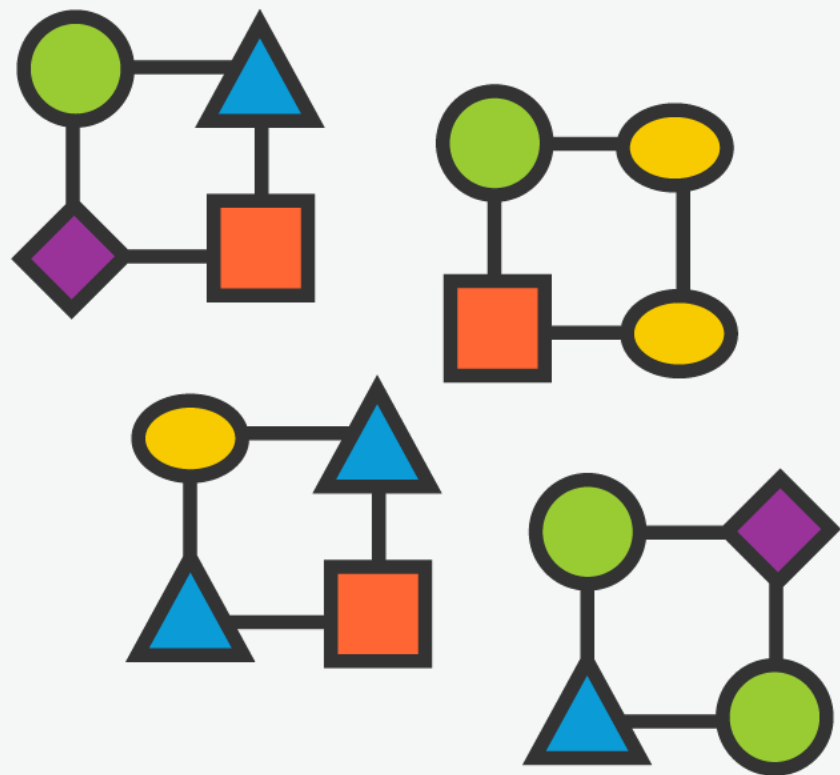Quali INFRASTRUCTURE UNBOUND

Infrastructure Automation for Labs

Using Self-Service Environment Blueprints to Maximize Productivity of Remote Teams

Synopsis

Since the onset of COVID-19, organizations scrambled to adjust their work environment to accommodate the sudden shift to a remote and distributed workforce. As a result of this new paradigm, labs and testing teams face ongoing pressure to maximize speed and productivity, while at the same time keeping CAPEX in check.

This technical overview will address the challenges for lab and testing environments that have grown increasingly impactful (see Fig 1):

- **IT/Network Admin Challenges:** Users, including test engineers, and members of development, support, and sales teams, require access to shared lab infrastructure. But their requests often overburden IT admins, whose onsite staff are short-handed due to pandemic-related restrictions.

- **User Challenges:** As a result, users are growing increasingly frustrated with strained access to lab infrastructure, which cause delays and leads to compromised workarounds, such as accessing the topology via unsecure or unauthorized methods.

