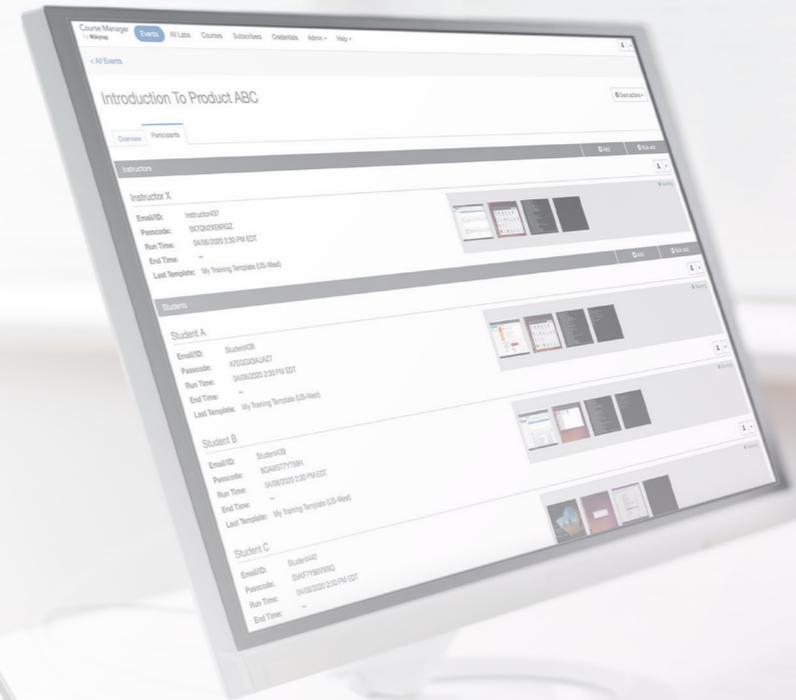


Choosing the Best Virtual Hands-on Labs

Building, hosting, and delivering high-performance virtual hands-on labs for technical software training is more important than ever as remote working and distance learning have become the norm. The cloud is the perfect choice for virtual labs, but not all solutions are created equal.





Why do you need virtual training?

Offering high performance hands-on labs is crucial to the effectiveness of training programs. Labs need to provide a smooth, latency-free user experience as well as rapid startup times that can scale up and down to meet user demand.

Companies have had to move from in-person to virtual training on an unprecedented scale due to the pandemic, and this rapid shift has exposed the difficulty in building and delivering virtual labs — especially in complex application environments. For effective training outcomes, virtual labs need to closely simulate real-world scenarios, which can be difficult if applications require complicated networking configurations or multiple virtual machines (VMs).

Pre-pandemic, on-demand training was already gaining in popularity as a way to reduce the costs of owning and maintaining equipment, travel time and expense, and technical difficulties in configuring equipment. Modular content — videos, webinars, and interactive learning platforms — ushered in self-guided, self-paced training with much greater flexibility and lower delivery costs. At the same time, instructor-led training shifted from in-person to Virtual Instructor-Led Training, or VILT.

Yet there was still a need for hands-on labs, which were largely conducted in person. Many companies dramatically scaled back or even eliminated labs as it became too costly and burdensome to support them, undermining the value of training.



The cloud and widespread use of virtual machines changed the face of hands-on labs, enabling the delivery of high-performance virtual labs that are easy to set up and administer without requiring IT support. Students and instructors can access production-equivalent hands-on product experiences from any global location with a web browser, without impacting production systems.

The cloud provides scalable capacity to support fluctuations in demand, from individuals and small classes to large-scale events requiring hundreds or thousands of concurrent labs.

Spending better aligns with business demands as there is no need to purchase and maintain the amount of equipment required for peak demand, and IT teams are relieved of the burden of configuring and supporting this equipment.

However, moving lab environments to the cloud may not be as simple as it sounds.

IBM was able to provision nearly
4,000 virtual hands-on labs at their
annual Fast Start global cloud summit.

Find out how they did it [here](#).



Growing Virtual Training During Pandemic

Tigra, a networking and network security software provider, had to rapidly pivot from hosting 60-70 in-person training events per year to a completely virtual model due to the pandemic — as did their competitors. Training was critical for Tigra to convert open-source customers into purchasers, so the company decided to offer free virtual hands-on training to gain a competitive advantage.

However, provisioning environments internally or requiring customers to stand up their own would require significant time, development effort, and result in inconsistent experiences. Further, some customers were likely to break their environments, effectively ending their training session due to the time required to provision a new environment.

Using Course Manager by Skytap, Tigra was able to quickly provision lab environments, add registrants even at the last minute, and immediately re-provision environments broken during training. The online events grew quickly to up to 150 attendees at a time, and last-minute registrations became valuable sales leads.



Challenges of moving to cloud-based virtual labs

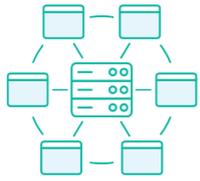


For applications with relatively simple environments, such as a single VM with a standard networking configuration, there are numerous options for cloud-based virtual labs from solution providers or cloud providers.

More complex environments, on the other hand, can require significant time and expertise to stand up and tear down with some cloud solutions, providing little improvement over configuring physical machines.

Some of the areas that increase complexity are:

- » Lab environments with two or more VMs due to multiple product modules or solution prerequisites
- » Multiple network configurations such as connections to external or on-premises resources through private network connections or VPNs
- » Applications that change often or have frequent updates
- » Traditional data center-based applications running on AIX, IBM i, or Linux on IBM Power Systems
- » Users in geographically dispersed locations that require low latency for optimal lab performance
- » Fluctuations in demand due to varying class sizes or events
- » Integration with existing Learning Management Systems (LMSs)



As user volume increases or multiple different types of lab configurations are required, it can be difficult to orchestrate and manage a large portfolio of labs. As greater numbers of labs are required, the work and resources to support them can grow exponentially. Varying skill sets across training coordinators, instructors, and students can also present challenges if the lab solution requires technical expertise beyond users' comfort zones.

