linux

linux cobbler 自动安装centos6与centos7系统

1.1 Cobbler介绍

> Cobbler 是一个免费开源系统安装部署软件，用于自动化网络安装操作系统。
> Cobbler 集成了 DNS，DHCP，软件包更新，带外管理以及配置管理，方便操作系统安装自动化。
> Cobbler 可以支持PXE启动，操作系统重新安装，以及虚拟化客户机创建，包括Xen，KVM or VMware.
> Cobbler 透过koan程序以支持虚拟化客户机安装。
> Cobbler 可以支持管理复杂网路环境，如建立在链路聚合以太网的桥接环境。

1.2 cobbler 服务集成

```
1 pxe  服务
2 DHCP
3 Rsync
4 HTTP
5 DNS
6 Kickstart
7 IPMI      电源管理
```

1.3 cobbler的设计方式

> 发行版（distro） ：表示一个操作系统，它承载了内核和initrd的信息，以及内核等其他数据
> 存储库 （repository）：保存了一个yum或者rsync存储库的镜像信息
> 配置文件（profile）：包含了一个发行版（distro），一个kickstart文件以及可能的存储库（repository），还包含了更多的内核参数等其他数据
> 系统（system）：表示要配给的机器，它包含了一个配置文件或一个镜像，还包含了ip和mac地址，电源管理（地址,凭据,类型）以及更为专业的数据信息
> 镜像（image）：可替换一个包含不属于此类别的文件的发行版对象（eg：无法为内核和initrd的对象）

以上各个组件中， 发行版，存储库， 配置文件为必须配置项

只有在虚拟环境中，必须要用cobbler来引导虚拟机启动时候，才会用到系统组件

但事实上，在生产环境中需要大量的虚拟机实例的话，通常利用openstack等来实现虚拟机节点

1.4 cobbler 运行的流程

```
- DHCP
- Client       （从dhcp服务器获取地址，访问next_server的ip地址）
- Next_server  （获取启动内核，initrd等文件）
- tftp         （pxe引导文件  启动cobbler选择界面）
- kickstart     （确定加载项，根据nfs, http，ftp等共享）
```

1.5 cobbler units

```
- cobbler
- cobbler-web
```

2.1 准备环境

1 安装cobbler 依据cobbler check检查结果，对setting主配置文件的设置，进行相关的修正设置

2 启动先相关的httpd cobbler服务，使用cobbler rsync 同步设置

3 配置 cobbler 所依赖的服务

dhcp: isc dhcpd ， dnsmasq（必须服务，选择其一管理即可）

dns: bing ， dnsmasq（可选）

rysnc: rsync（必须服务）

tftp: in，tftp（tftp-server），cobbler自带的tftp（必须服务 ，选择其中其一管理即可）

4 安装epel源

```
[root@kvm ~]# yum install -y wget
[root@kvm ~]# wget -O /etc/yum.repos.d/epel.repo http://mirrors.aliyun.com/repo/epel-6.repo
```

5 设置ip转发

```
[root@kvm ~]# echo 1 > /proc/sys/net/ipv4/ip_forward
[root@kvm ~]# sed -i 's/net.ipv4.ip_forward = 0/net.ipv4.ip_forward = 1/' /etc/sysctl.conf
[root@kvm ~]# sysctl -p
```

2.2 安装Cobbler

```
[root@kvm ~]#yum -y install cobbler dhcp httpd xinetd tftp-server syslinux pykickstart xinetd rsync cobbler-web
```

2.3 调整为动态配置Cobbler

动态更新配置

对于Cobbler2.4来说，有一个重要的功能，就是让你可以不需要手工去编辑setting配置文件，直接使用命令去修改，默认这个功能是不启用，你需要启用。

```
[root@kvm cobbler]# cp settings   settings.bak
[root@kvm cobbler]# sed -i 's/^[[:space:]]\+/ /' /etc/cobbler/settings [root@kvm cobbler]# sed -i 's/allow_dynamic_settings: 0/allow_dynamic_settings: 1/g' /etc/cobbler/settings
[root@kvm cobbler]# /etc/init.d/cobblerd restart
Stopping cobbler daemon:                              [  OK  ]
Starting cobbler daemon:                              [  OK  ]
```

