2017

Automation Project

BASH SCRIPT PROGRAMMING

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Contents

1- Introduction:

Automation can be defined as the technology by which a process or procedure is performed without human assistance.

2- Project description:

Our project has been developed by bash scripting programming for run it on any Linux platform, we implement it on CentOS 7, that script for automat the following task:

1- Install FTP.

2- Create local repository server.

3- Configure repository client to connect to local server.

4- Configure Firewall to add FTP protocol.

5- Configure network bridge and set it as a bridge for physical network card.

6- Install all packages are required for virtualization.

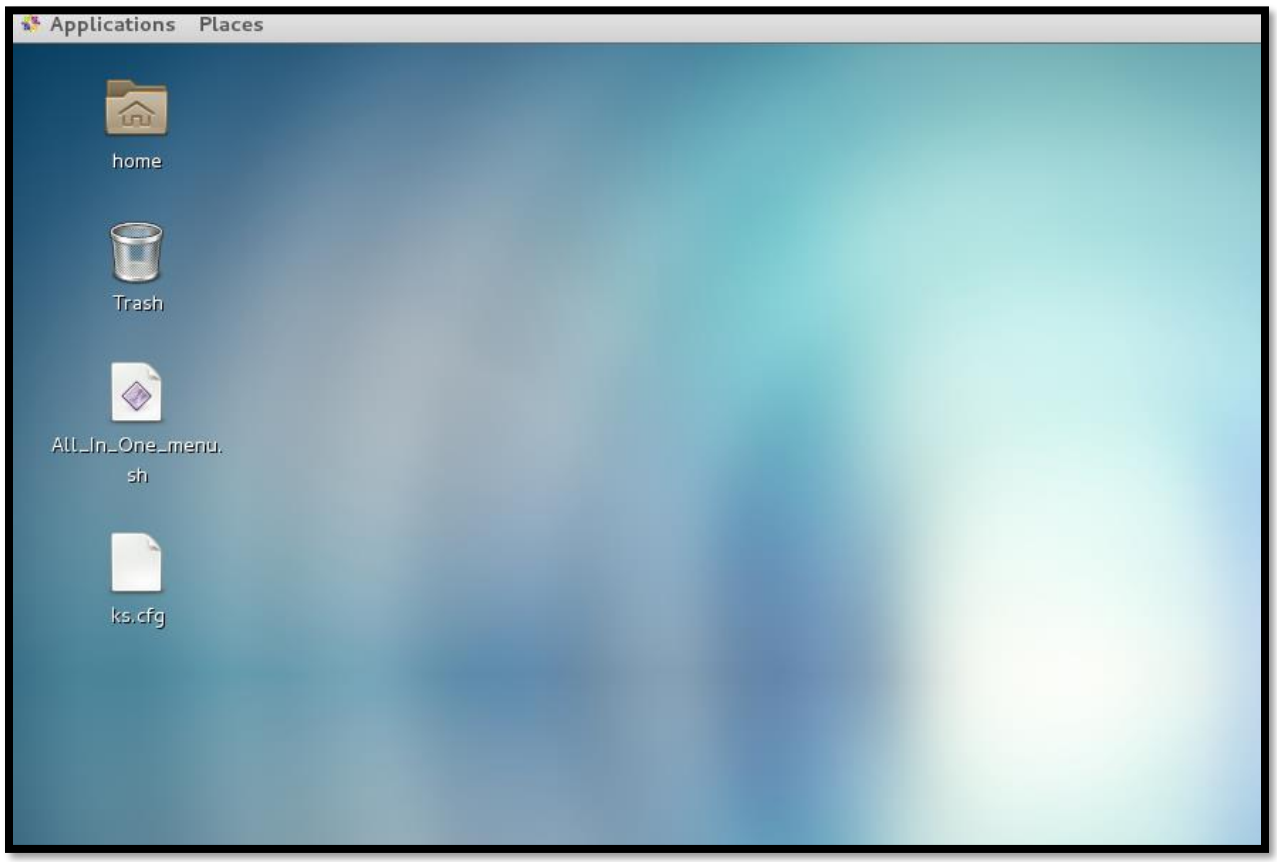
7- Create New Virtual machine by kickstart file (unattended installation).

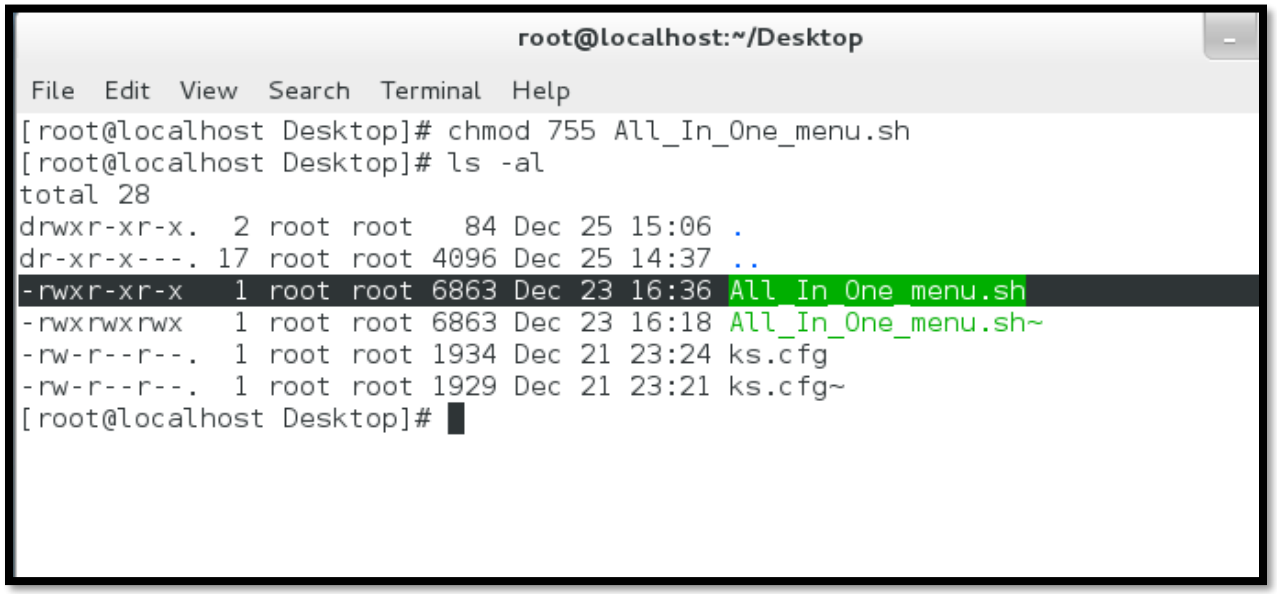
3- Implementation prerequisites:

- ✓ Before run this menu, you must be mount CentOS DVD media.
- ✓ Copy ks.cfg and All_IN_One_menu.sh files from **project CD** to you Centos root Desktop.
- ✓ Change permission by chmod 755 All_IN_One_menu.sh
- ✓ You must be copy ISO image of Centos to **/var/lib/libvirt/**
- ✓ Check IP address under Create Network bridge section in All_IN_One_menu.sh file, to check if you need to allocate it with your subnet or not.
- ✓ If you will be changing IP for bridge, so you must be change IP for new virtual machine under Create new virtual machine section in All_IN_One_menu.sh file.