The two most common approaches to setting up and delivering cloud-based virtual labs are to build your own in an on-premises data center, private cloud, or public cloud; or choose a provider offering a virtual lab solution.

Infoblox increased on-demand training revenue by **40%** while eliminating customer complaints about latency and VPN issues after moving from a private cloud to Skytap.

Read the case study [here](#).

Why not build your own?

Creating your own lab environments may work for relatively simple applications and a small number of users, but there are several drawbacks to this approach.

TIME

Training environments may be limited by available resources and require complex provisioning for each student and class. It can take hours — or even days — for VMs to be provisioned.

PERFORMANCE

Data centers and single-location private clouds can't provide the smooth, low-latency performance necessary for a global student population.

UNEXPECTED COSTS

Labs may need to be manually torn down once they are done being used to avoid paying for unused resources. Costs can balloon if cloud providers charge for resources, regardless of usage.

BLOCKED ACCESS

Students may be unable to join labs if they are required to install VPNs that are blocked on their local computers.

INCREASING COMPLEXITY

As the number, variety, and complexity of labs grows, orchestration, management, and automation capabilities would need to be developed.

Choosing a virtual lab solution



If your organization has complex lab environments, applications with frequent updates, global users, or large numbers of labs that need to be orchestrated, there are several factors to consider when choosing a solution provider:

Speed and ease of use

Cloud-based virtual labs should be simple to build, use, and retire and be available within minutes. Lab environments should replicate production application environments and be in sync with releases and updates.

Self-service

Training coordinators and instructors should be able to easily provision labs without IT assistance, and students should be able to self-provision labs for self-guided, on-demand courses.

Scalability and cost-effectiveness

The solution should offer flexible capacity, pay-as-you-go pricing, and access from anywhere. Unused labs should be automatically suspended or deleted to limit spending.

Orchestration and integration

Each lab should be ready when needed and shut down when not, and integrate with existing LMSs through Learning Tools Interoperability (LTI) or REST APIs to create a seamless, consistent experience.

Performance and global reach

Labs should be quick to start up and provide a smooth, responsive experience without latency or dropped connections. The solution should offer multiple global regions that can provide low-latency connectivity for all users, wherever their location.



Course Manager by Skytap

Skytap is the ideal platform for building, hosting and delivering technical training labs. Each Skytap environment is a software-defined data center (SDDC) that contains everything an application needs to run, including infrastructure, OS, memory state, storage, compute, middleware, and complex Layer 2 and Layer 3 networking.

Skytap is unique in its capability to support both x86 workloads and AIX, IBM i, and Linux on IBM Power Systems on either Microsoft Azure or IBM Cloud. This allows companies to support complex application configurations and more closely simulate real-world customer experiences without the tradeoff of training on sample scenarios that may not mirror actual production environments.

Course Manager is a Skytap subscription add-on that enables global end-to-end lab delivery, orchestration, and management at cloud scale and without burdening IT.

Benefits of Course Manager



Simple lab image creation

Build even the most complex lab images, with as many VMs and as much storage, RAM, computing power, and networking as you need, without burdening IT. Save images as templates to provision lab environments, and import existing images to accelerate migration. Create new or updated images immediately after product releases or updates to keep training current.

Fast, easy lab environment provisioning

Create courses and provision lab environments from templates in minutes. Create as many exact replicas as needed with a single click. Once students complete their labs, environments are automatically discarded, releasing resources and optimizing cloud consumption.

Cost-effective and scalable

With no more infrastructure and equipment costs, you only pay for capacity you actually use with Skytap's pay-as-you-go model, while flexible cloud capacity lets you provide hands-on labs for any size group. Set retention rules to suspend or delete unused labs to automatically limit spending, and track usage and insight into the business value of virtual lab investments with robust reporting.

Better instructor and student experiences

Instructors enjoy full visibility and control, with a rich set of administrative tools that allow them to extend, reschedule, or cancel lab access; restore any lab to a known state at any time; and assist students with over-the-shoulder access. Students enjoy immediate and responsive access to hands-on labs from anywhere, anytime.

Global footprint for high performance

Skytap is 100% cloud-based with multiple global regions to ensure that all virtual lab environments perform flawlessly regardless of where training coordinators, instructors, or students are located. Copies of lab environments are hosted on the region nearest the user's location, reducing latency and delivering positive, productive experiences.

Integrated orchestration

Skytap's REST APIs and LTI support add technical training labs to existing LMS systems and automated workflows for an end-to-end self-service training solution. Course Manager orchestrates environments to ensure they are available when needed and suspended or deleted when not in use.

About Skytap

Skytap is a cloud service purpose-built to natively run traditional systems in the cloud. Our customers use Skytap for running production, disaster recovery, virtual training labs, and development workloads. We are the only cloud service to support AIX, IBM i, and Linux on IBM Power together with x86 workloads, enabling businesses to accelerate their journey to the cloud and increase innovation. To learn more about Skytap or schedule a demo, visit www.skytap.com

Additional Resources

[Course Manager virtual training datasheet](#)

[Course Manager for VILT product tour \[add link\]](#)

[Virtual Labs: the Key to Effective Technical Training white paper](#)

[Managing Modern VILT Lab Environments with Course Manager by Skytap white paper](#)

Course Manager provides powerful hands-on product demos and Proofs of Concept, too.

Learn more [here](#).

