Setting up and using a local SRN

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How to configure a competitor's development host to be similar to an SRN:

- Install Ubuntu 14.04.5 LTS on the system.
- sudo apt-get install lxd/trusty (Simply accept defaults)
- logout/login (This is just so your user is added to lxd group. This can be achieved by other means)
- The base container uses NVIDIA CUDA version 8.0.44. Download and follow the installation directions.
    - Note: Only do this if you have NVIDIA GPA and plan on exercising it.
    - Note: Competitors may install a more updated version, however, these versions have not been tested within the Colosseum and are not officially supported.
    - **https://developer.nvidia.com/compute/cuda/8.0/prod/local_installers/cuda-repo-ubuntu1404-8-0-local_8.0.44-1_amd64-deb** (https://developer.nvidia.com/compute/cuda/8.0/prod/local_installers/cuda-repo-ubuntu1404-8-0-local_8.0.44-1_amd64-deb)
    - Choose the options:
        - Linux:x86_84:Ubuntu:14.04:deb(loca)
    - Download the Deb
    - sudo dpkg -i cuda-repo-ubuntu1404-8-0-local_8.0.44-1_amd64.deb
    - sudo apt-get update
    - sudo apt-get install cuda

Once you have your local SRN setup, here are some useful LXC commands to use. For more information on how to use LXC/LXD use this tutorial (**https://www.stgraber.org/2016/03/11/lxd-2-0-blog-post-series-012/)** (https://www.stgraber.org/2016/03/11/lxd-2-0-blog-post-series-012/))

Importing an image:

- lxc image import baseContainerImage.tar.gz --alias AliasName

Starting an container:

- lxc init local:AliasName ContainerName
- lxc start ContainerName

Deleting a container

- lxc stop ContainerName
- lxc delete ContainerName

Exporting an image

- lxc stop ContainerName
- lxc publish ContainerName --alias NewAliasName
- lxc image export NewAliasName ./NewContainerImage.tar.gz

Editing the Containers configuration

Option 1:

- lxc stop ContainerName
- lxc config edit ContainerName
- Modify using nano editor

- Save
- lxc start ContainerName

Option 2:

- lxc stop ContainerName
- lxc config show ContainerName > container.yaml
- Modify the container.yaml using the editor of your choice
- cat container.yaml | lxc config edit ContainerName
    - After the yaml is created only this command is required between the lxc stop and start
- lxc start ContainerName

Add a bridged interface to the Container

- Edit the lxc configuration
- Add the following lines nested under the "devices:" key

```
devices:
  eth0:
        mtu: "9000"
         name: eth0
         nictype: bridged
         parent: lxdbr0
         type: nic
```

Add a physical interface to the Container - This is advised for a lower latency connection to the USRP

- Edit the lxc configuration
- Add the following lines nested under the "devices:" key

```
devices:
    usrp1:
        name: usrp1
         nictype: physical
         parent: p4p1
         type: nic
```

Mount a host directory to the Container

- Edit the lxc configuration
- Add the following lines nested under the "devices:" key

```
devices:
   logs:
     path: /data   #path on the container
     source: /path/on/host
     type: disk
```

Add NVIDIA devices to the Container

- Edit the lxc configuration
- Add the following lines nested under the "devices:" key

```
devices:
        nvidia-uvm:
             path: /dev/nvidia-uvm
             type: unix-char
        nvidia0:
             path: /dev/nvidia0
             type: unix-char
        nvidiactl:
```

```
path: /dev/nvidiactl
type: unix-char
```