4- Implementation Process:

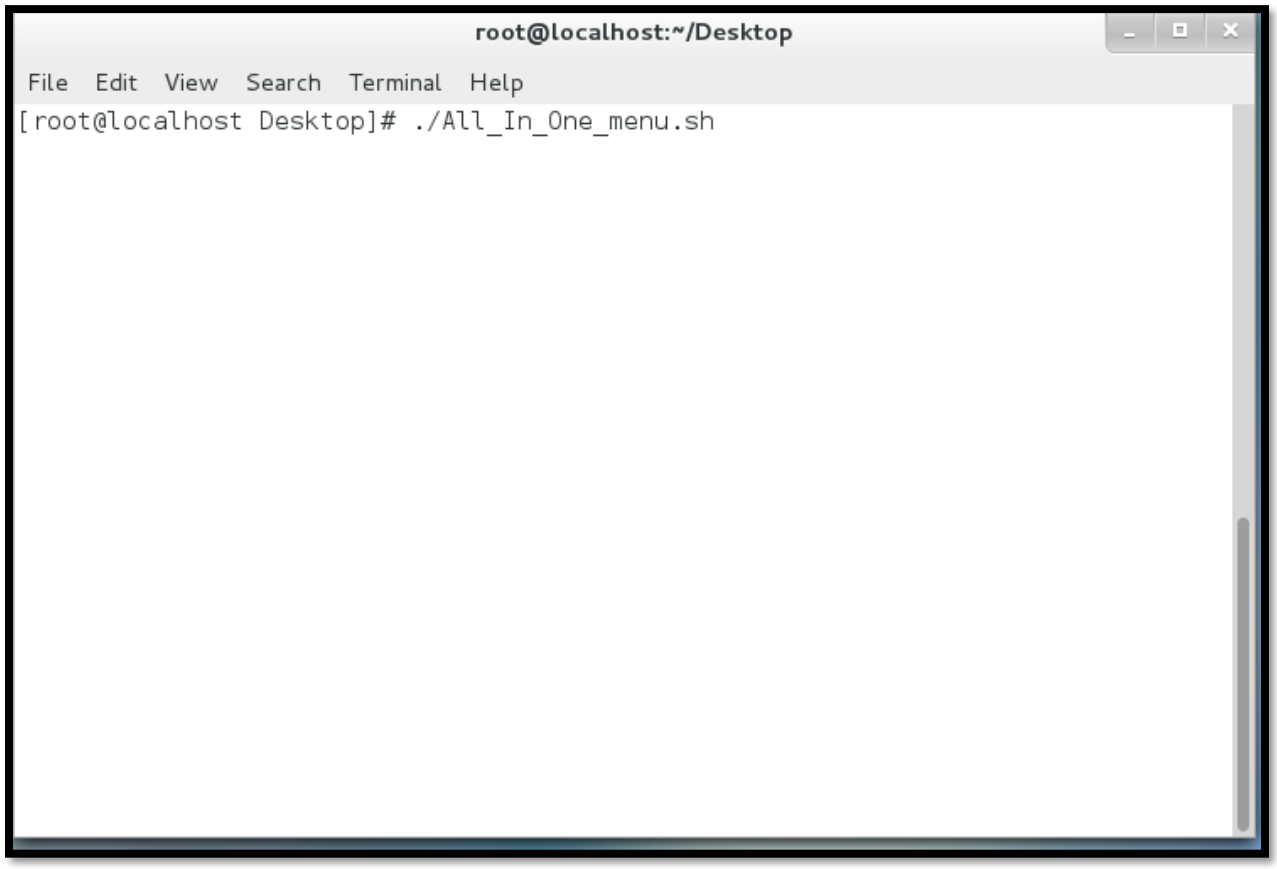
After Copy All_IN_One_menu.sh and ks.cg from project CD to root desktop, you must be change the permission to execute All_IN_One_menu.sh script

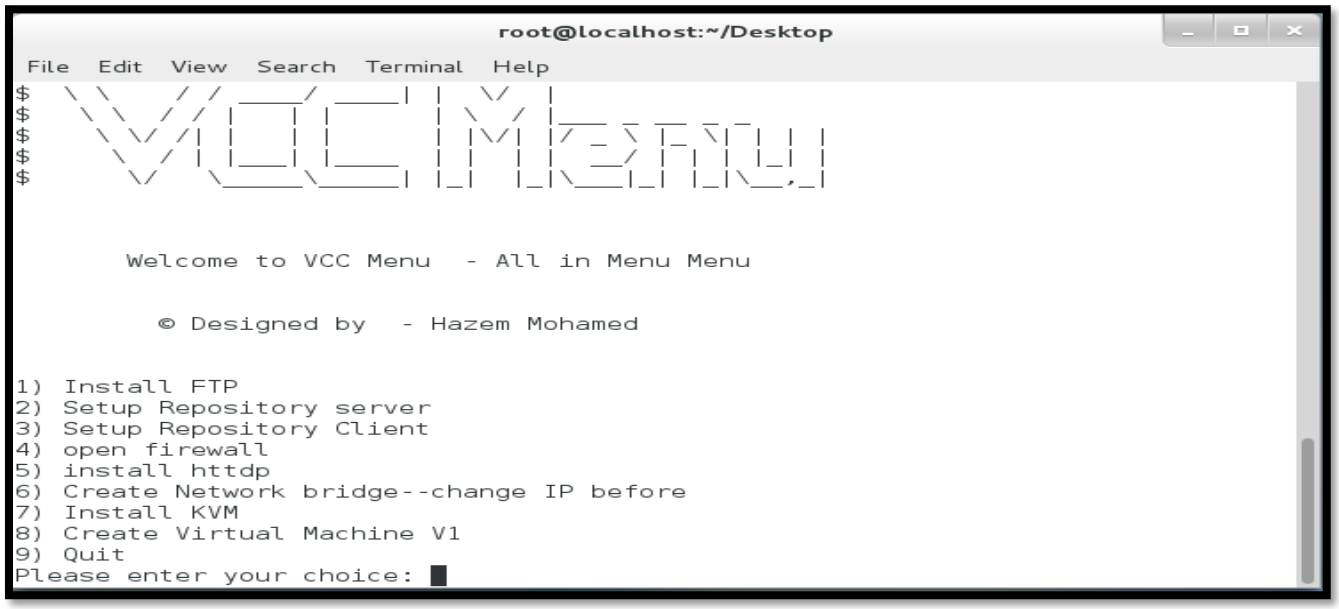




Mount CentOS DVD to your centos machine:

Now, you can run All_In_One_menu.sh script:



