Linux Server - Install RedHat 8.6

Summary

Instructions on the install and configuration of a Linux server for Kiwiplan.

Details

Prerequisites

VMware, KVM, Hyper-V machine to host the installation

You will need to use the following command when you vi your files as you cut and paste:

Once in vi you have to hit the colon and then type “set paste”

```
:set paste
```

This will not mess with the paste you put in.

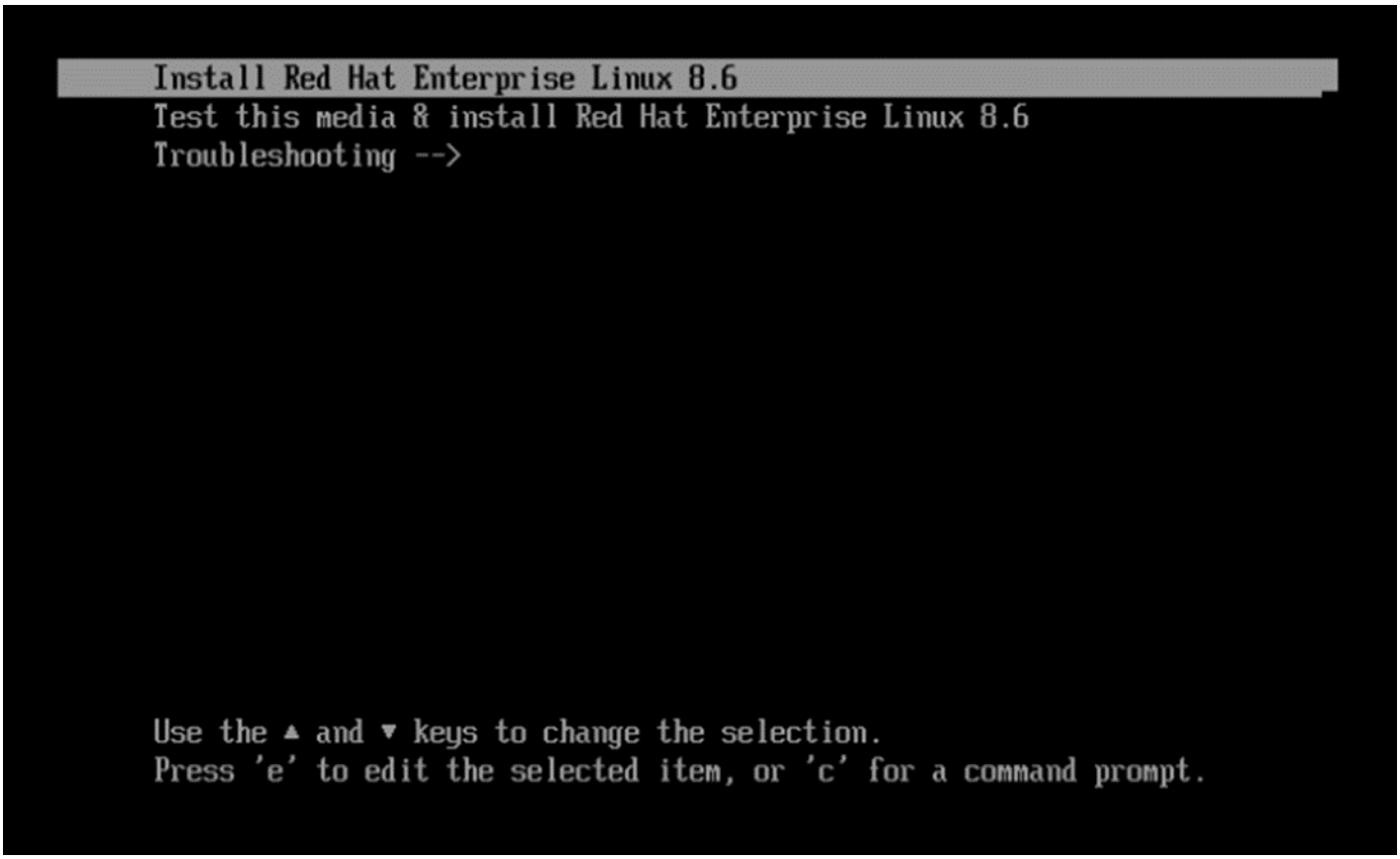
Instructions

Preparing the OS

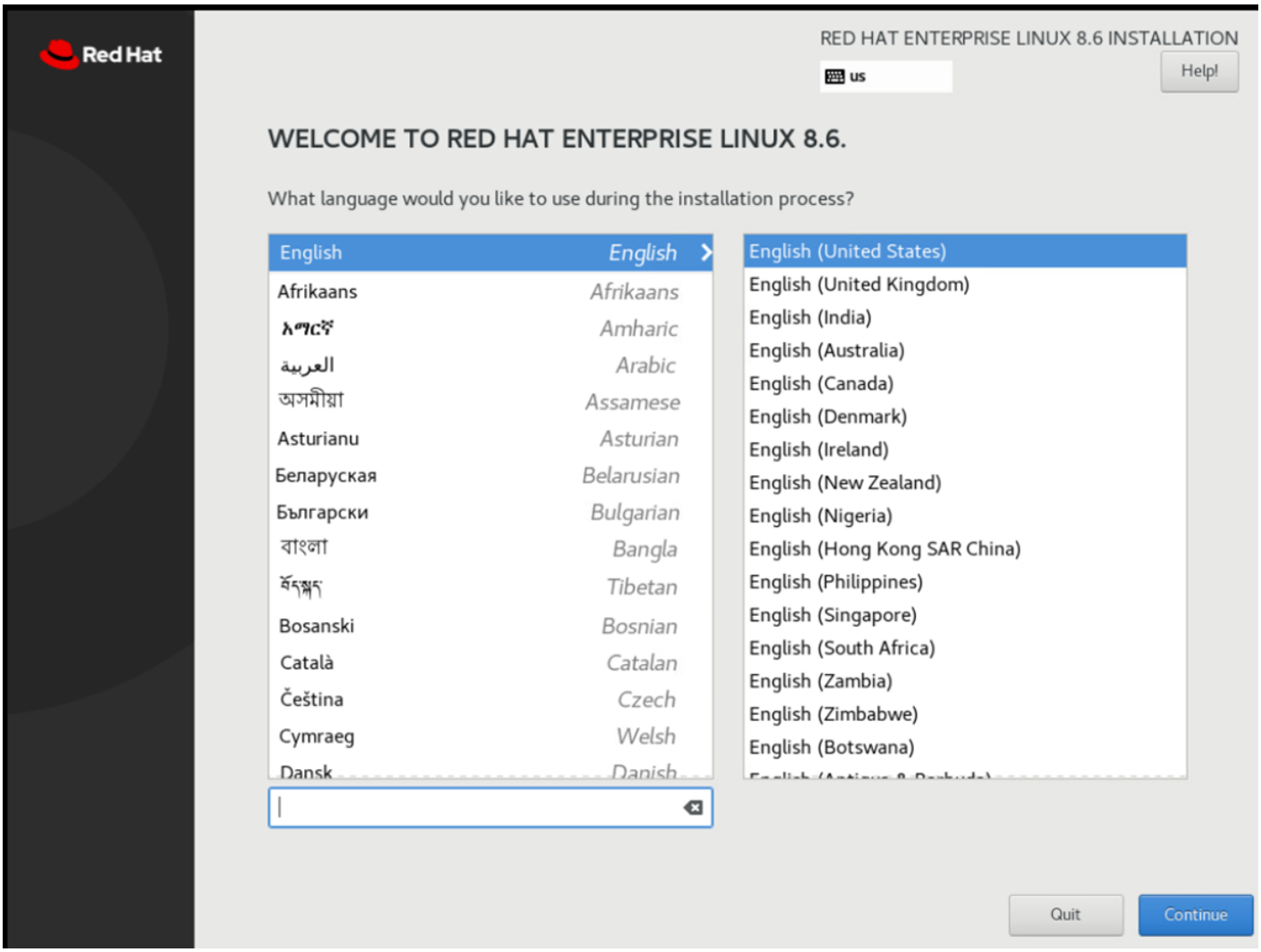
This is to install the OS on a VmWare

VMWare Setup using GUI

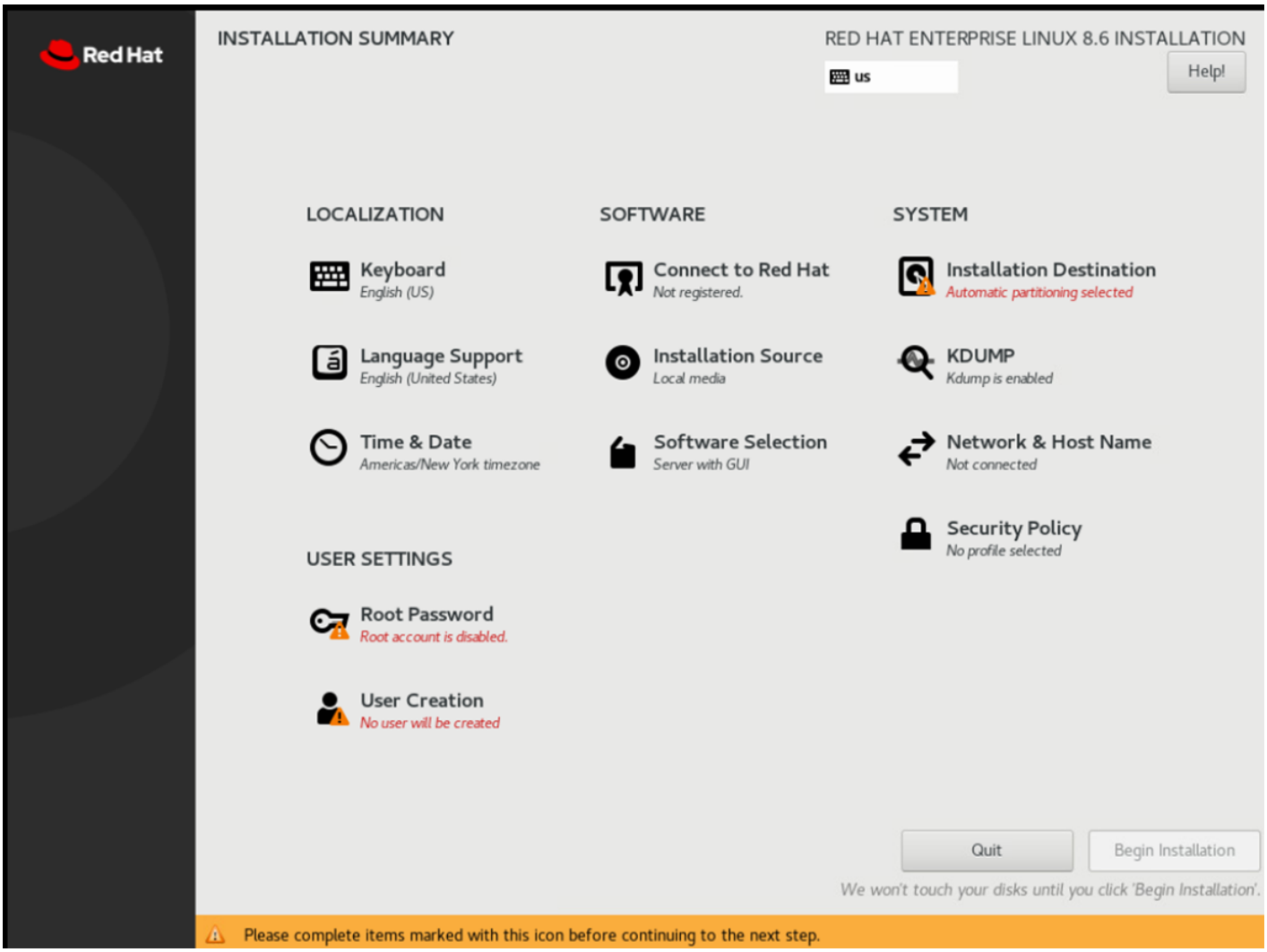
Boot ISO



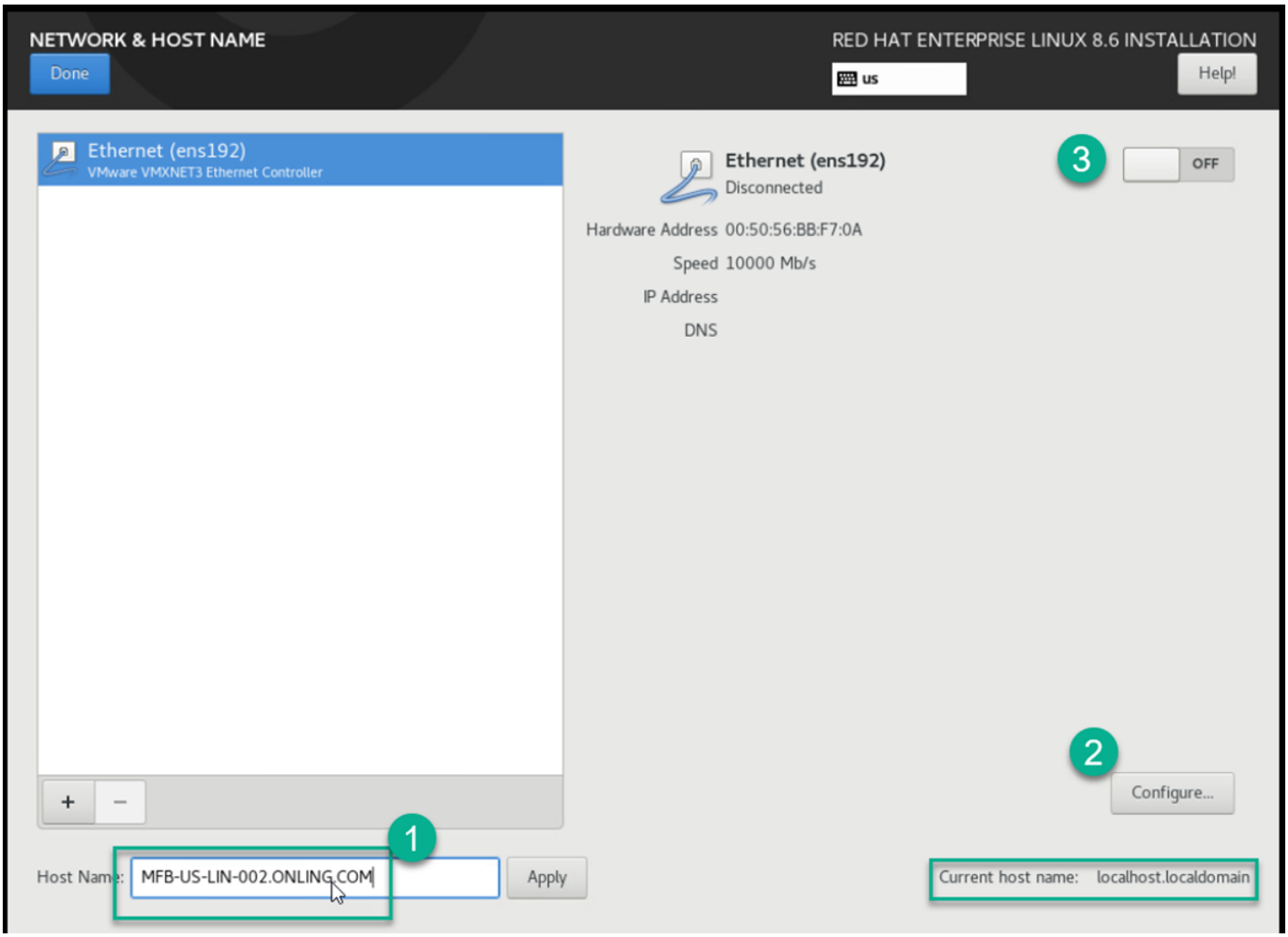
Select “Install RedHat Linux”



Select Language



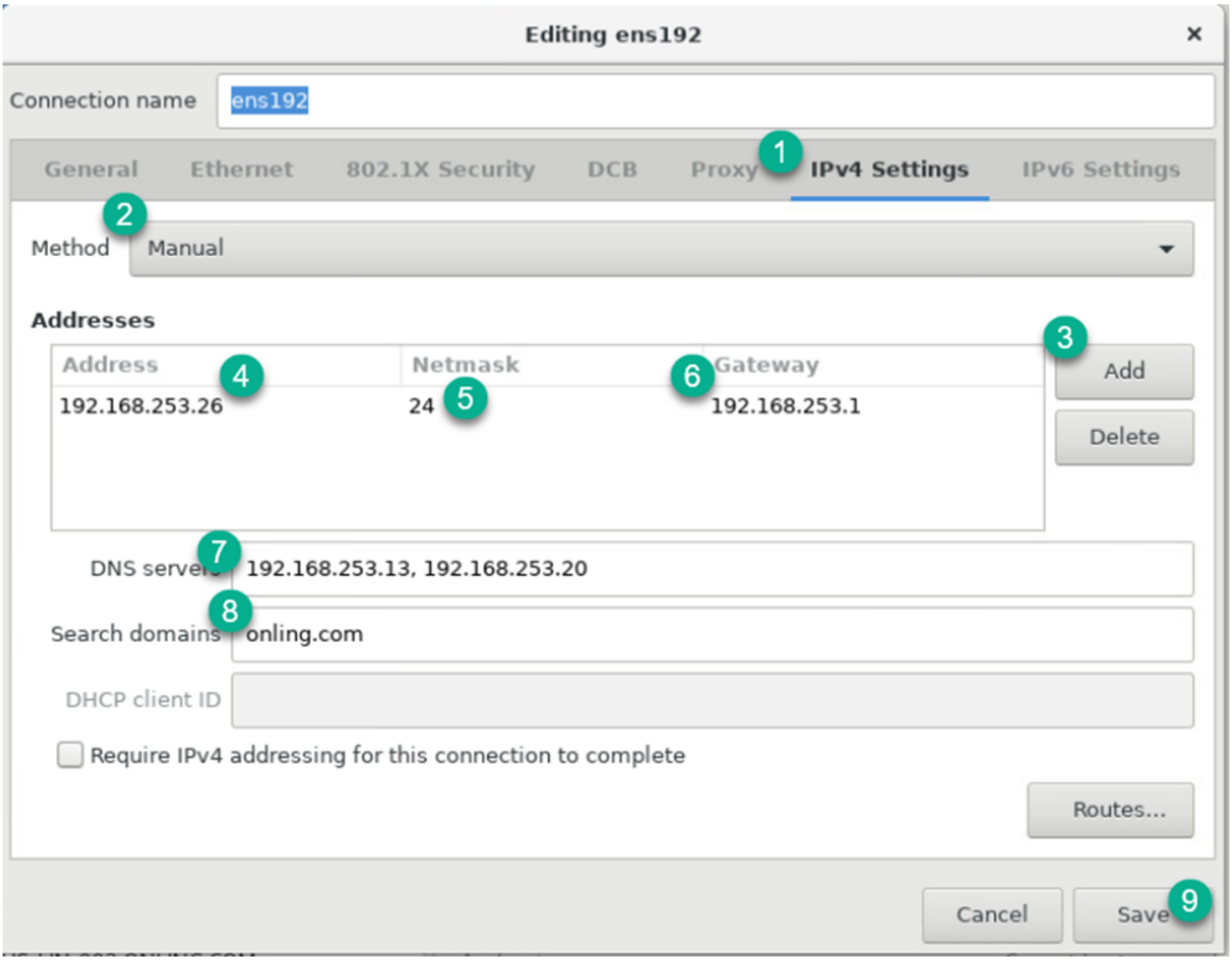
Then Select “Network & Hostname” from install menu.

