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# FLEXAPP OPTIMIZES UNIVERSITY OF UTAH HEALTH VIRTUAL WORKSPACES



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GREG RICHARDS  
Citrix team lead and principal systems administrator, University of Utah Health

## Overview

University of Utah Health (UUH) provides patient care for the people of Utah, Idaho, Wyoming, Montana, western Colorado and much of Nevada through five hospitals, twelve community health centers and numerous other clinics and virtual care services. Ranked first in the country for quality, UUH is also the only academic medical center in Utah and trains the majority of the state's physicians, nurses, therapists, and other healthcare providers. Supporting that scope of operations requires hundreds of applications and hundreds more servers, typically with 14,000 concurrent users. Server and workspace virtualization helped reduce the support burden, but updating and patching applications and keeping workspaces running was a full-time job for the entire eight-member Citrix support team.

"We spent a lot of time maintaining apps and managing desktops, and we didn't get a lot of bang for our buck," says Greg Richards, Citrix team lead and principal systems administrator at UUH.

## The Challenge

Managing desktops did become easier once the organization virtualized them and eventually moved more than 10,000 doctors, nurses, and other staff onto Citrix digital workspaces. However, because many of its clinical professionals need highly specialized applications, efforts to move more clinicians to virtual desktops stalled. Many of the applications needed were considered too sophisticated and not suitable for virtual desktops. At that point, the UUH Citrix support team had created dozens of virtual master images to meet the needs of various user roles. To make it work, many applications had been segregated onto their own dedicated servers, creating numerous silos in a population of more than 1,500 servers.



**Organization:**  
University of Utah Health



**Virtual Desktop Users:**  
14,000 concurrent users



**Solutions:**  
Liquidware ProfileUnity™  
with FlexApp™

User needs and preferences for highly customized computers also led to desktop performance problems. As some user profiles approached 4-5 GB, the desktop would frequently fail to load or would crash when in use. UUH's support team typically had to resolve multiple desktop support issues every day. Desktop and profile management accounted for approximately 80 percent of all service tickets.

## The Solution

When the organization planned to transition from on-premises Microsoft Office to Office 365, staff knew it had to make changes to its profile-management process. They took the opportunity to reassess its entire desktop infrastructure with Liquidware partner Terralogic, which included evaluating alternative methods of delivering applications — outside of building them into desktop images. That idea led to a proof-of-concept project for application layering with FlexApp™ from Liquidware, which turned out to be a transformative development for the UUH IT infrastructure and its support operations.

FlexApp instantly delivers applications to physical or virtual desktop users running any Windows® OS desktop in Citrix, VMware Horizon, Microsoft AVD, Nutanix Frame, Amazon WorkSpaces, and other environments. It puts apps in object-based containers, so when users change platforms or log in from new devices or locations, their workspaces and apps are ready and waiting for them. It can isolate applications by type so that only approved software is delivered and visible to a specific user's published workspaces.

The FlexApp One feature attaches virtually any type of application to a Windows session without modifying the pristine base image through traditional installation. It untethers the dynamic capabilities of layered applications from full-time network connections, enabling applications to be made available by any means necessary. FlexApp™ One applications are self-contained in one shareable file and run without the need for an additional application player on any type of Windows session. Users simply click on the application container and the application(s) contained in the executable are attached to their Windows workspace session in seconds. FlexApp One containers can run offline too!

With FlexApp, UUH has been able to virtualize more than 40 applications, including nearly all of its most widely used. The ability to package applications and attach them on machine boot or to user sessions at login means the apps do not need to be built into the master image. Master images now only contain the Citrix Virtual Delivery Agent and are booted blank, and FlexApp delivers all of the applications to them. That, in turn, has enabled UUH to significantly reduce the number of master images it needs to build and support. It has also been able to consolidate and decommission servers, besides simplifying workspace management. Older servers have been retired, including some of the 40 dedicated servers that previously hosted single applications.

"Some apps do need dedicated servers, but that is really going away because we can virtualize the app for Citrix Multi-Session Server VDA," says Richards. "That has really reduced our overhead in terms of the time we need to support apps and servers."

UUH uses FlexApp with Liquidware's ProfileUnity™, which adds application rights management features and has eliminated all the problems the organization had experienced managing user profile bloat. "The ProfileDisk feature of ProfileUnity was appealing to us because we have a lot of large profiles and people really don't want to be limited on what they can put in their profile," says Richards.

ProfileDisk™ is a ProfileUnity feature that allows you to have users' entire profiles on a provisioned virtual disk. Many organizations leverage ProfileDisk to provide Office 365 caching, handle extremely large profiles, and to enable Microsoft Windows and Outlook indexing and search for virtual desktops.

UUH uses ProfileUnity to run its Outlook mailboxes in cached mode, which was a key for being able to convert from on-premises Exchange to Office 365 without having to add FSLogix or any other software. ProfileDisk seamlessly offloads the entire user profile to disk for optimum performance and flexibility. ProfileDisk technology can be used with ProfileUnity's longstanding portability rulesets so administrators can offer lightning-fast profiles that are fully customizable, even when they are extremely large.

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## UUH VIRTUAL WORKSPACES

## Overview

“We went from profiles being our number-one issue to having practically no problems with them,” says Richards. “We were getting multiple profile issues to deal with every day, now we have to deal with maybe one or two in a week.”

Not only are profile-caused crashes now extremely rare, but recovery of profiles is seamless with ProfileUnity’s archive and restore capabilities. Also, the improved profile management and application delivery enable extremely fast logins, meeting the expectations and gaining the appreciation of the medical staff.

Overall, the success in profile management, application management and server consolidation has enabled UUH’s Citrix support team to shift its focus from troubleshooting to enabling ongoing improvements. The effort to get more employees onto digital workspaces has regained momentum and the staff has ramped up plans to move more users to virtual workspaces.

“Today we usually have about 14,000 concurrent virtual workspace sessions and have 38,000 managed profiles. We always received a lot of departmental requests to move onto virtual desktops. Now we’re going back to some departments that we initially turned down because we thought their needs were too specialized. But because of FlexApp application layering, we’re able to say, ‘I think we can help you now,’” says Richards.

“With a better understanding of digital workspaces, and with the better tools we now have from Liquidware, we can really choose when and how we can use VDI. Our team gets to do engineering again, instead of spending all our time on mundane image updates, which is the best result you can ask for.”



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