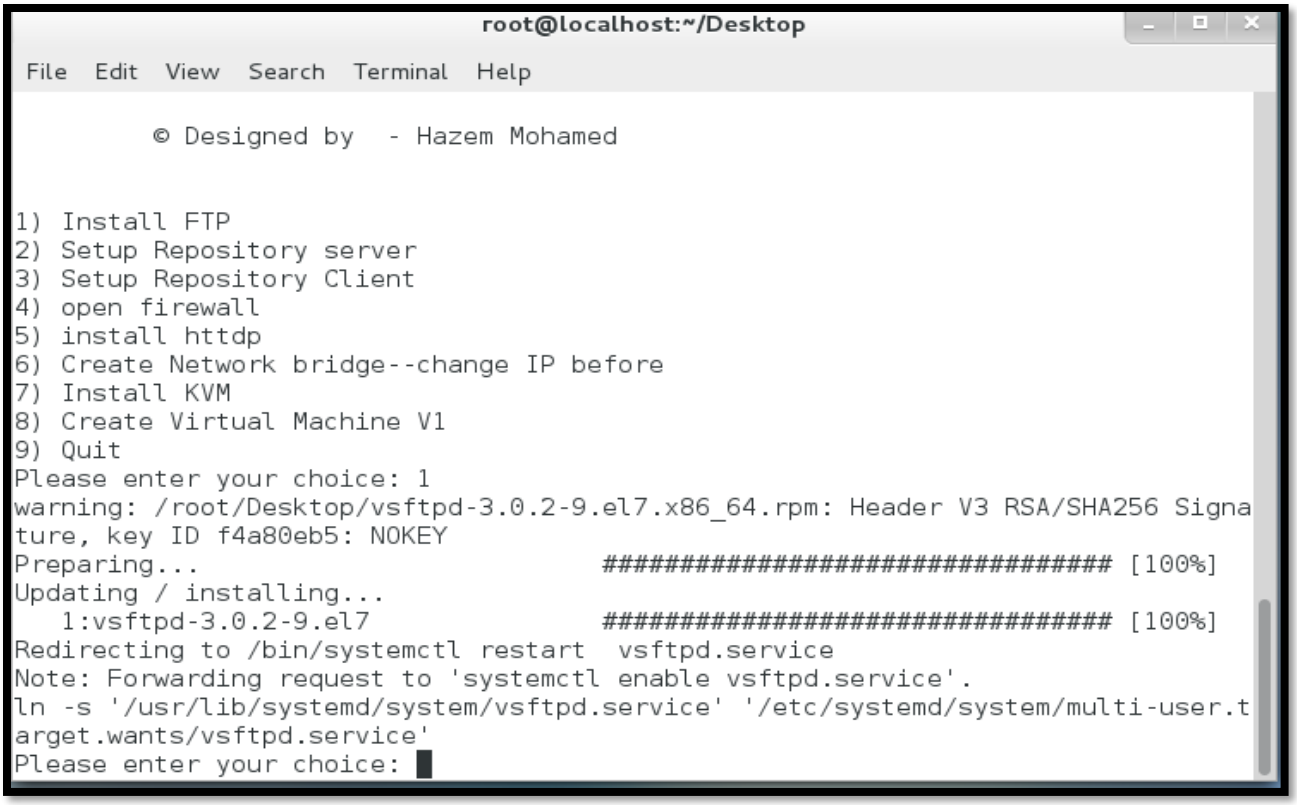


Enter number 1 if you want to install FTP:

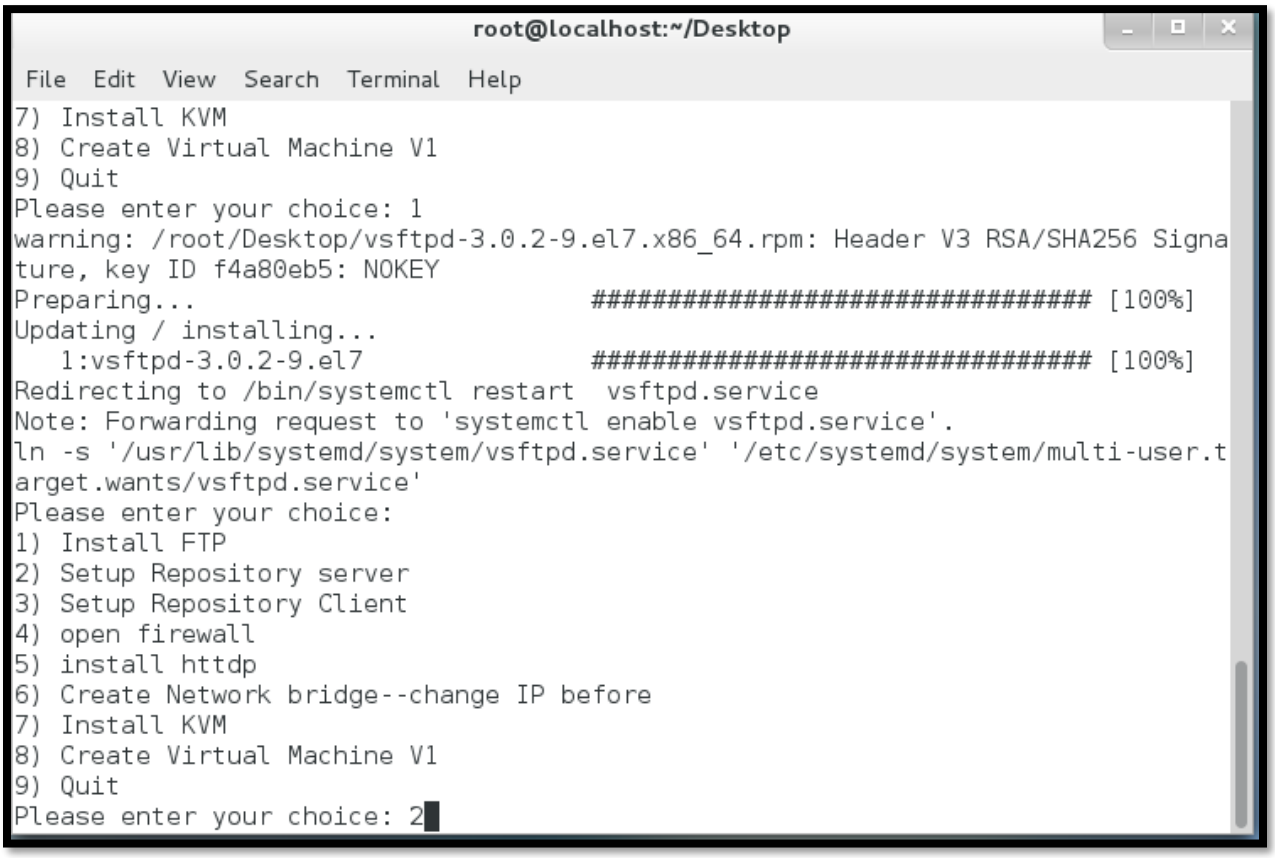
This option will be call the following command from script :

"Install FTP ${opts[1]}")

cp /run/media/root/*/Packages/vsftpd-3.0.2-9.el7.x86_64.rpm /root/Desktop&& chmod 777 /root/Desktop/vsftpd-3.0.2-9.el7.x86_64.rpm&& rpm -ivh /root/Desktop/vsftpd-3.0.2-9.el7.x86_64.rpm&& service vsftpd restart&& chkconfig vsftpd on


root@localhost:~/Desktop
File Edit View Search Terminal Help
© Designed by - Hazem Mohamed
1) Install FTP
2) Setup Repository server
3) Setup Repository Client
4) open firewall
5) install httdp
6) Create Network bridge--change IP before
7) Install KVM
8) Create Virtual Machine V1
9) Quit
Please enter your choice: 1
warning: /root/Desktop/vsftpd-3.0.2-9.el7.x86_64.rpm: Header V3 RSA/SHA256 Signature, key ID f4a80eb5: NOKEY
Preparing... ################################# [100%]
Updating / installing...
1:vsftpd-3.0.2-9.el7 ################################# [100%]
Redirecting to /bin/systemctl restart vsftpd.service
Note: Forwarding request to 'systemctl enable vsftpd.service'.
ln -s '/usr/lib/systemd/system/vsftpd.service' '/etc/systemd/system/multi-user.target.wants/vsftpd.service'
Please enter your choice:

Enter Number 2, if you want to create repository server:



This option will be call the following command from script:

case 2 to create repo folder, then copy packages from CentOS media, then install repo server.

"Setup Repository server ${opts[2]}")

mkdir /var/ftp/pub/myrepo&& cp -a /run/media/root/*/Packages/* /var/ftp/pub/myrepo/&& createrepo /var/ftp/pub/myrepo/&& cp /run/media/root/*/repodata/2*.xml /root/Desktop&& createrepo -g /root/Desktop/2*.xml /var/ftp/pub/myrepo/&& yum clean all

```
Spawning worker 1 with 2116 pkgs
Spawning worker 2 with 2116 pkgs
Spawning worker 3 with 2116 pkgs
Workers Finished
Saving Primary metadata
Saving file lists metadata
Saving other metadata
Generating sqlite DBs
Sqlite DBs complete
Spawning worker 0 with 2117 pkgs
Spawning worker 1 with 2116 pkgs
Spawning worker 2 with 2116 pkgs
Spawning worker 3 with 2116 pkgs
Workers Finished
Saving Primary metadata
Saving file lists metadata
Saving other metadata
Generating sqlite DBs
Sqlite DBs complete
Loaded plugins: fastestmirror, langpacks
Cleaning repos: base extras test-repo updates
Cleaning up everything
Cleaning up list of fastest mirrors
```