2.4 检查需要安装的配置

```
[root@note1 ~]# cobbler check
The following are potential configuration items that you may want to fix:

1 : The 'server' field in /etc/cobbler/settings must be set to something other than localhost, or kickstarting features will not work.  This should be a resolva
ble hostname or IP for the boot server as reachable by all machines that will use it.
2 : For PXE to be functional, the 'next_server' field in /etc/cobbler/settings must be set to something other than 127.0.0.1, and should match the IP of the boo
t server on the PXE network.
3 : change 'disable' to 'no' in /etc/xinetd.d/tftp
4 : some network boot-loaders are missing from /var/lib/cobbler/loaders, you may run 'cobbler get-loaders' to download them, or, if you only want to handle x86/
x86_64 netbooting, you may ensure that you have installed a *recent* version of the syslinux package installed and can ignore this message entirely.  Files in t
his directory, should you want to support all architectures, should include pxelinux.0, menu.c32, elilo.efi, and yaboot. The 'cobbler get-loaders' command is th
e easiest way to resolve these requirements.
5 : change 'disable' to 'no' in /etc/xinetd.d/rsync
6 : since iptables may be running, ensure 69, 80/443, and 25151 are unblocked
7 : reposync is not installed, need for cobbler reposync, install/upgrade yum-utils?
8 : debmirror package is not installed, it will be required to manage debian deployments and repositories
9 : The default password used by the sample templates for newly installed machines (default_password_crypted in /etc/cobbler/settings) is still set to 'cobbler' a
nd should be changed, try: "openssl passwd -1 -salt 'random-phrase-here' 'your-password-here'" to generate new one
10 : fencing tools were not found, and are required to use the (optional) power management features. install cman or fence-agents to use them
```

```
#解决方法
[root@kvm cobbler]# cobbler setting edit --name=server --value=10.10.10.10
2: [root@kvm cobbler]# cobbler setting edit --name=next_server --value=10.10.10.10
3: 可以忽略
4: [root@note1 loaders]# openssl passwd -1 -salt `openssl rand -hex 4` "budongshu"
$1$557d907c$AmKQun9Jxitt1D6aQ8DUC.
[root@kvm cobbler]# cobbler setting  edit --name=default_password_crypted \
> --value="$1$557d907c$AmKQun9Jxitt1D6aQ8DUC."
5: [root@kvm cobbler]# yum install cman          #安装电源管理工具
#开机启动
[root@note1 cobbler]# chkconfig tftp on
[root@note1 cobbler]# chkconfig rsync on
[root@note1 cobbler]# /etc/init.d/xinetd restart
#下载启动菜单
[root@note1 cobbler]# cobbler get-loaders
#防止误重装系统 选项 pxe_just_one
[root@note1 cobbler]# cobbler setting edit --name=pxe_just_once --value=1
#开启cobbler 管理dhcp服务器
[root@note1 cobbler]# cobbler setting edit --name=manage_dhcp --value="1"


2.5 同步cobbler
[root@kvm cobbler]# service cobblerd restart
Stopping cobbler daemon:                               [  OK  ]
Starting cobbler daemon:                               [  OK  ]
[root@kvm cobbler]# cobbler sync
task started: 2015-11-06_094656_sync
task started (id=Sync, time=Fri Nov  6 09:46:56 2015)
running pre-sync triggerscleaning treesremoving: /var/lib/tftpboot/grub/imagescopying bootloaders
trying hardlink /var/lib/cobbler/loaders/pxelinux.0 -> /var/lib/tftpboot/pxelinux.0
trying hardlink /var/lib/cobbler/loaders/menu.c32 -> /var/lib/tftpboot/menu.c32
trying hardlink /var/lib/cobbler/loaders/yaboot -> /var/lib/tftpboot/yaboot
trying hardlink /usr/share/syslinux/memdisk -> /var/lib/tftpboot/memdisk
trying hardlink /var/lib/cobbler/loaders/grub-x86_64.efi -> /var/lib/tftpboot/grub/grub-x86_64.efi
trying hardlink /var/lib/cobbler/loaders/grub-x86.efi -> /var/lib/tftpboot/grub/grub-x86.efi
copying distros to tftpboot
copying imagesgenerating PXE configuration files
generating PXE menu structurerendering TFTPD files
generating /etc/xinetd.d/tftpcleaning link caches
running post-sync triggersrunning python triggers from /var/lib/cobbler/triggers/sync/post/*
running python trigger cobbler.modules.sync_post_restart_services
running shell triggers from /var/lib/cobbler/triggers/sync/post/*
running python triggers from /var/lib/cobbler/triggers/change/*
running python trigger cobbler.modules.scm_track
running shell triggers from /var/lib/cobbler/triggers/change/**** TASK COMPLETE ***
重启
[root@kvm cobbler]# service cobblerd restart
Stopping cobbler daemon:                               [  OK  ]
Starting cobbler daemon:                               [  OK  ]
再次检查
[root@kvm cobbler]# cobbler check
The following are potential configuration items that you may want to fix:
1 : debmirror package is not installed, it will be required to manage debian deployments and repositoriesRestart
cobblerd and then run 'cobbler sync' to apply changes.
#上面配置成功
```

