Installing Fedora for LANforge

Installing Fedora is the first step to building a LANforge machine. You might be doing this when you are installing to new hardware, doing an OS update, or replacing a failed hard drive. LANforge should work on most releases of Fedora, but please ask your support contact for a suggested version.

LANforge 5.3.7 on Fedora 27 was the most recent combination as of this writing.

Suggested Items

We want to begin with:

- Your normally working desktop or laptop and an Internet Connection
- PC/Server computer with 4GB+ RAM and 16GB+ SSD/Hard drive. If you are replacing the hard drive, do the hard-drive replacement before you start these instructions.
- If you are doing an OS Upgrade, please run these commands on the LANforge sysetm as root user and use WinSCP or similar to save the lf_state.tgz off the LANforge machine:

  cd /home/lanforge
  tar -cvzf lf_state.tgz license.txt DB config.values

- 4GB USB stick
- Downloaded Fedora .ISO image

Hard drive replacement in CT523 chassis

On a CT52x chassis, you can open the bottom of the case by turning the unit over and unscrewing the rubber feet. When you open this back panel of the chassis, you will see a SSD attached to the inside of the bottom panel.
1. **Download ISO image**

Begin by downloading a Fedora MATE install CD image. The Fedora project describes making these CD images on their website. We suggest looking at their installation guide as well. Fedora comes in a stock workstation image and many spins. Our instructions assume using the MATE spin. MATE is a lower resource desktop with a more familiar look and feel to older Fedora and Windows users. You will want to download the F27 ISO image. Once you download your image, we suggest you verify the SHA256 hash. There are PowerShell techniques to do verification as well. For Fedora 27, the signatures are here. →

2. **Write the ISO to the USB stick**

After you’ve downloaded the F24 disk image Fedora-MATE-Compiz-Live-x86_64-27-1.6.iso to your Downloads folder, you will plug in your USB stick and burn the image to it:

**On Windows**

There are a number of utilities you can use to write ISO files to USB sticks, but here are two recommended methods: 1) the Fedora Media Writer, and 2) Rufus.

**Fedora Media Writer**

The Fedora project provides the Fedora Media Writer as their default Windows-oriented download. It is simple to use, and you can use it to write any ISO file you downloaded earlier. The following series of screenshots shows using it. There is also further USB creation information at the Fedora Wiki. Once you have written your ISO file, you should verify the SHA256 hash.


2. In your Downloads folder, double-click the installer to begin the install:
3. Launch the Fedora Media Writer and click Custom Image
4. Select your ISO file:

5. Next, select your USB stick:

6. Click Write and the image will overwrite the entire contents of your USB stick:
Write the image using Rufus

Rufus is a Win32 USB writing utility. If you collect good Windows utilities, you might want to use this. Using Rufus is described in this LifeHacker article.

On Linux

- Open a terminal window
- To check the drive name of the USB stick, the last system messages should tell you: `dmesg | tail`
  