Enter Number 3, to configure repository client:

```
1) Install FTP
2) Setup Repository server
3) Setup Repository Client
4) open firewall
5) install httdp
6) Create Network bridge--change IP before
7) Install KVM
8) Create Virtual Machine V1
9) Quit
Please enter your choice: 3
```

This option will be call the following command from script:

Case 3 , setup repo client : move old data to new folder , touch file, then write , then Save

"Setup Repository Client ${opts[3]}")

mkdir /etc/yum.repos.d/old_repo; mv /etc/yum.repos.d/*.repo /etc/yum.repos.d/old_repo/; touch /etc/yum.repos.d/myrepo.repo;

echo "[test-repo]

name=test

#baseurl=ftp://127.0.0.1/pub/myrepo

baseurl=file:///var/ftp/pub/myrepo

enabled=1

gpgcheck=0

" > /etc/yum.repos.d/myrepo.repo

To make sure, go to the following path :

/etc/yum.repos.d

Enter number 4 , to configure Firewall :

```
1) Install FTP
2) Setup Repository server
3) Setup Repository Client
4) open firewall
5) install httdp
6) Create Network bridge--change IP before
7) Install KVM
8) Create Virtual Machine V1
9) Quit
Please enter your choice: 4
```

This option will be call the following command from script:

Case 4 , Open ftp on Firewall

"open firewall ${opts[4]}")

firewall-cmd --permanent --zone=public --add-port=20/tcp

firewall-cmd --permanent --zone=public --add-port=20/udp

firewall-cmd --permanent --zone=public --add-port=21/tcp

firewall-cmd --permanent --zone=public --add-port=21/udp

firewall-cmd --permanent --add-service=ftp

firewall-cmd --reload

```
1) Install FTP
2) Setup Repository server
3) Setup Repository Client
4) open firewall
5) install httdp
6) Create Network bridge--change IP before
7) Install KVM
8) Create Virtual Machine V1
9) Quit
Please enter your choice: 4
success
success
success
success
success
success
```

Enter number 6 , to Create Network Bridge :

This option will be call the following command from script:

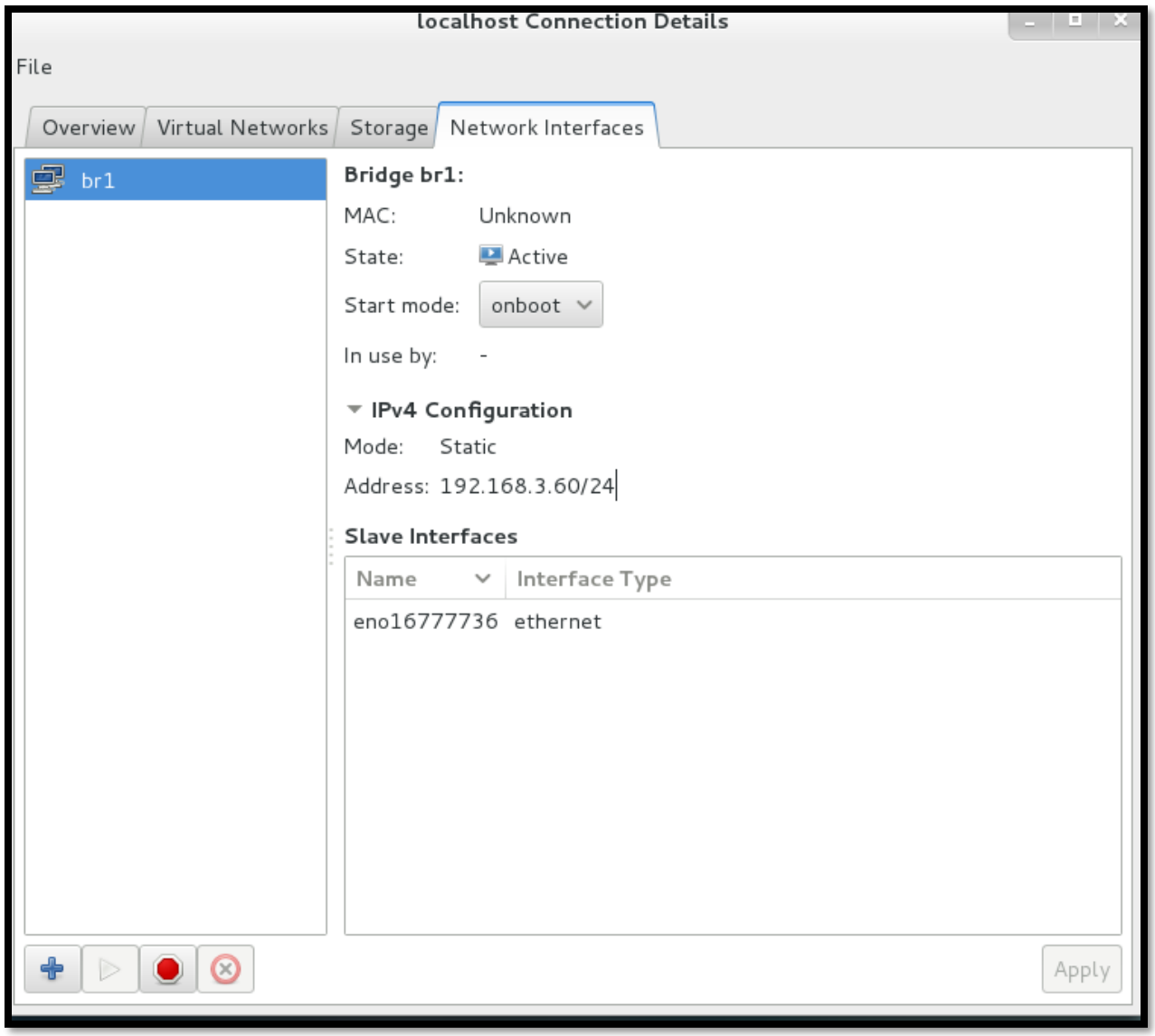
```
"Create Network bridge--change IP before ${opts[6]}")
yum install bridge-utils -y;
touch /etc/sysconfig/network-scripts/ifcfg-br1;
echo "
DEVICE="br1"
BOOTPROTO="static"
IPADDR="192.168.3.60"
NETMASK="255.255.255.0"
GATEWAY="192.168.3.100"
DNS1=8.8.8.8
ONBOOT="yes"
TYPE="Bridge"
NM_CONTROLLED="no"
" > /etc/sysconfig/network-scripts/ifcfg-br1;
echo "
DEVICE=eno16777736
TYPE=Ethernet
BOOTPROTO=none
ONBOOT=yes
NM_CONTROLLED=no
BRIDGE=br1
" > /etc/sysconfig/network-scripts/ifcfg-eno16777736;
systemctl restart network.service; service network status&& ifconfig
```

```
Please enter your choice: 6
Loaded plugins: fastestmirror, langpacks
test-repo                                                | 3.8 kB     00:00
(1/2): test-repo/group_gz                                  | 157 kB   00:00
(2/2): test-repo/primary_db                                | 4.9 MB   00:00
Determining fastest mirrors
Package bridge-utils-1.5-9.el7.x86_64 already installed and latest version
Nothing to do
Job for network.service failed. See 'systemctl status network.service' and 'jour
nalctl -xn' for details.
Configured devices:
lo Auto_Ethernet br1 eno16777736
Currently active devices:
lo eno16777736 br1
br1: flags=4163<UP,BROADCAST,RUNNING,MULTICAST>  mtu 1500
        inet 192.168.3.60  netmask 255.255.255.0  broadcast 192.168.3.255
        ether 00:0c:29:19:ba:e4  txqueuelen 0  (Ethernet)
        RX packets 1679  bytes 149495 (145.9 KiB)
        RX errors 0  dropped 0  overruns 0  frame 0
        TX packets 707  bytes 31499 (30.7 KiB)
        TX errors 0  dropped 0 overruns 0  carrier 0  collisions 0

eno16777736: flags=4163<UP,BROADCAST,RUNNING,MULTICAST>  mtu 1500
        ether 00:0c:29:19:ba:e4  txqueuelen 1000  (Ethernet)
        RX packets 1685  bytes 173361 (169.2 KiB)
        RX errors 0  dropped 6  overruns 0  frame 0
        TX packets 717  bytes 44759 (43.7 KiB)
        TX errors 0  dropped 0 overruns 0  carrier 0  collisions 0

lo: flags=73<UP,LOOPBACK,RUNNING>  mtu 65536
        inet 127.0.0.1  netmask 255.0.0.0
        inet6 ::1  prefixlen 128  scopeid 0x10<host>
        loop  txqueuelen 0  (Local Loopback)
        RX packets 488  bytes 48172 (47.0 KiB)
        RX errors 0  dropped 0  overruns 0  frame 0
```