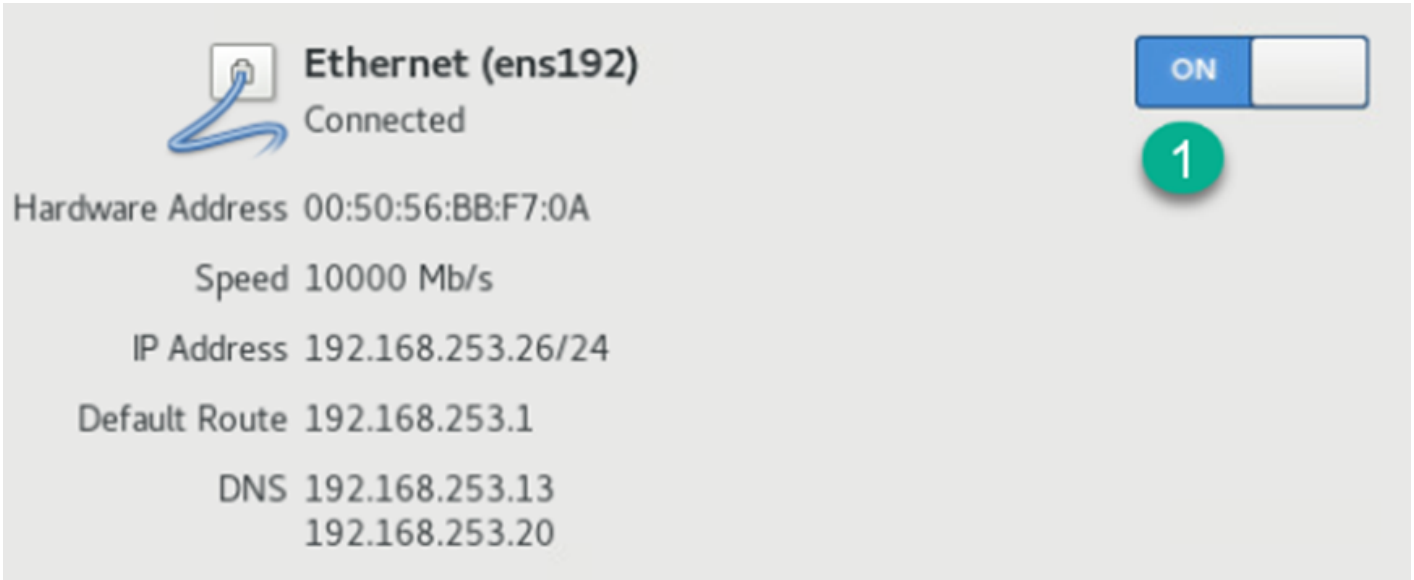


Set hostname and hit apply

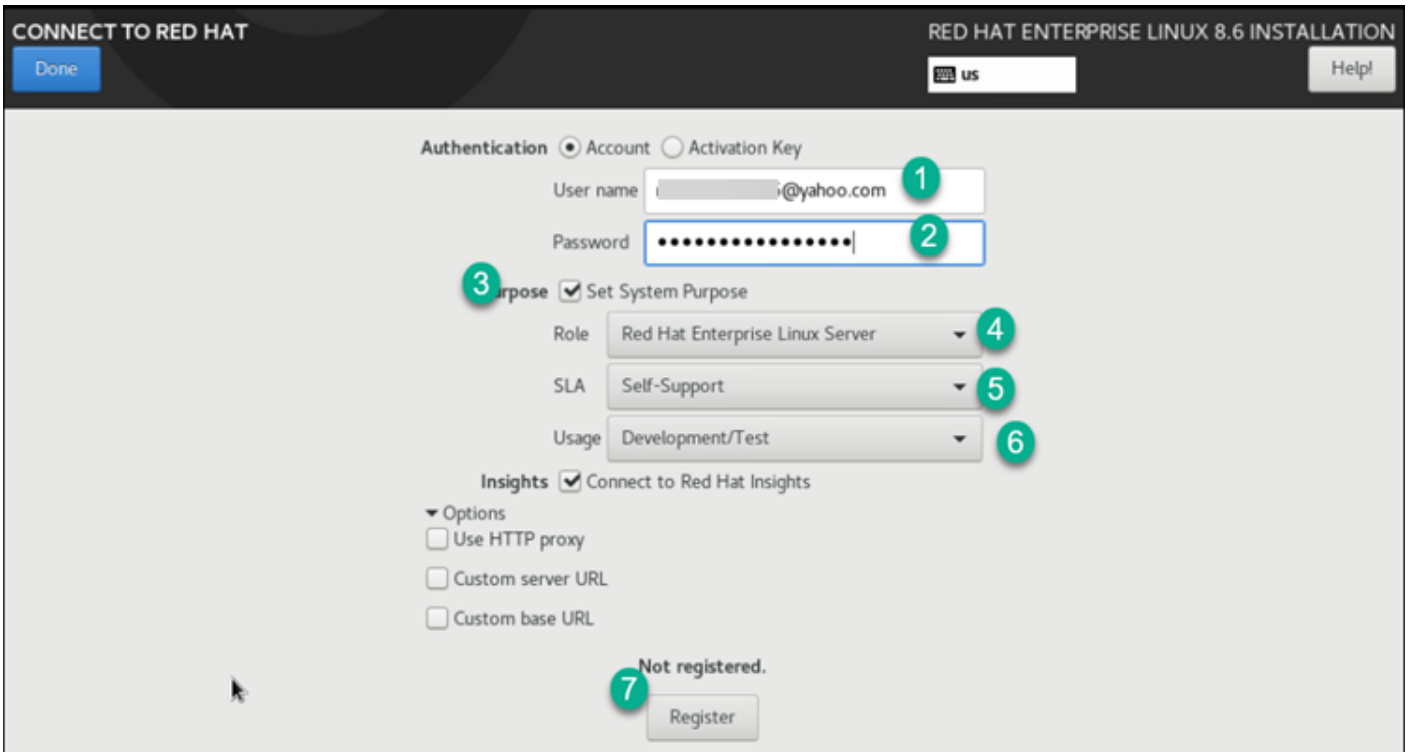
Click Configure and set the IP

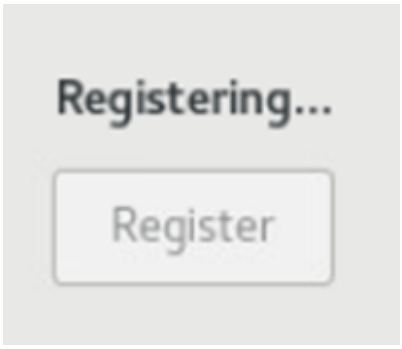
Click on IPv6 Settings and disable it





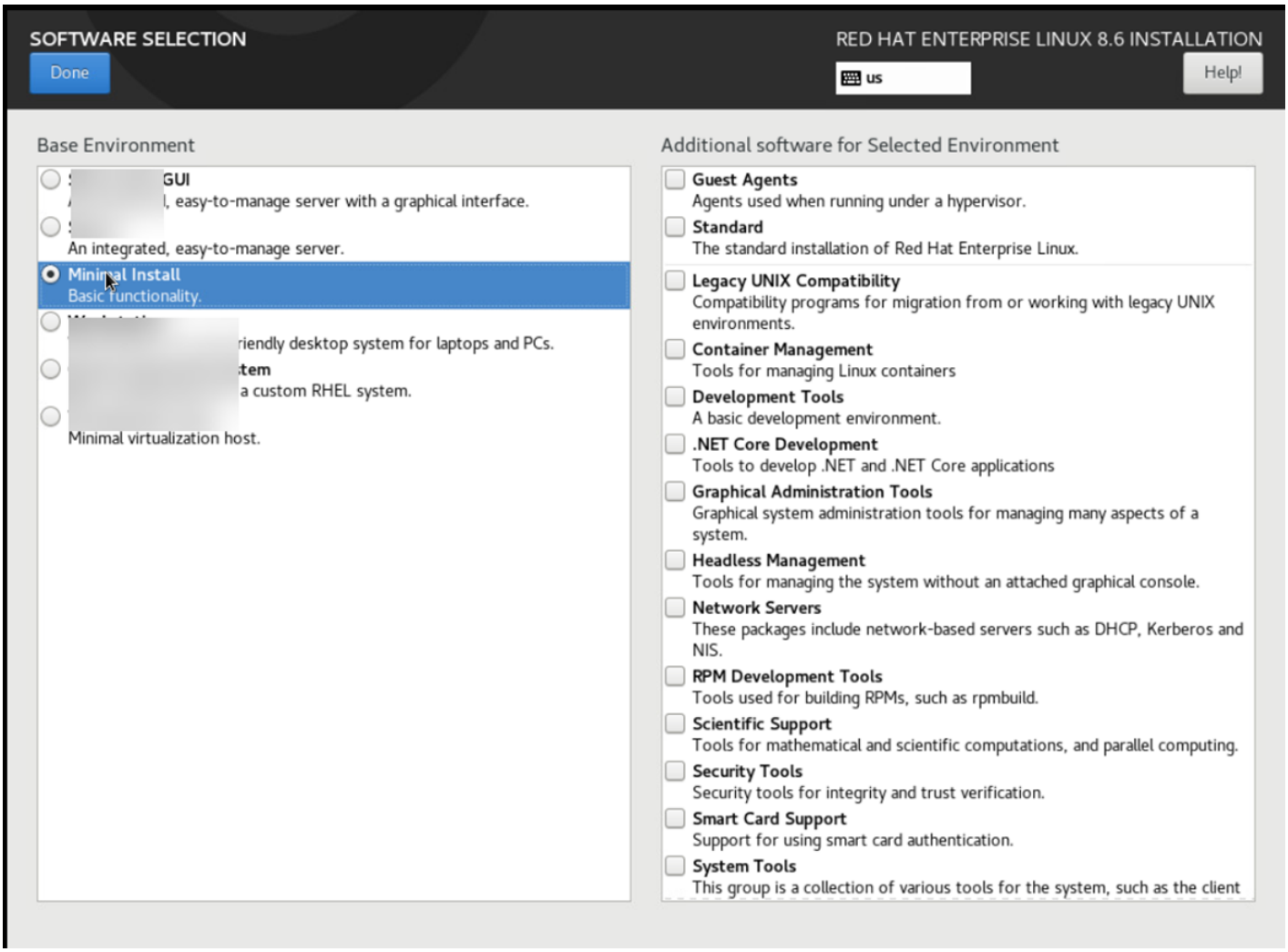
