IBM Linux on Power Workshop

220 RHEL7 PowerKVM Guest

RHEL71 PowerKVM Guest

- In 2015, we were all in the browser, in PowerKVM Kimchi
  - Create a template, pointing at RHEL iso file, and a specific LUN
  - Create guest from that template, boot from iso file and install
  - virsh migrate the RHEL guest to another physical machine

- Question arose, how do we insert a kickstart file into this install?

- We use the pkvm command virt-install (see man virt-install on pkvm)

- In order to use --extra_args "ks=", we must also use --location

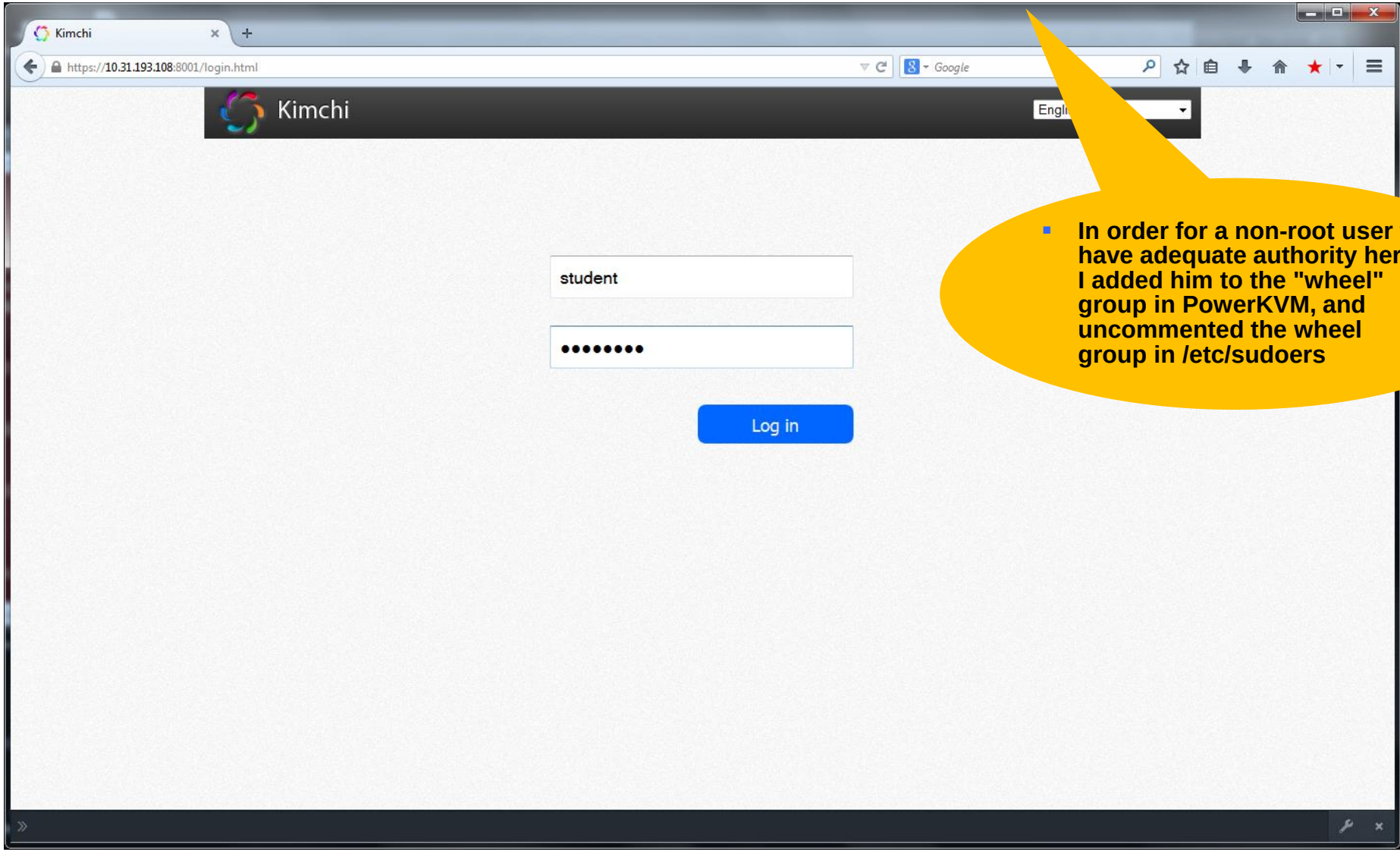
- --location will point to http resource across the network

- Every student gets their own unique kickstart file - Your guest install will finish, then boot with its designated IP address and hostname

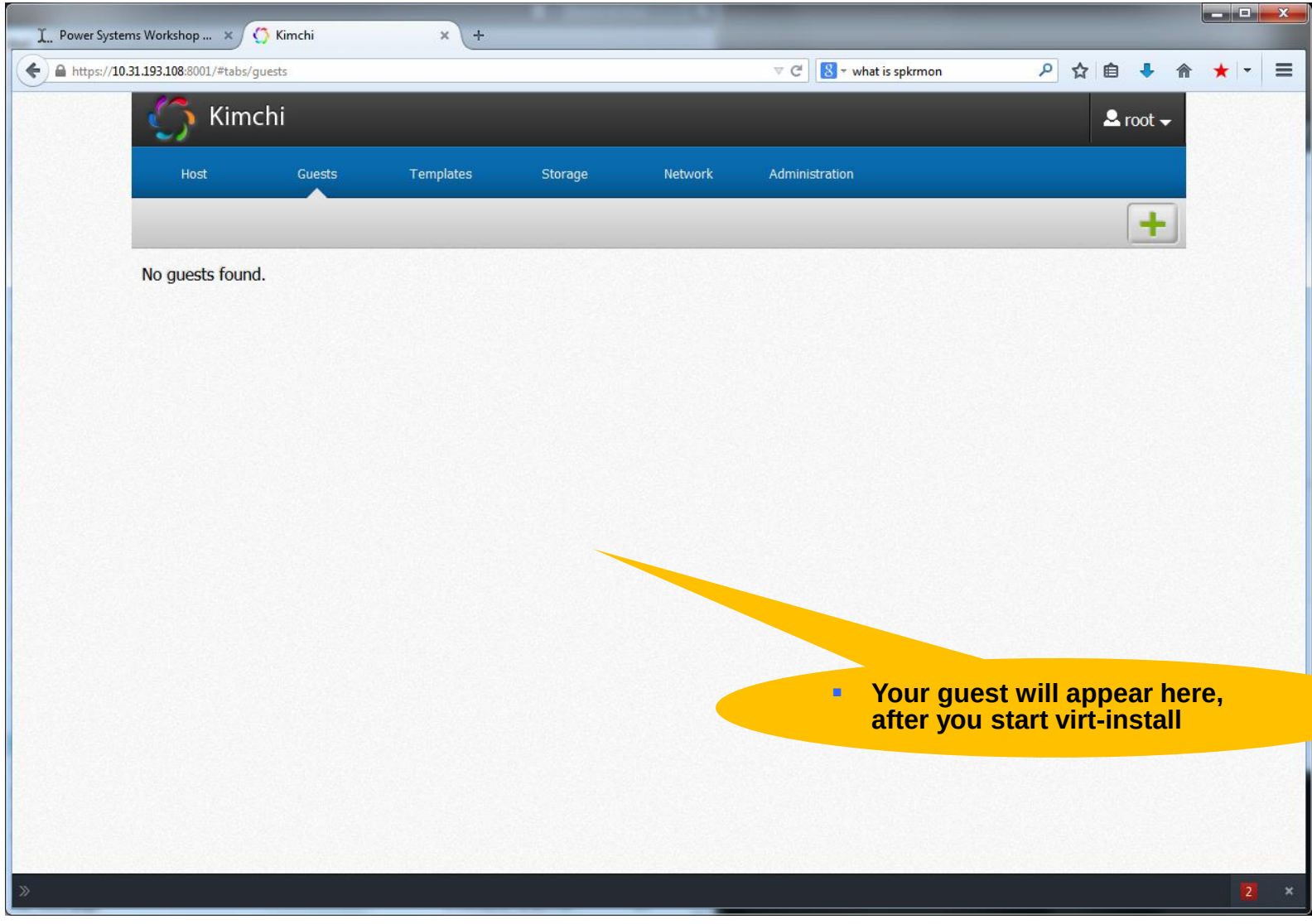
- Every student points at their own unique LUN for RHEL install

Kimchi login

- Even Students https://10.31.193.108:8001 student abcd1234
  Odd Students https://10.31.193.109:8001 student abcd1234



Guests tab



ssh to PowerKVM, to run virt-install

- Even Students ssh student@10.31.193.108 student abcd1234
  Odd Students ssh student@10.31.193.109 student abcd1234