After Create network bridge, confirm that bridge is shown and assigned to virt-manager connection details:



Enter Number 7 , to install Virtualization packages :

```
1) Install FTP
2) Setup Repository server
3) Setup Repository Client
4) open firewall
5) install httdp
6) Create Network bridge--change IP before
7) Install KVM
8) Create Virtual Machine V1
9) Quit
Please enter your choice: 7
```

This option will be call the following command from script:

yum install qemu-kvm qemu-img virt-manager libvirt libvirt-python libvirt-client virt-install virt-viewer system-config-kickstart

```
Please enter your choice: 7
Loaded plugins: fastestmirror, langpacks
Loading mirror speeds from cached hostfile
Package 10:qemu-kvm-1.5.3-60.el7.x86_64 already installed and latest version
Package 10:qemu-img-1.5.3-60.el7.x86_64 already installed and latest version
Package virt-manager-0.10.0-20.el7.noarch already installed and latest version
Package libvirt-1.1.1-29.el7.x86_64 already installed and latest version
Package libvirt-python-1.1.1-29.el7.x86_64 already installed and latest version
Package libvirt-client-1.1.1-29.el7.x86_64 already installed and latest version
Package virt-install-0.10.0-20.el7.noarch already installed and latest version
Package virt-viewer-0.5.7-7.el7.x86_64 already installed and latest version
Package system-config-kickstart-2.9.2-4.el7.noarch already installed and latest version
Nothing to do
Please enter your choice:
```

<u>After install virtualization packages, you can use selection number 8 to create new virtual machine:</u>

```
root@localhost:~/Desktop
File  Edit  View  Search  Terminal  Help
$  \ \    / / ____/ ____| |  \/  |
$   \ \  / / |    | |      | \  / |___ _ __ _ _
$    \ \/ /| |    | |      | |\/| |/ _ \ |_ \| | | |
$     \  / | |___| |____  | |  | |  __/ | | | |_| |
$      \/   \_____\_____| |_|  |_|\___|_| |_|\__,_|


       Welcome to VCC Menu  - All in Menu Menu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1) Install FTP
2) Setup Repository server
3) Setup Repository Client
4) open firewall
5) install httdp
6) Create Network bridge--change IP before
7) Install KVM
8) Create Virtual Machine V1
9) Quit
Please enter your choice: 8
```

Note: default setting for new virtual machine will be created by our script (you Can customize it as per your configuration):