Register Redhat



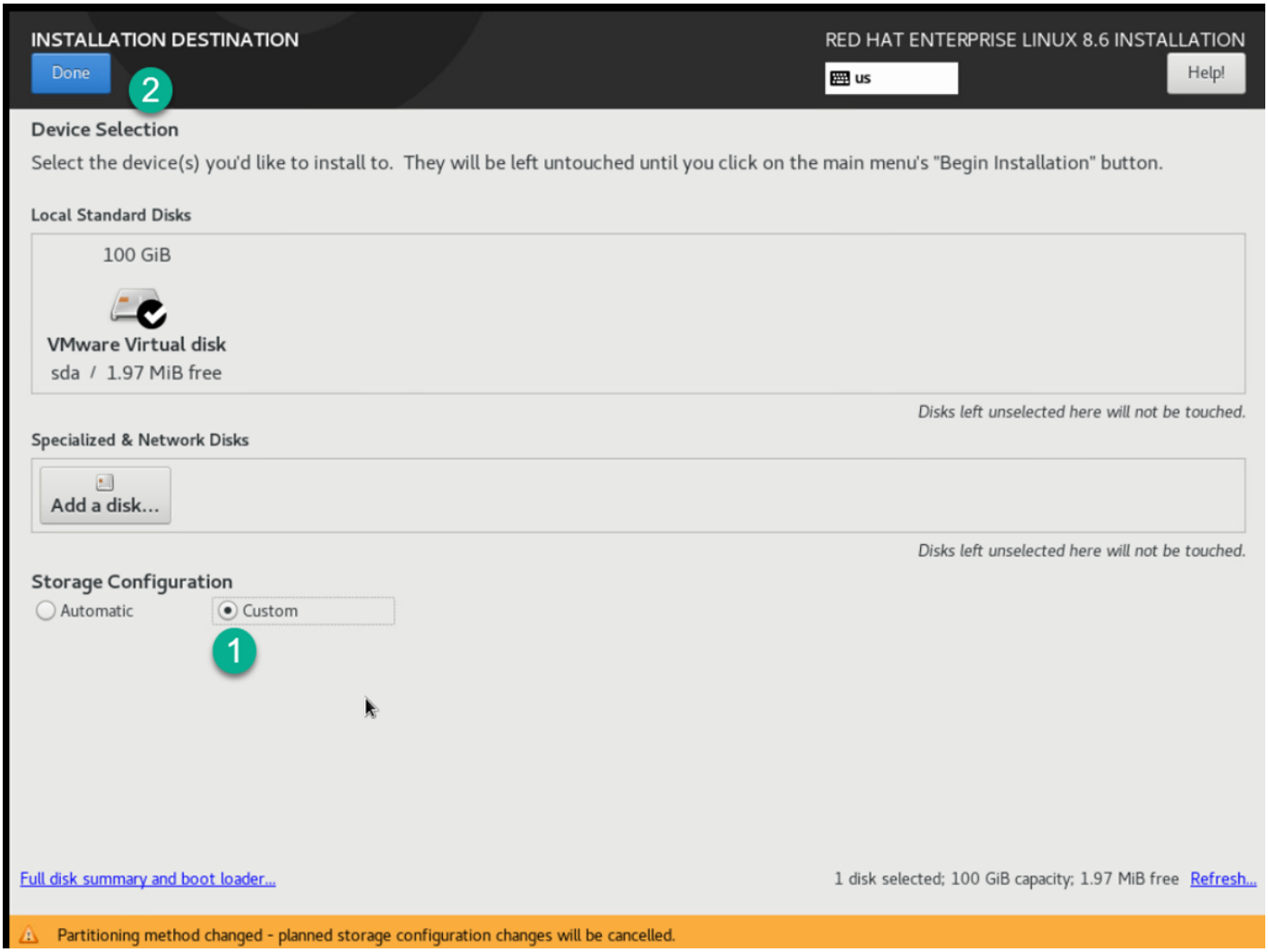


Software Selection

Select Minimal install with nothing else checked

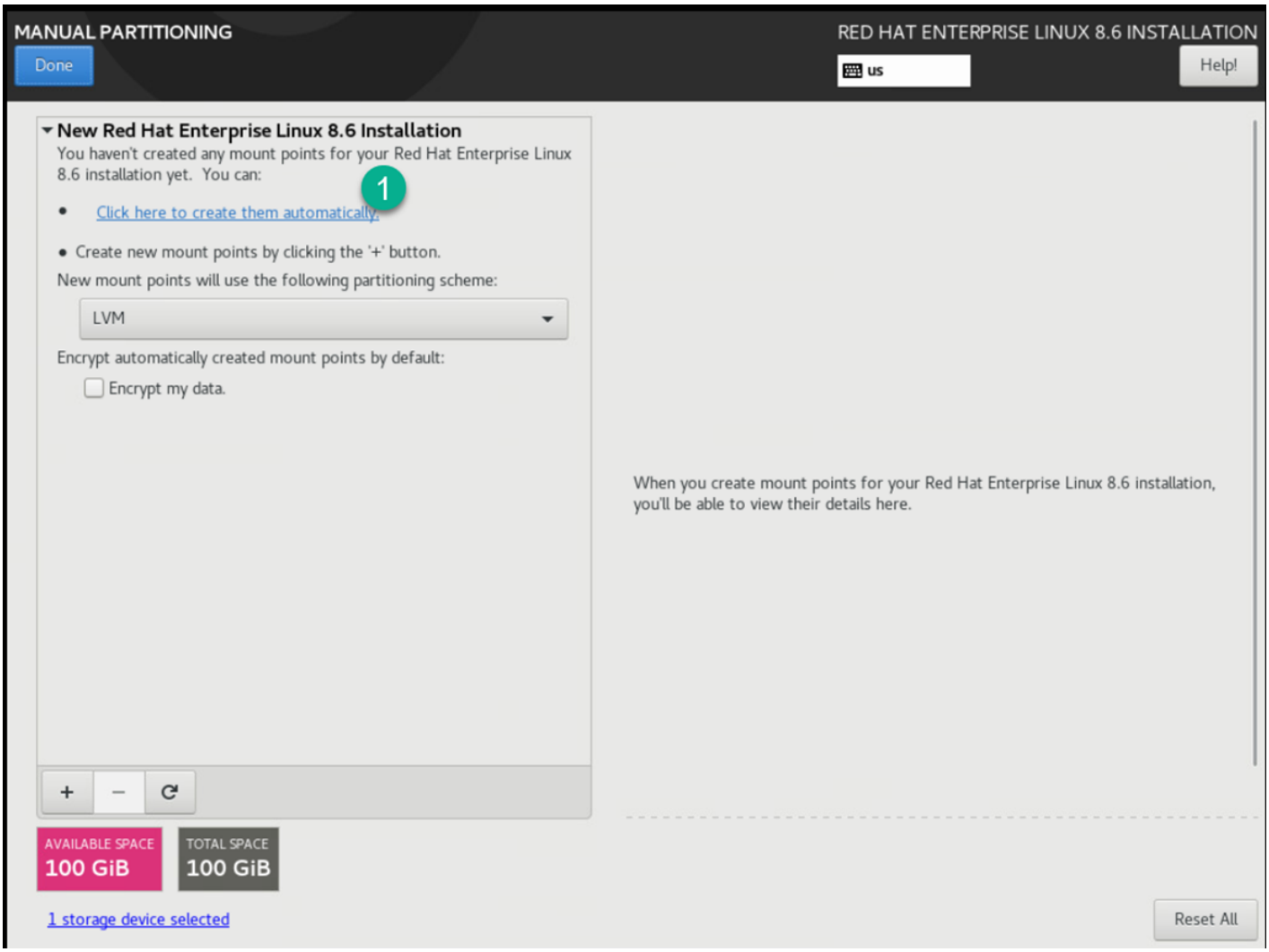


Select “Installation Destination

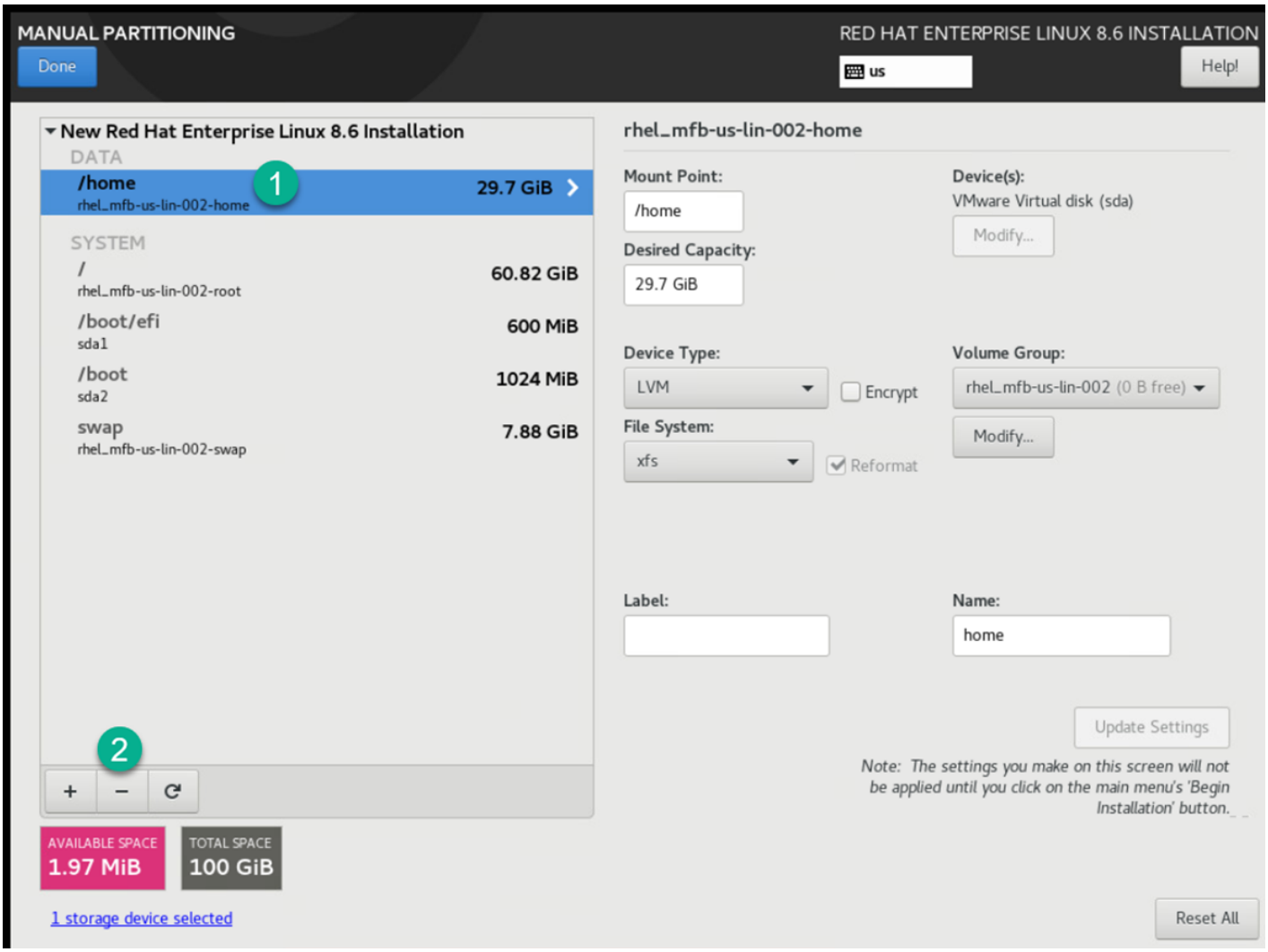