- **Business Challenges:** Delayed development and testing lead to delayed product releases; to increase network availability, organizations are forced to purchase additional infrastructure.
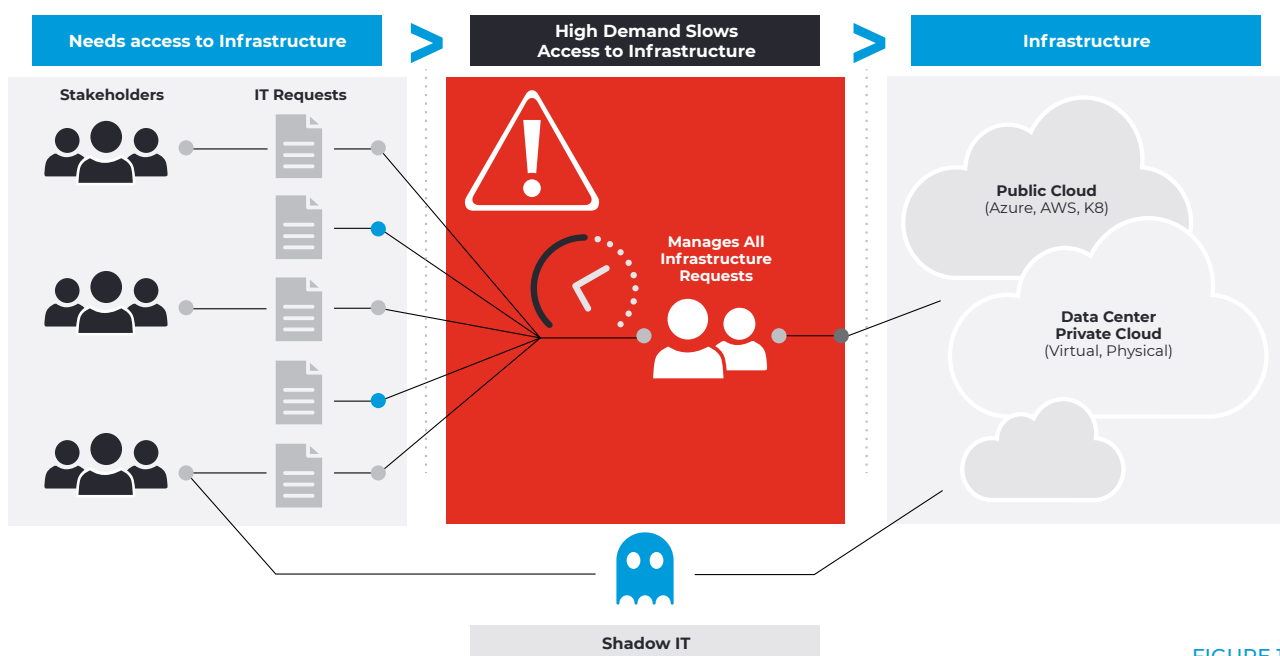

FIGURE 1

Solving the Access Challenge

To highlight these three challenges, consider the following example:

A bank is rolling out a new web application, and its quality assurance (QA) team needs one week to test the application before sending it to production. After QA submits an IT request for a virtual environment configured with the required servers, networking, storage, database, and security applications, the IT team responds with its availability estimate: one to two months, owing to a backlog of requests. QA has several options:

- Wait one to two months, delaying production and potentially impacting business loyalties

- Obtain access to the environment using an unsecured, unapproved process

- Leverage virtualization and cloud computing, which would allow them to increase their resources without purchasing additional hardware infrastructure.

There is a better way. Labs-as-a-Service (LaaS) delivers lab resources to users quickly and cost-effectively in a repeatable manner, delivering three significant value propositions:

- **Infrastructure orchestration:** LaaS provides a platform to manage and orchestrate an organization's entire inventory of resources. This is especially helpful when there are thousands of devices that span different regions.

- **Infrastructure consolidation:** LaaS increases lab capacity by consolidating all infrastructure globally. This allows IT to assign more resources to meet user access requests. With orchestration, organizations can increase utilization and optimize use for existing resources, eliminating the need to purchase additional resources.

- **Location agnostic:** LaaS creates a consistent environment in every region, even when different teams create the environment. LaaS also enables users to create and use environments where they lack the skill to create or manage environments from various locations.

By increasing resource utilization and user productivity, LaaS reduces CAPEX and OPEX. Companies can further leverage their capabilities by partnering with a LaaS provider. While LaaS offers valuable efficiencies, it can be further enhanced with a self-service option to allow users to access infrastructure without going through IT. Providers help answer these questions:

- What if users could quickly deploy an environment on demand from a central self-service repository?

- What if admins could automate the back-end provisioning process for users to access infrastructure?

- What methods can organizations implement to ensure these automation and self-service options accelerate their time to market, while cutting costs?

