

# CloudShell

## Cloud Sandbox Software



### The Need for Cloud Sandboxing

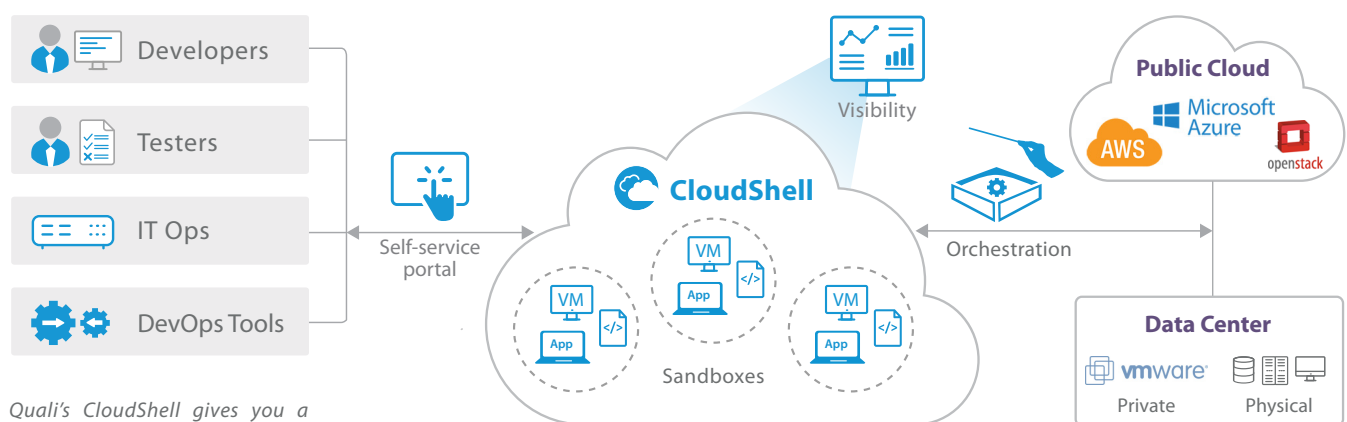
Enterprises today are facing intense pressure to become more agile and reduce costs. This means moving to DevOps and taking an automated “as-a-service” approach to delivering infrastructure and applications. But manual processes, infrastructure, and application complexity make this shift a challenge.

### The Quali Solution

Quali’s CloudShell Cloud Sandboxing Software brings the power of self-service and cloud to your entire organization with support for full-stack automation of application and infrastructure environments. That means your teams get on-demand, self-service access to environments that can include physical, virtual, and cloud resources.

### Model, Orchestrate, Deploy

Users model complex application and infrastructure environments as blueprints which are published in a self-service catalog. End users then consume these blueprints and deploy them as live sandboxes. Powerful orchestration workflows manage the deployment, reclamation, and snapshotting of sandboxes.



Quali’s CloudShell gives you a common platform to model, orchestrate, and deploy application and infrastructure sandboxes.



# Capabilities

## Full Stack Blueprint Modeling

Quickly and easily model complex application and infrastructure blueprints. Drag and drop components from a template library to model everything from virtual, cloud, application, or physical components like a network switch, a storage array, or a full application.

## Self Service Blueprint Catalog

CloudShell's web based, self-service catalog allows users to deploy sandbox blueprints from anywhere at any time. Multiple data center or lab sites can be federated and accessed via a single cloud based portal. This catalog can also be tailored to multiple organization or partners providing a true multitenant environment.

## Powerful Sandbox Orchestration

Built in orchestration allows automated setup and teardown of sandbox environments. Whether it's spinning up a VM, loading firmware on a device, running health checks, or deploying an application, CloudShell dramatically reduces the time to provision and de-provision full end-to-end environments.

## Maintain Deployment State

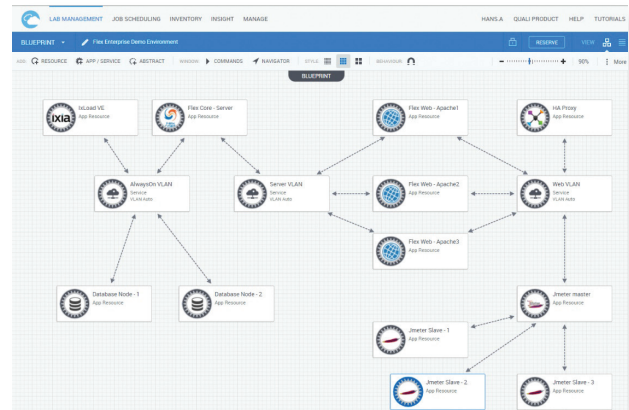
CloudShell sandboxes represent the active state of a deployed blueprint. Orchestration workflows allow snapshotting, restoring, and performing monitoring and health checks on sandbox resources.