Make sure you select custom to configure the drives and click done

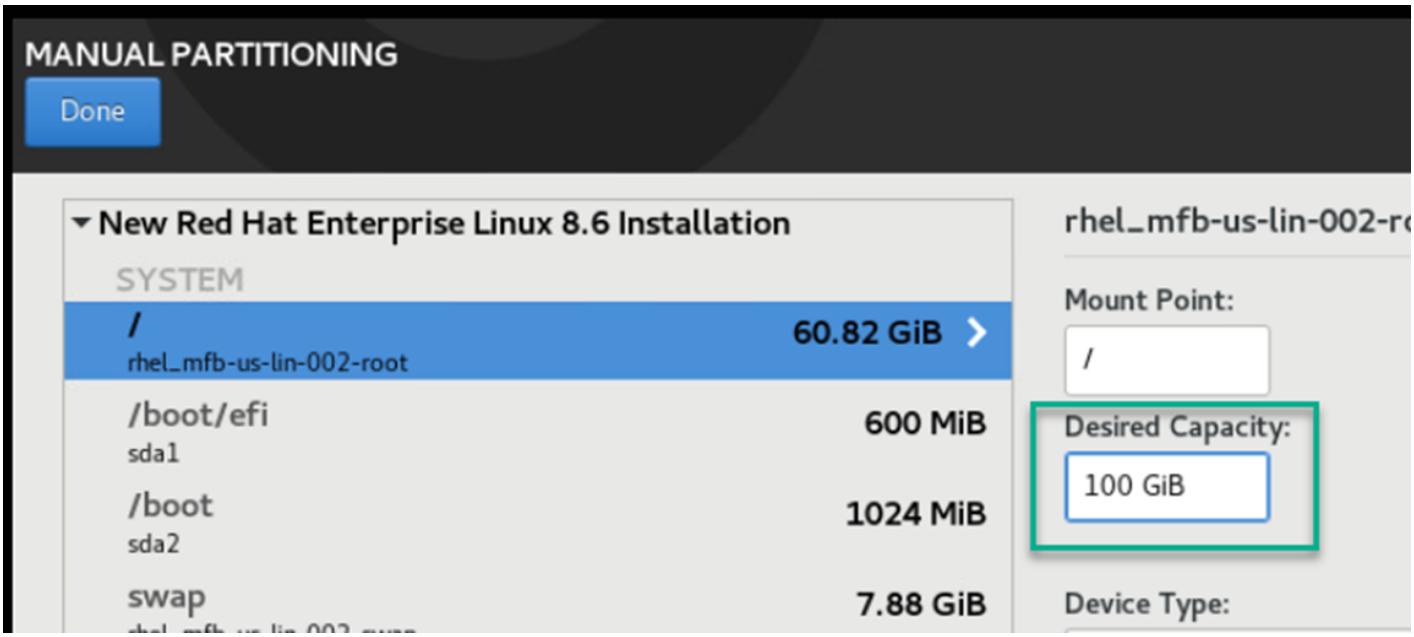
Click on the Hyper Link



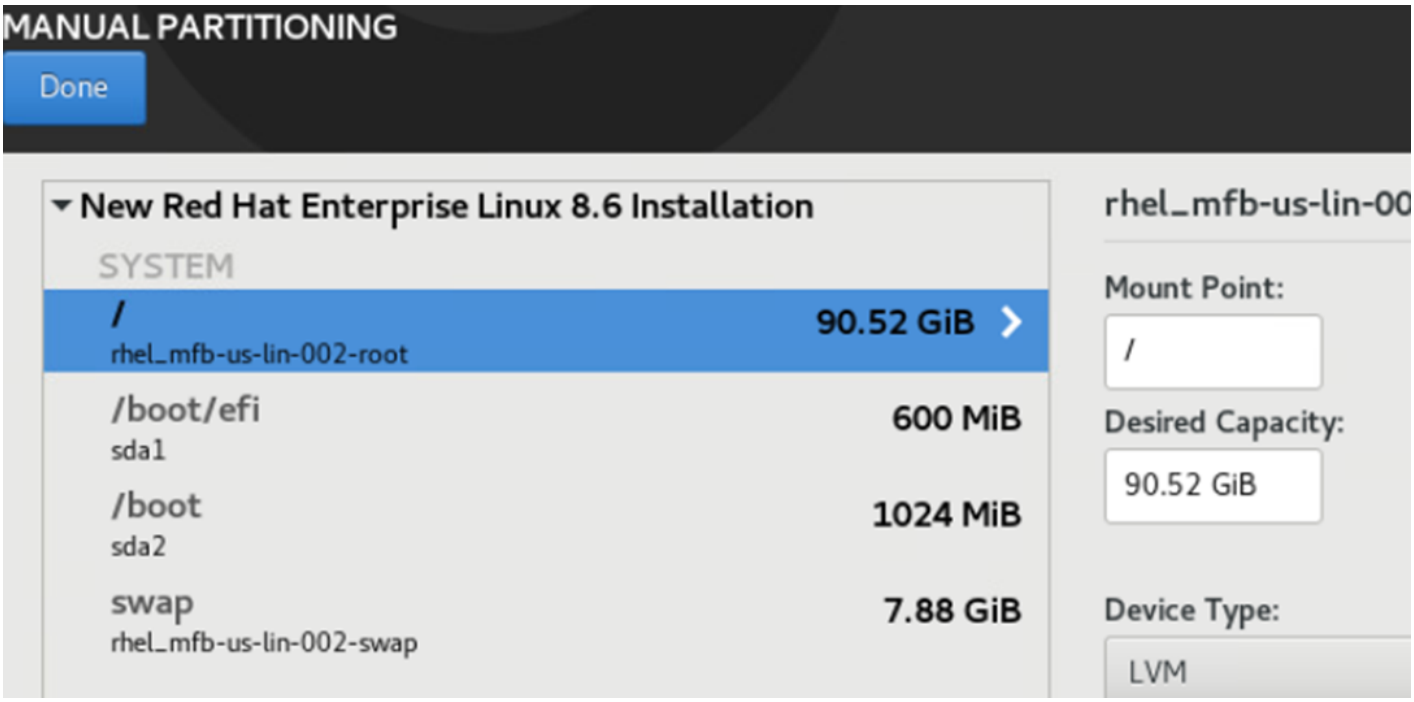
Click on the /home folder and then the minus sign



