Managing Today's VDI Infrastructure – Part 1

Christian Chavez, Aspire Solutions Architect, with Brad TerEick, Cisco's Global Lead in Cloud Infrastructure, and Chuck Foley, NetApp Senior Director.

Christian Chavez: Hi everyone, this is Christian Chavez, Aspire Solutions Architect, sitting in for Doug Stevens for PART ONE of this two-part series on Managing Today's VDI Infrastructure. With me today, I have Cisco's Global Lead for Cloud Infrastructure and Software, Brad TerEick, and NetApp Senior Director, Chuck Foley. Welcome to the podcast, Brad and Chuck. It's great to have you join me.

Chuck, I know you and I had done some Techcasts before on VDI. A moment for those who are listening who want to listen to that Techcast, you can go to aspiretransforms.com, inside the resources under Techcast. So, you can grab some of that. But before we get started, see if I can get some info from Brad. If you can give us a little background about yourself, Brad, so our listeners can understand who is talking.

Brad TerEick: That sounds good. So, I'm part of the worldwide Cloud Infrastructure and Software team. And I focus on our Intersight platform helping customers understand what the platform is all about. I work with our business teams to help them channel—I gather information from our customers from our field teams and help them with the planning of the platform.

CC: Excellent. Excellent. And Chuck - let's see what you got.

Chuck Foley: I'm Chuck Foley, Senior Director with NetApp. And I have the privilege of heading the marketing effort for our Cloud portfolio which has grown significantly over the past few years from what we've been known for in storage. Expanding that into a real broad array of storage management from data protection to audit and compliance to continuous availability. And now, we've expanded that infrastructure to areas such as compute and even end-user compute, which is along the lines of what we're going to talk about today.

CC: Awesome. There's quite a portfolio that NetApp has in this area, and I'm looking forward to getting into some of that.

How 2020 Changed the View of VDI

But just to start it off, I started looking for some information and some reports on VDI, so I came across an ESG report. And now, specifically with FlexPod and the infrastructure that it's built for in terms of VDI, it talked about some of the challenges. So, this report came out in February of 2020. And the biggest driver when this report came out was cost optimization.

Now, granted a month later, a lot has happened in 2020 as everyone in the world knows it happened. So, it now moved from a cost optimization component, rather than trying to save some money. Now, we're moving to, "Hey, our workforce needs to now be mobile." So, there was a big impact for VDI. The landscape moved from proof of concept, where cost reduction was the biggest driver, to now we're doing full enterprise deployments.

Now, in speaking of one of those driving components was FlexPod, at least for Aspire. So, there's a partnership between Aspire, Cisco, and NetApp. We have a great ecosystem of our partners who can help build this infrastructure specifically for VDI. And FlexPod was that component for us. It had the best of breeds. We had Cisco, UCS, M5 servers on the front end. And we had all flash storage on the back end with NetApp storage arrays.

Chuck, during that time, at least in the last year, what can you tell us about the storage impact that happened for VDI in terms of performance or anything like that? What can you share with us?

CF: Well, if I say one thing has happened to VDI in 2020, the one word is scale. We've seen so many people say that we've got to scale up or use the VDI because we can't have our users in a corporate environment anymore, which means they don't have access to their corporate networks, their corporate storage, their corporate resources. They're working remotely. But we weren't set up to have thousands of people remote use on-premise resources.

And so, the way to address that is to move to a VDI paradigm, which our users can work from anywhere, from their homes, maybe using their home laptops but still accessing the critical business resources and infrastructure that they need to get their job done. And we've seen organizations that used to have a hundred, maybe 200, VDI seats out of their organization, turn that into 2,000 VDI seats in the organization, literally, overnight. And that creates a lot of stress on infrastructure. You've got thousands

of people now using a centralized infrastructure. So, how you manage it, how you take advantage of that storage, how you have storage that can prevent things like boot storms, log in storms, and AV storms, becomes significantly more important.