- Create and install your guest. Get the blue fields from your worksheet

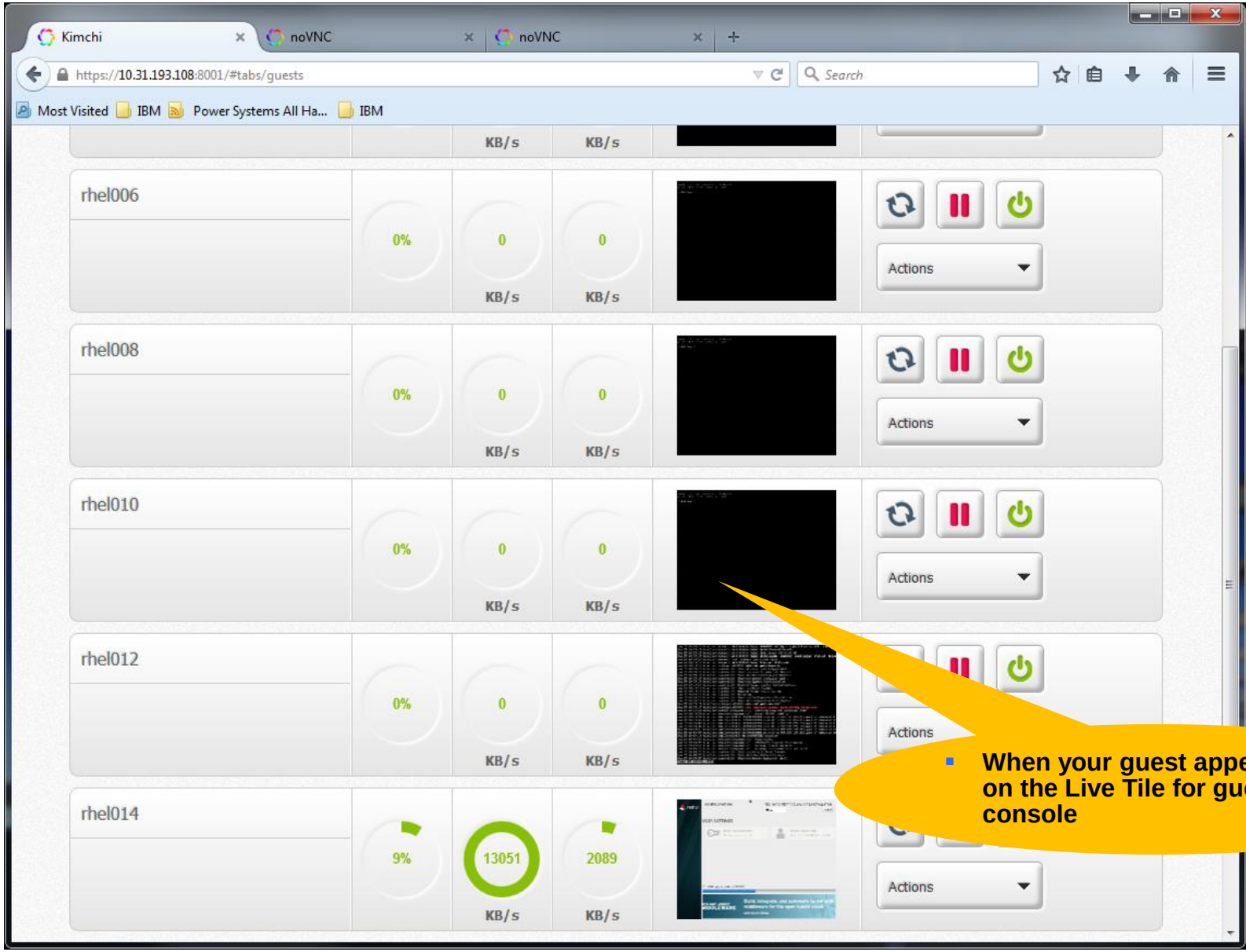
```
[student@s822kvm ~]$ sudo virt-install --name rhel0nn --memory=2048
--vcpus=8,cores=1,threads=8 --os-variant=rhel7
--disk vol=sanv7k/unit:0:0:nn --network="network=br192"
--graphics "vnc" --location http://10.31.193.105/RHEL71
--extra-args "ks=http://10.31.193.105/kickstart/rhel0nn-ks.cfg"
```

- Type the above as one continuous command

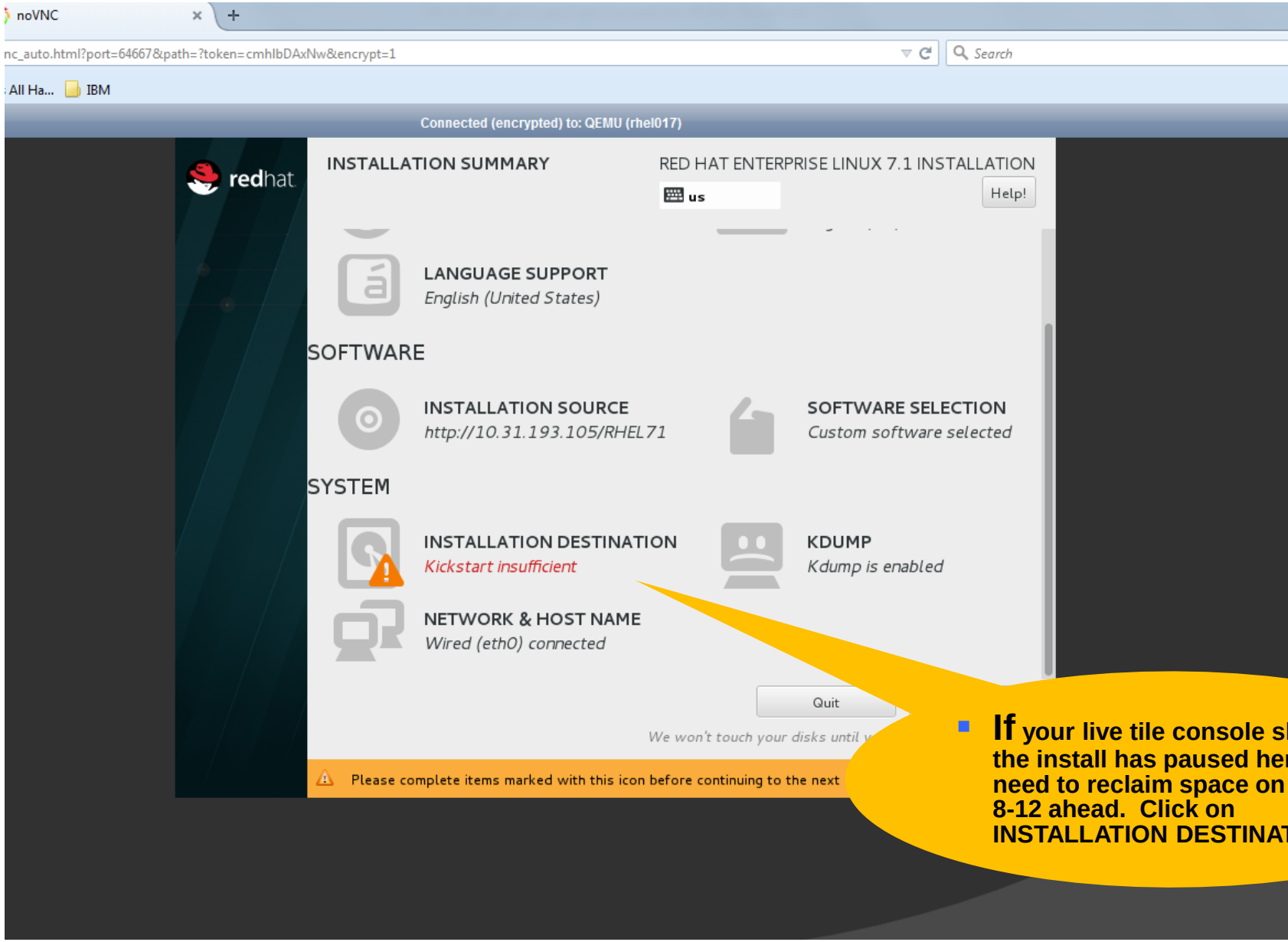
- You notice, the repo and kickstart are coming from another IP address, across the network. Are we missing anything on our guest?

The guest gets a DHCP address for the install, then applies a static IP from the kickstart file.