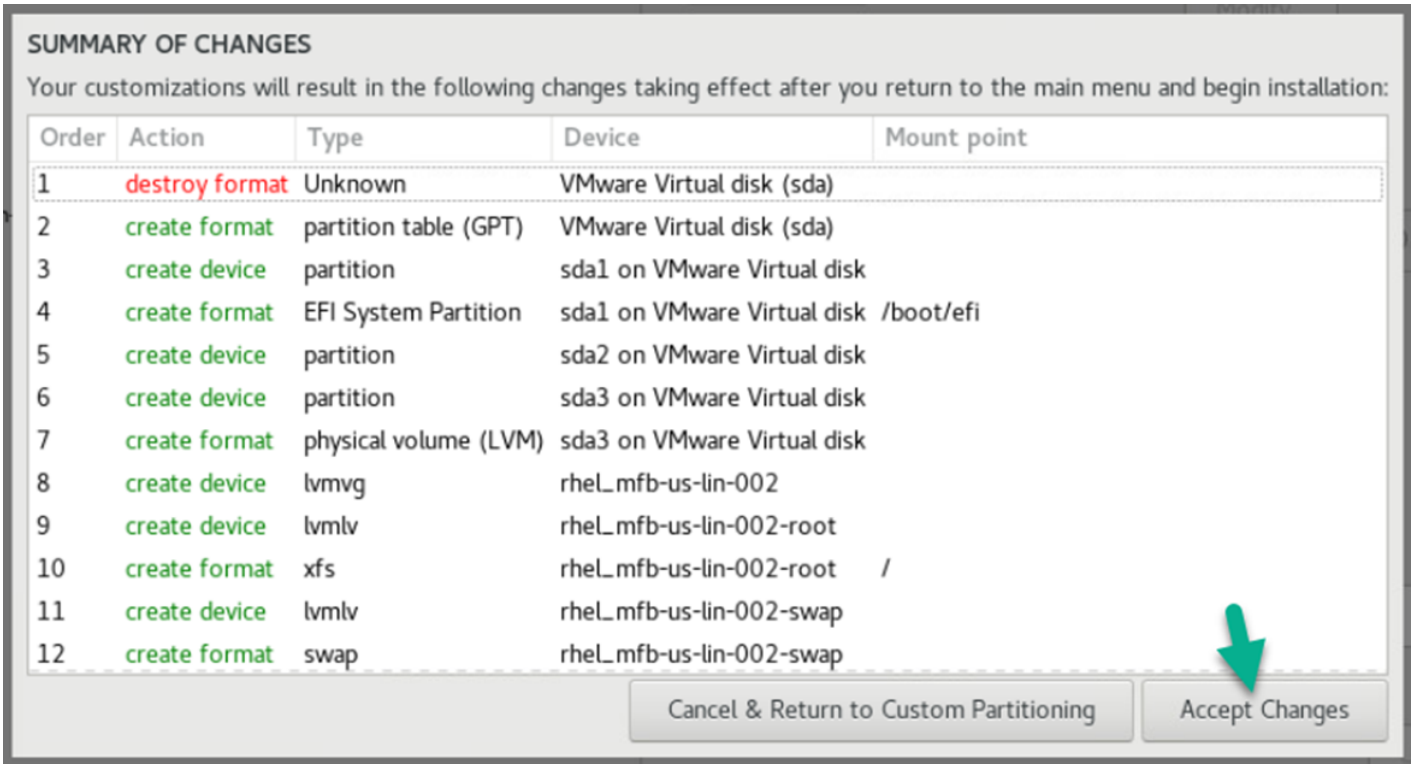
Enter the total original in the Desired Capacity



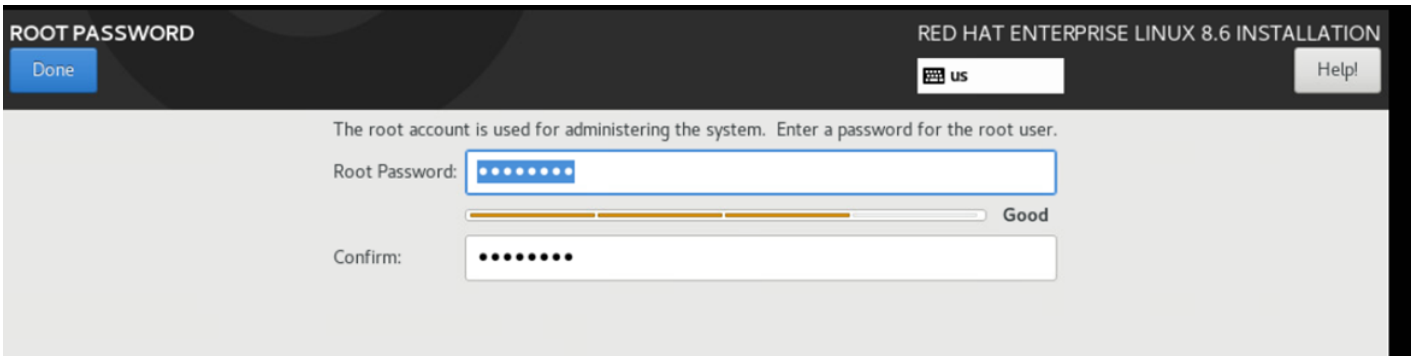
Click on any of the drives and the screen will recalculate the space to the “/” folder which is what we need.



Accept Changes



Root Password



Set “root” Password

Click “Begin Installation”

When finished click on “Reboot System”

Connect to the Server

Use a SSH connection to the server the remaining of the commands in order to cut and pates them in instead of using the VM interface.

Commands to run

This will show all command that need to be ran to update within the OS to start the configuration.

All the command are within each box

Update the System

After install update system packages for the needed configuration.

```
dnf upgrade -y
```

Disable SeLinux

```
setenforce 0
sed -i 's/^SELINUX=.*/SELINUX=disabled/g' /etc/selinux/config
```

Optional: Manually adjust the file which is located here if you wish to edit manually

```
vi /etc/sysconfig/selinux
```

Disable firewall

```
systemctl disable firewalld.service
```

Epel Release

```
subscription-manager repos --enable codeready-builder-for-rhel-8-$(arch)-rpms
dnf install https://dl.fedoraproject.org/pub/epel/epel-release-latest-8.noarch.rpm
```

After Epel installation rerun the upgrade to update if any are needed

```
dnf upgrade -y
```

Install core software

Install Packages

Add the needed packages

Install required system packages

```
dnf install bind-utils bzip2 cups cifs-utils enscript ftp gdb ghostscript java-1.8.0-openjdk-headless java-11-openjdk-headless krb5-workstation ksh lftp lrzsz lsof libnsl lzop mariadb-server mlocate mutt ncompress net-tools net-snmp net-snmp-utils net-tools nfs-utils nmap nvme-cli openldap-clients openssh-clients psmisc realmd rsync samba-client strace sysstat tcpdump telnet telnet-server tmux unix2dos vim vim-enhanced vsftpd wget xfsdump vsftpd htop mc rsyslog rsyslog-doc postfix dbus-daemon s-nail dovecot cyrus-sasl cyrus-sasl-lib cyrus-sasl-plain tree figlet toilet coreutils -y
```

If you are running on a virtual machine run the following

```
dnf install open-vm-tools -y
sysctl vm.swappiness=10
```

Install vim color for scripting

```
dnf install git -y
git clone https://github.com/flazz/vim-colorschemes ~/.vim/
cp ~/.vim/colors/desert.vim /etc/vimrc.local
```

Configure Installed Packages

Configure the packages

Enable Telnet run the following to enable and start the packages

```
systemctl enable telnet.socket
systemctl restart telnet.socket
```

Enable Time Synchronization run the the following and add your domain time server

```
vi /etc/chrony.conf
```

Add your server below the following and make sure you change the domain name from **sflservicesllc.com**

```
# These servers were defined in the installation:
#server _gateway iburst
server domain.sflserviesllc.com iburst
```

Enable Time Synchronization

```
systemctl enable --now chronyd
```

Note: Time-zone changes are made with the command

```
timedatectl
```

Enable FTP run the following

```
vi /etc/vsftpd/vsftpd.conf
```

Make the following changes within the file

```
anonymous_enable=NO
local_umask=002
ascii_upload_enable=YES
ascii_download_enable=YES
```

Start and Enable FTP for transfer in and out for us or other vendors

```
systemctl enable --now vsftpd.service
```

