@chase ~]# systemctl start named
2. [ root@chase ~]# systemctl enable named

# Configuring machine A the Router

## Machine A has to be configured to advertise Machine D as the DNS sever for the local network. This is done by adding the line: option domain-name-servers 100.64.21.4; To both of the subnets served by the router.

1 [ root@router ~]# nano /etc/ dhcp / dhcpd . conf

## After this is complete the dhcpd deamon has to be restarted for the new configuration to take effect.

The DNS server is set statically in the router by removing the line PEERDNS=no and adding the line DNS1=100.64.21.4 the 3 network interface config files:

1. [ root@router ~]# nano /etc/ sysconfig / network - scripts /ifcfg - ens256
2. [ root@router ~]# nano /etc/ sysconfig / network - scripts /ifcfg - ens224
3. [ root@router ~]# nano /etc/ sysconfig / network - scripts /ifcfg - ens192

## Note the university DNS server at 128.138.130.30 is still kept as a backup.

1. Configuring machines B,C,D,E,F to accept the new DNS Server

Machines B,C,D,E and F need to be configured to take the new address of the local DNS server from DHCP. This is done by the removing the line PEERDNS=no and adding the lines DNS1=”” and DNS2=”” to the network interface config file on all the above mentioned machines:

1 [ root@router ~]# nano /etc/ sysconfig / network - scripts /ifcfg - ens192

## For some reason without forcing the 2 DNS servers to be epty the machines would revert to the University DNS after reboot.

To check if the setting stuck the resolv.conf file is checked and a a dig is performed on both an external and internal domain:

1. [ root@carriage ~]# nano /etc/ resolv . conf
2. File : /etc/ resolv . conf
3. ; generated by /usr/ sbin / dhclient - script
4. search dundermifflin .com.
5. nameserver 100.64.21.4
6. [ root@carriage ~]# dig dundermifflin .com

7 ; <<>> DiG 9.9.4 - RedHat -9.9.4 -73. el7\_6 <<>> dundermifflin .com

1. ;; global options : +cmd
2. ;; Got answer :
3. ;; ->> HEADER <<- opcode : QUERY , status : NOERROR , id: 39724
4. ;; flags : qr aa rd ra; QUERY : 1, ANSWER : 0, AUTHORITY : 1, ADDITIONAL : 1
5. ;; OPT PSEUDOSECTION :
6. ; EDNS : version : 0, flags :; udp: 4096
7. ;; QUESTION SECTION :
8. ; dundermifflin .com. IN A
9. ;; AUTHORITY SECTION :
10. dundermifflin .com. 3600 IN SOA chase . dundermifflin .com. hostmaster . dundermifflin .com. 200405191

28800 14400 2419200 86400

1. ;; Query time : 1 msec

19 ;; SERVER : 100.64.21.4 # 53(100.64.21.4)

20 ;; WHEN : Tue Apr 09 01:00:44 MDT 2019

1. ;; MSG SIZE rcvd : 99
2. [ root@carriage ~]# dig [www. google .com](http://www.google.com/)

23 ; <<>> DiG 9.9.4 - RedHat -9.9.4 -73. el7\_6 <<>> [www. google .com](http://www.google.com/)

1. ;; global options : +cmd
2. ;; Got answer :
3. ;; ->> HEADER <<- opcode : QUERY , status : NOERROR , id: 14187
4. ;; flags : qr rd ra; QUERY : 1, ANSWER : 1, AUTHORITY : 4, ADDITIONAL : 9
5. ;; OPT PSEUDOSECTION :
6. ; EDNS : version : 0, flags :; udp: 4096
7. ;; QUESTION SECTION :
8. ;[www. google .com.](http://www.google.com/) IN A
9. ;; ANSWER SECTION :

33 [www. google .com.](http://www.google.com/) 300 IN A 172.217.2.4

1. ;; AUTHORITY SECTION :
2. google .com. 171975 IN NS ns3. google .com.
3. google .com. 171975 IN NS ns2. google .com.
4. google .com. 171975 IN NS ns4. google .com.
5. google .com. 171975 IN NS ns1. google .com.
6. ;; ADDITIONAL SECTION :

40 ns2. google .com. 171975 IN A 216.239.34.10

41 ns2. google .com. 171975 IN AAAA 2001:4860:4802:34:: a

42 ns1. google .com. 171975 IN A 216.239.32.10

43 ns1. google .com. 171975 IN AAAA 2001:4860:4802:32:: a

44 ns3. google .com. 171975 IN A 216.239.36.10

45 ns3. google .com. 171975 IN AAAA 2001:4860:4802:36:: a

46 ns4. google .com. 171975 IN A 216.239.38.10

47 ns4. google .com. 171975 IN AAAA 2001:4860:4802:38:: a

48 ;; Query time : 26 msec

49 ;; SERVER : 100.64.21.4 # 53(100.64.21.4)

50 ;; WHEN : Tue Apr 09 01:01:52 MDT 2019

51 ;; MSG SIZE rcvd : 307

## Towards the end of the Dig output on the SERVER: line you can see the domains resolve to our local DNS server at 100.64.21.4.