Kimchi Guests tab

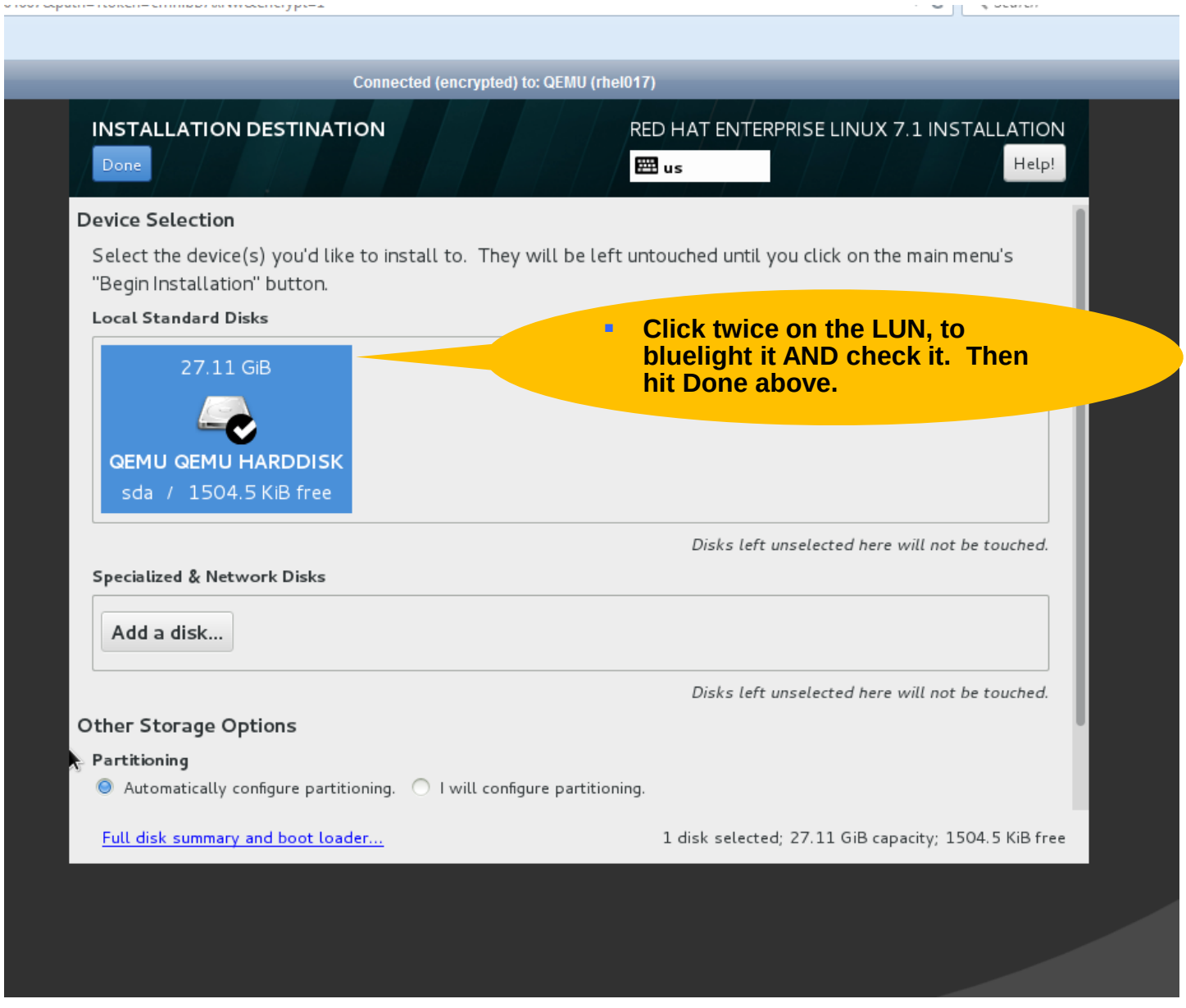


Guest Live Tile console

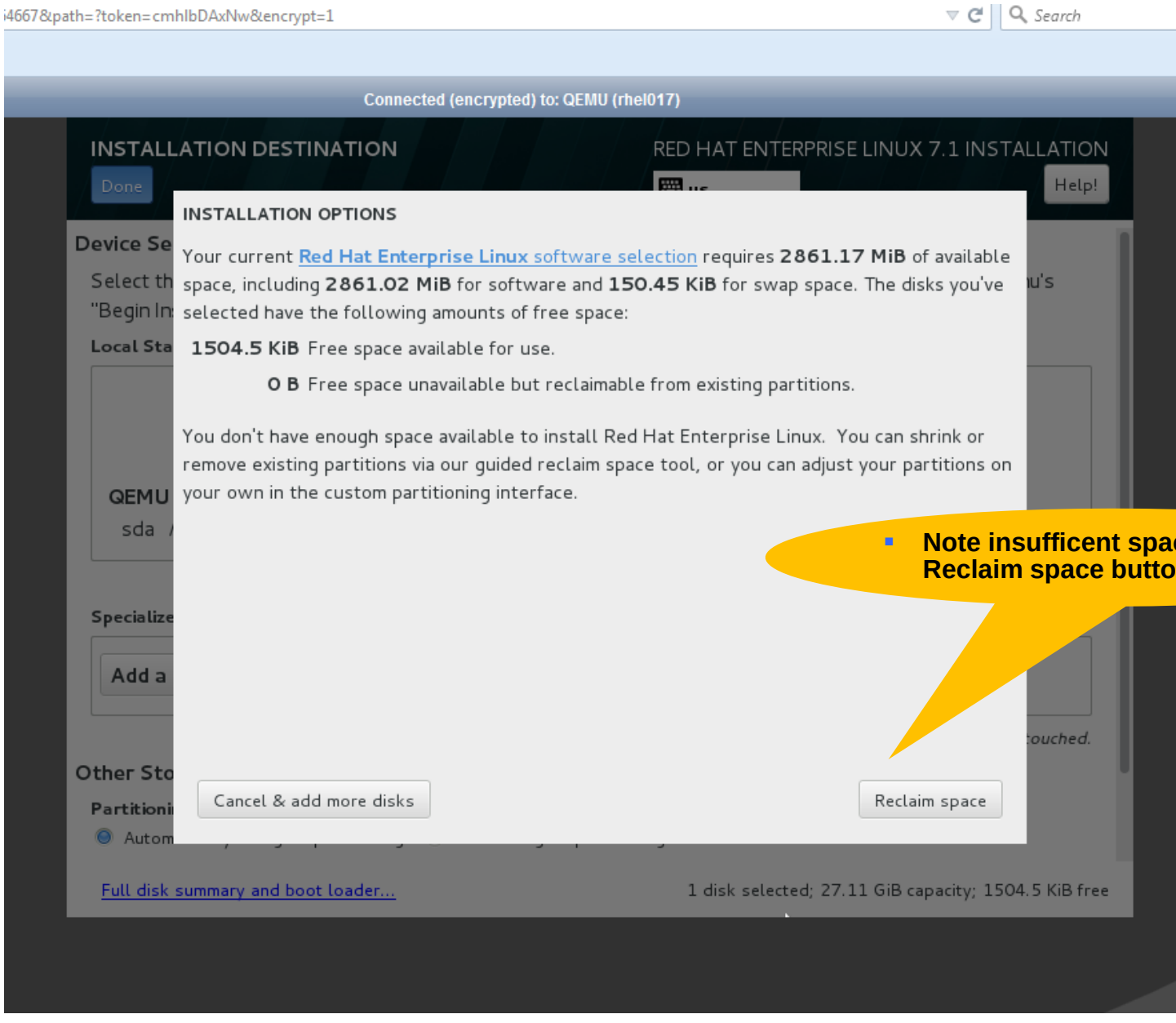


- **If your live tile console shows the install has paused here, you need to reclaim space on slides 8-12 ahead. Click on INSTALLATION DESTINATION**