## Custom Workflows

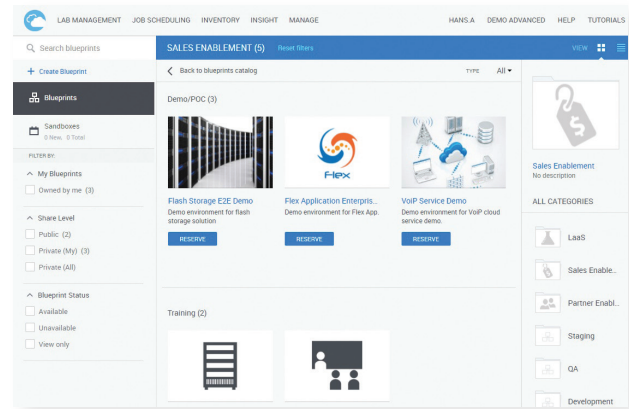
CloudShell's visual orchestration authoring tool and native support for Python allows both developers and non-programmers the ability to extend CloudShell's built in orchestration and create powerful sandbox orchestration workflows.

## Conflict Resolution

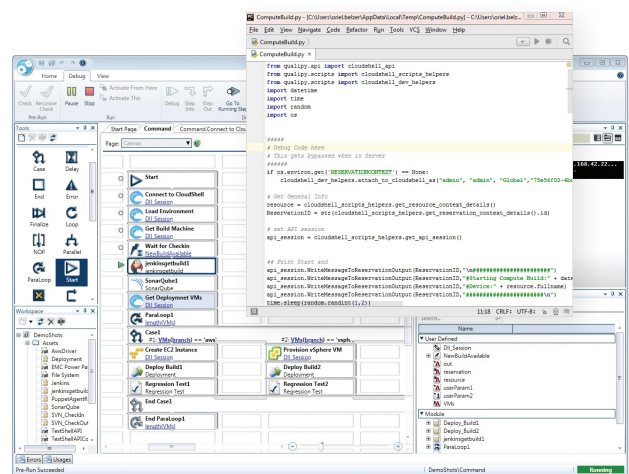
CloudShell provides the ability to reserve physical devices and manage conflicts as needed. If a resource is not available for the scheduled reservation, the next available date is automatically suggested.



Full stack app and infrastructure modelling



Self-service blueprint catalog



Visual based and native Python authoring



### Network Orchestration

CloudShell automates physical layer connectivity with support for major L1 vendors. It also supports networking between physical and virtual resources using a L2 fabric and VLAN allocation. Manage public cloud network allocation as well, with sandbox isolation in a multi-tenant and scalable configuration.

### Orchestrate Hybrid Cloud

CloudShell supports both on premise and public cloud deployments, bringing forward the benefits of hybrid clouds through sandboxes. CloudShell supports vCenter, AWS, OpenStack, and Azure as well as others via our Developer Community [community.quali.com](http://community.quali.com)

### Application Templating and Deployment

CloudShell’s App Template framework allows extensible configuration management options for application deployment automation. With full support for Python and Ansible, as well as other tools like Chef and Puppet, CloudShell allows you to leverage your existing configuration management framework.

### On-Demand Deployment

Quali’s sandbox software manages the orchestration and scoping of the sandbox lifecycle across all the stages of a CI/CD pipeline. Release automation and CI tools like Jenkins Pipeline allows running a pipeline stage against a full infrastructure sandbox rather than a single node.

### Power Control

Quali provides automated power control of physical devices by controlling the specific ports connected to a PDU. This enables significant cost savings and power efficiencies. CloudShell supports the major PDU vendors out of the box.

### Visibility and Analytics

Extensive sandbox analytics and web-based dashboards gives you full visibility into labs and data centers. Advanced analytics allows you to optimize use of infrastructure and cloud resources, perform better resource planning, see power costs, and deliver chargeback/showback reports.

