

ASD2018, Project Architecture Summary

Contributors: Tianyi Cheng, Ali Alhady

Component Layout

- asd1.ccs.neu.edu
 - Main build and Jenkins server
 - Specs: 2 GB RAM, dual core 2.4 Ghz CPU
 - **Hosts:**
 - Jenkins build/deployment server
- asd2.ccs.neu.edu
 - Admin service components and Redis cache
 - Specs: 2 GB RAM, dual core 2.4 Ghz CPU
 - **Hosts:**
 - Admin frontend web server
 - Admin backend service
 - Redis server/client (for ML)
- asd3.ccs.neu.edu
 - Database host
 - Specs: 2 GB RAM, dual core 2.4 Ghz CPU
 - **Hosts:**
 - Public MariaDB
 - Private MariaDB
 - Admin MariaDB
- asd4.ccs.neu.edu
 - Public/Student service components and chatbot
 - Specs: 8 GB RAM, dual core, 2.3 Ghz CPU
 - **Hosts:**
 - Public frontend web server
 - Public backend service
 - Student frontend web server
 - Student backend service
 - Chatbot service

Technologies

- All components (jenkins server, front/back-end services and databases) live within Docker containers, in other words no software has been directly installed onto the NU servers except Docker itself.
 - Docker containers are disposable. A running container will be torn down upon new release and a new container will be spun up.
 - The containers are configured to always start-up immediately if not manually stopped. If the server host was to unexpectedly reboot, the docker daemon will start on boot and all containers will come online.
 - Data persistence is achieved by mounting a local file system directory to the docker container as an external volume. All change we have made to the file system on the hosts is restricted to '/data'.
- Jenkins account is setup on each server host under the docker group with a home directory of '/data'. This account is responsible for both the build process and the deployment process.
 - Automated build, test and deploy project on a daily basis if there are any changes within subscribed repositories.
 - Automated backup for both the Jenkins server config and three databases run periodically as Jenkins jobs
 - Automated notification to the respective team if a job fails.
 - Jenkins is not a sudoer.
- Enforce TLS/SSL for web server, app server connection on the public facing host asd4. Databases are encrypted both in transit and at rest.