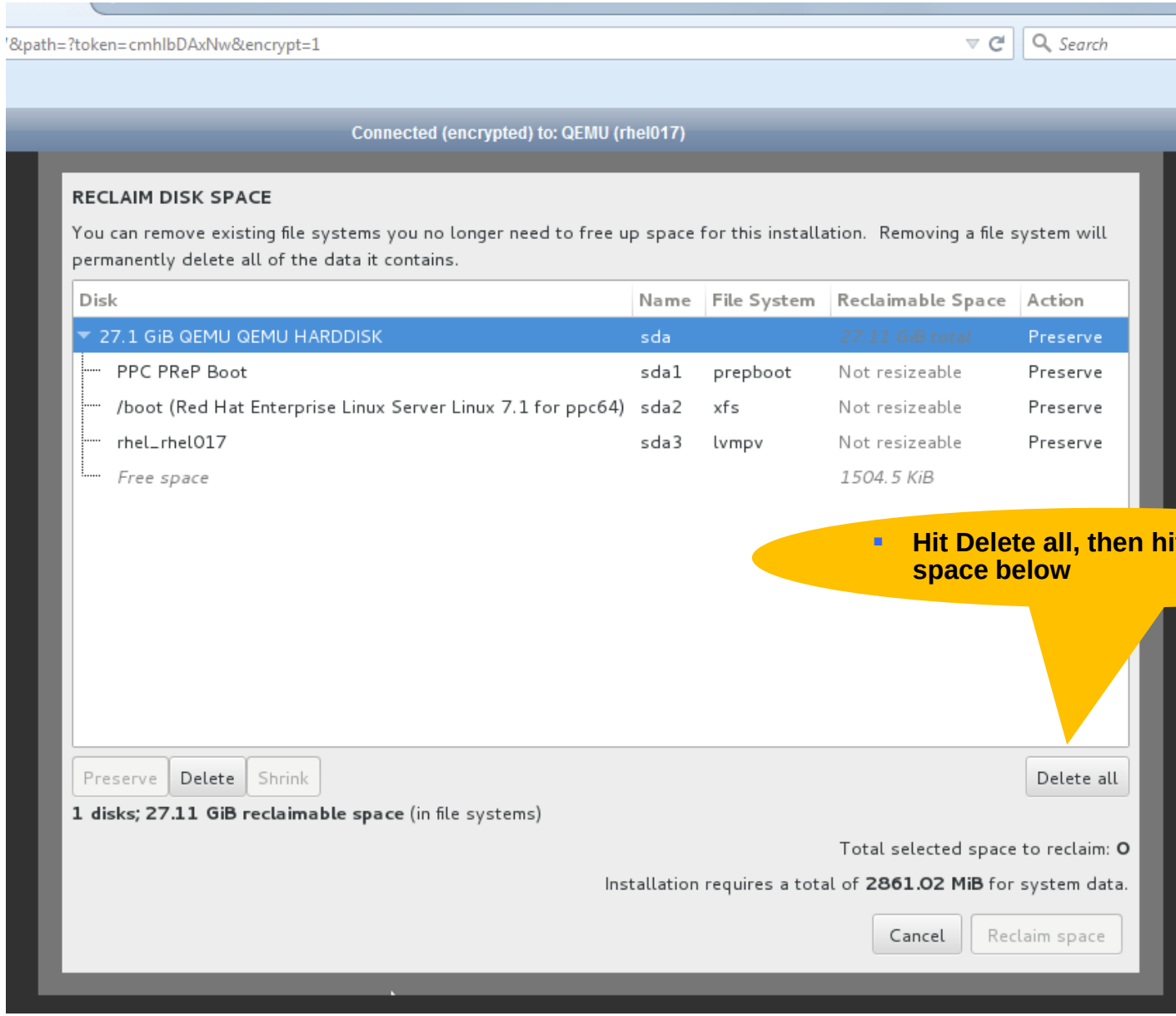
Guest Live Tile console



Guest Live Tile console

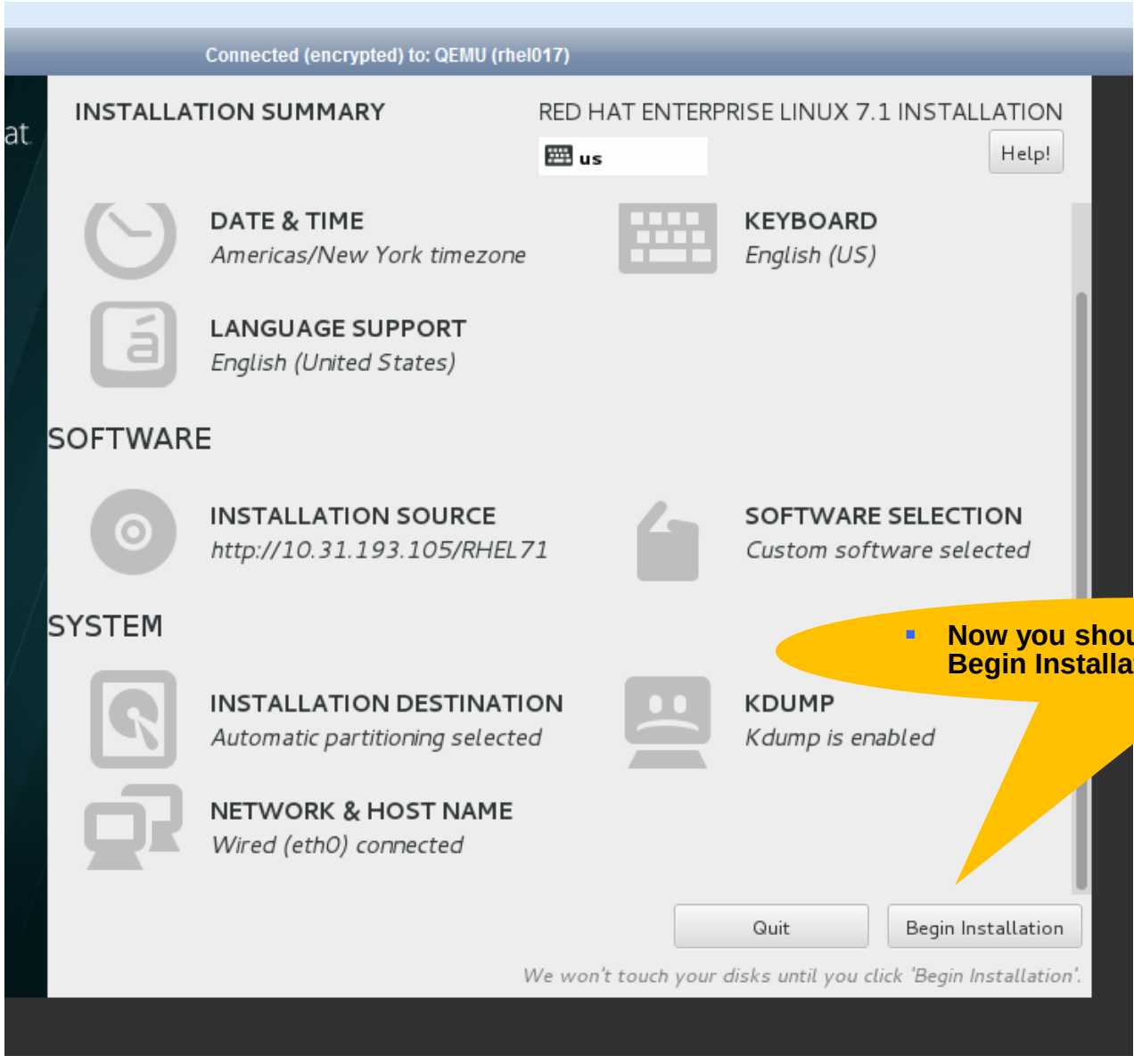


Guest Live Tile console



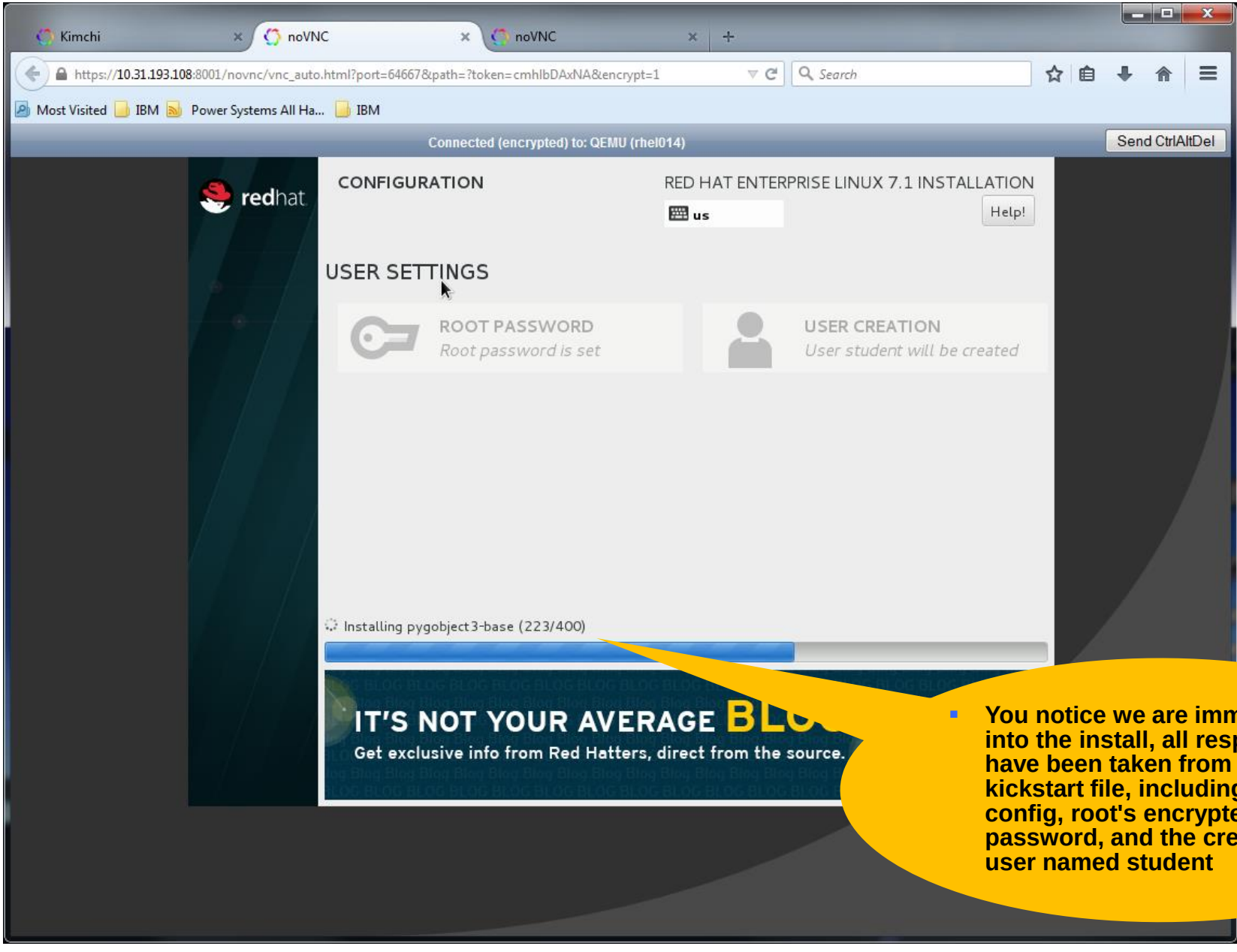
- **Hit Delete all, then hit Reclaim space below**

Guest Live Tile console



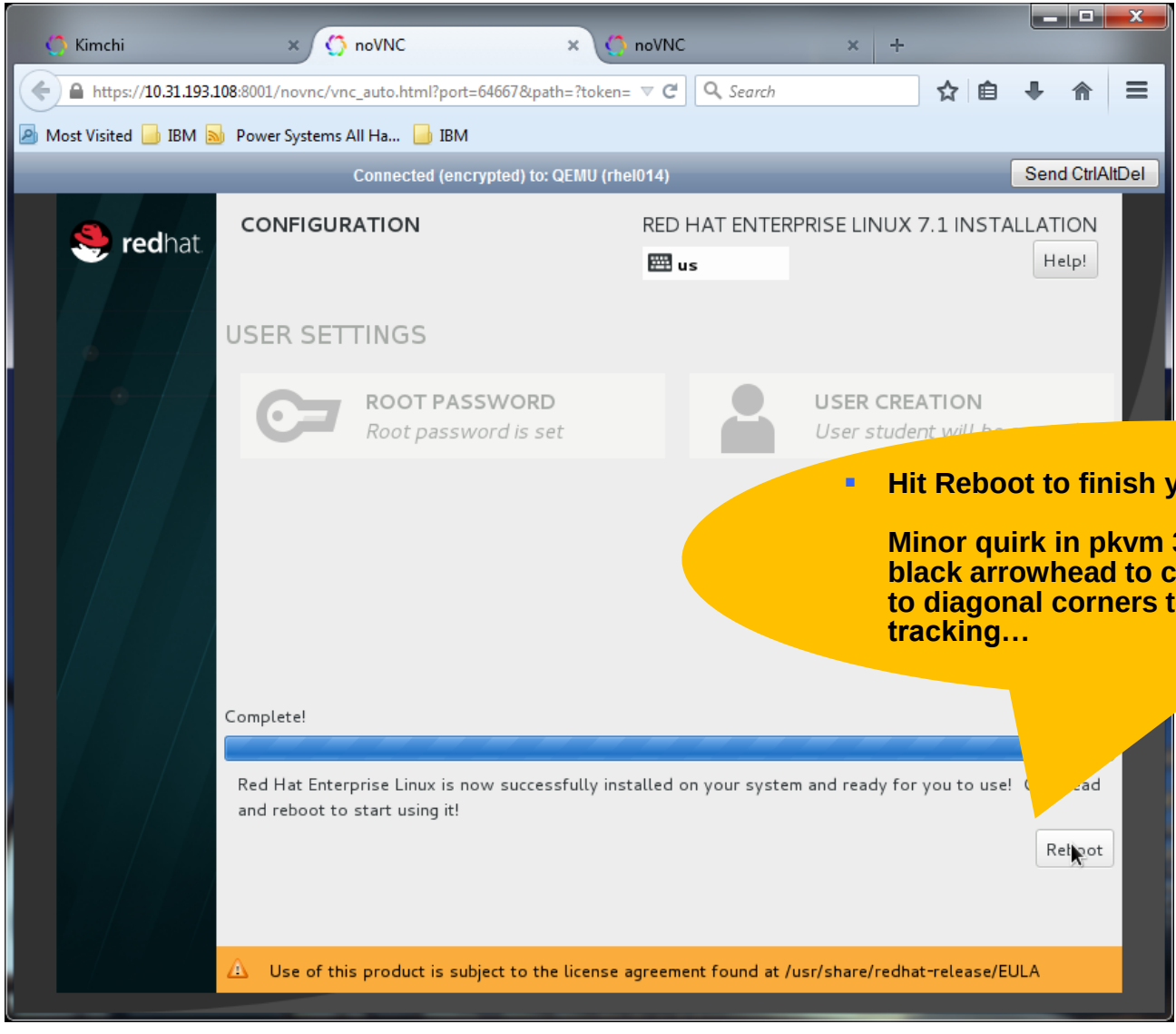
- **Now you should be ready to hit Begin Installation**