### Live & Interactive

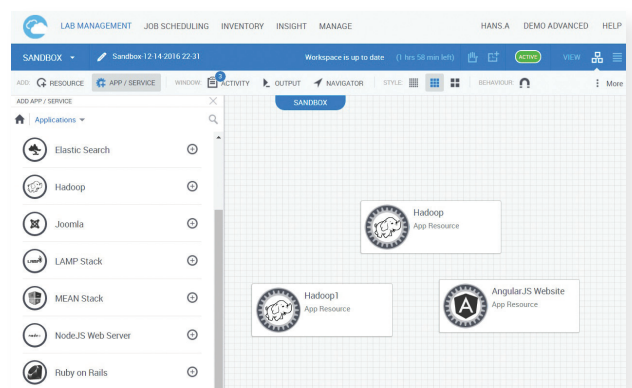
Get live access to the console of any sandbox resource using a secure web proxy, SSH, RDP, Telnet or a simple web console.

### Scalability

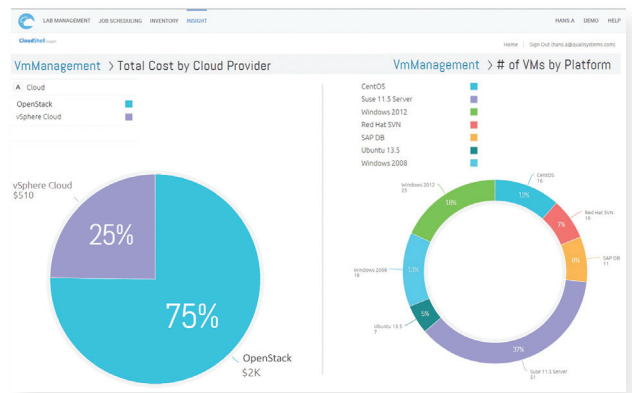
Based on a distributed execution server architecture, CloudShell provides a way to optimize performance of automation in large geographically distributed labs and datacenters. It also provides a means to securely manage infrastructure deployment.

### Workflow Scheduling

Schedule and queue test automation and workflows. These can then be consolidated into jobs, associated to a Blueprint, and scheduled on demand as resources in the blueprint become available.



