Asterisk Redundancy Using Heartbeat

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Redundancy – Why?

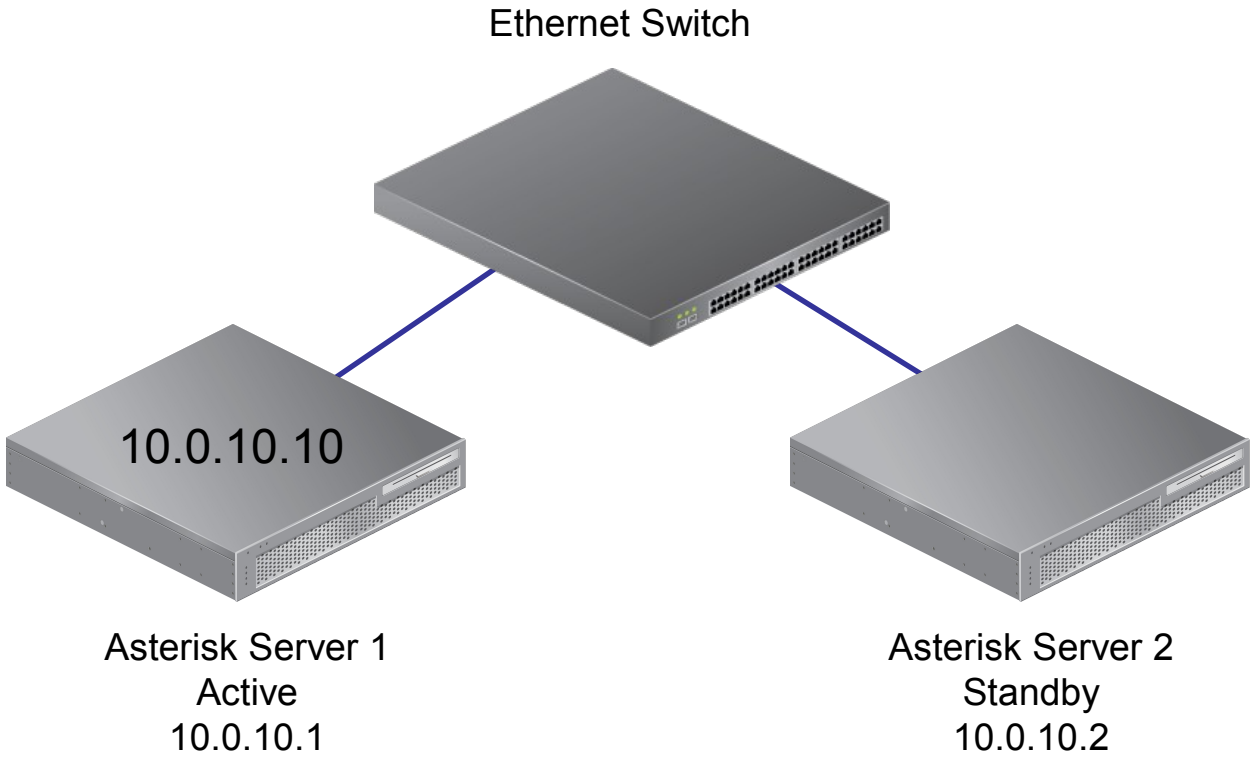
- You need to provide carrier class services
- Downtime is not an option
- Fully redundant softswitches are expensive

Heartbeat is your solution !

What is Heartbeat?