Guest Live Tile console



- **You notice we are immediately into the install, all responses have been taken from the kickstart file, including static IPv4 config, root's encrypted password, and the creation of a user named student**

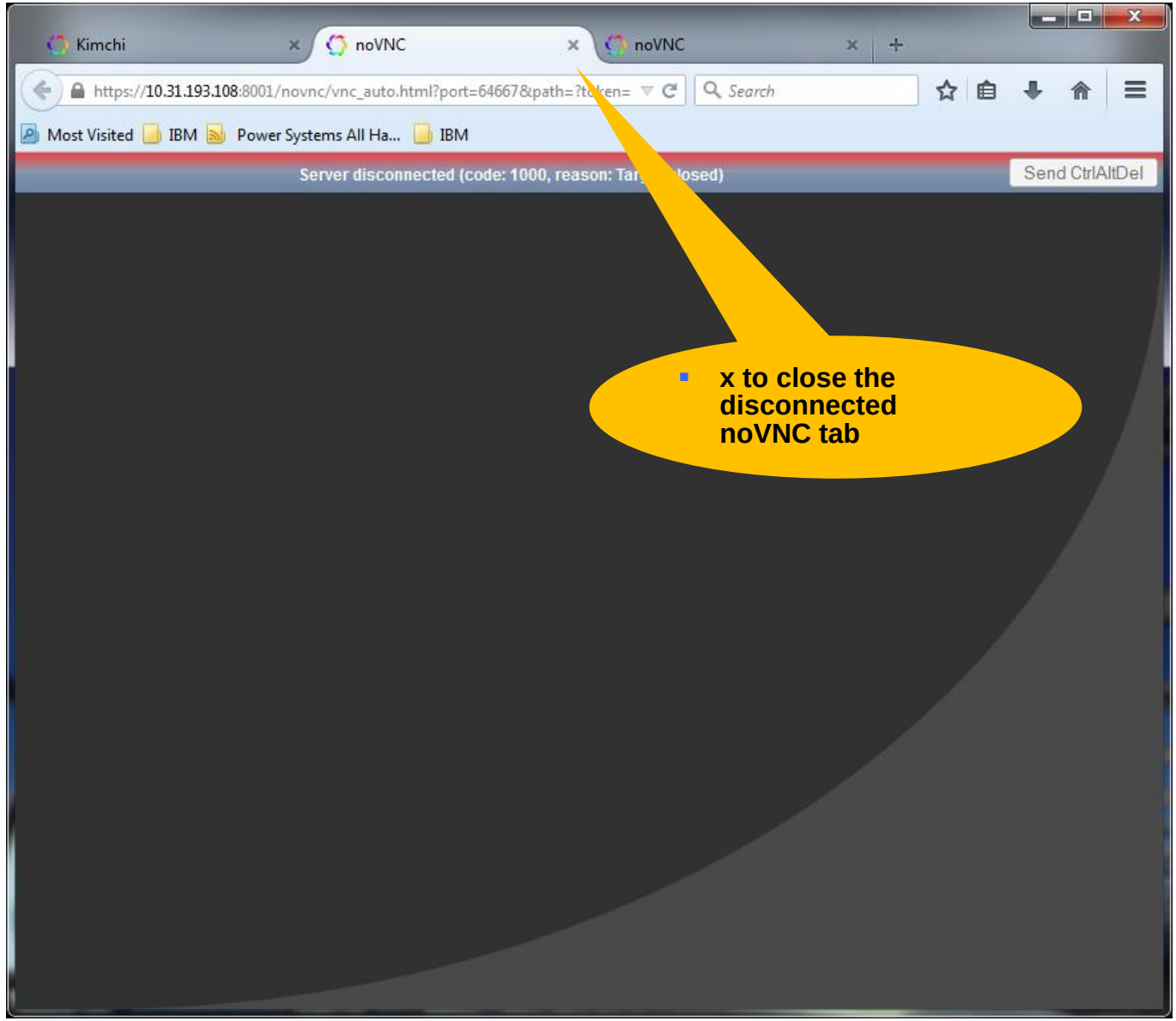
Guest Live Tile console



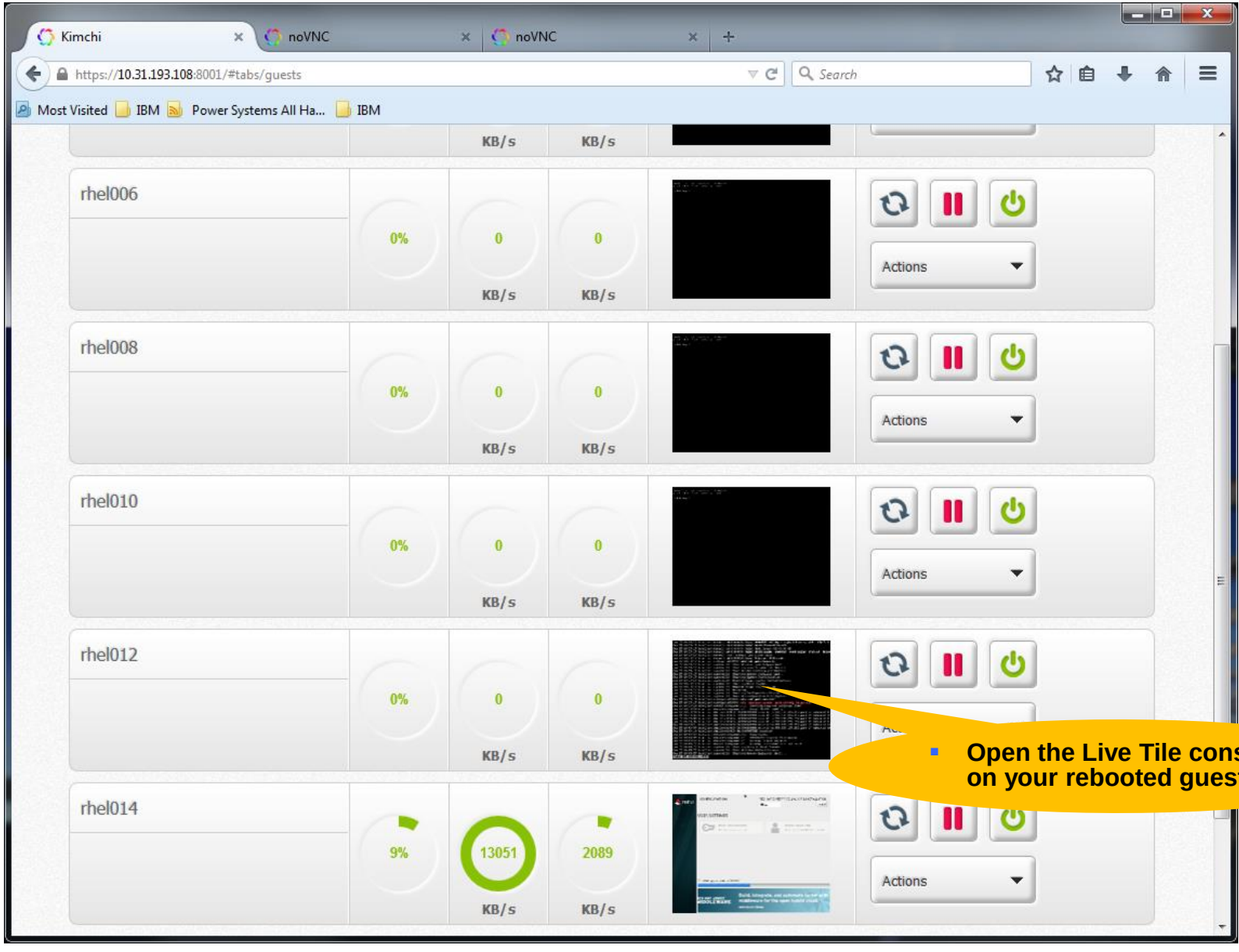
- **Hit Reboot to finish your guest install.**

  Minor quirk in pkvm 3.1, make sure it is the black arrowhead to click in Kimchi. Mouse to diagonal corners to improve arrowhead tracking…

