

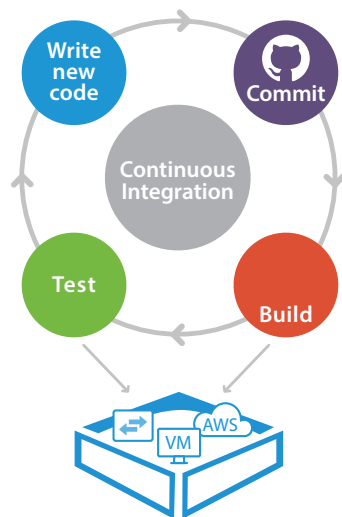
# Quali Cloud Sandbox Software for Continuous Integration and Continuous Delivery

## KEY BENEFITS

**Realize true agility benefits of CI/CD** by allowing CI/CD tools to deploy complex, full-stack environments

**Shift quality left** by giving developers and testers access to production-like environments earlier in the CI/CD process and ensuring pipeline includes important stages like load, system, integration, and security tests

**Increase operational efficiency** by managing the lifecycle of CI/CD environments and making dev/test infrastructure available as common pool of on-demand resources available 24x7 to multiple groups, teams, and CI/CD tools.



## CI/CD Overview

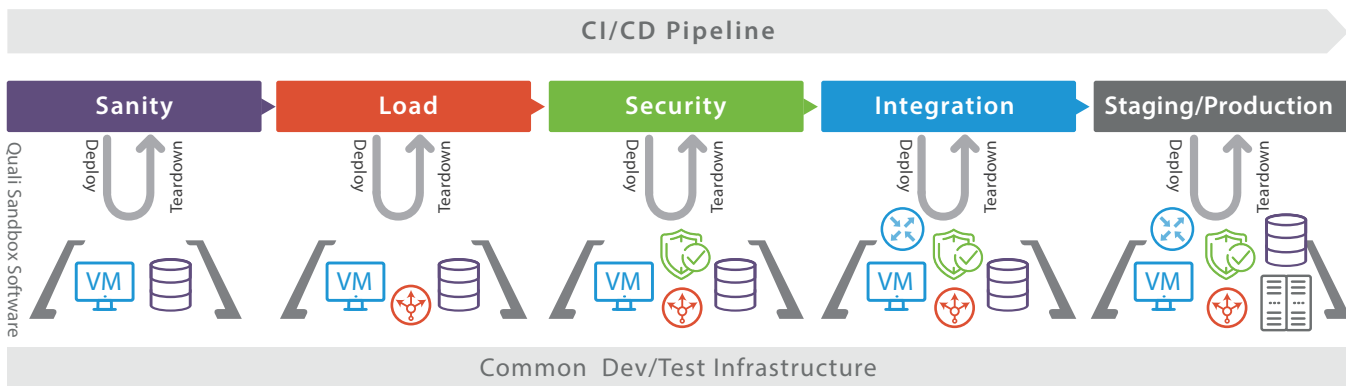
Continuous Integration and Continuous Delivery (CI/CD) are critical steps in the journey to DevOps. Continuous Integration is the process of automating a software build and corresponding suite of tests as a result of a developer checking code into a source repository. Continuous Delivery is the process of automatically delivering those changes to various environments to perform validation, tests, and pre-production staging to ensure that the code is production ready. Together, CI/CD can be seen as the automation component of DevOps. While CI/CD originated in software organizations, businesses like service providers, technology manufacturers, and traditional enterprises also investing in CI/CD processes to achieve faster technology launch cycles and reduce costs.

## The Challenge

CI/CD software like Jenkins and others are great tools for streamlining the application build, test, and release process. However, today's enterprises have complex, multi-vendor IT infrastructure and their applications are evolving to new technologies like mobile, IoT, and hybrid cloud while at the same time depending on traditional and legacy systems. This complexity poses a serious challenge to enterprises' ability to realize the benefits of CI/CD because it makes it difficult to assemble CI/CD environments in a timely manner and manage those environments efficiently. As a result, critical steps like integration, system, security, and acceptance test are often not included in the CI/CD pipeline.

## The Solution

Quali's Cloud Sandbox software eliminates the barrier between automated CI/CD and infrastructure complexity by giving CI/CD tools the power to deploy complex, production like sandbox environments on-demand. With Quali sandboxes, CI/CD tools can deploy full-stack environments that include networking, cloud, virtualization, applications, as well as physical resources like physical layer connectivity equipment, test equipment, network gear, storage, and even IoT. Quali's sandbox software manages the orchestration and scoping of the each sandbox's lifecycle across all the stages of a CI/CD pipeline. Setup automation includes spinning up VMs, provisioning physical equipment like network devices and storage, and configuring cloud and app resources.



## FEATURES

### Easy to Model On-Demand Blueprints

Easily and quickly model CI/CD sandbox blueprints and make them available in a self-service catalog for on-demand deployment by developers, testers, and CI/CD tools.

### Full Stack Environments

Create sandbox environments for CI/CD that configure physical, virtual, cloud, and application resources.

### Environment Lifecycle Management

Automate the deployment and reclamation of sandboxes at each stage of pipeline to ensure efficient use of resources.

### Multi-Tenant / Globally Available

Make your physical and virtual dev/test infrastructure available as a shared pool of resources, available 24x7, to multiple groups, teams, and CI/CD tools.

When a CI or CD stage is complete, CloudShell manages the tear down automation of the sandbox to re-configure devices and resources to a known state and return resources or equipment to a common pool of shared resources.

## Quali Jenkins Plugin

Quali's Jenkins Plugin allows CI/CD managers to associate a Quali sandbox with a job in Jenkins, which means that instead of running a test or build job on a single node, jobs can be run against a full infrastructure sandbox. The plugin allows you to Deploy (Start) a sandbox environment or Destroy (Stop) a sandbox. When a sandbox is started the plugin will store the Sandbox Id and Sandbox details in Jenkins environment variables, which can then be used in other build steps of Jenkins as necessary or by Test Automation scripts or tools to access/modify the sandbox via Quali's Sandbox REST API.

## Quali Jenkins Pipeline Plugin

Quali integrates with Jenkins Pipeline, allowing you to deploy sandbox environments for each stage of your CD pipeline workflow. This allows you to deploy sandboxes that are best suited for each stage of the CI/CD pipeline, so you can more accurately mimic production as you progress through your pipeline.

For example a "Sanity" stage sandbox might just deploy a single VM and a DB that runs on your local machine for performing basic tests. The next stage in the pipeline might be a "Load Test" stage, which would deploy the same application VM and database, as well as adding a load balancer, firewall, and a traffic generator to accurately test real world loads. The pipeline may then move on to a full system or staging test, where it might also include physical devices like network gear or dedicated test equipment. With Quali's Cloud Sandbox software, CI/CD tools can provision sandboxes that are replicas of even the most complex production-like environments, allowing organizations to realize the full benefits of an automated CI/CD process.