  You might see a message saying:

  ```
  $ dmesg | tail
  [35246.926813] sd 6:0:0:0: [sdc] 7975296 512-byte logical blocks: (4.08 GB/3.80 GiB)
  [35246.927397] sd 6:0:0:0: [sdc] Write Protect is off
  [35246.927404] sd 6:0:0:0: [sdc] Mode Sense: 43 00 00 00
  [35246.927905] sd 6:0:0:0: [sdc] No Caching mode page found
  [35246.927910] sd 6:0:0:0: [sdc] Assuming drive cache: write through
  [35246.932978] sdc: sdc1 sdc2
  [35246.935868] sd 6:0:0:0: [sdc] Attached SCSI removable disk
  [35247.181511] ISO 9660 Extensions: Microsoft Joliet Level 3
  [35247.183189] ISO 9660 Extensions: Microsoft Joliet Level 3
  ```
or you might use the command `lsblk` which will list all your drives.

```
$ lsblk

<table>
<thead>
<tr>
<th>NAME</th>
<th>MAJ:MIN</th>
<th>RM</th>
<th>SIZE</th>
<th>RO</th>
<th>TYPE</th>
<th>MOUNTPOINT</th>
</tr>
</thead>
<tbody>
<tr>
<td>sda</td>
<td>8:0</td>
<td>0</td>
<td>119.2G</td>
<td>0</td>
<td>disk</td>
<td></td>
</tr>
<tr>
<td>sda1</td>
<td>8:1</td>
<td>0</td>
<td>953M</td>
<td>0</td>
<td>part</td>
<td></td>
</tr>
<tr>
<td>sda2</td>
<td>8:2</td>
<td>0</td>
<td>1K</td>
<td>0</td>
<td>part</td>
<td></td>
</tr>
<tr>
<td>sda5</td>
<td>8:5</td>
<td>0</td>
<td>953M</td>
<td>0</td>
<td>part</td>
<td></td>
</tr>
<tr>
<td>sda6</td>
<td>8:6</td>
<td>0</td>
<td>94M</td>
<td>0</td>
<td>part</td>
<td></td>
</tr>
<tr>
<td>sda7</td>
<td>8:7</td>
<td>0</td>
<td>46.6G</td>
<td>0</td>
<td>part</td>
<td></td>
</tr>
<tr>
<td>sda8</td>
<td>8:8</td>
<td>0</td>
<td>70.7G</td>
<td>0</td>
<td>part</td>
<td></td>
</tr>
<tr>
<td>sdb</td>
<td>8:16</td>
<td>0</td>
<td>119.2G</td>
<td>0</td>
<td>disk</td>
<td></td>
</tr>
<tr>
<td>sdc</td>
<td>8:32</td>
<td>1</td>
<td>3.8G</td>
<td>0</td>
<td>disk</td>
<td></td>
</tr>
<tr>
<td>sdc1</td>
<td>8:33</td>
<td>1</td>
<td>616M</td>
<td>0</td>
<td>part</td>
<td>/media/jreynolds/Ubuntu-Server 15.04 amd64</td>
</tr>
<tr>
<td>sdc2</td>
<td>8:34</td>
<td>1</td>
<td>2.2M</td>
<td>0</td>
<td>part</td>
<td></td>
</tr>
</tbody>
</table>
```

For this example, we'll assume your USB stick is `/dev/sdc`

- You can use the `dd` utility on the command line.

```
$ cd ~/Downloads
$ sudo dd iflag=fullblock oflag=direct bs=4M if=Fedora-MATE_Compiz-Live-x86_64-27-1.6.iso of=/dev/sdc
```

That might take a few minutes to write.

3. **Boot the USB stick**

There are two ways to get to the BIOS boot menu.

1. Place the USB stick in the intended LANforge machine, power it on and press the Delete key while it boots up to get into the BIOS. Go to the EXIT menu and select that USB drive as a boot override.

![BIOS Setup Utility](image)

- **Discard Changes and Exit**
- **Save Changes and Exit**
- **Save Options**
- **Save Changes**
- **Discard Changes**
- **Restore Optimized Defaults**
- **Save as User Defaults**
- **Restore User Defaults**
- **Boot Override**
- **IBM GE Slot 0300 v1404**
- **debian**
- **UEFI: Built-in EFI Shell**
- **UEFI DB**

2. Press the F7 key during boot to get a boot list. Here is an example boot choice menu:
4. **Install Fedora**

A default install of Fedora will work well enough, but some settings we require:

- Create a user lanforge and make that user an Administrator

Optional settings:

- Root password: lanforge. You can change the root password if necessary, but this is the root password that matches our documentation.

- User, lanforge, password lanforge. You can change this password if necessary, but this is the password that matches our documentation.

1. **Boot menu:**

```
Press Tab for full configuration options on menu items.
```
2. Select **Install to hard drive**

3. Select Installation Destination; then click **Begin Installation**.

4. You will be asked for a root password:
5. **Reboot, Update and Reboot**

Once the installation completes, reboot the system as it suggests and while the system is rebooting, remove the USB stick. Make sure you can login as user lanforge and that you can open a terminal and use the command `sudo -s` to become root.

While in that terminal, do a `sudo dnf update`. This will speed up the installation of LANforge in the next step.

Also, F24 has a tendency to get hung up when upgrading nfs and/or rpcbind. You might have to issue these commands to help the upgrade move along:

```
sudo dnf clean all
sudo dnf update -y --best --allowerasing
```
After doing those upgrades, reboot the system again.

6. **Continue to Install LANforge**

LANforge systems shipped by Candela often have additional configuration changes, such as renaming network devices and WiFi radios. Please contact support to help with redoing these changes as needed. Often, this is ‘nice-to-have’, and not ‘required’.

You can now proceed to our normal LANforge installation instructions.