Evaluating LaaS Solutions

LaaS providers offer three compelling capabilities that make the solution ideal for a remote workforce: self-service, automation and orchestration, and frictionless governance. These capabilities empower users to gain secure access to infrastructure in a tim ely manner using a process that is repeatable and scalable without direct IT interaction **(see Fig 2)**.
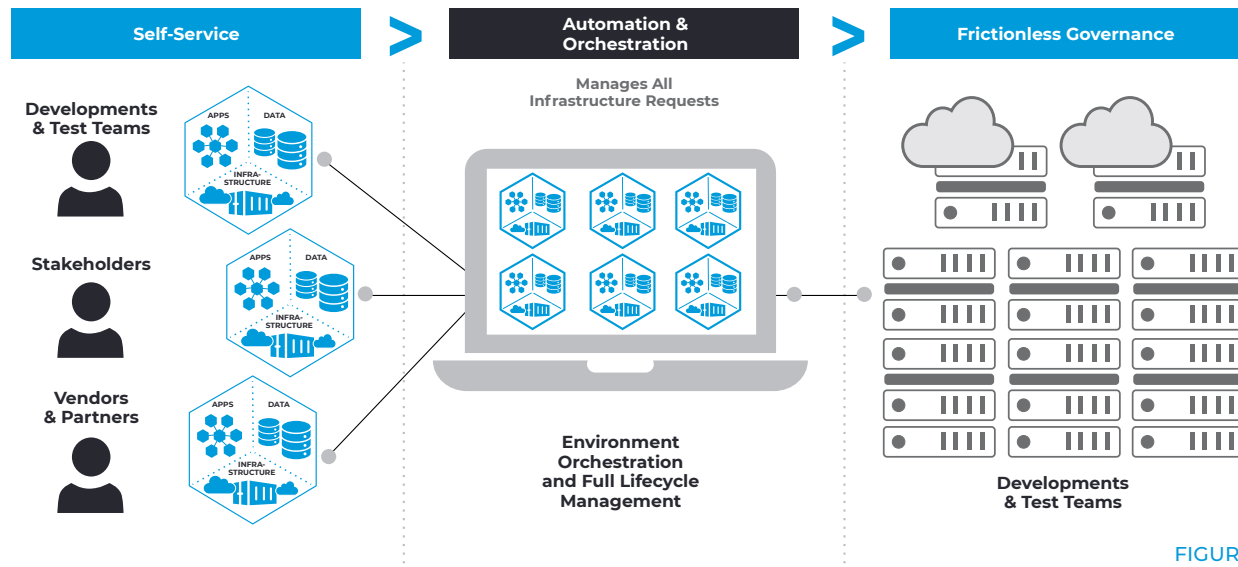

FIGURE 2

SELF-SERVICE

Self-service capabilities are essential for solving the bottleneck issue. Providers must be able to offer an intuitive, user-friendly platform populated with pre-built environments. Within these environments, there will be a pre-configured set of applications, hardware, and services. These pre-built environments should be reserved to avoid conflicting requests and be executed on the fly. Having this self-service option helps admins focus on back-end processes with near-zero touch provisioning.

AUTOMATION & ORCHESTRSTION

Automation is a vital com-ponent of IT orchestration. Enabling a self-service platform, for example, auto-mates the provisioning process for IT, which needs help with automating systems management, including deploying patches, updates, and configurations, as well as receiving network alerts.

GOVERNANCE & COST CONTROL

Organizations require the ability to secure a provisioning platform using authentication and security controls, such as role-based access control (RBAC). The ability to view, configure and allocate group access for the entire inventory is essential. Understanding resource utilization can help admins understand where to balance workload to ensure optimal usage.

Some providers offer these key elements specific to a tightly integrated stack aligned to their respective eco-system. While this may work for users with a homogeneous stack requirement, it prevents organizations from using a hybrid or best-of-breed approach when seeking out optimal components.

Environments-as-a-Service (Eaas): The Quali Approach

Quali's CloudShell is an environments-as-a-service platform that enables fully configured, on-demand, and ready-to-use lab environments **(see Fig 3)**. It incorporates self-service, automation and orchestration, and governance and cost control, providing admins, users, and organizations with powerful capabilities:

- Environments-on-demand for dev/test teams, sales demos, training, customer support teams, and continuous validation

- A platform that embraces large enterprises, financial services institutions, telcos, and security solution providers

- Remote access to dynamic environments for development, testing, and troubleshooting

- Easy-to-use deployment of elastic sandbox environments that incorporate an intuitive user interface

