Twin Peaks Software High Availability and Disaster Recovery Solution
For
Linux Email Server

Introduction

Twin Peaks Softwares Replication Plus software is a real-time file replication tool, based on its proprietary mirroring technology. It enables fast, live file replication between two file systems on two separate servers across network, LAN or WAN. This document describes how to use the tool for a complete and robust email server solution. The same procedure described is also applicable for file/NAS and database clustering server.

Replication Plus can back up users' emails and folders to the secondary email server for further tape and disk back up processing. When equipped with Heartbeat package, the two email servers can be configured as clustering email severs to provide disaster recover capability. When the primary email server fails or is taken out of service, the secondary email server takes over the email service without delay.

Requirements

Hardware:

Two X86 systems with 1G memory and 100G+ disk space
Software:

Operating System: Red Hat Enterprise Linux version 4/5 or CentOS 4/5
Twin Peaks Software Replication Plus for Linux
Heartbeat High availability software package

Installation Procedures

It is assumed that TPS Replication Plus has been installed. For TPS Replication Plus installation information, please refer to the Replication Plus installation Guide. Software download and installation documents are available at
http://www.twinpeaksoft.com.

It is also assumed that the primary node is named TwinJD and the secondary is named TwinES. Different names can be used as long as they are consistent in the procedures.

Email Replication

Set up the secondary email server

1. Edit /etc/exports file to export /home and /var/spool/mail directory to Primary Email server TwinJD

   /home   *(rw, async, no_root_squash, fsid=2001)
   /var/spool/mail   *(rw, async, no_root_squash, fsid=2002)

2. Export /home and /var/spool/mail directory
   # exportfs –va

3. Turn off sendmail and dovecot init script in /etc/init.d directory
   # chkconfig sendmail off
   # chkconfig dovecot   off

4. Create user accounts
   # useradd [-d home_dir] [-g initial_group] [-p passwd] [-u uid]

   Please review useradd(8) man page.

Set up the primary email server

1. Create user account
   User accounts should have the same user id (uid), group id(gid), password (passwd) and home directory as those created on the secondary email server TwinES.

2. Download Replication Plus Software from Twin Peaks Web site
   http://www.TwinPeakSoft.com/

3. untar the downloaded tar file TPS_MFS_2.0_Linux_RHEL_V4_[unp/smp].tar
   # tar xv TPS_MFS_2.0_Linux_RHEL_V4_[unp/smp].tar
   # ls
           Documentation Packages

4. Install the software package and the 30 days temporary license file
   # cd Packages
   # ./Install

   If there is MFS package installed on the system, the Install may fail and indicate
   that a MFS package is already installed. If so, remove the MFS package first

   # rpm –e `rpm –q MFS`

Then run the Install again
./Install

5. Review TPS MFS Administration Guide before starting to use TPS Replication Plus

6. Get license_request form in Documentation directory
Fill up the license_request form and e-mail it to license@TwinPeakSoft.com to get a new license file.

7. Sync up the files on the primary and secondary email server
    # rsync –avz /home
    # rsync –avz /var/spool/mail

    Depends on the size of /home and /var/spool/directories, the rsync command may take a a while to complete. Please review rsync(1) man page for details.

8. All activities on /home and /var/spool/mail directories have to be quiescent

    # /etc/init.d/sendmail stop
    # /etc/init.d/dovecot stop
    # /etc/init.d/httpd stop

    If you are not sure how to check and stop the processes that access the /home and /var/spool/mail directories, the easiest way to ensure that is to bring the system to the single user mode.
    # init 1

    And then start the network
    # /etc/init.d/network start

9. MFS mount the /home and /var/spool/mail directory from secondary e-mail server TwinES

    # mount –t mfs TwinES:/home /home
    # mount –t mfs TwinES:/var/spool/mail /var/spool/mail

10. Check the /home and /var/spool/mail directory again
    If there is change on /home and /var/spool/mail directory between the rsync and mount command, Run the mfsck command to check and make sure that they are in sync. Please Review man page of mfsck for details.

    # mfsck –[f/b] /home
    # mfsck –[f/b] /var/spool/mail

11. Turn on dovecot, httpd and sendmail init scripts

    # chkconfig sendmail on
    # chkconfig dovecot on

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```
# chkconfig httpd on
```

12. Bring the system back to multi-user mode or restart the stopped init.d scripts