Guest Live Tile console

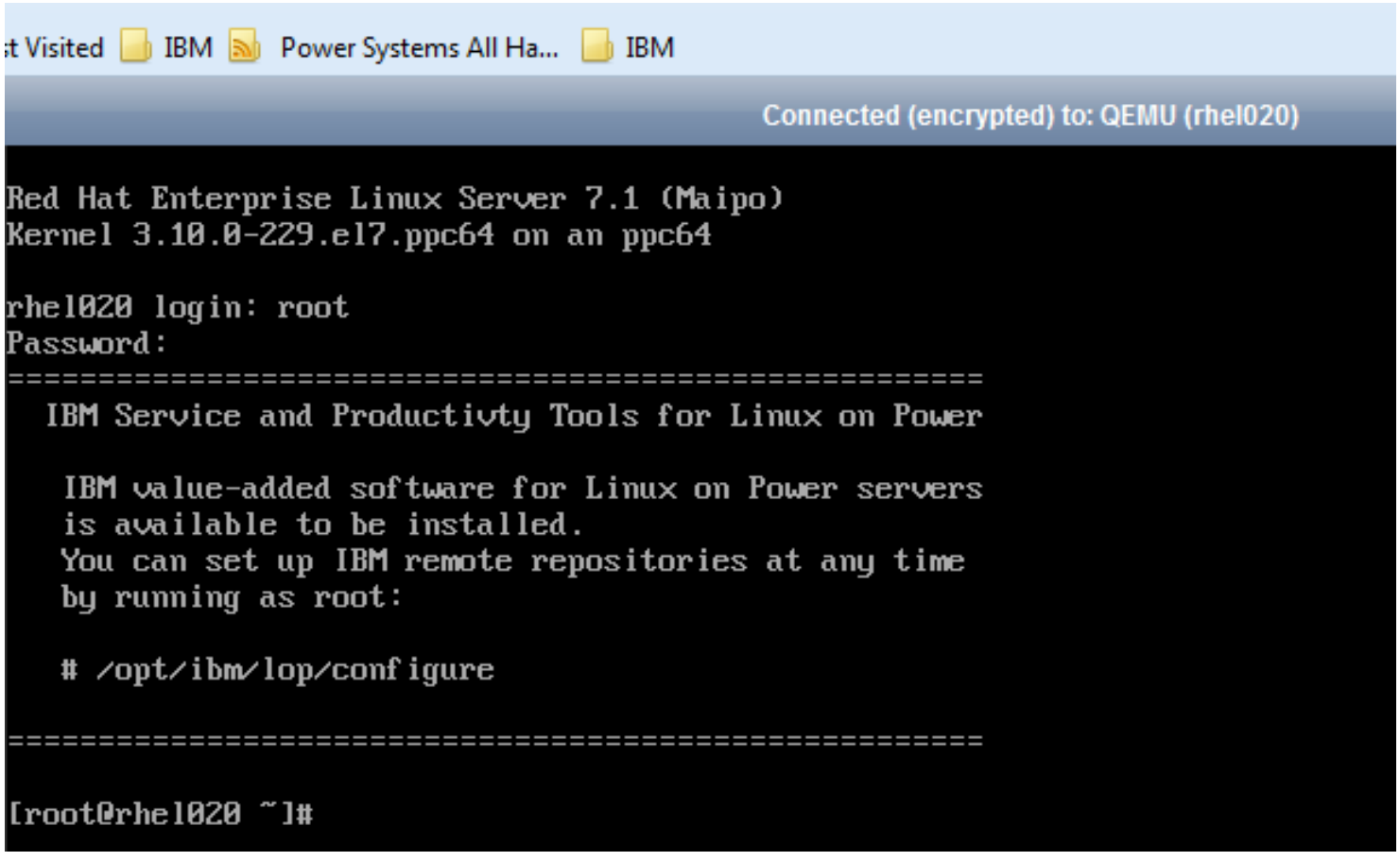


Back on guests tab, click again on your Live Tile



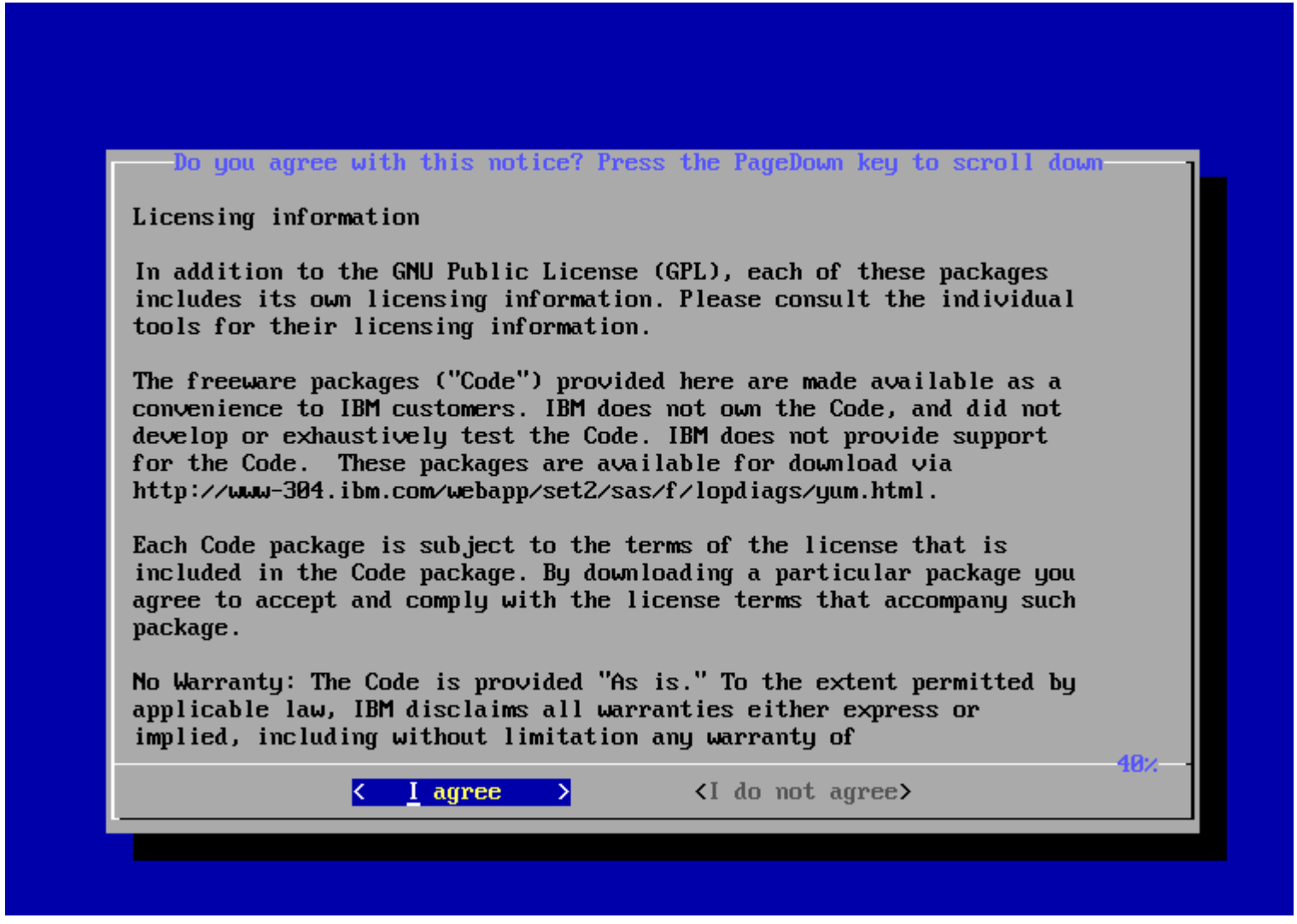
- **Open the Live Tile console on your rebooted guest**

Login on console, see prompt for /opt/ibm/lop/configure



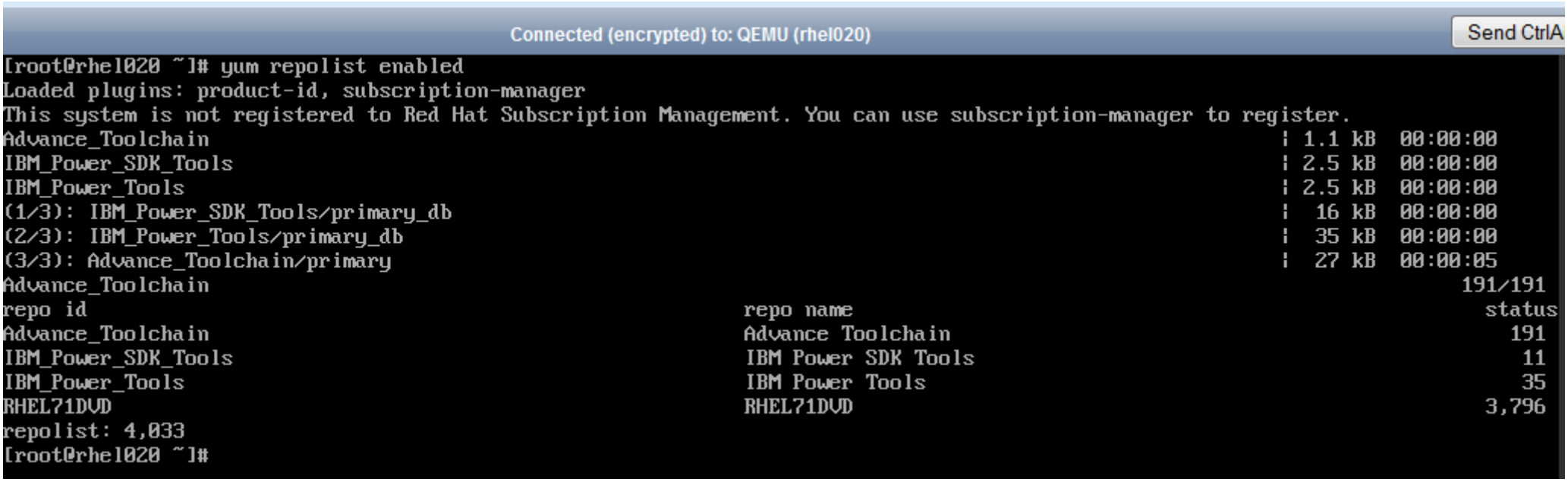
- The kickstart file installed, wget, dialog.ppc64, and ibm-power-repo, the repository definitions for IBM Service and Productivity Tools
- Recent license changes require you to run /opt/ibm/lop/configure and agree to license terms

Login on console, see prompt for /opt/ibm/lop/configure



- Hit space on "I agree" to agree with notice, give it about 20 sec…
- Scroll down to see root # prompt

Login on console, see prompt for /opt/ibm/lop/configure



- # yum repolist enabled

- **To see all the repositories configured**

What was in the kickstart?

- If you would like to review it
- How do these files compare?

```
# more /root/anaconda-ks.cfg

# wget http://10.31.193.105/kickstart/rhel0nn-ks.cfg
```

DNS - DOMAIN - search directive

- You should already have a search directive in /etc/resolv.conf, because we used a fully qualified hostname in the kickstart file.