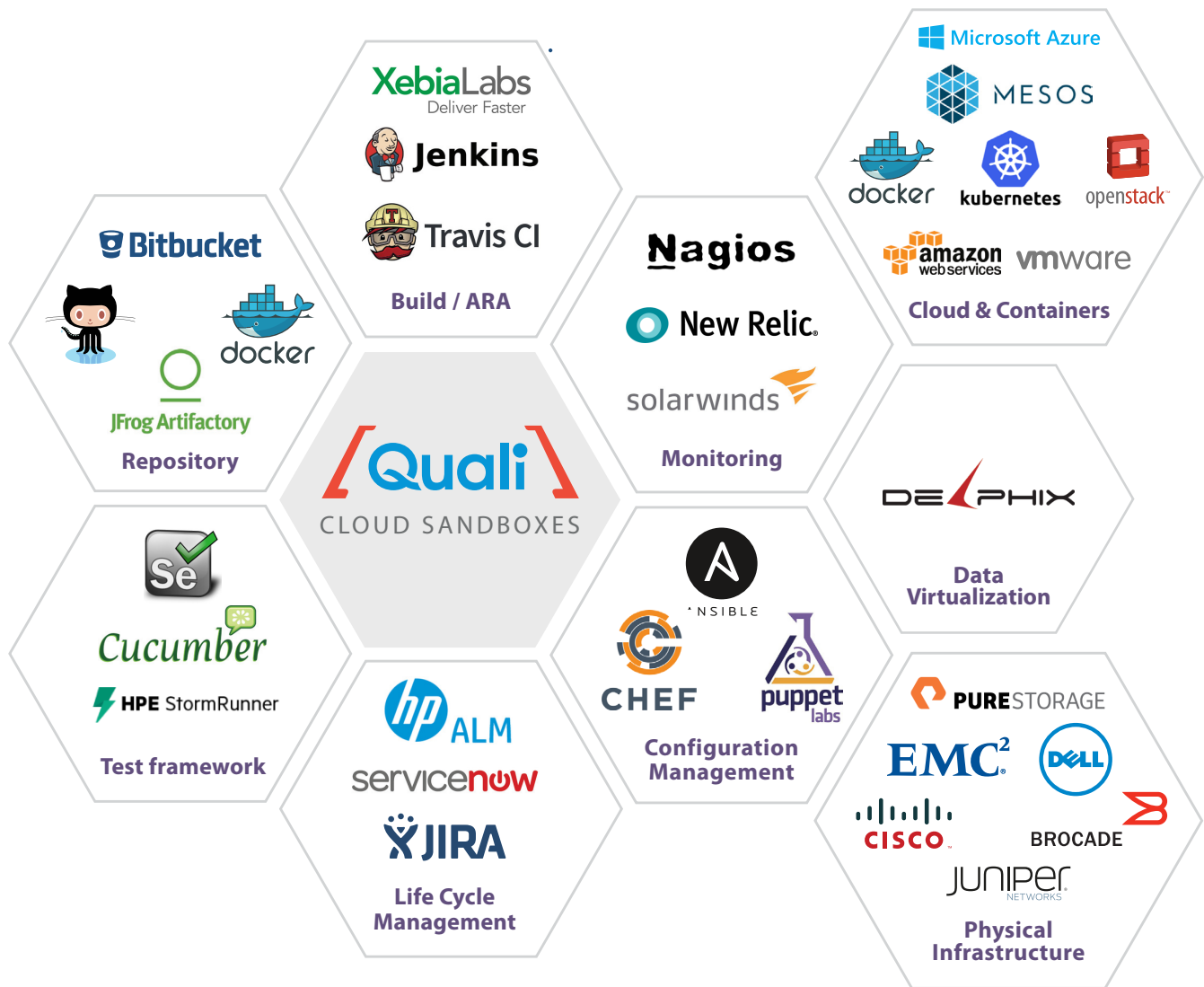
Application Templating and Deployment



Visibility and Analytics



# CloudShell and the DevOps Tool Chain



**Figure 1**  
 CloudShell Cloud Sandbox software provides full stack integration from physical, virtual, to cloud, and DevOps tools for a simplified, single point of deployment management

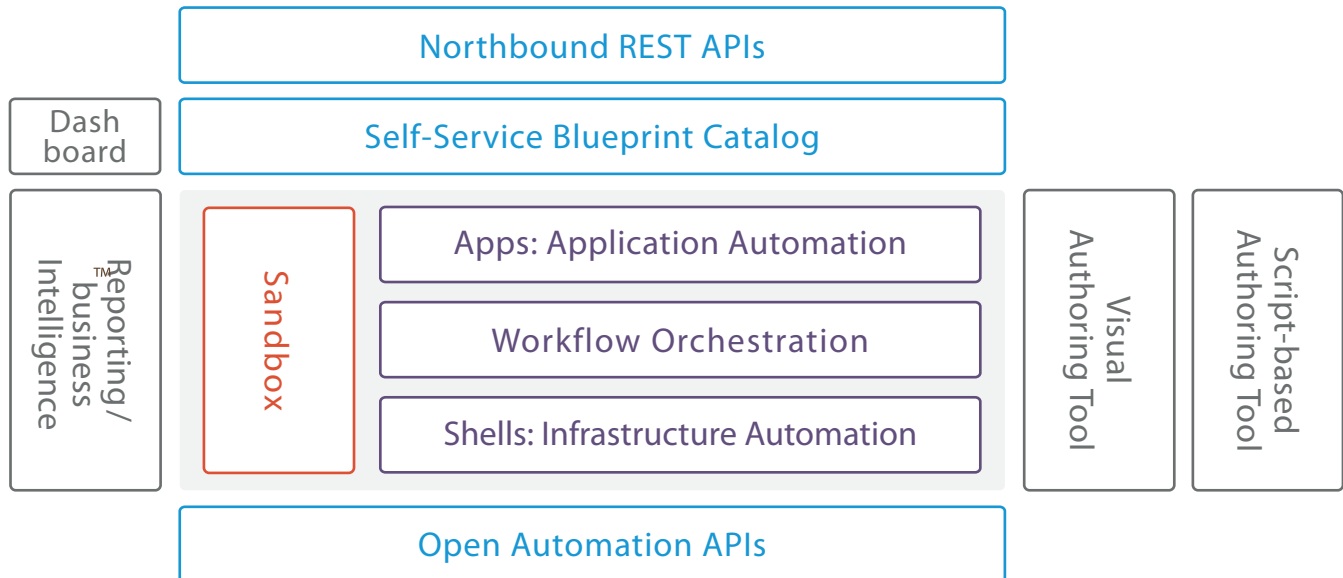
CloudShell’s open architecture allows easy integration with all your infrastructure, technologies, and DevOps tools. This allows you to deploy a mix of infrastructure, applications, and tools within a single sandbox. Many integrations for network, storage, compute, cloud, and DevOps tools are offered out of the box; others are

available via our Developer Community [www.quali.com/develop](http://www.quali.com/develop). CloudShell’s strong REST API allows external tools like CI/CD, ARA, SDLC, and ALM software to use CloudShell to easily deploy complex app and infrastructure environments.



