

7b. Network Imaging Setup

Network imaging is supported over Ethernet using the FileWave Imaging Virtual Server (IVS), which provides PXE services for Windows computers and NetBoot services for macOS 10.12 and lower computers. Network imaging via the IVS is not supported on macOS 10.12 and higher as explained [here](#). The IVS is a Linux virtual appliance that you can import into VMware, Hyper-V, or VirtualBox.

If you would like to test FileWave's network imaging capabilities during the course of your evaluation please engage your FileWave SE for assistance in setting it up should you run into any issues.

Since DHCP, PXE, and BSDP (used by NetBoot) are UDP-based broadcast protocols, they typically do not traverse subnets. Most network administrators do not allow broadcast packets across subnets. If your IVS and the clients computers to be reimaged are located on the same subnet then you do not need to make any changes to your network configuration, as the clients will discover the IVS via broadcasts on the local subnet. If the client Macs or PCs to be reimaged are on a different subnet, however, then you have to take one of the following steps to be able to network boot and reimage them.

1. Put an IVS on every subnet that you may need to reimage clients on.
2. Configure IP helpers on the routers for every subnet that you may need to reimage clients on.

For PXE, Microsoft "does not recommend using DHCP options" and that your "DHCP server does not have DHCP Options 60, 66, or 67 configured" as described [here](#). Setting scope options may actually prevent UEFI computers from UEFI PXE booting properly as explained [here](#). While these articles refer to SCCM, the same principles also apply to other PXE servers such as the FileWave IVS.

If you choose the latter option you will also need to configure the IVS to serve clients on other subnets other than the one it's located on. By default the IVS only responds to PXE boot requests from devices on its local subnet. Please engage your network admin for setting up IP helpers or DHCP scope options. Note that you only have to do one of these. For the purposes of this evaluation we recommend you install the IVS on the same subnet as your client machines to be reimaged to simplify the setup.

The following prerequisites must also be met.

1. There is nothing else using PXE or NetBoot on your network.
2. DHCP is enabled on the network segment where your Windows reference computer and client computers reside.
3. You are creating clean images using OS installation media from the OS vendor and not using the hardware manufacturer installed OS configuration.
4. You must set aside a static IP address for the IVS.

Firewall Considerations

The IVS needs to be able to connect to your FileWave Server on the following ports:

20015-20017, 20443-20445

Any subnets with clients to be imaged must be able to reach the following ports on the IVS:

67 (DHCP), 69 (TFTP), 80 (HTTP), 20444 (HTTPS), and 4011 (required for UEFI imaging)
111 (TCP,UDP) and 2049 (TCP,UDP) are used for NFS access

Any machine running the FileWave Admin needs to be able to connect to your IVS on the following Ports:

20010 (Client Monitor), 20444 (Remote Configuration, Shared Keys)

Configuring the IVS

1. Import the IVS Linux virtual appliance into your virtualization software of choice. Some basic instructions are available in the [Server & Admin Installation](#) section. Instead of importing the FileWave Server virtual appliance import the IVS virtual appliance instead. Note that the IVS has 2 virtual NICs and both of them need to be enabled.
2. Should the VM get stuck during first boot and show a white bar at the bottom send the VM a CTRL-ALT-DEL. The second boot should be much quicker.
3. Log into your IVS with your VM console using "root" for the username and "filewave" for the password.
4. Change the default password by typing "passwd" to change the password to another of your choosing. This is the password you will need to enter to login in the future as it will no longer be "filewave".
5. Change the time so that it matches your current time. If you need to look at the logs later for troubleshooting it will be easier if the time matches the time on your FileWave Server and clients.

```
date -s HH:MM
```

6. Next, change the IP address of the IVS to a static IP by running the following command. Follow the prompts to set the IP address, subnet mask, gateway, and DNS server. You will be asked to confirm your changes at the end.

```
imaging-control networksetup static
```

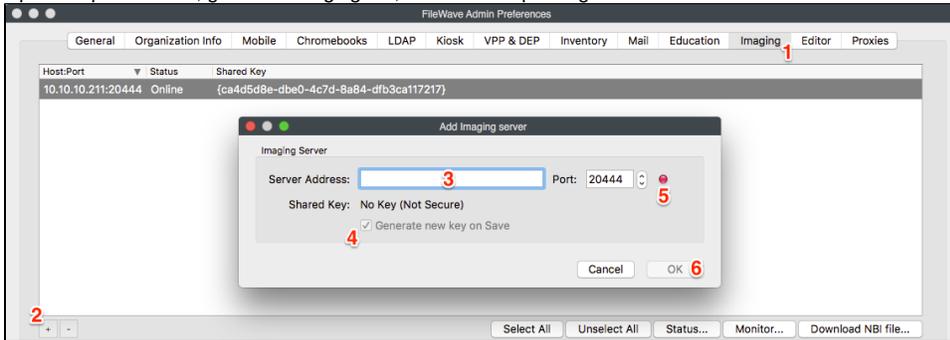
By default the IVS only responds to PXE requests originating from clients on its local subnet. If you will be reimaging PCs located on a different subnet than the one hosting your IVS you'll need to run the following command on the IVS telling it to respond to PXE requests from these other subnets.

```
imaging-control subnet add
```

When prompted for an IP address enter the first IP address in that particular subnet, e.g. 192.168.10.1.

Connecting the IVS to the FileWave Server

1. Log into the FileWave Server with the FileWave Admin console.
2. Open the preferences, go to the *Imaging* tab, and click the plus sign on the left.



3. Enter the static IP address of the IVS into the *Server Address* field, ensure that *Generate new key on Save* is checked, wait for the red dot next to the *Port* field to turn green, and click *OK*.
4. Click *OK* again to close the *Filewave Admin Preferences* window.
5. Open the preferences again and return to the *Imaging* tab.
6. Select the your IVS and click the *Status* button. The status lights should be all green with the exception of *NBI for macOS Imaging*. If there are more red dots or all status dots are yellow then close all preference windows, wait 5 minutes and check again. If the any of the other status dots except for "NBI for macOS imaging" remain red after 10 minutes, please contact your FileWave SE for assistance.

Creating the NBI (macOS 10.12 and lower only)

To be able to NetBoot Macs you need to provide a Network Boot Image (NBI) across the network to our macOS clients. This NBI is created using an automated NBI creation script from the IVS that can be downloaded via the FileWave Admin. Install the FileWave Admin app on a macOS client machine running a version of macOS that you can use to boot all of your Macs that will be NetBooted. The NBI will be created from the recovery partition of the machine from which the NBI creation script is run. If the script fails, check that your Mac you're running the script on has a recovery partition. If not then consider running the NBI creation script from another Mac that does have a recovery partition. If you have multiple IVS's with each serving a different subnet, you'll need to download and run the NBI creation script multiple times, once for each IVS, as its address is embedded in the NBI.

1. Open the FileWave preferences, go to the *Imaging* tab, select the IVS you are going to boot your clients from, and click the *Download NBI file* button. Save the NBI creator script to your desktop.
2. The script will be named *create_nbi_<IVS_IP_address>.sh*. Change the permissions on the script and run it.

```
cd ~/Desktop
sudo chmod 755 ./create_nbi_<IVS_IP_address>.sh
sudo ./create_nbi_<IVS_IP_address>.sh
```

3. The script will take a few minutes to create and upload the NBI using the local recovery partition on your current machine.

4. Return to the preferences, go into the *Imaging* tab, select your IVS, and click the *Status* button. All dots should now be green and the warning message next to *NBI for macOS Imaging* should be gone. Your IVS is now configured and ready to go.

