

CI/CD Fundamentals

What is CI/CD?

- **Continuous Integration (CI)**
 - **Continuous Integration** is used to describe the process that a developer works to. It defines the way developers make changes on feature branches and the running of unit & integration tests
- **Continuous Delivery**
 - Following a successful Continuous Integration build, **Continuous Delivery** aims to maintain a codebase that is always in a production ready state. It utilised test automation to ensure code is ready to be released, and release automation to promote production artifacts ready to be deployed
- **Continuous Deployment**
 - Once the Continuous Delivery process is complete, **Continuous Deployment** is the final stage of the process. As this is an automated process it relies on automated testing to verify the release, and a release could be in production within minutes assuming all test have passed

Current Issues

- Infrequent software releases (~ 3 monthly)
- Manual testing
- Huge effort required at release time to ensure all is working due to the number of changes in the release
- Environments are complicated to create (on premise servers take time to acquire and then provision by external team)

CI/CD Benefits

- Frequent small releases
 - Release features quicker to our users
 - Smaller scope in releases reduces risks
- Automated testing
 - Reduces the requirement for the whole system to be tested manually
- Automated deployments
 - Provisioning happens in the cloud and can automated to a pragmatic process
 - Automatic promotions to production
 - Automatic roll backs
- Reduced costs
 - Only paying for resources we need - no bare metal machines sitting idle

Issues to overcome

- Change of mindset
 - Changing from our current 3 monthly release process
 - Big push towards automated testing
- Upskilling
 - New tools/software to learn
 - AWS
 - CircleCI
 - Automated test suites
- Resource
 - Implementing these changes will require significant involvement from developers
 - QAs will be required to put together automated test suites