- A technology-agnostic platform with full-stack automation capabilities

- Support for both hardware & software labs

- Reduction of CAPEX/OPEX by better management of resources and an increase in lab utilization
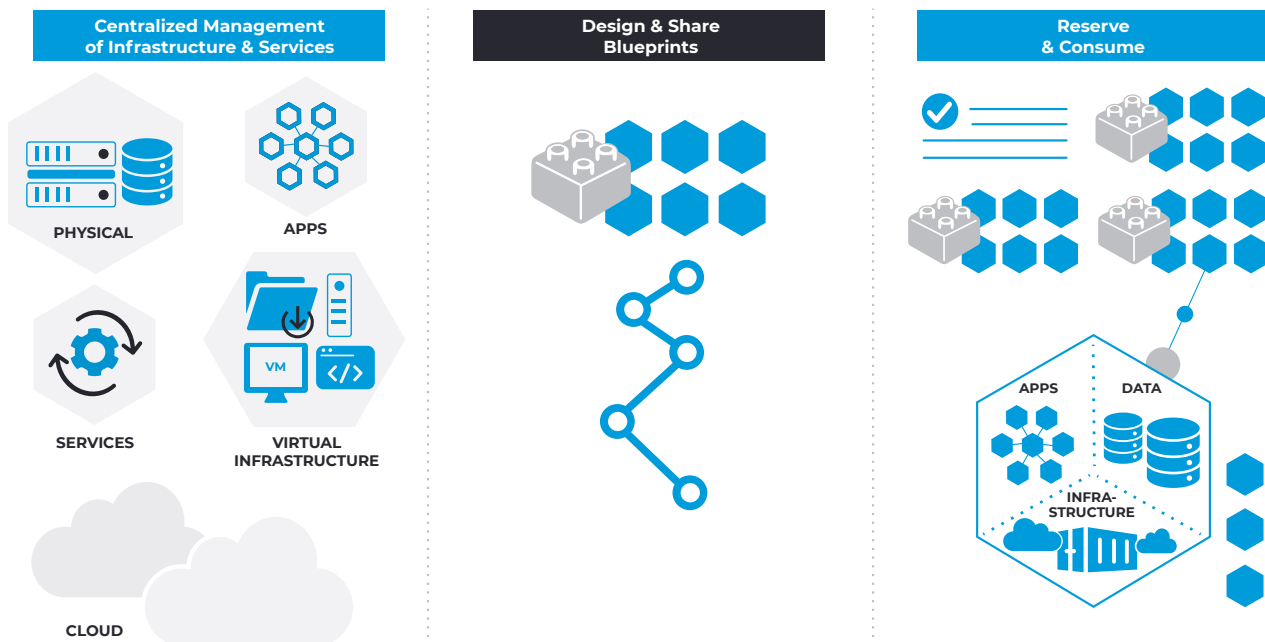
FIGURE 3

A Cloudshell Use Case:

A major bank with more than 2,600 locations and $2T in assets under management had network and testing labs distributed over 12 datacenters. This bank was facing a few challenges:

1. It needed to provide secured, remote lab access to thousands of test engineers.

2. Its IT-managed infrastructure provisioning process resulted in exceptionally long validation and certification cycles.

3. It lacked visibility and control over infrastructure utilization, resulting in low utilization and high CAPEX.

4. It needed its 12 labs to function as a single lab and to be configured in a way that allowed users to directly reserve its resources.

The bank partnered with Quali to deploy CloudShell, providing the bank's remote testers with secure, cloud-based access to the lab's distributed resources. CloudShell also replaced manual processes with an automated self-service process, maximizing productivity with its built-in reservation and scheduling system.

CloudShell offers the same capabilities to organizations of all sizes with deployment that is simple and straightforward. **(see Fig 4)**
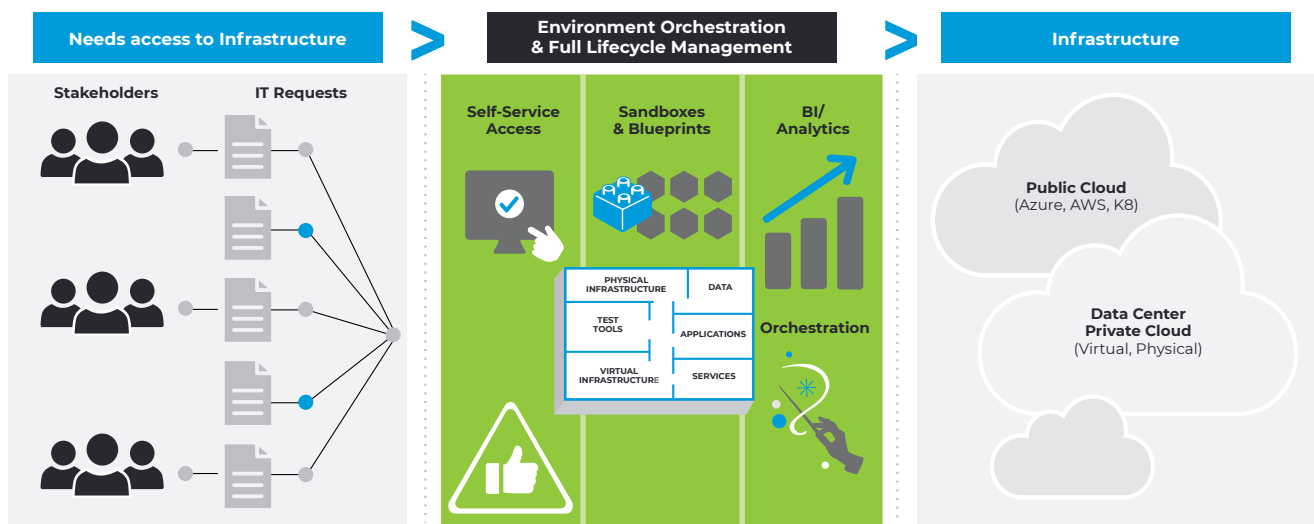