And the flip side is the type of user that's using it. The VDI users of 2019 were more task-oriented users. They were what many organizations - not in the pejorative - would call a lower trust model. They were hourly workers, contract workers, temp workers, that kind of stuff. Now, the highest-level executives in the organization are running the business from a tablet in their home accessing VDI resources, essentially. And that's a huge shift. And you need to give the type of performance, the type of availability, and the type of resource access there that would have been in the office.

The Role of Intersight and UCS Servers over the Last Year

CC: So, Brad, let me send this over to you now. I know one of the big things with FlexPod - so FlexPod is a Cisco validated design for infrastructure either for server infrastructure or VDI. And we've seen a lot of it going and supporting VDI desktops. So, in terms of infrastructure, Intersight is one of those components so we can talk network, we can talk servers. But Intersight was a big component of that validated design as we're seeing today in terms of management. So, what have you seen at least either from Intersight's perspective or maybe if you have any insights into the UCS servers that you were seeing and how they were being utilized, specifically even in the last year because, again, that's one of the biggest impacts?

BT: Sure. Absolutely. A couple comments around that, one of the most powerful things about the Intersight platform is that it's delivered as a service, functions as a service, and it lives as a SaaS-based service in the cloud. So, because it's this cloud-based service, one of the things that we need to ensure happens in a very secure and seamless fashion is that Intersight has the ability to communicate and work with devices and servers that are under management by the platform that are living inside, perhaps, the four walls of a customer's data center.

So, one of the slick things about Intersight is, there is a lightweight piece of software living inside of all of our server infrastructure. And in the case of UCS, specifically, living in our fabric interconnects. And that lightweight piece of software is called the device connector. The device connector is responsible for establishing a secure and durable WebSocket connection from whatever that thing is that Intersight is managing up to Intersight itself.

And so, if Intersight is living as a SaaS-based service, our customers now have the ability from really anywhere in the world - and especially in these current times of the pandemic - that became very helpful for us in that our customers could literally work from anywhere, connect to Intersight living in the cloud, and it would have very secure low-level access to components living inside the four walls of a customer's data center.

VDI Management and Performance for Remote Users at Enterprise Scale

CC: Great. Yeah. And I know we're going to get into more specifics of Intersight and the value it brings to VDI later on.

So, this massive undertaking from last year, and I'm really focusing on that because, prior to that, things were slow roll outs for desktops. And, again, cost optimization was one of the biggest drivers. I think last year was a very pivotal point for the desktop itself or remote users and a lot of other technologies as well, but specifically to VDI. This massive undertaking has realized that there's potential with desktop mobility. There's flexibility that is there as well. But what it did is it presented itself as a management nightmare.

And so, when we take a look at how we now have dispersed from both users - we have different assets, whether it's cloud-based assets or infrastructure that is in close proximity to the user, or maybe it's still on-prem where users are coming in, there are still pain points that follow that, right? So, in some of those pain points, one specifically was performance. Cost optimization was still a driver because, again, we were no longer trying to build from proof of concepts. Small little footprints may be doing them in packs of ten. We had to roll out full-blown enterprise-scale desktops.

And even though we wanted to be cost-conscious, there was still that, "Hey, let's just get what's out there and let's just put it out there." And so, it may not be set up correctly, it may not be configured correctly. It was just a matter of getting people to get out there to service the remote user, so they were able to still do work. So, that management aspect now is, not only are we looking to manage the platform, but also bring back into a validated design or a validated an infrastructure where we make sure that configurations are correct.

So, as part of those pain points that I just specifically spoke about, Chuck, I know you had mentioned one thing that I kind of want to touch upon and is really the performance aspect of it. That was one of the greatest points, I think, that we were running into prior to 2020, and even after the fact, we're still

seeing some of that. What is NetApp doing around the performance in terms of VDI and how users are dealing with them?

CF: One of the reasons FlexPod has been so well-received in this sector, especially as VDI starts to scale, is the underlying storage infrastructure on our ONTAP operating system. It deals with incredibly high stress workloads very well. It powers some of the most demanding users of IT in the world. So, when you have things like entire populations of users signing on at one time in a given region - that's called a login storm or a boot storm - that stresses the heck out of the infrastructure. Or when you have scheduled AV scans that kick in that crush the infrastructure, ONTAP handles that really well, either on-premises and FlexPod or in the cloud when you've maybe burst into the cloud. So, you're running a hybrid scenario both on-premises and VDI users in the cloud.