Machine Name: project-test

vCPU: 1

RAM: 3069

OS-type: Linux

Vdisk: virtuald1.dsk, size=10

IP=192.168.3.21

netmask=255.255.255.0

gateway=192.168.3.100

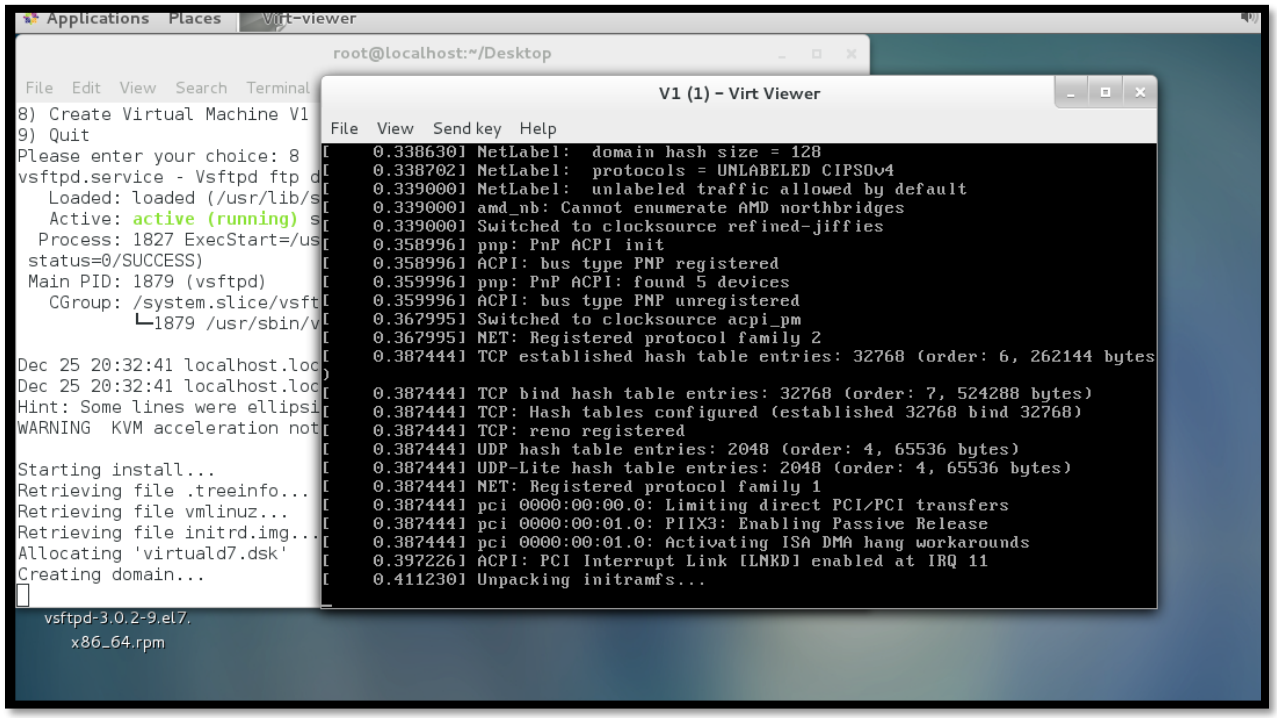
DNS=8.8.8.8

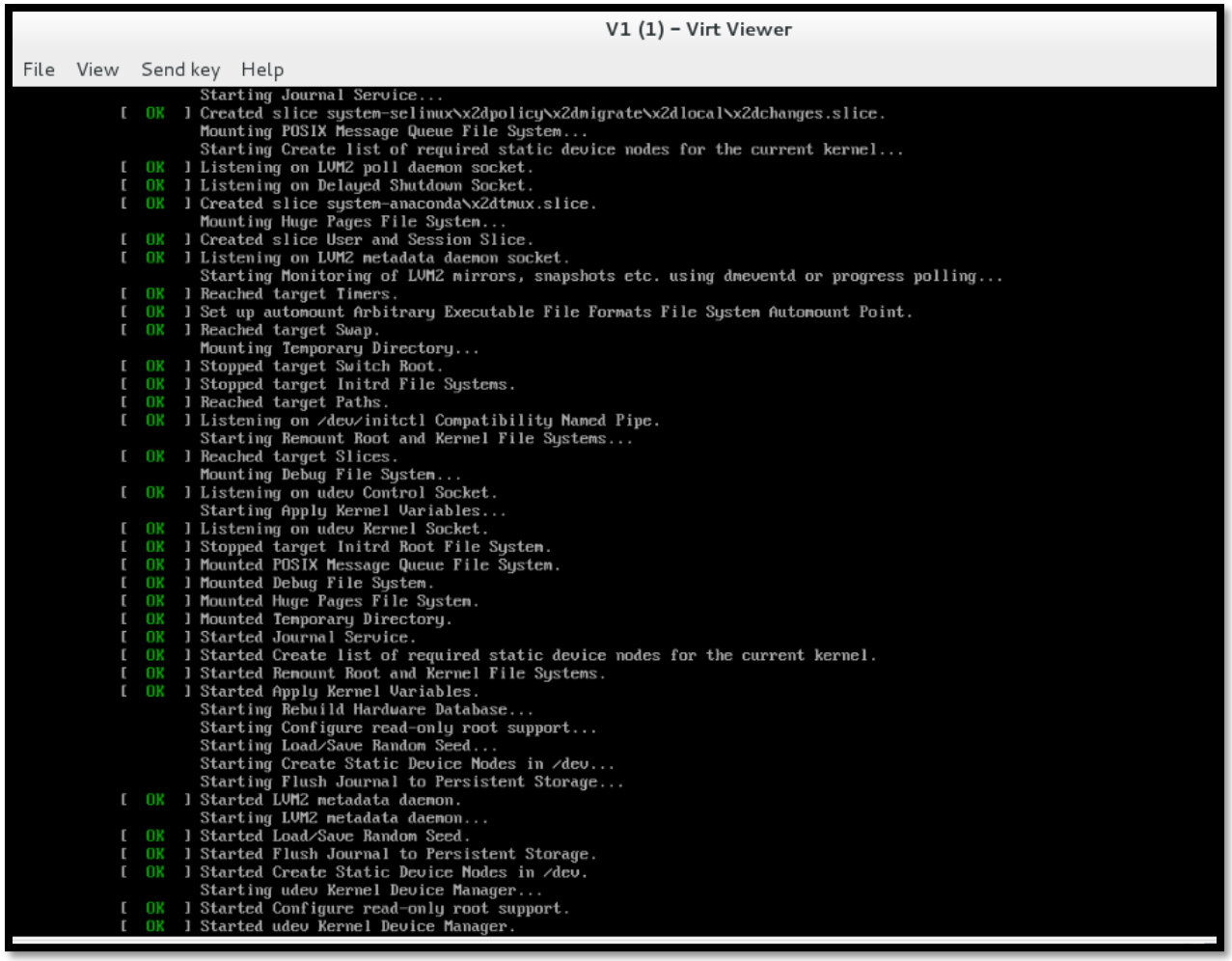
This option will be call the following command from script:

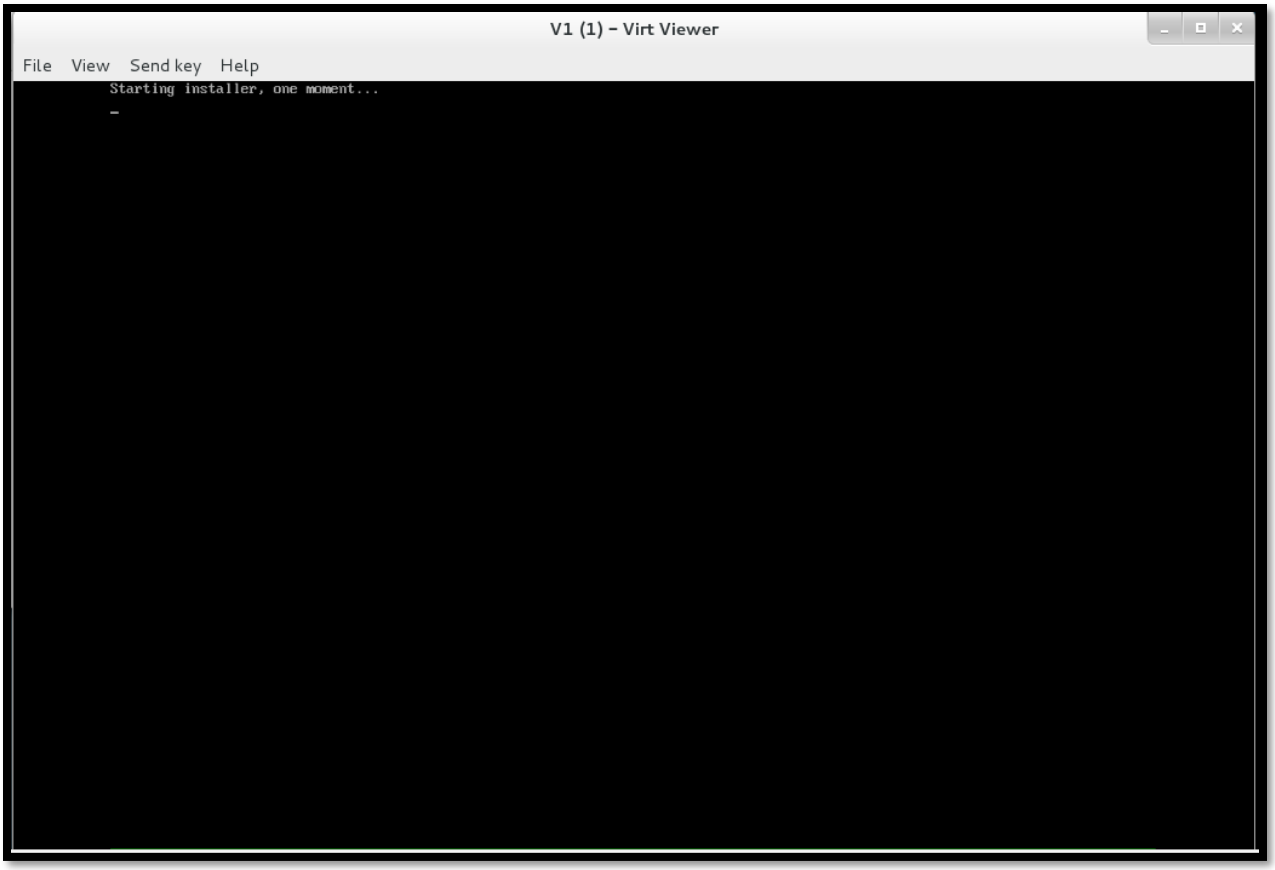
Firstly check FTP service and try to start it , then copy kickstart file from desktop to /var/ftp.pub , then validate ks.cfg file , and create new virtual machine :