FIGURE 4

READ CASE STUDY >

Setting Up Automated Environments with Blueprints

CloudShell users draw on the use of the concept of blueprints **(see Fig 5)**, which are templates of fully functional environments containing all the components, configurations, and orchestration logic necessary to power those environments. The environment requires the expertise of different stakeholders in the organization, including IT to provision the devices/virtual machines (VM), and a developer to write the orchestration that governs the deployment of the environment.

Blueprints provide a near seamless connection between users and infrastructure. Users accelerate the testing process by using the pre-defined blueprints, accessing CloudShell's self-service portal with a single click.
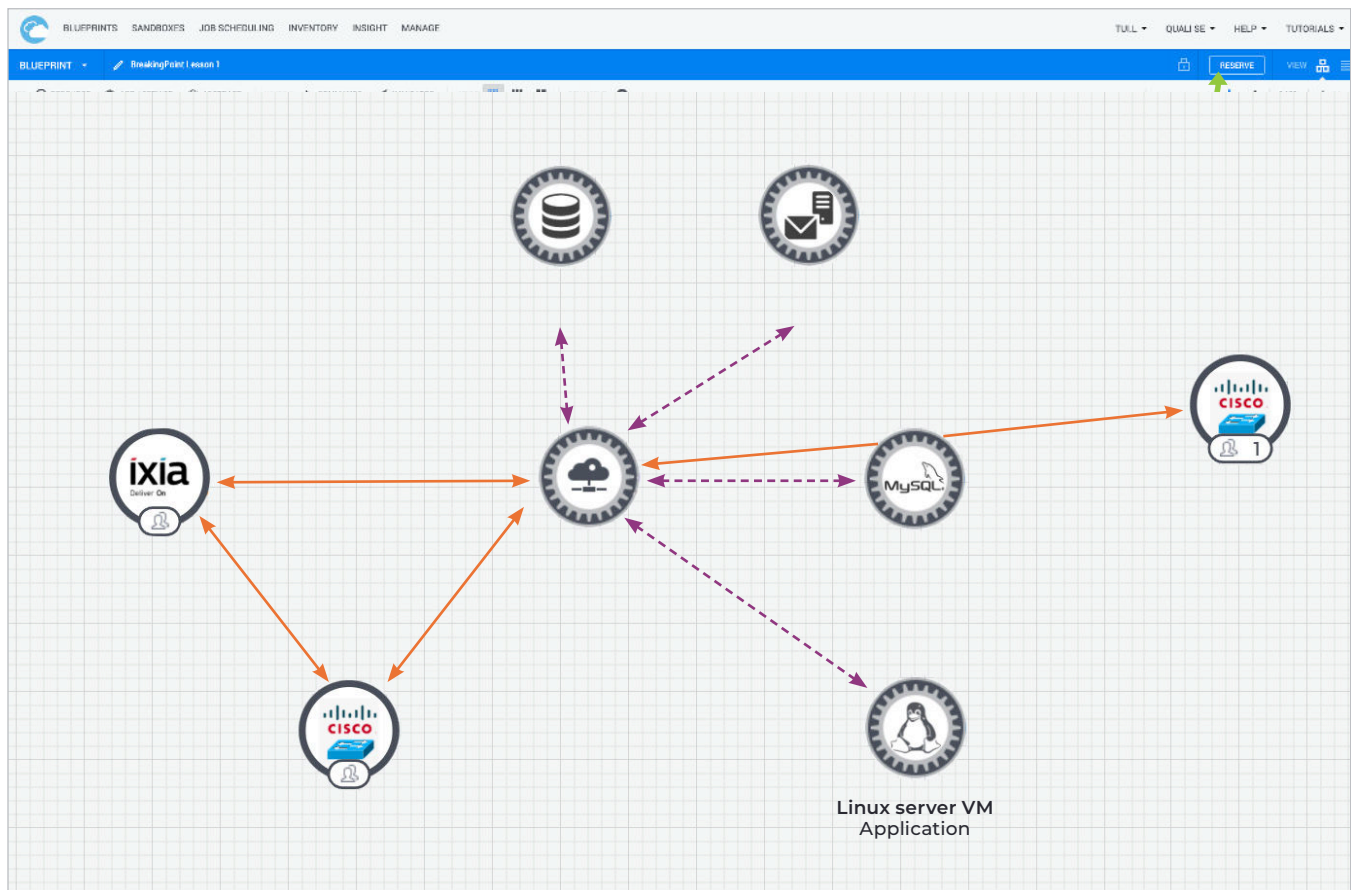