The other thing that we've done is, we've invested in the global control plane, we brought it to market as Virtual Desktop Services, which can provision the right resources when you need it. If you know when your stress times are in your workloads, when more people sign or more heavyweight users like designers, engineers and developers are working, you can have programmatically, according to your policy, more resources compute memory disk GPUs assessed for that time. And it will be provisioned when you need them. And then, to save money, they will be deprovisioned in the off hours.

So, being able to come at this from a storage layer by having a really heavy-duty storage system as well as the compute optimization throughout the whole thing, it's kind of wrapped up by NetApp's Cloud Insights that lets you see where your bottlenecks are beginning to occur before they hit you. So, if you need to make a change, provision more resource, deprioritize users or tasks, you can do that. Those are some of the things we're putting on the table to allow people manage VDI enterprise scale.

Intersight Assures Performance and Delivers Resources when Enterprises Need Them

CC: Awesome. I know one of the things with Cisco UCS - and you had mentioned some optimization of infrastructure there - that we used to do before is manual work, into performance manual work, into some of the utilizations that were happening inside of UCS itself. We're now moving - I shouldn't say we're, but Cisco is now moving that up to a different management level. What type of performance can we see with Intersight? Brad, I think there's some visibility that we can gain into infrastructure and/or at least the desktops or the infrastructure that supports the desktops.

BT: Sure. A couple of comments related to that. And this is specific to a platform that we have inside the Intersight platform called Intersight Workload Optimizer, or IWO sometimes as you hear it. And the way

I like to talk about it with our customers is, if you think about an IT organization, they really have one job and one job only. And that's to deliver performant applications at the lowest possible cost. And so, that's quite challenging and it's really beyond human scale in today's dynamic world if you think about it.

So, Intersight Workload Optimizer is a SaaS delivered, real-time decision engine for public and private cloud environment. So, it assures workload, performance by giving all of the workloads the resources that they need when they need them. It grew out of a long-standing partnership that we've had with Turbonomic. And it was originally offered as this on-premises solution that we delivered as a virtual machine. But now, it's embedded in the heart of the Intersight platform. So, it really takes advantage of the scale and the reach of Intersight through these secure connections to the resources that it manages, whether it's on-prem workload resources or public cloud resources. It really delivers application resource management to the hybrid cloud, if you will.

CC: Got you. So, I'm hearing a lot of good management pieces coming from both sides. I'm hearing a lot of things to take into consideration. So, there's a lot of management tools to consider when it comes to virtual desktop infrastructure or even infrastructure that's supporting the desktop user. I think there's still a good mix or a tying together of, not only DSI but VDI, and either they're leveraged as two separate or as one whole, but in terms of management that we need to consider the areas of focus.

Considerations for VDI Deployments

I know specifically, Chuck, you and I had conversations around was the deployment aspect of VDI, the management aspect of VDI, as well as the optimization. Brad had just talked about some optimizations that Intersight brings to the table. But what should we consider - and let's specifically just kind of cut those into three - when we're looking to deploy? What things should we consider in terms of deployments for whether its desktops or even DSi itself? Chuck?

CF: Well, a lot of people believe VDI is easy, but it's not. It's actually pretty complex because you have to know the whole Windows end-user compute environment, plus the VDI layer, plus, especially if you're doing it on the cloud, you need to understand the cloud layer as well if you're doing it in a hybrid mode. So, there's a lot involved there. If you're going to deploy a 200 user VDI workspace, there's 38 discrete tasks, including the prep and data gathering, et cetera, it can take three weeks to get put together.

It's a ton of work for these admins. You have to provision the infrastructure. First, the storage infrastructure with things like creating volumes and tiers, and assigning user profile storage, and application, and share storage. Then, you need to provision the network infrastructures, BPCS, subnets.