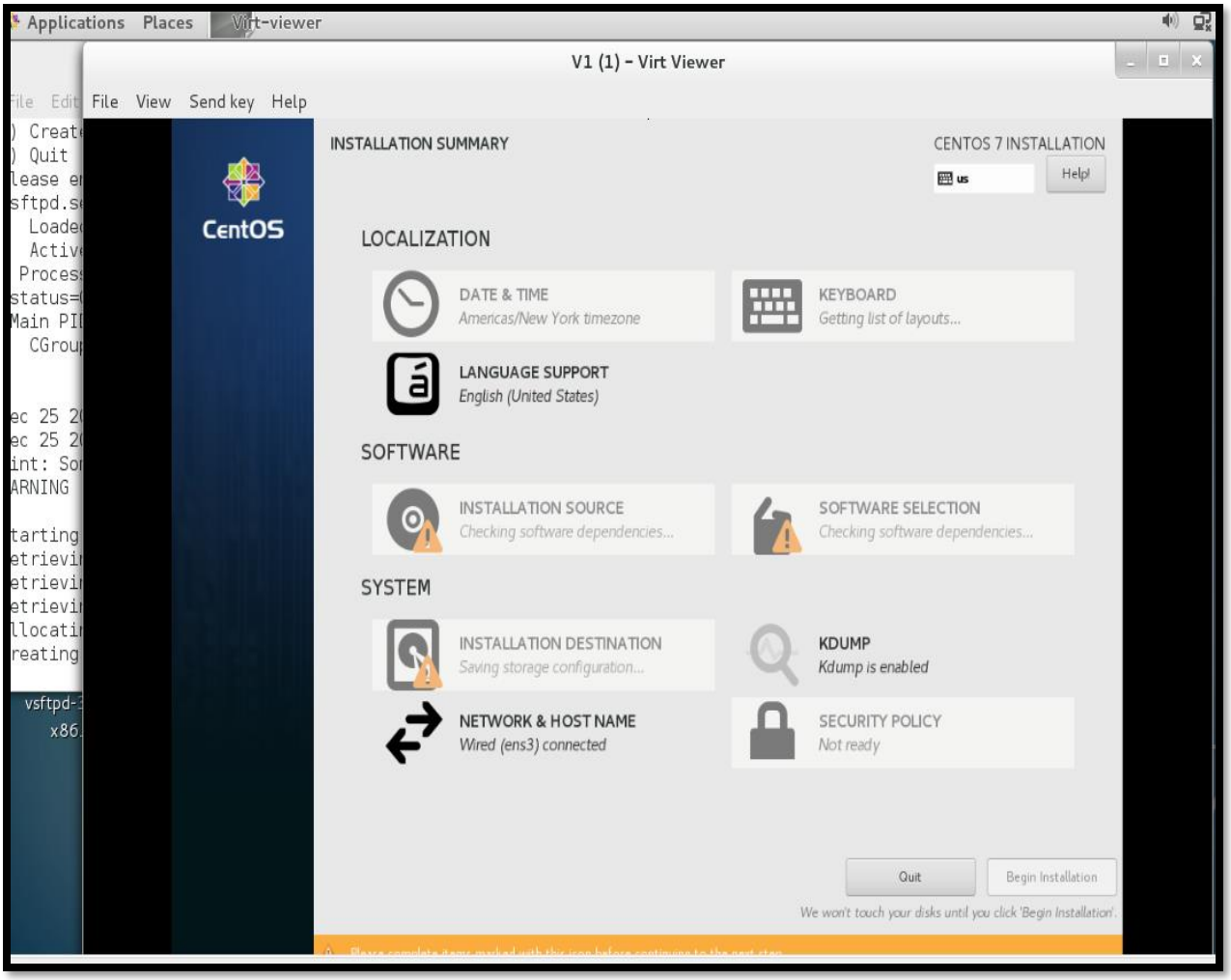
```
systemctl status vsftpd&& systemctl start vsftpd&& cp /root/Desktop/ks.cfg /var/ftp/pub/&& ksvalidator /var/ftp/pub/ks.cfg&& virt-install --name=project-test --ram=3069 --vcpus=1 --autostart --os-type=linux --extra-args='ks=ftp://192.168.3.60/pub/ks.cfg ksdevice=ens3 ip=192.168.3.21 netmask=255.255.255.0 gateway=192.168.3.100 dns=8.8.8.8' --disk path=/var/lib/libvirt/images/virtuald1.dsk,size=10 --location=/var/lib/libvirt/7.4.iso --network bridge=br1
```

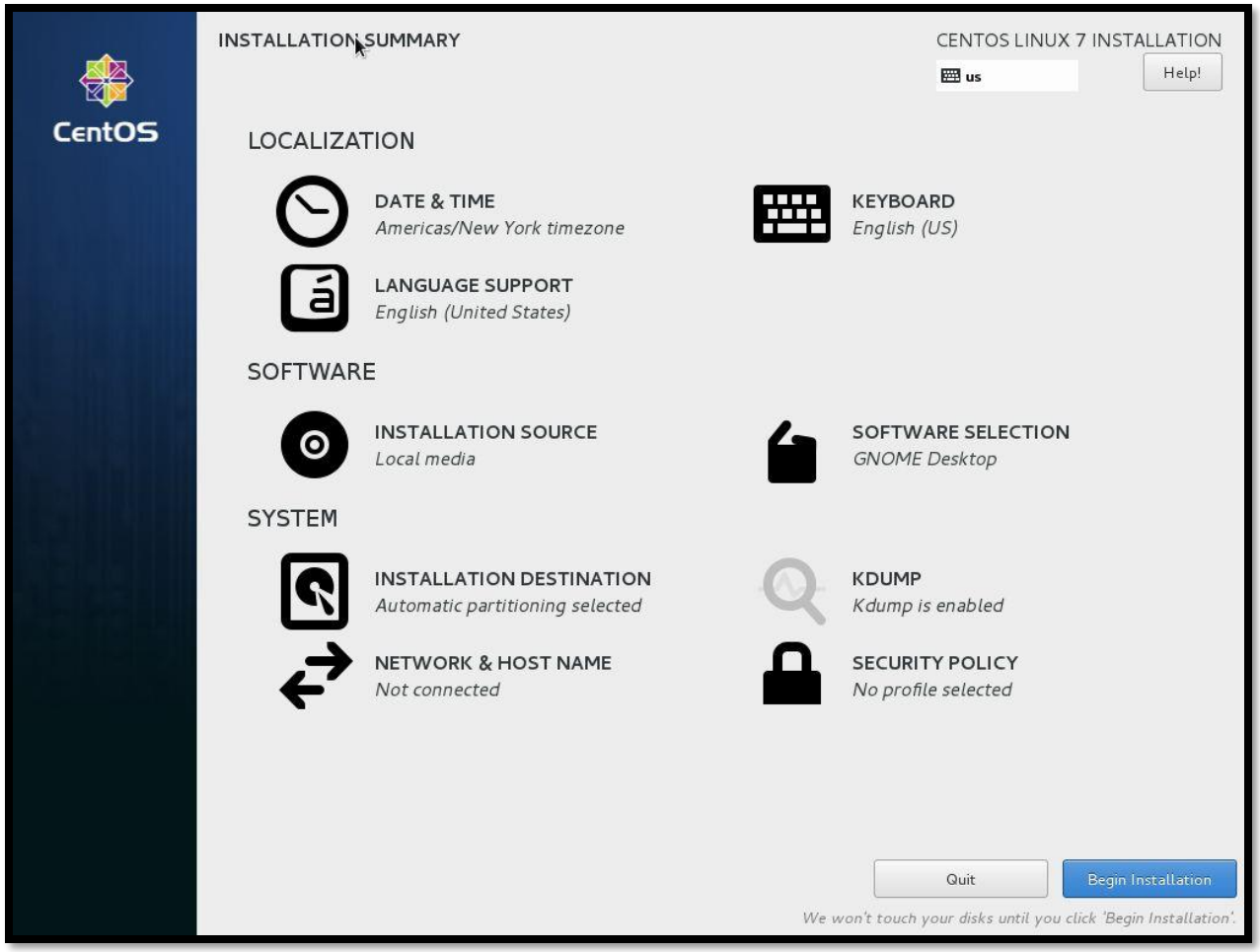
```
Please enter your choice: 8
vsftpd.service - Vsftpd ftp daemon
   Loaded: loaded (/usr/lib/systemd/system/vsftpd.service; enabled)
   Active: active (running) since Mon 2017-12-25 18:43:57 EET; 13min ago
  Process: 1714 ExecStart=/usr/sbin/vsftpd /etc/vsftpd/vsftpd.conf (code=exited,
 status=0/SUCCESS)
 Main PID: 1833 (vsftpd)
   CGroup: /system.slice/vsftpd.service
           └─1833 /usr/sbin/vsftpd /etc/vsftpd/vsftpd.conf

Dec 25 18:43:57 localhost.localdomain systemd[1]: Starting Vsftpd ftp daemon...
Dec 25 18:43:57 localhost.localdomain systemd[1]: Started Vsftpd ftp daemon.
Hint: Some lines were ellipsized, use -l to show in full.
WARNING  KVM acceleration not available, using 'qemu'

Starting install...
Retrieving file .treeinfo...                          |  708 B     00:00
Retrieving file vmlinuz...                            |  11 MB     00:00
Retrieving file initrd.img...                         |  92 MB     00:01
Allocating 'virtuald1.dsk'                            |  10 GB     00:00
Creating domain...                                    |    0 B     00:00
Domain installation still in progress. You can reconnect to
the console to complete the installation process.
Please enter your choice:
```