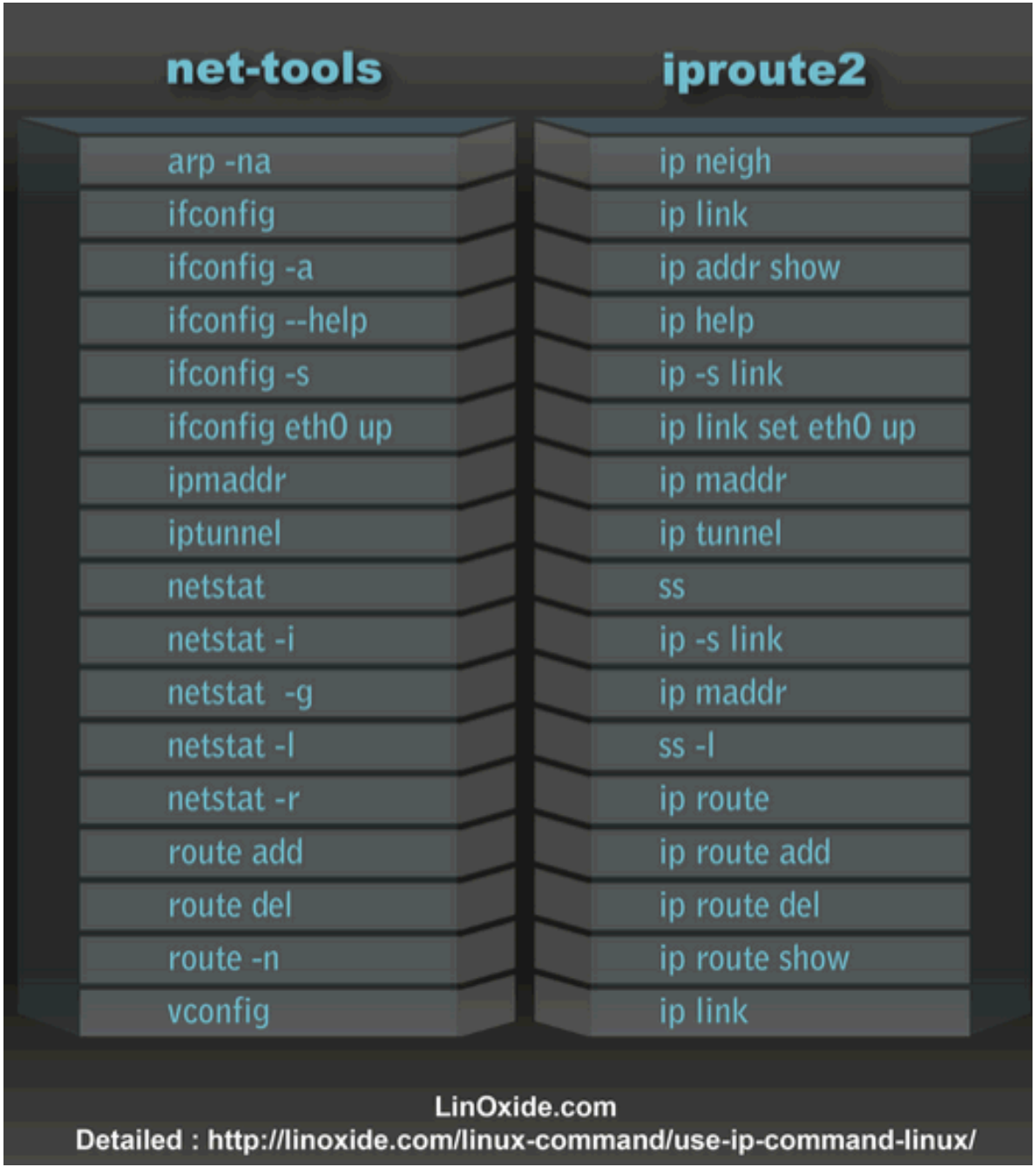
```
# cat /etc/resolv.conf
# Generated by NetworkManager
search pvw.ibm.com
nameserver 10.31.197.47
```

- If search directive is missing, playing along with Network Manager, we use nmcli to insert it. On the RHEL pkvm guest console…

```
# nmcli con modify "System eth0" +ipv4.dns-search "pvw.ibm.com"
# ifdown eth0
# ifup eth0
```

- Or you could use nmtui. But you should not need either nmcli or nmtui in this lab.

Alternate commands for networking



- Just FYI, we are being led to new commands…
- Or…
  # yum -y install net-tools

  if you miss ifconfig

SMT

- Check SMT state

```
# ppc64_cpu --smt
SMT=8
```

- 2015, pkvm 2.1, we had to make an XML edit and a reboot of guest to get SMT turned on. We did put some SMT settings into the virt-install command, and pkvm 3.1 better handles SMT

- virt-install, we asked for --vcpus=8,cores=1,threads=8

```
# ppc64_cpu --info
Core   0:    0*    1*    2*    3*    4*    5*    6*    7*
```

```
# ppc64_cpu --threads-per-core
Threads per core: 8
```

-

```
# ppc64_cpu --cores-present
Number of cores present = 1
```

- `# lscpu | grep -i byte`
  `Byte Order:  Big Endian`

- Just FYI

Migrate RHEL7 Guest to the other machine

- In your KVM login, if you are odd…

```
[student@p8kvm ~]$ sudo virsh migrate rhel0nn --undefinesource --persistent
qemu+ssh://10.31.193.108/system
```

- **I've already exchanged ssh public keys for root on each machine, so you won't be prompted for destination KVM root passwrord.**

In your KVM login, if you are even…

```
[student@s822kvm ~]$ sudo virsh migrate rhel0nn --undefinesource --persistent
qemu+ssh://10.31.193.109/system
```

- Did you see your guest blank out and disappear?
- Browser into the other machine, and check for it
- ssh into the other KVM, and move it back

Guest console logout

CLI guest console

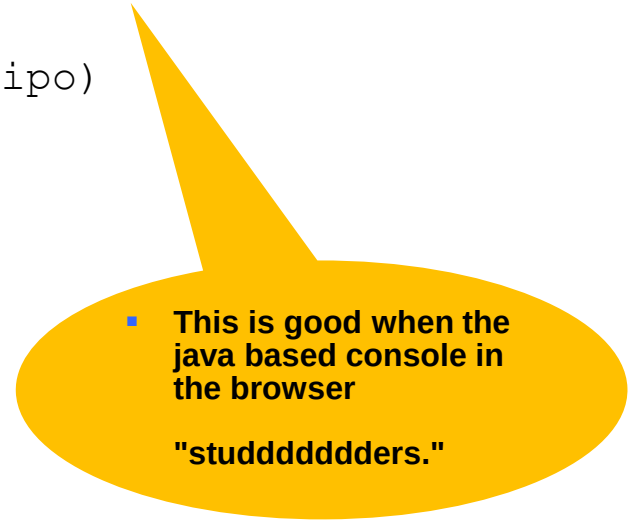
- PowerKVM can open command line console to guest

```
[student@s822kvm ~]$ sudo virsh console rhel0nn
Connected to domain rhel00n
Escape character is ^]


Red Hat Enterprise Linux Server 7.0 (Maipo)
Kernel 3.10.0-123.el7.ppc64 on an ppc64

rhel0nn login:
```

- To exit this console `ctrl + ]`



sudo in RHEL70 - just FYI

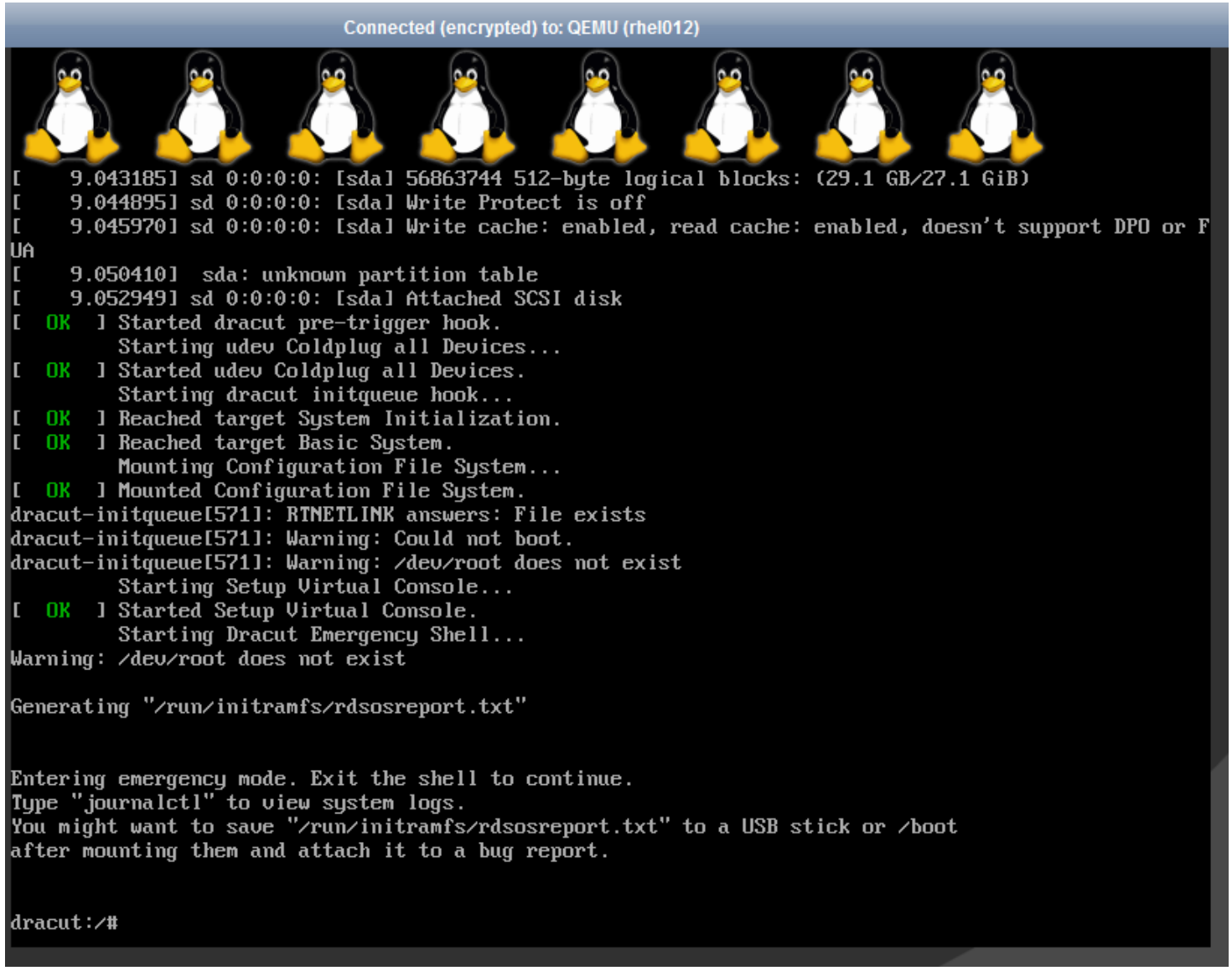
- "wheel" group, password required, is already uncommented in /etc/sudoers
- Put non-root users in wheel group to run commands
- At this time user student is put into the wheel group in the kickstart file
- Non-root user will need to logout, and login again
- sudo violators are recorded in /var/log/secure
- As root in RHEL70, do a tail –f /var/log/secure

