

- Right click, select **Configure** and confirm that the Ethernet interface that you selected (e.g., `enp0s3`) is in the list. If it is not there, select the device from the pull-down list and click the **Add** button. Then click **OK**.
- Use the network links to connect the cloud to the desired component.
- Use port forwarding as described earlier to map host ports to ports on the VM. When defining port forwarding, enter `0.0.0.0` as the “Host IP”, and the container IP address, e.g., `10.0.2.100` as the “Guest IP”.
- You should now be able to ssh to the container from outside of the VM using the mapped port.

Alternately, to provide access from the VM (but not from external sources), pick `virbr` Ethernet interface and:

- Select a **Cloud** component from the **Browse End Devices** menu, and drag it to the desktop. (computer terminal icon).
- Right click, select **Configure** and delete the default Ethernet interface if any is selected.
- Click the **Show special Ethernet interfaces** checkbox in the lower left. That should add devices to the pull-down list.
- Select the `virbr0` device from the pull-down list and click the **Add** button. Then click **OK**.
- Use the network links to connect the cloud to the desired component.
- When the lab is started, you should be able to ping the connected container from the VM.
- Use port forwarding as described earlier to map host ports to ports on the VM. When defining port forwarding, enter the container IP address as the “Guest IP”.

Note that the subnet used for this remote access is defined by the VM’s Ethernet device. Putting multiple lab computers on that subnet as part of the lab network topology may be awkward and confusing to students since `192.168` addresses are private.

When a GNS3 Labtainer is run with the `--student` option, the Cloud components are hidden, as are any Labtainer components whose `start.config` entries include `HIDE YES`. Links to hidden devices are also hidden.

## 12 Multi-user Labtainers

Labtainer exercises can support multiple concurrent users, such as students collaborating or competing on a shared set of networked components. A multi-user lab can be operated in any one of three modes:

1. Dedicated to a single student, e.g., on a laptop or a VM allocated to the student from a VM farm.
2. Shared by multiple students, each running Labtainers on a per-student VM with shared components running on separate Labtainers VM. This is illustrated in Figure 3
3. Shared by multiple students, each SSHing from a non-Labtainer VM into a per-student Labtainer computer on a single VM running Labtainers. This is illustrated in Figure 4