FIGURE 5

Empowering Users to Access Infrastructure via Self Service

CloudShell provides a self-service portal that displays a blueprint catalog, configured by admins or blueprint designers that contain all the necessary components of a desired environment **(see Fig 6)**. Users will see a variety of options to sort, filter and reserve their environment. They can also navigate to the blueprint and see detailed instructions of how it can be used as well as a visual layout of the blueprint.

For large catalogs, there are search and filter options that provide quick access to appropriate blueprints. CloudShell also includes extensive tutorials and detailed information linked to each step as well as access to Quali's education platform, Quali U.
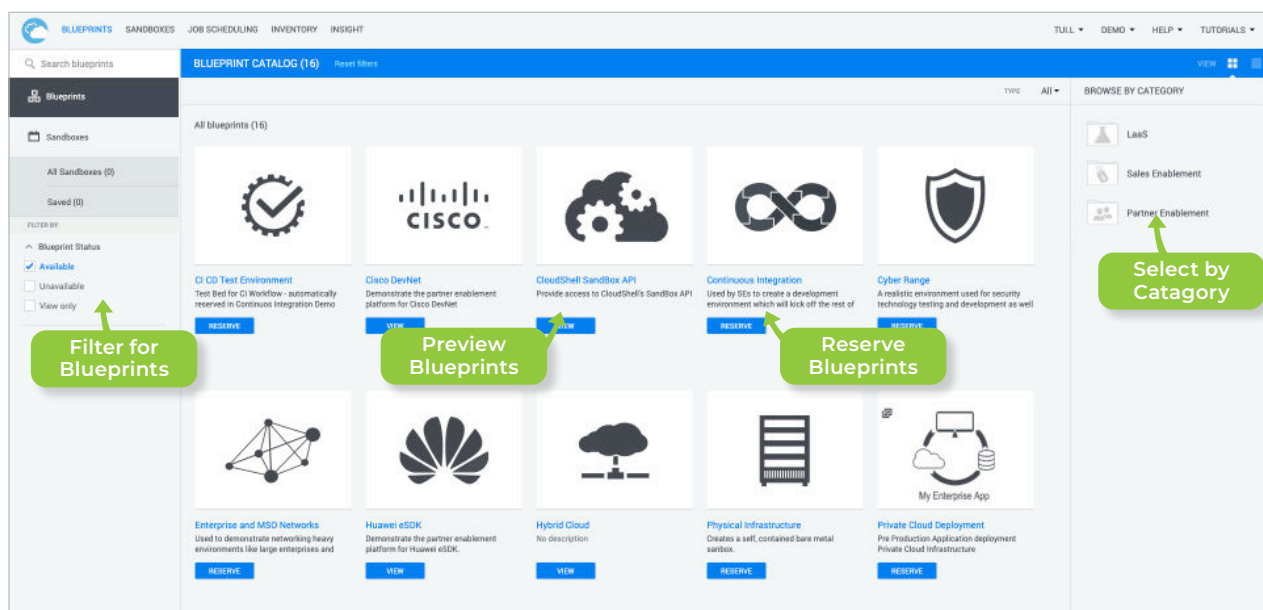

FIGURE 6

WHITE PAPER

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Setting up CloudShell for Governance and Reporting

CloudShell can control access to environments using access control measures, such as RBAC, and other authentication methods. Active Directory and lightweight directory access protocol (LDAP) enable users to access CloudShell with customized corporate accounts, while SSO and JWT provide access through a user's individual login page.