2.6 配置dhcp服务

```
[root@note1 cobbler]# vim /etc/cobbler/dhcp.template
```

#其他需要动，只修改下面的几个内容

```
subnet 10.10.10.0 netmask 255.255.255.0 {
    option routers              10.10.10.10;
    option domain-name-servers 114.114.114.114;
    option subnet-mask          255.255.255.0;
      range dynamic-bootp       10.10.10.20 10.10.10.50;
      default-lease-time        21600;
      max-lease-time            43200;
      next-server               $next_server;
      ......
```

此时的dhcpd的配置就被cobbler覆盖,由cobbler来管理配置文件,截取的一部分,后面还有内容

```
[root@note1 cobbler]# vim  /etc/dhcp/dhcpd.conf
# **************************************************************
# Cobbler managed dhcpd.conf file
# generated from cobbler dhcp.conf template (Sun Jan 31 15:47:49 2016)
# Do NOT make changes to /etc/dhcpd.conf. Instead, make your changes
# in /etc/cobbler/dhcp.template, as /etc/dhcpd.conf will be
# overwritten.
# **************************************************************
ddns-update-style interim;
allow booting;
allow bootp;
ignore client-updates;
set vendorclass = option vendor-class-identifier;
option pxe-system-type code 93 = unsigned integer 16;
subnet 10.10.10.0 netmask 255.255.255.0 {
......
......
......
```

编写启动脚本

```
cat >>/etc/init.d/cobbler<<EOF
#!/bin/bash
# chkconfig: 345 80 90
# description:cobbler
case \$1 in
start)
/etc/init.d/httpd start
/etc/init.d/xinetd start
/etc/init.d/dhcpd start
/etc/init.d/cobblerd start
;;
stop)
/etc/init.d/httpd stop
/etc/init.d/xinetd stop
/etc/init.d/dhcpd stop
/etc/init.d/cobblerd stop
;;
restart)
/etc/init.d/httpd restart
/etc/init.d/xinetd restart
/etc/init.d/dhcpd restart
/etc/init.d/cobblerd restart
;;
status)
/etc/init.d/httpd status
/etc/init.d/xinetd status
/etc/init.d/dhcpd status
/etc/init.d/cobblerd status
;;
sync)
cobbler sync
;;
*)
echo "Input error,please in put 'start|stop|restart|status|sync'!"
exit 2
;;
esac
EOF
# chmod +x /etc/init.d/cobbler
# chkconfig cobbler on
```

2.7 配置ks文件

```
[root@linux-node1 ~]# cobbler    #cobbler命令
usage
=====
cobbler <distro|profile|system|repo|image|mgmtclass|package|file> ...
[add|edit|copy|getks*|list|remove|rename|report] [options|--help]
cobbler <aclsetup|buildiso|import|list|replicate|report|reposync|sync|validateks|version|signature|get-loaders|hardlink> [options|--help]
[root@linux-node1 ~]# cobbler import --help  # 导入镜像
Usage: cobbler [options]
Options:
-h, --help             show this help message and exit
--arch=ARCH            OS architecture being imported
--breed=BREED          the breed being imported
--os-version=OS_VERSION
the version being imported
--path=PATH            local path or rsync location
--name=NAME            name, ex 'RHEL-5'
--available-as=AVAILABLE_AS
tree is here, don't mirror
--kickstart=KICKSTART_FILE
assign this kickstart file
--rsync-flags=RSYNC_FLAGS
pass additional flags to rsync
cobbler check     核对当前设置是否有问题
cobbler list      列出所有的cobbler元素
cobbler report    列出元素的详细信息
cobbler sync      同步配置到数据目录,更改配置最好都要执行下
cobbler reposync  同步yum仓库
cobbler distro    查看导入的发行版系统信息
cobbler system    查看添加的系统信息
cobbler profile   查看配置信息
```