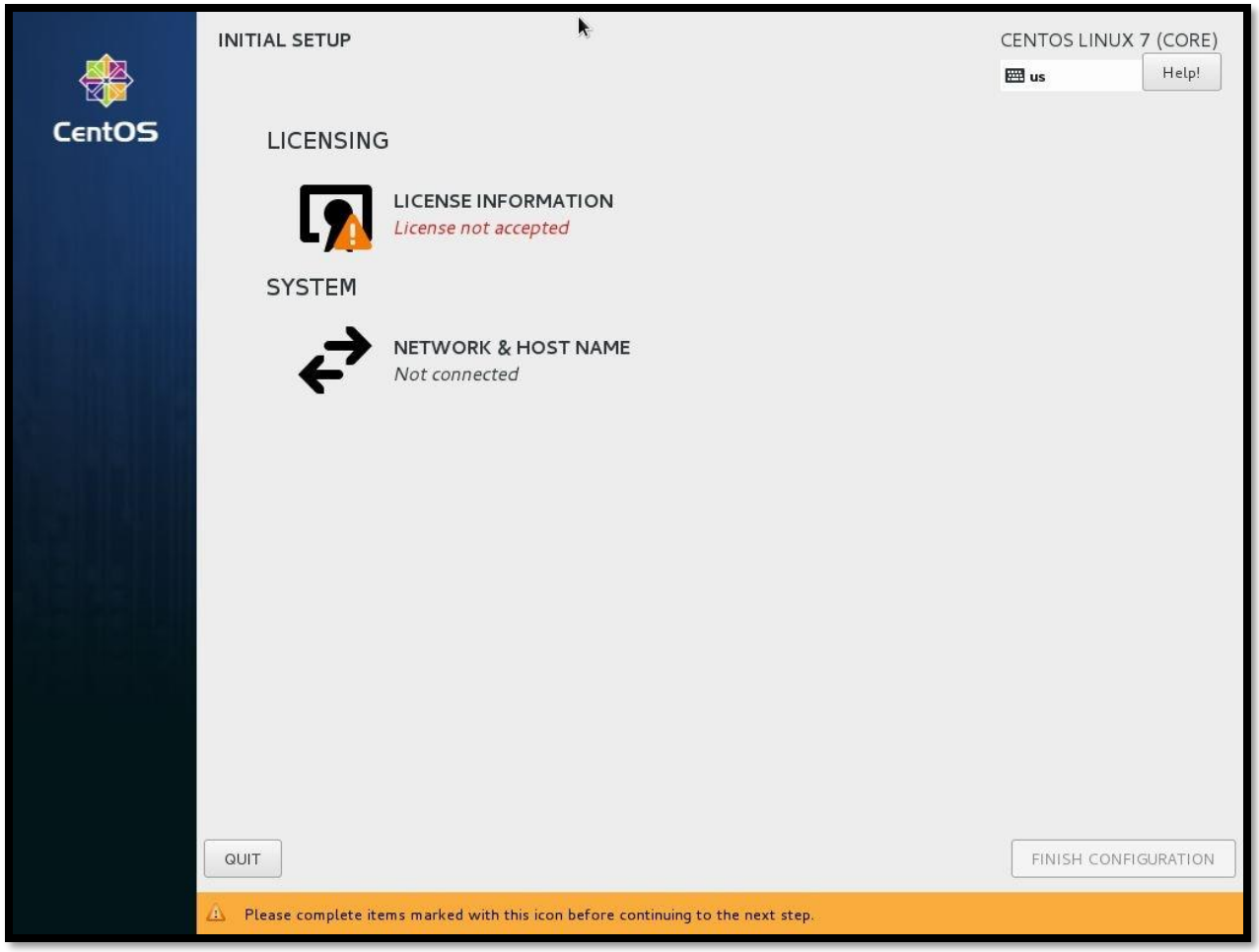



V1 (1) – Virt Viewer
File View Send key Help
Starting Journal Service...
[OK] Created slice system-selinux\x2dpolicy\x2dmigrate\x2dlocal\x2dchanges.slice.
Mounting POSIX Message Queue File System...
Starting Create list of required static device nodes for the current kernel...
[OK] Listening on LVM2 poll daemon socket.
[OK] Listening on Delayed Shutdown Socket.
[OK] Created slice system-anaconda\x2dtmux.slice.
Mounting Huge Pages File System...
[OK] Created slice User and Session Slice.
[OK] Listening on LVM2 metadata daemon socket.
Starting Monitoring of LVM2 mirrors, snapshots etc. using dmeventd or progress polling...
[OK] Reached target Timers.
[OK] Set up automount Arbitrary Executable File Formats File System Automount Point.
[OK] Reached target Swap.
Mounting Temporary Directory...
[OK] Stopped target Switch Root.
[OK] Stopped target Initrd File Systems.
[OK] Reached target Paths.
[OK] Listening on /dev/initctl Compatibility Named Pipe.
Starting Remount Root and Kernel File Systems...
[OK] Reached target Slices.
Mounting Debug File System...
[OK] Listening on udev Control Socket.
Starting Apply Kernel Variables...
[OK] Listening on udev Kernel Socket.
[OK] Stopped target Initrd Root File System.
[OK] Mounted POSIX Message Queue File System.
[OK] Mounted Debug File System.
[OK] Mounted Huge Pages File System.
[OK] Mounted Temporary Directory.
[OK] Started Journal Service.
[OK] Started Create list of required static device nodes for the current kernel.
[OK] Started Remount Root and Kernel File Systems.
[OK] Started Apply Kernel Variables.
Starting Rebuild Hardware Database...
Starting Configure read-only root support...
Starting Load/Save Random Seed...
Starting Create Static Device Nodes in /dev...
Starting Flush Journal to Persistent Storage...
[OK] Started LVM2 metadata daemon.
Starting LVM2 metadata daemon...
[OK] Started Load/Save Random Seed.
[OK] Started Flush Journal to Persistent Storage.
[OK] Started Create Static Device Nodes in /dev.
Starting udev Kernel Device Manager...
[OK] Started Configure read-only root support.
[OK] Started udev Kernel Device Manager.


V1 (1) – Virt Viewer
File View Send key Help
Starting installer, one moment...


Applications
Places
Virt-viewer
V1 (1) - Virt Viewer
File
View
Send key
Help
CentOS
INSTALLATION SUMMARY
CENTOS 7 INSTALLATION
us
Help!
LOCALIZATION
DATE & TIME
Americas/New York timezone
KEYBOARD
Getting list of layouts...
LANGUAGE SUPPORT
English (United States)
SOFTWARE
INSTALLATION SOURCE
Checking software dependencies...
SOFTWARE SELECTION
Checking software dependencies...
SYSTEM
INSTALLATION DESTINATION
Saving storage configuration...
KDUMP
Kdump is enabled
NETWORK & HOST NAME
Wired (ens3) connected
SECURITY POLICY
Not ready
Quit
Begin Installation
We won't touch your disks until you click 'Begin Installation'.


CentOS
INSTALLATION SUMMARY
CENTOS LINUX 7 INSTALLATION
us
Help!
LOCALIZATION
DATE & TIME
Americas/New York timezone
KEYBOARD
English (US)
LANGUAGE SUPPORT
English (United States)
SOFTWARE
INSTALLATION SOURCE
Local media
SOFTWARE SELECTION
GNOME Desktop
SYSTEM
INSTALLATION DESTINATION
Automatic partitioning selected
KDUMP
Kdump is enabled
NETWORK & HOST NAME
Not connected
SECURITY POLICY
No profile selected
Quit
Begin Installation
We won't touch your disks until you click 'Begin Installation'.



Enter Number 9 to quiet from the program