Permissible blueprint actions for users (other than the blueprint owner) are determined by a combination of the user type, group membership, and the group's access level in the current domain. Admins specify which resources and blueprints are available to each domain.

CloudShell also provides tools for simple, clear reporting that deliver insights into the health, usage, and utilization of the infrastructure and application inventories **(see Fig 7)**. Its customizable dashboard displays data in tables, graphs, or charts with additional tools to create reports or single-page views. Organizations can use this data to optimize utilization and load balance accordingly, minimizing the need to acquire more equipment.
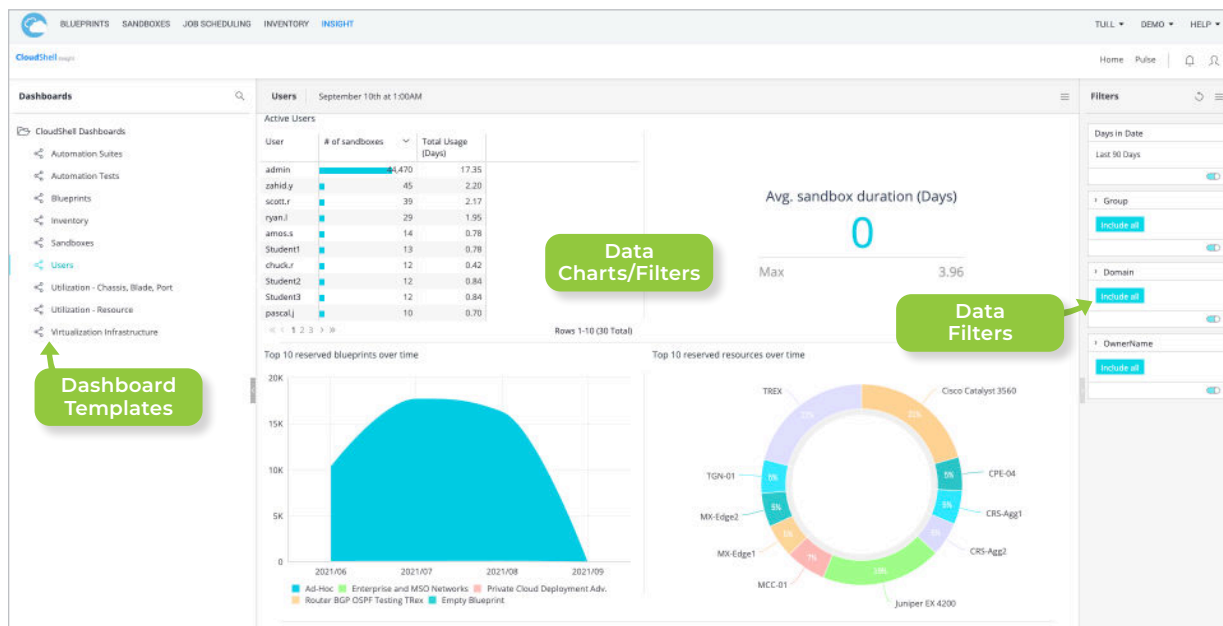

FIGURE 7

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Bottom-Line Benefits

CloudShell helps organizations accelerate their time-to-market by removing barriers that hinder user access to shared infrastructure. It solves challenges that admins, users and businesses face by providing customized, configurable blueprints that allow users to acquire infrastructure without direct intervention from IT admins. The blueprints can be built to automatically tear down when not in use or spun back up again as designed.

As a result of these efficiencies, admins regain bandwidth that they can reallocate to other IT projects, users can access resources faster, and businesses can bring their product to market quicker. By eliminating manual processes, organizations save costs while maintaining a high quality of IT services.

Learn More About Cloudshell

Quali drives innovation on a global scale, working with customers, partners, and the tech community to extend Labs-as-a-Service into a thriving platform through CloudShell's Environments-as-a-Service approach. Quali has joined the Telecom Infra Project (TIP) to help accelerate a standards-based solution that delivers infrastructure automation and connectivity for telecom environments.

For more information, visit the Quali TIP web page.

Learn more about CloudShell and how it can help your organization automate infrastructure and reduce costs:

- CloudShell Overview
- CloudShell Community
- CloudShell Integrations
- CloudShell Help Center