2.8 导入系统到cobbler

centos6.5

```
[root@kvm cobbler]# mount /dev/cdrom  /mnt
[root@note1 cobbler]# cobbler import --path=/mnt/ --name=Centos-6.5-x86_64 --arch=x86_64
[root@note1 cobbler]# cobbler distro report --name=Centos-6.5-x86_64
Name                        : Centos-6.5-x86_64
Architecture                : x86_64
TFTP Boot Files             : {}
Breed                       : redhat
Comment                     :
Fetchable Files             : {}
Initrd                      : /var/www/cobbler/ks_mirror/Centos-6.5-x86_64/images/pxeboot/initrd.img
Kernel                      : /var/www/cobbler/ks_mirror/Centos-6.5-x86_64/images/pxeboot/vmlinuz
Kernel Options              : {}
Kernel Options (Post Install) : {}
Kickstart Metadata          : {'tree': '
Management Classes          : []
OS Version                  : rhel6
Owners                      : ['admin']
Red Hat Management Key       : <<inherit>>
Red Hat Management Server    : <<inherit>>
Template Files              : {}
```

centos7

```
[root@note1 ~]# umount /mnt
[root@note1 cobbler]# cobbler import --path=/mnt/ --name=Centos-7-x86_64 --arch=x86_64
[root@note1 kickstarts]# cobbler distro report --name=Centos-7-x86_64
Name                          : Centos-7-x86_64
Architecture                  : x86_64
TFTP Boot Files               : {}
Breed                         : redhat
Comment                       :
Fetchable Files               : {}
Initrd                        : /var/www/cobbler/ks_mirror/Centos-7-x86_64/images/pxeboot/initrd.img
Kernel                        : /var/www/cobbler/ks_mirror/Centos-7-x86_64/images/pxeboot/vmlinuz
Kernel Options                : {}
Kernel Options (Post Install) : {}
Kickstart Metadata            : {'tree': 'http://@@http_server@@/cblr/links/Centos-7-x86_64'}
Management Classes            : []
OS Version                    : rhel7
Owners                        : ['admin']
Red Hat Management Key        : <<inherit>>
Red Hat Management Server     : <<inherit>>
Template Files                : {}
```

```
[root@note1 cobbler]# cobbler distro list
    Centos-6.5-x86_64
    Centos-7-x86_64
```