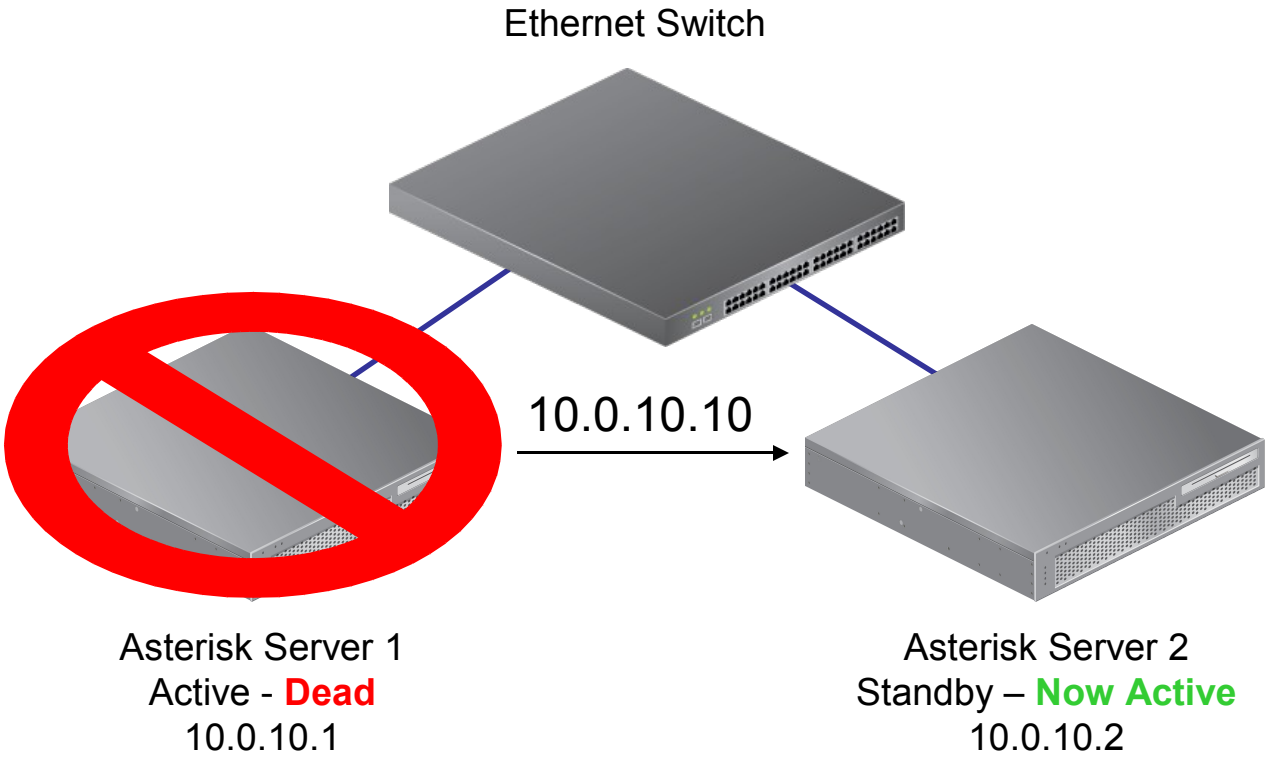
- Heartbeat is a piece of software which was written for the Linux-HA project. It performs death-of-node detection, communications and cluster management in one process. [1]
- The Heartbeat program is one of the core components of the Linux-HA (High-Availability Linux) project. Heartbeat is highly portable, and runs on every known Linux platform, and also on FreeBSD and Solaris. Ports to other OSes are also in progress. [2]

How does it work?



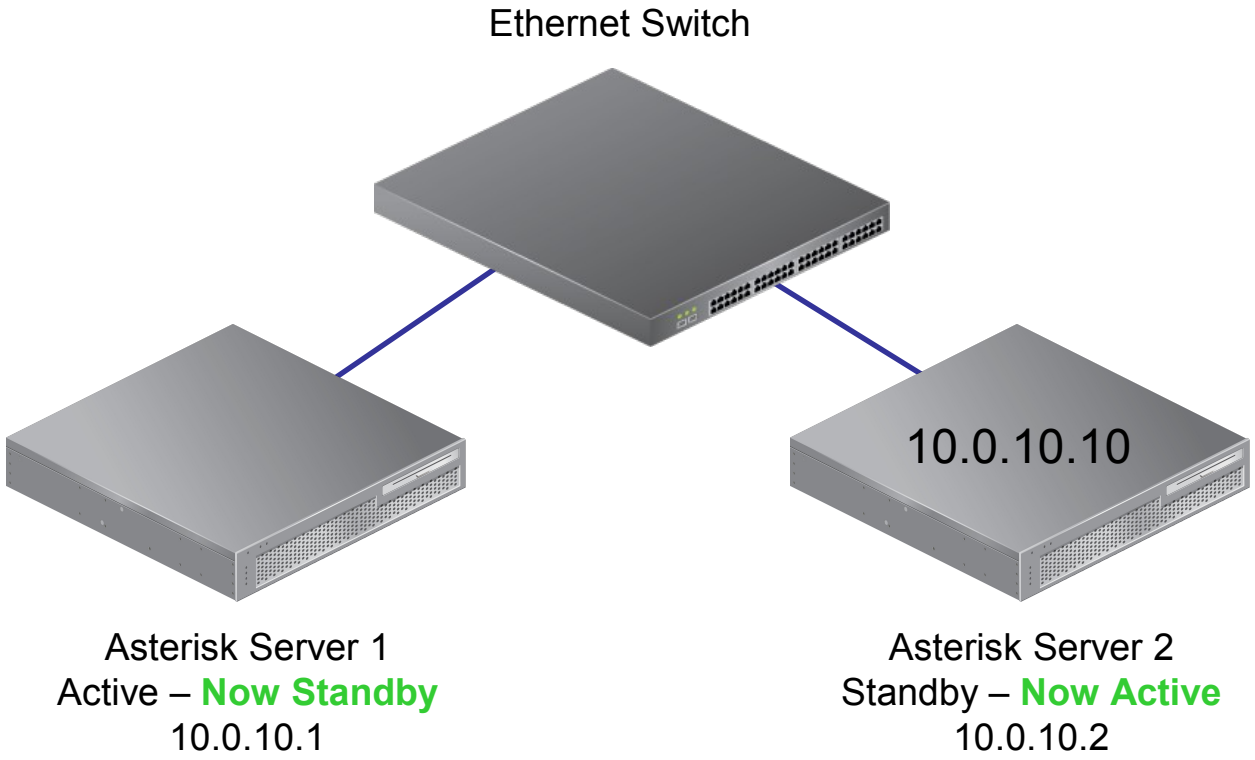
- Servers are configured in an active/standby configuration
- All resources (IP addresses are configured by Heartbeat. The system IP that is used by clients in this case would be 10.0.10.10
- The Heartbeat application on both servers communicate with each other by sending either broadcast or unicast packets across the ethernet.