```
# init 5
```

Or

```
# /etc/init.d/sendmail start
# /etc/init.d/dovecot start
# /etc/init.d/httpd start
```

After the set up is completed, all emails come to primary server TwinJD are replicated to the secondary server TwinES. User's email folders are also replicated. The client can read and send email through primary email server TwinJD.

Client access primary email server

Window Outlook

1. Use Outlook to set up the e-mail accounts, choose IMAP as the type of server
2. For the incoming and outgoing mail server use the IP address of TwinJD

Browser

Client can use any web browser to access their email on primary email server by using

http://www.TwinJD/webmail/

After the set up is completed, all emails that come to primary server TwinJD are replicated to the secondary server TwinES. User's email folder are also replicated. The client can read and send email through primary email server TwinJD.

Email cluster configuration (Heartbeat Package)

The primary email server TwinJD and the secondary email server can be configured as a pair of clustering nodes. In case the primary email server TwinJD fails or is taken out for service, the secondary email server TwinES kick in automatically and continues to provide email service to their clients without delay.

1. Download the Heartbeat package
   Go to http://www.linux-ha.org/download

Or go to http://www.ultramonkey.org/download/heartbeat/stable.latest

For Red Hat Linux 4 or CentOS 4, download heartbeat-2.0.4.tar.gz
For Red Hat Linux 5 or CentOS 5, download the version equal to or higher than heartbeat-2.0.8.tar.gz

2. gunzip and untar the file
   # gunzip heartbeat-2.0.8.tar.gz
   # tar xf heartbeat-2.0.8.tar

3. Review the documentation

   # cd hearbeat-2.0.8/doc

   Read the GettingStarted.[txt/html], HardwareGuide.[txt/html], Requirements.[txt/html] and other documents in the directory.

4. Config the heartbeat package

   From the top of the src tree, type
   # ./ConfigureMe configure

   If you see the following message, please follow step 5 to install libnet
   configure: error: The following required components noted earlier are missing: libnet

   If no error after running ./ConfigureMe, continue to type

   # make
   # make install

5. Install libnet package if you see the above error

   a) Go to http://www.packetfactory.net/libnet
      Download the latest version: 1.1.2.1

   b) gunzip and untar libnet.tar.gz
      # gunzip libnet.tar.gz
      # tar xf libnet.tar

   c) From the top of the libnet src tree, type
      # ./configure
      # make
      # make install

6. Configure Heartbeat run time options
   Copy the ha.cf, haresources, authkeys files from doc directory of heartbeat src tree to /etc/ha.d directory

7. Edit ha.cf file and turn on the following options:
    debugfile /var/log/ha-debug
    logfile /var/log/ha-log
    logfacility   local0
    keepalive 2
    deadtime 30
    warntime 10
    initdead 120
    udpport 694
    #
    # Note: the bcast will generate more traffics on the net and the log
    # file /var/log/ha-log if there is another pair of clustering nodes
    # running on the same subnet. One can then use ucast and a different
    # udpport
    #
    # udpport 695
    # ucast eth0 192.168.1.[210/207]
    #
    ucast eth0 192.168.1.150   # for ha.cf on TwinJD
    ucast eth0 192.168.1.210   # for ha.cf on TwinES
    auto_failback on
    #
    #   Tell what machines are in the cluster
    #   node   nodename ...   -- must match uname -n
    #node   ken3
    #node   kathy
    node TwinJD
    node TwinES

8. Edit haresources file

    #   Assuming the administrative addresses are on the same subnet...
    #   A little more complex case: One service address, default subnet
    #   and netmask, and you want to start and stop http when you get
    #   the IP address...
    #
    #just.linux-ha.org   135.9.216.110 http
    TwinJD 192.168.1.177   sendmail   dovecot

9. Edit authkeys file
    auth 1
    1 crc

10. Use adduser command or the 'User and Group' GUI from Applications 'System Setting'
    Add a user account hacluster.
    Add a group account haclient.

11. Turn on heartbeat process
    Login in as root

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chkconfig heartbeat on

12. Add IP address of newly configured cluster email sever TwinCS to /etc/hosts . The above procedures must be performed on both systems.

```
127.0.0.1              TwinJD localhost.localdomain          localhost
192.168.1.210          TwinJD
192.168.1.150          TwinES
192.168.1.177          TwinCS
```

13. Reboot both systems

14. Verify heartbeat is running

Login to the primary email server TwinJD as root, and type
ifconfig eth0

```
eth0    Link encap:Ethernet  HWaddr 00:16:76:32:09:B3
inet addr:192.168.1.210  Bcast:192.168.1.255  Mask:255.255.255.0
inet6 addr: fe80::216:76ff:fe32:9b3/64 Scope:Link
UP BROADCAST RUNNING MULTICAST  MTU:1500  Metric:1
RX packets:1721 errors:0 dropped:0 overruns:0 frame:0
TX packets:897 errors:0 dropped:0 overruns:0 carrier:0
collisions:0 txqueuelen:1000
RX bytes:325596 (317.9 KiB)  TX bytes:152702 (149.1 KiB)

eth0:0  Link encap:Ethernet  HWaddr 00:16:76:32:09:B3
inet addr:192.168.1.177  Bcast:192.168.1.255  Mask:255.255.255.0
UP BROADCAST RUNNING MULTICAST  MTU:1500  Metric:1
```

The primary email server has two IP addresses, 192.168.1.210 for TwinJD and 192.168.1.177 for new cluster server TwinCS.

When the primary server fail, the standby server TwinES will take over the IP address 192.168.1.177 and continues running. This is the failover operation.

When the primary server TwinJD recovers, the TwinJD gets the IP address 192.168.1.177 back. This is the failback operation.

Type the following command to see the failover and failback sequences:

tail -f /var/log/ha-log

Perform these mount and mfsck operations after primary server has recovered:

mount -t mfs TwinES:/var/spool/mail /var/spool/mail
mount -t mfs TwinES:/home /home

When the failover occurs, the secondary server TwinES takes over the email operation. So its /var/spool/mail and /home directories may get updated with the new mail arrives and there is new activities in user's home directory. After the Primary server comes back online, its /var/spool/mail and /home directories need to re-sync with the new files from secondary server TwinES. The '-b' option of mfsck handles such case. If in doubt, use '-I' interactive mode to review the difference in files between the Primary and Secondary before making the sync. Please review mfsck man page.

mfsck -b /var/spool/mail
mfsck -b /home

Client access email cluster

Window Outlook

1. Use Outlook to set up the email accounts.
   choose IMAP as the type of server.

2. For the incoming and Outgoing mail server
   use the IP address of TwinJD.

With the new cluster email server set up and assign a new IP address, all client email account should change to use this new IP address as the incoming and/or outgoing server.

Web Browser

Client can use any web browser to access their email on the email clustering server by using

http://www.TwinCS/webmail/

Monitor email and folders are replicated between e-mail servers

Login TwinJD or TwinES as root
   # tethereal -S -f tcp port 2049 and host 192.168.1.207 and host 192.168.1.210 -F snoop

You will see TCP NFS traffics between two nodes of clustering system whenever e-mail arrives on primary E-mail server TwinJD or a user updates the folder.