

14.8 DNS fixes for rebuild problems

When building a container, Docker uses its Daemon's default DNS addresses, which are the external Google DNS. Some sites disallow use of external DNS, and this results in rebuilds failing when yum/apt are unable to resolve host names. The script at `setup_scripts/dns-add.sh` will update those default DNS entres to include the DNS used by the host.

14.9 Suggestions for Developers

14.9.1 Testing assessment directives

The result and goals configuration files can be revised and tested within a running grader container by starting grader with the `-d` option. This saves time because you do not need to rebuild the container for each iteration of the development of configuration files. However, be sure to scp the configuration files from the container to your host Linux system. The files are in `.local/instr_config`. See the `tt /tmp` directory for logs.

Most result and goal assessment can occur once you have generated a suitable sample of expected student artifacts. In other words, adding new goal does not typically require that you go back and re-perform student actions. Exceptions to this are:

1. Adding new system commands to a "treataslocal" file;
2. Identifying new system files to be parsed as results. For example, results in a log file will not be collected unless that log file has been named in the results.config file.

14.9.2 3rd party applications

Some applications that you may wish to include in your lab may already have Docker container instances. Bringing those into Labtainers can sometimes be challenging because such containers often lack execution environment elements required by Labtainers for configuration steps, e.g., sudo. Most such applications are traditional Docker images whose purpose is to package an application. In contrast, Labtainer Docker containers are intended to look like computers running applications – not as applications packaged as containers. It is therefore often easier, (and less disruptive to what students see), to include the 3rd party installation procedures, (e.g., what they publish to allow you to install their application on a Linux system), within your lab's Labtainer Docker file.

14.9.3 Msc

Use `TERMINAL_GROUPS` in the start.config file to organize terminals if you have more than a few. Otherwise the student will spend time trying to find each terminal.

14.9.4 Docker cache

By default, a **rebuild** will make use of the Docker cache to speed up the image building process. Use the `-N` option to suppress use of the cache. This may be needed if you expect the results of a `RUN` command within a Dockerfile to change between builds. When using the `publish.py` command, the cache is disabled by default.