When the active node fails



- Standby determines active node has failed because it stops receiving packets (heartbeats) from the active
- All resources including IP address become active on the secondary and services start
- Within seconds all services are running properly on the standby

When the active returns



- Depending on configuration, Active server now assumes the standby role
- If desired, cluster can be configured so that when the active returns all services transfer back to the active

What is needed?

- Two Linux servers (or more)
- Heartbeat application from www.linux-ha.org
- csync2 from oss.linbit.com/csync2/
  (for cluster replication
- Asterisk…of course !!!

csync2 Configuration

/etc/csync2.cfg

```
nossl vpbx1-* vpbx1-*;

group vpbx1
{
        backup-directory /var/backups/csync2;
        backup-generations 5;

        auto none;

       host vpbx1-1 vpbx1-2;
        key /etc/csync2.key_vpbx1;

        exclude *~ .* ok lock control;

        include /etc/csync2.cfg;
        include /etc/hosts;
        include /etc/odbc.ini;
        include /etc/odbcinst.ini;
        include /etc/ha.d/haresources;
        include /etc/ha.d/resource.d;
        include /etc/asterisk;
        include /var/lib/asterisk;
        include /var/spool/asterisk;
        include /usr/lib/asterisk;
        include /var/log/asterisk;
        include /etc/aliases;
        include /etc/aliases.db;
}
```

csync2 Configuration

Cron Job

```
*/5 * * * * [ -f /tmp/.HB-master ] && /usr/local/sbin/csync2 -xv >/dev/null 2>/dev/null
```

- In order to ensure that replication of data and configuration is done correctly, a file called .HB-master is created on the active server
- The above cron job is configured on both machines
- Replication will only occur when the file exists

Heartbeat Configuration

/etc/ha.d/ha.cf

```
use_logd yes
keepalive 200ms
deadtime 2
warntime 1
initdead 120
bcast eth0
node vpbx1-1
node vpbx1-2
crm off
auto_failback off
```

/etc/ha.d/haresources

```
vpbx1-1 MailTo::tech@webinmotion.ca::Asterisk 10.0.10.10/24/eth0 asterisk master
```

/etc/ha.d/authkeys

```
auth 1
1 sha1 ThisIsTheAuthkeyForTheCluster
```

Heartbeat Configuration

/etc/ha.d/resource.d/master

```
#!/bin/sh
F=/tmp/.HB-master

case $1 in
start)
touch $F
# Activate log rotation
ln -sf /etc/asterisk/asterisk.logrotate /etc/logrotate.d/asterisk

csync2 -fr /var/log/asterisk/
csync2 -fr /etc/asterisk/
csync2 -xv
;;

stop)
if [ -f $F ]
then
# De-activate log rotation
rm -f /etc/logrotate.d/asterisk

csync2 -fr /var/log/asterisk/
csync2 -fr /etc/asterisk/
csync2 -xv

rm -f $F
fi
;;
esac
exit 0
```

Heartbeat tidbits

- The configuration shown today makes use of the version 1 style of Hearbeat configurations. This is all that is required for a simple asterisk cluster
- More advance clustering features are available by using version 2 style configurations
- If you are running x-windows, there is a cool gui program available to help with advance configurations
- There are some excellent tutorials at the following URL http://linux-ha.org/LearningAboutHeartbeat

Questions?

References

- 1 & 2 - http://www.linux-ha.org/Heartbeat