- Example below, from when student was not in the wheel group

```
[root@rhel003 log]# tail -f /var/log/secure
Feb 16 15:20:13 rhel003 login: pam_unix(login:session): session closed
 for user root
Feb 16 15:20:19 rhel003 login: pam_unix(login:session): session opened
 for user student by LOGIN(uid=0)
Feb 16 15:20:19 rhel003 login: LOGIN ON hvc0 BY student
Feb 16 15:20:29 rhel003 sudo: student : user NOT in sudoers ; TTY=hvc0 ;
 PWD=/home/student ; USER=root ; COMMAND=/sbin/ifconfig -a
Feb 16 15:20:43 rhel003 su: pam_unix(su-l:session): session opened for
 user root by student(uid=1000)
```

Without DHCP on subnet, virt-install guest fails here

Just FYI… It says run journalctl



Without DHCP on subnet, at the end of journalctl

Again, just FYI, No DHCPOFFERS received…

```
Jan 29 13:35:54 localhost systemd[1]: Mounted Configuration File System.
Jan 29 13:35:54 localhost multipathd[206]: sda: add path (uevent)
Jan 29 13:35:54 localhost multipathd[206]: sda: spurious uevent, path already in pathvec
Jan 29 13:35:55 localhost dracut-initqueue[638]: Starting dhcp for interface eth0
Jan 29 13:35:55 localhost dracut-initqueue[638]: dhcp: PREINIT eth0 up
Jan 29 13:35:55 localhost dhclient[716]: DHCPDISCOVER on eth0 to 255.255.255.255 port 67 interval 8
Jan 29 13:36:03 localhost dhclient[716]: DHCPDISCOVER on eth0 to 255.255.255.255 port 67 interval 12
Jan 29 13:36:15 localhost dhclient[716]: DHCPDISCOVER on eth0 to 255.255.255.255 port 67 interval 11
Jan 29 13:36:26 localhost dhclient[716]: DHCPDISCOVER on eth0 to 255.255.255.255 port 67 interval 18
Jan 29 13:36:44 localhost dhclient[716]: DHCPDISCOVER on eth0 to 255.255.255.255 port 67 interval 12
Jan 29 13:36:56 localhost dhclient[716]: No DHCPOFFERS received.
Jan 29 13:36:57 localhost dracut-initqueue[638]: dhcp failed
Jan 29 13:36:57 localhost dracut-initqueue[638]: RTNETLINK answers: File exists
Jan 29 13:40:05 localhost dracut-initqueue[638]: Warning: Could not boot.
Jan 29 13:40:05 localhost dracut-initqueue[638]: Warning: /dev/root does not exist
Jan 29 13:40:05 localhost systemd[1]: Starting Setup Virtual Console...
Jan 29 13:40:05 localhost systemd[1]: Started Setup Virtual Console.
Jan 29 13:40:05 localhost systemd[1]: Starting Dracut Emergency Shell...
lines 589-624/624 (END)
```

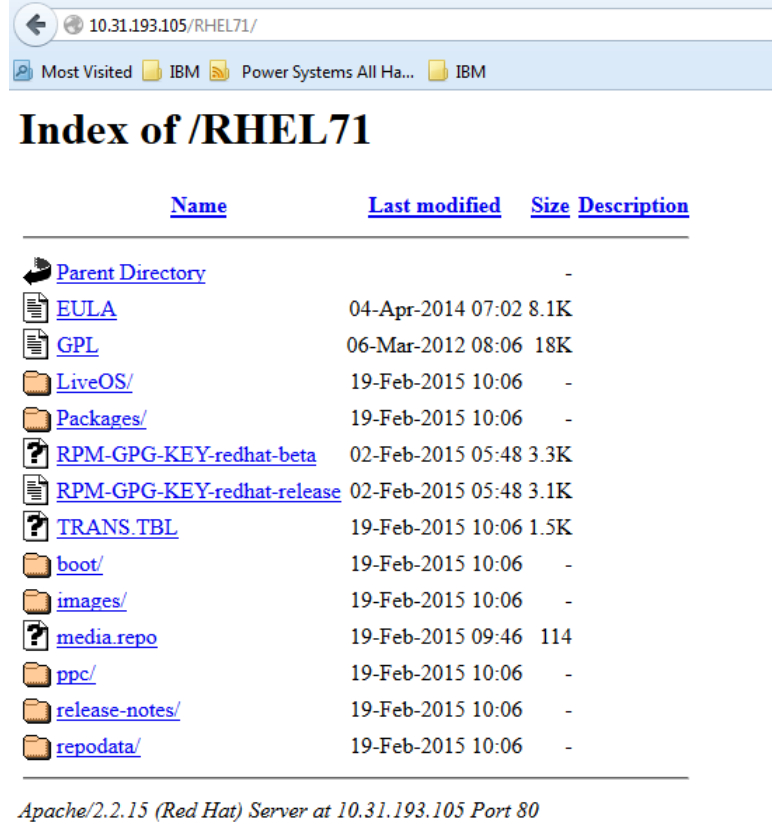
FYI, setup on the http server was minimal

At 10.31.193.105…

ls /iso/RHEL*
/iso/RHEL-7.1-20150219.1-Server-ppc64-dvd1.iso

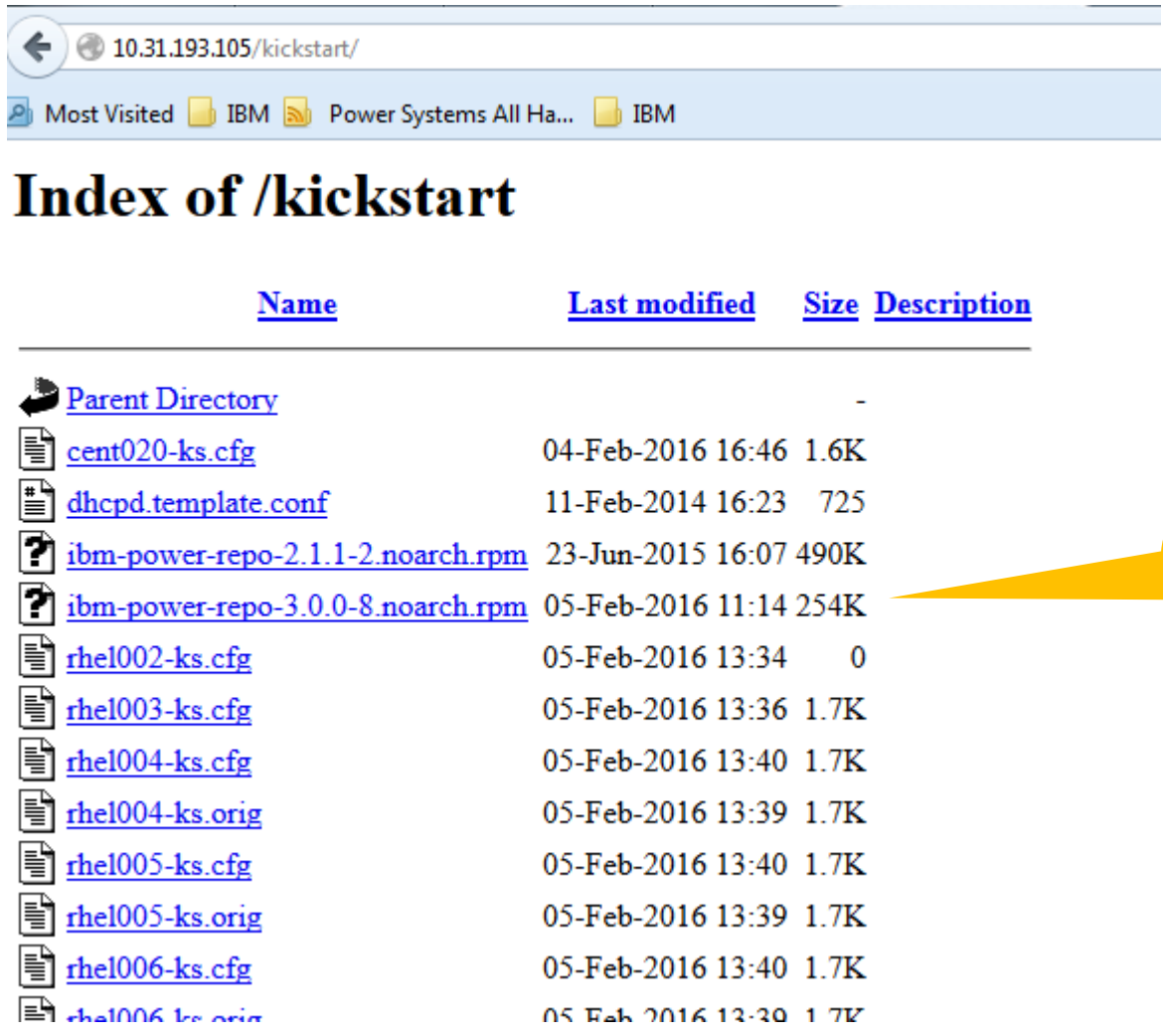
grep RHEL-7 /etc/fstab
/iso/RHEL-7.1-20150219.1-Server-ppc64-dvd1.iso /var/www/html/RHEL71 iso9660 ro,loop

Browser to http://10.31.193.105/RHEL71 and see directory from the RHEL71 media



FYI, setup on the http server was minimal

Browser to http://10.31.193.105/kickstart and see list of kickstart files



- **Your kickstart file did a wget of the ibm-power-repo and then rpm installed it**