

Hydra Master Server

Author: Vince Forgetta

Last saved: 12/7/2015 11:44 AM

Objective

To describe deployment of Warewulf master node for the Hydra Cluster.

The Warewulf Master is deployed on same server and the HYDRA File Server on host, `D1P-HYDRAFS01`.

This deployment assumes that the server is configured as per document `Hydra-FileServer-CentOS7`.

Assumes:

1. Internet connectivity.
2. SELinux and firewall disabled.
3. EPEL repository enabled.

Install

Warewulf Dependencies

```
$ yum group install 'Development tools'
$ yum install tcpdump tftp tftp-server pigz dhcp nfs-utils nfs-utils-lib ntp httpd
$ yum install perl-DBD-MySQL mariadb mariadb-server perl-Term-ReadLine-Gnu mod_perl
perl-CGI
$ yum install libselinux-devel libacl-devel libattr-devel
$ yum install cpan
$ cpan Module::Build
$ cpan YAML
$ cpan DateTime
$ cpan Crypt::HSXKPasswd
```

Reboot.

Start Services

```
$ systemctl enable httpd
$ systemctl start httpd
$ systemctl enable mariadb
$ systemctl start mariadb
```

Reboot, and ensure services are in proper state after reboot:

```
systemctl status httpd # on
systemctl status mariadb # on
systemctl status firewalld # off
```

Install Warewulf

```
# Build Warewulf from SVN
$ BUILD_DIR=/root/rpmbuild
$ WW_DIR=/root/warewulf
$ RPM_DIR=/root/rpmbuild/RPMS/
$ function build_it { cd $1 && ./autogen.sh && make dist-gzip && make distcheck && cp
-fa warewulf-*.tar.gz $2/SOURCES/ && rpmbuild -bb ./*.spec; }

$ cd /usr/include
$ h2ph -al * sys/*

# Warning from h2ph: Destination directory /usr/local/lib64/perl5 doesn't exist or
isn't a directory

$ mkdir -p $BUILD_DIR/{BUILD,RPMS,SOURCES,SPECS,SRPMS}

$ mkdir /root/warewulf
$ echo p | svn co https://warewulf.lbl.gov/svn/trunk/ /root/warewulf

$ build_it $WW_DIR/common $BUILD_DIR
$ yum install -y $RPM_DIR/noarch/warewulf-common-*.rpm

$ build_it $WW_DIR/provision $BUILD_DIR
$ yum install -y $RPM_DIR/x86_64/warewulf-provision-*.rpm

$ build_it $WW_DIR/cluster $BUILD_DIR
$ yum install -y $RPM_DIR/x86_64/warewulf-cluster-*.rpm

## remove debian.tmpl from Makefil* in vnfs/libexec/wwwmkchroot
$ sed -i 's+debian.tmpl+ +g' $WW_DIR/vnfs/libexec/wwwmkchroot/Makefil*
$ build_it $WW_DIR/vnfs $BUILD_DIR
$ yum install -y $RPM_DIR/noarch/warewulf-vnfs-*.rpm

# monitor
$ ln -s /usr/lib64/libjson.so.0 /usr/lib64/libjson.so
$ ln -s /usr/lib64/libjson-c.so.2 /usr/lib64/libjson-c.so
$ ln -s /usr/lib64/libsqlite3.so.0 /usr/lib64/libsqlite3.so
$ yum -y install json-c-devel json-devel sqlite-devel
$ build_it $WW_DIR/monitor $BUILD_DIR
$ yum -y install $RPM_DIR/x86_64/warewulf-monitor-0*.rpm
$ yum -y install $RPM_DIR/x86_64/warewulf-monitor-cl*.rpm
# Added by Vince Forgetta
$ yum -y install $RPM_DIR/x86_64/warewulf-monitor-node*.rpm

# build_it $WW_DIR/ipmi $BUILD_DIR
# yum -y install $RPM_DIR/x86_64/warewulf-ipmi*.rpm

$ rpm -qa | grep warewulf
warewulf-provision-gpl_sources-3.6.99-0.r1945.el7.centos.x86_64
warewulf-vnfs-3.6.99-0.r1947M.el7.centos.noarch
warewulf-monitor-0.0.1-0.r1939.el7.centos.x86_64
warewulf-provision-3.6.99-0.r1945.el7.centos.x86_64
warewulf-cluster-node-3.6.99-0.r1933.el7.centos.x86_64
warewulf-common-3.6.99-0.r1936.el7.centos.noarch
```

```
warewulf-cluster-3.6.99-0.r1933.el7.centos.x86_64
warewulf-provision-server-3.6.99-0.r1945.el7.centos.x86_64
warewulf-monitor-cli-0.0.1-0.r1939.el7.centos.x86_64
```

Configure

Change network interface card used to provision OS image:

```
$ vi /etc/warewulf/provision.conf

# What is the default network device that the master will use to
# communicate with the nodes?
network device = eno1
```

