

- Start the lab on the server VM using the labtainer command with the `-server (-s)` switch. This causes Labtainers to start each container in the lab that is not tagged as a “CLIENT”.
- Students then start the lab on their individual VMs using the labtainer command with the `-workstation` switch, which will cause the student VM to only start the container identified as the “CLIENT” in the `start.config` file.

When conformant labs (see 12.1) are started, the workstation containers use DHCP to obtain IP addresses from a Labtainers DHCP server. The MAC address of the workstation container is derived from the MAC address of the Linux VM host-only network interface (to avoid duplicate MAC addresses on the host-only network).

12.0.2 Single Labtainers VM with multiple students

In this approach all the Labtainer containers will run on a single VM. Students have access to one or more other VMs hosted on the same VMM as the VM that hosts Labtainers. Students will SSH from these VMs into the container workstation allocated to the student via the host-only network. The `ssh` command may include the “-X” option to permit X11 forwarding, thus allowing students to run GUI-based applications on their workstation containers.

- Allocate the host-only network to the Labtainers VM. Be sure to disable the IPv4 networking for this network on the Labtainers VM, and set the network interface to promiscuous mode (within the Linux host as well).
- Allocate the host-only network to each VM used by students to SSH into their Labtainers workstation. Configure the network on the VM to use DHCP (the host-only DHCP server should be disabled, the VM will get an IP from a Labtainer DHCP server.)
- Start the lab on the server VM using the labtainer command with the `-clone_count (-n)` switch, specifying the quantity of per-student client containers to start.
- Students then `ssh` into their respective containers over the host-only network.

Conformant labs will assign each student workstation component an IP address in a sequence, starting from a fixed value. These IP addresses are allocated to the students.

12.1 Creating conformant multi-user labs

The following suggestions are intended to yield labs that can be started in any of the three operating modes.

- The lab should include a “client subnet” via which multiple VMs will communicate.
- Within the `start.config` file, identify this subnet as either a `MACVLAN` or a `MACVLAN_EXT`. The `MACVLAN_EXT` option will create a `MACVLAN` for this interface regardless of what mode the lab is started in, and is only intended for use if the lab includes an external host as described in 8.3.
- Identify the client component within the `start.config` file using:

```
CLIENT YES
```