If you have a remote logging server setup then edit the following command

```
vi /etc/rsyslog.conf
```

Then add the following at the end of the file but make sure you update the IP address and replace the XXX's

```
*.* @192.168.XXX.XXX:514    # use @ for UDP Protocal
*.* @@192.168.XXX.XXX:514    # use @@ for TCP Protocal
```

Enable Rsyslog to enable logging locally and remotely

```
systemctl enable --now rsyslog
```

Configure Postfix for Email run the following

```
vi /etc/postfix/main.cf
```

Update the following with your email server

```
relayhost = [ENTER IP or SMTP SERVER] or [sflservicesllc-com.mail.protection.outlook.com]:25
```

Optional if you want to hardcode a domain name run the following

```
vi /etc/postfix/main.cf
```

Update the following with a remote or local email server and make sure you change the domain name from **sflservicesllc.com**

```
myhostname = sflservicesllc.com

mydomain = sflservicesllc.com

mydestination =

relayhost = [ENTER IP or SMTP SERVER] or [sflservicesllc-com.mail.protection.outlook.com]:25
```

Optional f you do not have a email remote/local server

```
vi /etc/postfix/main.cf
```

Update the following for no email server and make sure you change the domain name from **sflservicesllc.com**

```
myhostname = sflservicesllc.com

mydomain = sflservicesllc.com

mail_spool_directory = /var/mail

mynetworks = 127.0.0.0/8, 168.100.189.0/28
```

Enable Postfix

```
systemctl enable --now postfix
```

Test your config this way

```
echo "Install of Linux Rocks $HOSTNAME" | sendmail steve.ling@sflservicesllc.com
```

Locale add-ons to make sure that ANSI applications display correctly so edit the following and replace all of the values with the following

Edit the following:

```
vi /etc/locale.conf
```

Change the following:

```
sudo cat > /etc/locale.conf << EOF
LANG="en_US"
SUPPORTED="en_GB:en_GB-.UTF-8:en_US:en_US.UTF-8:de_DE:de_DE.UTF-8"
SYSFONT="latarcyrheb-sun16"
EOF
```

> Once added the locals exit and telnet back into the server to take the update

Bash colors and Prompt

Bash for root for color edit the following

Dependent on

```
dnf install figlet toilet -y
```

Creating Aliases

```
sudo cat > /etc/profile.d/custom-aliases.sh << EOF
# Common interactive aliases for all users

alias rm='rm -i'
alias cp='cp -i'
alias mv='mv -i'
alias vi='vim'
alias tailf='tail -f'
EOF
```

Server Warning

```
sudo tee /etc/profile.d/custom-prod-warning.sh > /dev/null << 'EOF'
# Colorful PRODUCTION warning banner for interactive logins

if [[ -n "$PS1" && -t 0 && -t 1 ]]; then  # Interactive terminal with stdin/stdout
    RED='\033[1;31m'   # Bold red
    YELLOW='\033[1;33m' # Bold yellow
    NC='\033[0m'       # No color

    echo
    if command -v figlet >/dev/null 2>&1; then
        figlet -f big "PRODUCTION" | while IFS= read -r line; do
```

```
            printf '%b%s%b\n' "$RED" "$line" "$NC"
        done
        figlet -f big "SERVER" | while IFS= read -r line; do
            printf '%b%s%b\n' "$RED" "$line" "$NC"
        done
    else
        echo -e "${RED}***** PRODUCTION SERVER!! *****${NC}"
    fi

    echo
    echo -e "${YELLOW} *** EXTREME CAUTION REQUIRED ***${NC}"
    echo -e "${RED}This is a LIVE PRODUCTION system.${NC}"
    echo -e "${RED}Unauthorized access is strictly prohibited.${NC}"
    echo -e "${RED}All activity is logged and monitored.${NC}"
    echo -e "${YELLOW}Think twice before running commands!${NC}"
    echo

    # Pause briefly to ensure user sees the warning
    read -t 5 -p "Press Enter to continue (auto-continue in 5 seconds)... " || true
    echo
fi
EOF
```

Creating Colorful Prompts

```
sudo tee /etc/profile.d/custom-prompt-and-colors.sh > /dev/null << 'EOF'
# Custom LS_COLORS and improved multi-line colored prompt

# Vibrant LS_COLORS (directories bold blue on gray, etc.)
LS_COLORS='rs=0:di=01;44:ln=01;36:mh=00:pi=40;33:so=01;35:do=01;35:bd=40;33;01:cd=40;33;01:or=40;
31;01:su=37;41:sg=30;43:ca=30;41:tw=30;42:ow=34;42:st=37;44:ex=01;32:*.tar=01;31:*.tgz=01;31:*.arj=01
;31:*.taz=01;31:*.lzh=01;31:*.lzma=01;31:*.tlz=01;31:*.txz=01;31:*.zip=01;31:*.z=01;31:*.Z=01;31:*.dz=01;3
1:*.gz=01;31:*.lz=01;31:*.xz=01;31:*.bz2=01;31:*.bz=01;31:*.tbz=01;31:*.tbz2=01;31:*.tz=01;31:*.deb=01;3
1:*.rpm=01;31:*.jar=01;31:*.rar=01;31:*.ace=01;31:*.zoo=01;31:*.cpio=01;31:*.7z=01;31:*.rz=01;31:*.jpg=01
;35:*.jpeg=01;35:*.gif=01;35:*.bmp=01;35:*.pbm=01;35:*.pgm=01;35:*.ppm=01;35:*.tga=01;35:*.xbm=01;35
:*.xpm=01;35:*.tif=01;35:*.tiff=01;35:*.png=01;35:*.svg=01;35:*.svgz=01;35:*.mng=01;35:*.pcx=01;35:*.mov
=01;35:*.mpg=01;35:*.mpeg=01;35:*.m2v=01;35:*.mkv=01;35:*.ogm=01;35:*.mp4=01;35:*.m4v=01;35:*.mp
4v=01;35:*.vob=01;35:*.qt=01;35:*.nuv=01;35:*.wmv=01;35:*.asf=01;35:*.rm=01;35:*.rmvb=01;35:*.flc=01;
35:*.avi=01;35:*.fli=01;35:*.flv=01;35:*.gl=01;35:*.dl=01;35:*.xcf=01;35:*.xwd=01;35:*.yuv=01;35:*.cgm=01;
35:*.emf=01;35:*.axv=01;35:*.anx=01;35:*.ogv=01;35:*.ogx=01;35:*.aac=00;36:*.au=00;36:*.flac=00;36:*.mi
d=00;36:*.midi=00;36:*.mka=00;36:*.mp3=00;36:*.mpc=00;36:*.ogg=00;36:*.ra=00;36:*.wav=00;36:*.axa=0
```

```
0;36:*.oga=00;36:*.spx=00;36:*.xspf=00;36:'
export LS_COLORS

# Color and style variables (cached tput calls for speed)
RESET=$(tput sgr0)
BOLD=$(tput bold)
BG_GRAY=$(tput setab 8)
FG_RED=$(tput setaf 1)
FG_MAGENTA=$(tput setaf 5)
FG_GREEN=$(tput setaf 2)
FG_CYAN=$(tput setaf 6)

# Multi-line prompt
PS1="\n${BOLD}${BG_GRAY}${FG_RED}\\u${FG_MAGENTA}@${FG_RED}\`hostname\`${FG_GREEN} :
\`uname\` : ${FG_CYAN}\\d \\t : \${PLANTID:+\$PLANTID }\n${FG_CYAN}[\\w]${RESET}${BOLD} \\\$
${RESET}"
export PS1
EOF
```

Database Install and Configuration

Configure MariaDB

> Optional: To add the MariadB repo to get the latest revision other then the one that is included in the RedHat

> MySQL/MariaDB reported a problem with 10.5, you should consider upgrading to 10.6

Install the new Repo for MariaDB

```
curl -sS https://downloads.mariadb.com/MariaDB/mariadb_repo_setup | sudo bash
```

This is the location of

```
vi /etc/yum.repos.d/MariaDB.repo
```

You have to change the yellow below to get the desired version

```
[mariadb]
name = MariaDB
baseurl = https://rpm.mariadb.org/10.6/rhel/$releasever/$basearch
gpgkey= https://rpm.mariadb.org/RPM-GPG-KEY-MariaDB
gpgcheck=1
```

> Done with Optional

Run the following

```
systemctl edit mariadb.service
```

Then add the following to the file in between these lines or if blank just add and save

```
### Editing /etc/systemd/system/mariadb.service.d/override.conf
### Anything between here and the comment below will become the new contents of the file

[Service]
LimitNOFILE=32768

### Lines below this comment will be discarded
```

Run the following

```
vi /etc/my.cnf.d/client.cnf
```

Add the following below the **[client]** section

```
socket=/var/lib/mysql/mysql.sock
```

Run the following

```
vi /etc/my.cnf.d/mariadb-server.cnf
```

Add the following below the **[mysqld]** section and you will have to use the **:set paste** command or it will not paste correctly

```
#Custom
performance_schema = ON
tmpdir = /run/mariadb
thread_cache_size = 4
table_open_cache = 16384
table_definition_cache = 8384
sql_mode = ERROR_FOR_DIVISION_BY_ZERO,NO_AUTO_CREATE_USER,NO_ENGINE_SUBSTITUTION

query_cache_type = 0
query_cache_size = 0
query_cache_limit = 128M
query_cache_strip_comments = 1

tmp_table_size = 512M
max_heap_table_size = 512M

max_connections = 512
max_allowed_packet = 24M
sort_buffer_size = 24M
join_buffer_size = 48M

innodb_buffer_pool_size = 4G
innodb_buffer_pool_instances = 4
innodb_use_native_aio = 1
innodb_flush_log_at_trx_commit = 0
innodb_file_per_table
innodb_log_file_size = 512M

#Optional configuration for transaction loggin
log_bin = /var/log/mariadb/mariadb.log
expire_logs_days = 2
```