Enable tftp:

```
$ vi /etc/xinetd.d/tftp
# default: off
# description: The tftp server serves files using the trivial file transfer \
#               protocol. The tftp protocol is often used to boot diskless \
#               workstations, download configuration files to network-aware printers, \
#               and to start the installation process for some operating systems.
service tftp
{
    socket_type           = dgram
    protocol              = udp
    wait                 = yes
    user                 = root
    server                = /usr/sbin/in.tftpd
    server_args           = -s /var/lib/tftpboot
    disable              = no
    per_source            = 11
    cps                  = 100 2
    flags                 = IPv4
}
```

Restart xinetd:

```
$ systemctl restart xinetd
```

Setup MariaDB:

```
$ vi ~/.my.cnf
[client]
user = root
password =
$ chmod 0600 ~/.my.cnf
$ vi /etc/warewulf/database.conf
```

```
user = root
password =
$ vi /etc/warewulf/database-root.conf
user = root
password =
```

Setup VNFS

```
$ vi /etc/warewulf/vnfs.conf

# uncomment hybridpath =
```

Initial setup to provision nodes:

```
$ systemctl enable dhcpd
$ wwinitt ALL
# Make sure all relevant test are OK
$ wwbootstrap `uname -r`
```

PDSH

```
yum install libgenders

wget ftp://rpmfind.net/linux/sourceforge/s/sy/sys-integrity-mgmt-platform/yum/el/7/ext/x86\_64/pdsh-2.29-1el7.x86\_64.rpm

wget ftp://fr2.rpmfind.net/linux/sourceforge/s/sy/sys-integrity-mgmt-platform/yum/el/7/ext/x86\_64/pdsh-rcmd-ssh-2.29-1el7.x86\_64.rpm

yum -y install pdsh-rcmd-ssh-2.29-1el7.x86_64.rpm pdsh-2.29-1el7.x86_64.rpm
```

SSH Key

```
$ ssh-keygen (use empty passphrases)
$ cat ~/.ssh/id_rsa.pub >> ~/.ssh/authorized_keys
$ chmod 400 ~/.ssh/authorized_keys
$ ssh-keygen -f ~/.ssh/identity
```

Provision Configuration

Sync Users, Groups and Passwords

```
$ wwsh -y file import /etc/passwd
$ wwsh -y file import /etc/group
$ wwsh -y file import /etc/shadow
$ wwsh -y provision set --fileadd passwd,group,shadow \*
$ wwsh file sync \*
```

```
# To sync files right away
$ pdsh -w D1P-HYDRARS01 "SLEEPTIME=0 /warewolf/bin/wwgetfiles"
```

Gigabit Network Card

```
$ vi ~/wwtemplates/ifcfg-eth3.ww
TYPE=Ethernet
BOOTPROTO=none
ONBOOT=yes
USERCTL=no
NM_CONTROLLED=no
PREFIX=24
HWADDR=%{NETDEVS::ETH3::HWADDR}
IPADDR=%{NETDEVS::ETH3::IPADDR}
NAME=eth3
DEVICE=eth3
DEFROUTE=yes
PEERDNS=no
DNS1=172.21.8.112
DNS2=172.21.8.111
DOMAIN=ldi.lan
```

Import and sync file:

```
$ wwsh file import ~/wwtemplates/ifcfg-eth3.ww --path=/etc/sysconfig/network-scripts/ifcfg-eth3 --name=ifcfg-eth3.ww
$ wwsh -y node set D1P-HYDRARS02 --netdev=eth3 --ipaddr=192.168.13.21 --netmask=255.255.255.0 --hwaddr=0c:c4:7a:1f:8b:9b
$ wwsh provision set --fileadd=ifcfg-eth3.ww D1P-HYDRARS[01-04]
$ wwsh file sync
$ systemctl restart dhcpd
```

Gatway

```
# vi ~/wwtemplates/network.ww
GATEWAY=172.21.13.1
GATEWAYDEV=eth0
```

Setup domain name server:

```
$ vi ~/wwtemplates/resolv.conf.ww
search ldi.lan
nameserver 172.21.8.112
nameserver 172.21.8.111

$ wwsh -y file import ~/wwtemplates/resolv.conf.ww --path=/etc/resolv.conf --
name=resolv.conf.ww
$ wwsh -y provision set --fileadd=resolv.conf.ww D1P-HYDRARS[01-04]
$ wwsh file sync
```

Import and sync file:

```
$ wwsh file import ~/wwtemplates/network.ww --path=/etc/sysconfig/network --
name=network.ww
$ wwsh -y provision set --fileadd=network.ww D1P-HYDRARS[01-04]
```

```
$ wssh file sync \*  
$ systemctl restart dhcpd
```

Additional Packages

```
$ yum install emacs  
$ yum install lsof
```