2.9 修改默认ks文件

```
#配置centos6.5
[root@note1 kickstarts]#cd /var/lib/cobbler/kickstarts/
[root@note1 kickstarts]#cp sample_end.ks    CentOS-6.5-x86_64.cfg
[root@note1 kickstarts]#cobbler profile edit --name=Centos-6.5-x86_64 --kickstart=/var/lib/cobbler/kickstarts/CentOS-6.5-x86_64.cfg
[root@note1 kickstarts]# cat CentOS-6.5-x86_64.cfg
# kickstart template for Fedora 8 and later.
# (includes %end blocks)
# do not use with earlier distros
#platform=x86, AMD64, or Intel EM64T
# System authorization information
auth  --useshadow  --enablemd5
# System bootloader configuration
bootloader --location=mbr
# Partition clearing information
clearpart --all --initlabel
# Use text mode install
text
# Firewall configuration
firewall --enabled
# Run the Setup Agent on first boot
firstboot --disable
# System keyboard
keyboard us
# System language
lang en_US
# Use network installation
url --url=$tree
# If any cobbler repo definitions were referenced in the kickstart profile, include them here.
$yum_repo_stanza
# Network information
$SNIPPET('network_config')
# Reboot after installation
reboot
#Root password
rootpw --iscrypted $default_password_crypted
# SELinux configuration
selinux --disabled
# Do not configure the X Window System
skipx
# System timezone
timezone  America/New_York
# Install OS instead of upgrade
install
# Clear the Master Boot Record
zerombr
# Allow anaconda to partition the system as needed
autopart
%pre
$SNIPPET('log_ks_pre')
$SNIPPET('kickstart_start')
$SNIPPET('pre_install_network_config')
# Enable installation monitoring
$SNIPPET('pre_anamon')
%end
%packages
$SNIPPET('func_install_if_enabled')
%end
%post --nochroot
$SNIPPET('log_ks_post_nochroot')
%end
%post
$SNIPPET('log_ks_post')
# Start yum configuration
$yum_config_stanza
# End yum configuration
$SNIPPET('post_install_kernel_options')
$SNIPPET('post_install_network_config')
$SNIPPET('func_register_if_enabled')
$SNIPPET('download_config_files')
$SNIPPET('koan_environment')
$SNIPPET('redhat_register')
$SNIPPET('cobbler_register')
# Enable post-install boot notification
$SNIPPET('post_anamon')
# Start final steps
$SNIPPET('kickstart_done')
# End final steps
```

```
#配置centos7
[root@note1 kickstarts]#cobbler profile edit --name=Centos-7-x86_64 --kickstart=/var/lib/cobbler/kickstarts/CentOS-7-x86_64.cfg
[root@note1 kickstarts]# cat CentOS-7-x86_64.cfg
#obbler for Kickstart Configurator for CentOS 7.1 by yao zhang
install
url --url=$tree
text
lang en_US.UTF-8
keyboard us
zerombr
bootloader --location=mbr
# Network information
$SNIPPET('network_config')
timezone --utc Asia/Shanghai
authconfig --enableshadow --passalgo=sha512
rootpw  --iscrypted $default_password_crypted
clearpart --all --initlabel
part /boot --fstype xfs --size 500
part swap --size 2000
part / --fstype xfs --size 20000
part /data --fstype xfs --size 30000
firstboot --disable
selinux --disabled
firewall --disabled
logging --level=info
reboot
%pre
$SNIPPET('log_ks_pre')
$SNIPPET('kickstart_start')
$SNIPPET('pre_install_network_config')
# Enable installation monitoring
$SNIPPET('pre_anamon')
%end
%packages
@base
@compat-libraries
@debugging
@development
tree
nmap
sysstat
lrzsz
dos2unix
telnet
iptraf
ncurses-devel
openssl-devel
zlib-devel
OpenIPMI-tools
screen
%end
%post
systemctl disable postfix.service
```

```
#修改centos7 网卡label
# 修改安装系统的内核参数，在CentOS7系统有一个地方变了，就是网卡名变成eno16777736这种形式，但是为了运维标准化，
#我们需要将它变成我们常用的eth0，因此使用下面的参数。但要注意是CentOS7才需要下面的步骤，CentOS6不需要。
[root@note1 kickstarts]# cobbler profile edit --name=CentOS-7.1-x86_64 --kopts='net.ifnames=0 biosdevname=0'
[root@note1 kickstarts]# cobbler profile report --name=CentOS-7-x86_64
Name                            : CentOS-7-x86_64
TFTP Boot Files                 : {}
Comment                         :
DHCP Tag                        : default
Distribution                    : Centos-7-x86_64
Enable gPXE?                    : 0
Enable PXE Menu?                : 1
Fetchable Files                 : {}
Kernel Options                  : {'biosdevname': '0', 'net.ifnames': '0'}
Kernel Options (Post Install)   : {}
Kickstart                       : /var/lib/cobbler/kickstarts/CentOS-7-x86_64.cfg
Kickstart Metadata              : {}
Management Classes              : []
Management Parameters           : <<inherit>>
Name Servers                    : []
Name Servers Search Path        : []
Owners                          : ['admin']
Parent Profile                  :
Internal proxy                  :
Red Hat Management Key          : <<inherit>>
Red Hat Management Server        : <<inherit>>
Repos                           : []
Server Override                 : <<inherit>>
Template Files                  : {}
Virt Auto Boot                  : 1
Virt Bridge                     : xenbr0
Virt CPUs                       : 1
Virt Disk Driver Type           : raw
Virt File Size(GB)              : 5
Virt Path                       :
Virt RAM (MB)                   : 512
Virt Type                       : kvm
```

#查看

```
[root@note1 kickstarts]# cobbler profile report  Centos-7-x86_64
[root@note1 kickstarts]# cobbler profile report  Centos-6.5-x86_64
```

```
[root@note1 kickstarts]# cobbler list
distros:   Centos-6.5-x86_64   Centos-7-x86_64
profiles:   Centos-6.5-x86_64   Centos-7-x86_64
systems:   budongshu
repos:
images:
mgmtclasses:
packages:
files:
```

#配置本地yum仓库 可以忽略

```
[root@localhost ~]# mkdir /tmp/rpms
[root@localhost ~]# createrepo /tmp/rpms   #放入rpm包,执行此步骤
[root@localhost ~]# cobbler repo add --mirror=/tmp/rpms --name=local
[root@localhost ~]# cobbler reposync
```

#配置本地epel仓库 可以忽略

```
[root@localhost ~]# cobbler repo add --mirror=http://mirrors.aliyun.com/epel/6/x86_64/ --name=epel
[root@localhost ~]# cobbler reposync --tries=3 --no-fail   #同步epel仓库到本地,需要较长时间#查看已添加的repo
[root@localhost ~]# cobbler repo list   epel   local
```