# Architecture

CloudShell is built on a modular, extensible architecture that allows you to rapidly model, orchestrate, and deploy a huge range of application and infrastructure environments.



## The architecture components of CloudShell include the following:

**Apps:** Application deployment templates can be used in blueprints for modeling and automating the deployment of virtual resources and application configurations.

**Workflow orchestration:** automation linked to the sandbox lifecycle to enable setup, teardown, save, restore, monitoring, and other management capabilities.

**Shells:** Shells are the building blocks of sandboxes, providing data modeling and automation capabilities for the infrastructure defined in CloudShell. Shells allow user to build sandboxes with full stack network, storage, compute, virtual, and cloud elements. Shells are fully open source in standard python format and available for download in our community [community.quali.com](https://community.quali.com)

**NorthBound REST API:** REST API that allows the creation and termination of Sandboxes.

**Self-Service Blueprint Catalog:** web based self-service portal that allows multi-tenant access to published blueprints, which can then be deployed on-demand as live sandboxes by end users, any-where, any-time.

**Open Automation APIs:** southbound APIs used by CloudShell automation to interact with the infrastructure (SSH, REST...)

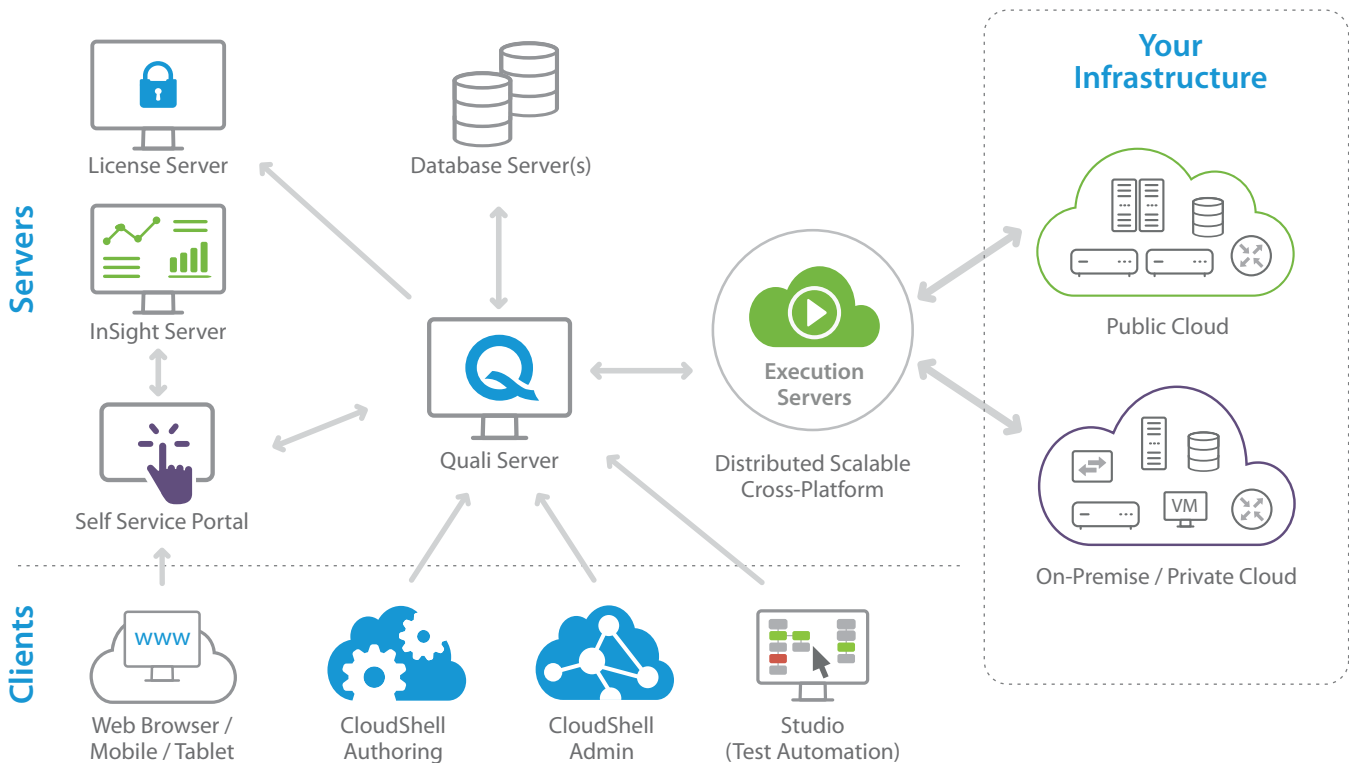
**Reporting/Business Intelligence:** Resource Consumption, Power Management , ROI dashboards that allows deep customization