Reload the changes

```
systemctl daemon-reload
```

Enable and start MySQL/MariaDB on boot

```
systemctl enable --now mariadb.service
```

Run the following

```
mysql
```

Then execute the following statements also make sure to (**change passwords as needed XXXXXXXXXX but NOT the users names**)

```
CREATE USER 'kiwisql'@'%' IDENTIFIED BY 'XXXXXXXXXX';
GRANT all ON *.* TO 'kiwisql'@'%' WITH GRANT OPTION;
CREATE USER 'kiwisql'@'localhost' IDENTIFIED BY 'XXXXXXXXXX';
GRANT all ON *.* TO 'kiwisql'@'localhost' WITH GRANT OPTION;
CREATE USER 'kiwilive'@'localhost' IDENTIFIED BY 'XXXXXXXXXX';
GRANT all ON *.* TO 'kiwilive'@'localhost';
CREATE USER 'remuser'@'localhost' IDENTIFIED BY 'XXXXXXXXXX';
GRANT all ON *.* TO 'remuser'@'localhost' WITH GRANT OPTION;
CREATE USER 'reports'@'%' IDENTIFIED BY 'XXXXXXXXXX';
GRANT SHOW DATABASES, SELECT, EXECUTE, PROCESS, SHOW VIEW  ON *.* TO 'reports'@'%';
FLUSH PRIVILEGES;
Quit
```

Build skeleton for the Kiwiplan Environment

Command to Run

Setup the user environment

Remember to change the **remuser** & **esp** password

ESP username password is the global password store in ESP to let it connect and is *unfortunately* visible to an admin user but please make sure to (**change passwords as needed XXXXXXXXXX but NOT the users names**)

```
groupadd kiwiplan
mkdir /opt/kiwi
ln -s /opt/kiwi/ /KIWI
mkdir /opt/kiwi/{home,rev}
mkdir /opt/kiwi/rev/{map,mes}
```

```
useradd -g kiwiplan -G wheel -d /KIWI/home/remuser/ remuser
echo XXXXXXXXXX | passwd --stdin remuser
useradd -g kiwiplan -d /KIWI/home/esp/ esp
echo XXXXXXXXXX | passwd --stdin esp
chown -R remuser:kiwiplan /opt/kiwi
mkdir /etc/kiwiplan
chown remuser:kiwiplan /etc/kiwiplan
```

Configure kidds

Remember your **:set paste** command

Edit xinetd.conf:

```
vi /etc/xinetd.conf
```

Add the following ad the end of the # Define access restriction defaults section

```
instances       = 200
per_source      = 80
```

Should look like this:

```
#
# This is the master xinetd configuration file. Settings in the
# default section will be inherited by all service configurations
# unless explicitly overridden in the service configuration. See
# xinetd.conf in the man pages for a more detailed explanation of
# these attributes.
defaults
{
# The next two items are intended to be a quick access place to
# temporarily enable or disable services.
#
#       enabled         =
#       disabled        =
# Define general logging characteristics.
        log_type        = SYSLOG daemon info
        log_on_failure  = HOST
        log_on_success  = PID HOST DURATION EXIT
# Define access restriction defaults
#
#       no_access       =
#       only_from       =
#       max_load        = 0
        cps             = 50 10
        instances       = 200
        per_source      = 80
# Address and networking defaults
#
#       bind            =
#       mdns            = yes
        v6only          = no
# setup environmental attributes
#
#       passenv         =
        groups          = yes
        umask           = 002
# Generally, banners are not used. This sets up their global defaults
#
#       banner          =
#       banner_fail     =
#       banner_success  =
}
includedir /etc/xinetd.d
```

Append to end of the services:

```
kidd            2326/tcp                # Kiwiplan Interface Daemon
```

Run the following to add the kidds service:

```
sudo tee /etc/xinetd.d/kidd <<EOF
# default: on
# description: The kidd server serves kidd sessions; it uses \
```

```
# unencrypted username/password pairs for authentication.
service kidd
{
        disable = no
        flags           = REUSE
        socket_type     = stream
        wait            = no
        user            = root
        server          = /KIWI/rev/current/progs/kidd
        server_args     = -a -p -F 1
        log_on_failure  += USERID
        env             = HOME=/tmp
}
EOF
```

Start the service:

```
systemctl start kidd.socket
systemctl enable kidd.socket
```

> The above will only work once you have the Kiwiplan environment configured/installed

VUE Installation Configurations

Adjust system limits for VUE products

Edit the following

```
vi /etc/security/limits.d/20-nproc.conf
```

Add the following

```
@kiwiplan  soft     nproc     32768
```

Edit the following

```
vi /etc/security/limits.conf
```

Then add the following before the **#End of file**

```
@kiwiplan    -    nofile    32768
```

Installing MsSQL Tool

Configure MsSQL tools

Install the repo for the MsSQL service/connection

```
curl https://packages.microsoft.com/config/rhel/8/prod.repo > /etc/yum.repos.d/msprod.repo
```

This will only work once you have the Kiwiplan environment configured/installed

Install the packages make sure you answer/type **YES** to all

```
dnf remove mssql-tools unixODBC-utf16-devel
dnf install mssql-tools unixODBC-devel -y
```

STOP HERE FOR YOUR TEMPLATE BUILD

RESTART FROM HERE AFTER TEMPLATE BUILD

Linux RedHat Registration

Re-Register the server with RedHat if you entered initial credentials to add the server

You need to run the **nmtui** command to bring up the menu from above in this documentation and then simply change the IP and also the hostname

Run the following and this will change the subscription details

```
subscription-manager register --force
subscription-manager attach --auto
```

Activate Directory Setup

Using SSSD

Install the following packages

```
yum install sssd sssd-tools realmd samba-common-tools oddjob oddjob-mkhomedir adcli samba -y
```

Run this just in-case your domain is still using RC4

```
update-crypto-policies --set DEFAULT:AD-SUPPORT
```

Configure KRB5

Edit the following file and make sure the following is added/changed

```
vi /etc/krb5.conf
```

Add or changed the following below

```
# To opt out of the system crypto-policies configuration of krb5, remove the
# symlink at /etc/krb5.conf.d/crypto-policies which will not be recreated.
includedir /etc/krb5.conf.d/
[logging]
    default = FILE:/var/log/krb5libs.log
    kdc = FILE:/var/log/krb5kdc.log
    admin_server = FILE:/var/log/kadmind.log
[libdefaults]
    dns_lookup_realm = true
    ticket_lifetime = 24h
    renew_lifetime = 7d
    forwardable = true
    rdns = true
    pkinit_anchors = FILE:/etc/pki/tls/certs/ca-bundle.crt
    spake_preauth_groups = edwards25519
  dns_canonicalize_hostname = fallback
  qualify_shortname = ""
    default_realm = ONLING.COM
    default_ccache_name = KEYRING:persistent:%{uid}
    udp_preference_limit = 0

[realms]
 ONLING.COM = {
     kdc = domain_controller..onling.com
     admin_server = domain_controller..onling.com
 }
[domain_realm]
 .onling.com = ONLING.COM
 onling.com = ONLING.COM
```

Join the server to the domain

Configurating the SSSD (in yellow update to site specific) (in green needs to be capitalized)

You must have the access to add to the AD server or the server has to be add first before you run the following command.

> For the join you may need to specify the -OU's for the specific location

```
# realm discover onling.com
# realm join -U administrator@ONLING.COM --verbose domain_controller.onling.com
# authselect select sssd with-mkhomedir
# authselect apply-changes
```

Copy from below and make changes

```
realm discover onling.com
realm join -U administrator@ONLING.COM --verbose domain_controller.onling.com
authselect select sssd with-mkhomedir
authselect apply-changes
```

Update SSSD config

Once joined then you can change or add the following parameters

```
vi /etc/sssd/sssd.conf
```

```
[sssd]
domains = onling.com
config_file_version = 2
services = nss, pam

[domain/onling.com]
default_shell = /bin/bash
ad_server = sfl-dom-001.onling.com
krb5_store_password_if_offline = True
cache_credentials = True
krb5_realm = ONLING.COM
realmd_tags = manages-system joined-with-adcli
id_provider = ad
fallback_homedir = /home/%d/%u
ad_domain = onling.com
use_fully_qualified_names = false
ldap_id_mapping = True
access_provider = ad
override_gid = 1000
ad_gpo_ignore_unreadable = true
ad_gpo_access_control = disabled
timeout = 300
```

Restarting SSSD

```
systemctl stop sssd; sss_cache -E; systemctl start sssd
```

Optional SSSD configurations

Defaults to no Shell Access, allows short usernames

Optional (Group allow) additional parameters and changes

```
simple_allow_groups = sssd-users
OR
simple_allow_groups =  gg-C3193???-KiwiTS_access
```

Add users to SSSD

Optional grant shell access and force primary group to kiwiplan, change john.doe to the username

```
sss_override user-add john.doe -g $(getent group kiwiplan | cut -d: -f3) -s /bin/bash -h /KIWI/home/john.doe
```

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