#添加repo到profile 可以忽略

```
[root@localhost ~]# cobbler profile edit --name=Centos-6.5-x86_64 --repos="epel local"
[root@localhost ~]# cobbler sync
```

#绑定mac地址 ,实现开机自动选择
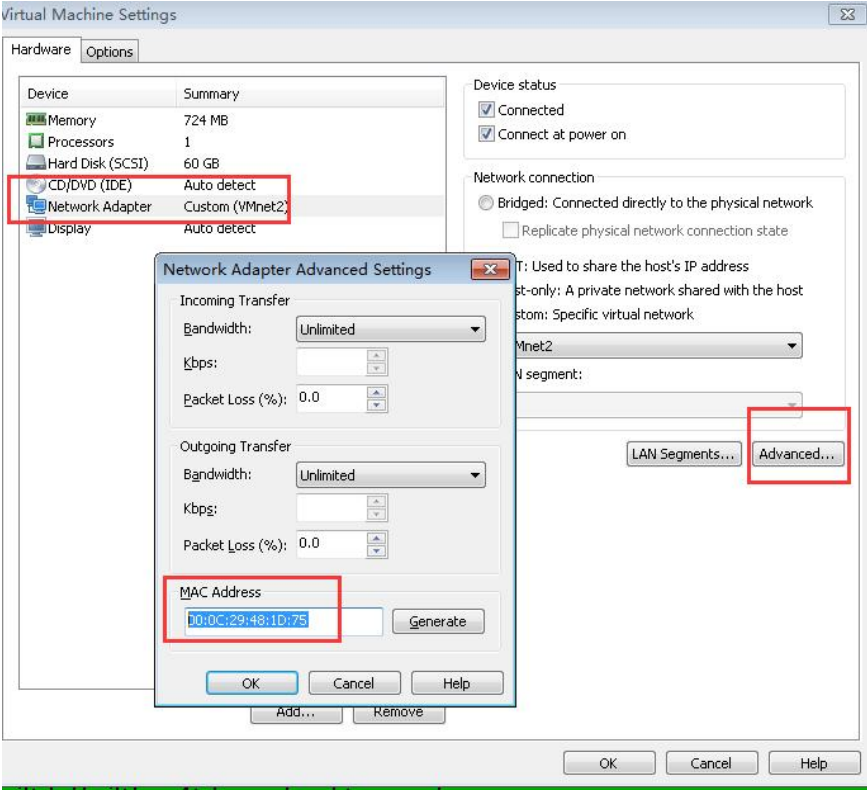
(/static/blog/imagesw8/2016/04/06/full/f2cf63786bf46fb34d77a8b56ddeeae5f85c8dba.jpg)

#配置绑定mac地址和IP地址,开机自动选择

```
cobbler system add --name=budongshu --mac=00:0C:29:48:1D:75 --profile=Centos-7-x86_64  \--ip-address=10.10.10.23 --subnet=255.255.255.0 --gateway=10.10.10.10 --
interface=eth0 \--static=1 --hostname=budongshu --name-servers="114.114.114.114 8.8.8.8"
```

3.0 配置cobbler web界面

```
    cobbler-web支持多种认证方式，如authn_configfil、authn_ldap或authn_pam等，下面我们基于authn_pam做认证
#修改认证方式
[root@note1 web]# vim /etc/cobbler/modules.conf
[authentication]
module = authn_pam
添加系统用户
[root@note1 web]# useradd cobbler
[root@note1 web]# echo "cobbler" | passwd --stdin cobbler
添加用户到管理组
[root@note1 web]# vim /etc/cobbler/modules.conf
[admins]
admin = "cobbler"
重启服务
Stopping cobbler daemon:                          [  OK  ]
Starting cobbler daemon:                          [  OK  ]
[root@note1 web]# service httpd restart
Stopping httpd:                                   [  OK  ]
Starting httpd:                                   [  OK  ]
```

过去酒逢知己千杯少，现在酒逢千杯知己少"。   不甚酒力，体会不了酒的美味，但却能感受知己的妙处。没有朋友的人生是孤独的，不完整的，可是，因为生活的忙碌，渐渐少了联络，友谊就变的淡了，所以，抽点时间，联络朋友一起聊聊天，让情谊在笑声中升腾，当朋友遇到了难题的时候，一定要记得挺身而出，即便帮不了忙，安慰也是最大的支持!。

优质好货