**Visual Authoring Tool:** CloudShell Authoring Client allows the developer to build automation workflow with a visual experience.





**Script Based Authoring tools:** python based CLI tools to develop Shells and workflows from standards, and import them into CloudShell.






# Components



CloudShell is built on modular and distributed components that enables enterprise level scalability and security.

- 
**Web server**  
 Front end to the CloudShell portal, can be load balanced and customized
- 
**Quali Server**  
 Core application engine, can be configured in high availability mode
- 
**Database server**  
 Backend SQL server database
- 
**CloudShell Authoring**  
 visual design tool for workflow automation

- 
**Execution server**  
 Scalable and distributed automation server that configures your physical and virtual infrastructure, applications, cloud resources, and DevOps tools.
- 
**Insight server (BI)**  
 reporting engine for consumption and ROI dashboard
- 
**TestShell Studio**  
 visual design tool for test automation





# CloudShell solutions

CloudShell cloud sandbox software brings DevOps agility to your entire organization. To learn more about our solutions visit [www.quali.com/solutions](http://www.quali.com/solutions).



## Dev/Test Automation

Provide self-service, on-demand access to production like environments for developers and testers in order to speed software and product time to market.



## Lab-as-a-Service

Provide self-service, on-demand access to complex infrastructure and network environments. Automate equipment configuration, scheduling of resources, resource conflict resolution, power control, and reclamation to achieve maximum lab and data center efficiencies.



## Continuous Integration and Continuous Delivery

Eliminate the barrier between CI|CD / ARA tools and infrastructure complexity by providing the power to deploy complex, production like sandbox environments on-demand.



## Private/Public/Hybrid Cloud

Quickly model your complex applications and deploy them in private, public or hybrid cloud environments including bare metal, private, and public clouds.



## Sales Demo Cloud

Sell faster and better with a sales demo/PoC cloud build on CloudShell. Give SE's, marketing teams, and other stakeholders self-service access to effective demo and PoC.



## Education / Training

Provide a self-service access to a shared lab infrastructure for your online classes.



## Application Modernization

Quali's Cloud Sandbox solution gives you a single tool that helps you quickly develop and test your applications – from legacy to modern applications with containers and microservices with cloud agnostic application templates and automation.



## SDN / NFV

Accelerate SDN and NFV adoption by modeling and deploying SDN and NFV components in sandboxes. Give third party vendors a self-service certification cloud to validate VNFs or SDN apps in production-like network environments.



## IoT

Create replicas of your IoT production environment for faster and more accurate IoT test and development before releasing to production.



## Security

Blueprints can be modeled for security compliance testing such as cyber ranges.



## Certification/Compliance

Provides confidence of compliance to standards (HIPA, PCI...) before releasing applications in production by creating accurate sandboxes that you can test against.

## Technology Benefits



**Increase Resource efficiency** for physical and virtual assets



**Increased Visibility and Control** and provide a single pane of glass to utilization of physical infrastructure and virtual environments, tracking of users' activity and much more



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

## Business Benefits



**Better manage change** for business initiatives, and increase process velocity



**Reduce Risks** for transformation by providing a pre-production replica



**Lower costs** of infrastructure ownership and resources

### System Requirements and User Guides

[www.quali.com/documentation](http://www.quali.com/documentation)

### Ordering Information

For demo or ordering information, please contact [info@quali.com](mailto:info@quali.com)