You have to configure and provision the compute infrastructure, both your infrastructure VMs, like your brokers and gateways and application managers. And then, you have your host pools and sessions servers. And then, you've got to set up, in most cases, your active directory environment. And if you're in multiple locations - because, Chris, you mentioned global - you got to connect that all together. That's a ton of work.

And so, what we're seeing the industry push us to - and we do this with our Virtual Desktop Service - is to use automation and machine logic. What used to take weeks, boil that down into a couple of hours. And if you can have a layer of machine logic do the things that you would normally do, those 38 tasks, instead of taking three weeks, it can take X number of hours. And then, managing that on an ongoing basis in terms of managing the infrastructure, the machines, the storage, the backup, the cleanup, the image sizing, the patches, the updates, as well as the application layer work. If you can then use machine logic and automation to do that, you can save yourself literally man months per year. In most cases, it's going to save about 50 percent of the cost of deploying and running a VDI environment. So, it's huge, especially as your VDI environments get bigger.

Deployment Aspects Provided by Intersight for Server Infrastructure or Virtualized Infrastructure

CC: Yeah. I was a little dizzy after all that, Chuck. You're right, a lot of effort needs to go into deployment aspects of it. And I know specifically working, again, with FlexPod, as we were deploying it, the management piece now has become decentralized. So, if we had multiple areas where we were deploying FlexPod, either VSI or VDI, now we can actually take that on from a SaaS-centralized location like Intersight. So, I know there's some deployment aspects that Intersight provides as well, at least in terms of server infrastructure or actual virtualized infrastructure. Brad, what can you talk about there?

BT: A couple of comments there is, with the Intersight platform, we really wanted to take advantage of all of the greatness that we had with the original UCS platform where, we took this concept of building policies that allowed customers to standardize the configuration and consistently deploy their platforms. And then, attaching those policies to profiles, and mapping those profiles to the servers, whether those are blades or whether those are ranked based systems. With the Intersight platform, we can deliver that.

But on top of that, Intersight can take it to the next level. There is the opportunity to deploy the host operating system through the Intersight platform. And we can deploy a whole variety of different host operating systems. And with all of that, one of the things that you get with Intersight through that concept that I mentioned earlier, the device connector, is that device connector is sort of the secret

sauce that allows us to connect to Cisco infrastructure as well as through a function, called the Assist, that allows us to connect a third-party infrastructure, NetApp storage.

So, what we can do then is, we can tie all of that together and through another component of Intersight called Intersight Cloud Orchestrator. We can begin to build a workflow that assembles not only the physical aspects of configuring a server, but it can then take it to the next step, which is perhaps deploy the operating system. And then, the next step, maybe I need to do something with the storage that's attached to it. And that storage can be that NetApp storage. So, it has the ability to marry all of those components together in a very secure fashion and sequence those through the Intersight Cloud Orchestrator.

Managing VDI after Deployment

CC: Nice. And sometimes when I hear things like that in building those workflows and deploying some of this infrastructure with centralized profiles and things like that, it speaks management to me. But in reality, if I'm thinking of deploy, manage, and optimize, manage is sort of like the day two, "What am I doing with my infrastructure?" So, if we touch upon management, management is the - I would call - reactive - in some cases, proactive. But it's more reactive like, "How do I manage this infrastructure now after it's been deployed?" And I know there is some aspects of Intersight that bring that on as well as things from NetApp that actually help manage the day two operations moving forward.

Chuck, I mean, if you could speak specifically to day two operations to the management aspect of it, what's NetApp doing in that area after we deploy?

CF: After you deploy, that's when at the VDI layer - so the Windows end-user compute layer - that's where Virtual Desktop Service really kicks in for you. Because all the things that you would normally have your VDI managers doing about managing the different Windows OS, layers, patches, versions updates, anti-malware, or managing the application layer, re-versioning patches and updates, including the interdependencies with other OS changes, and managing the ongoing user support, session issues, performance issues, provisioning resource, spinning down unused resource, all that can be done via automation.

And here's the best part, the world's kind of moved to the point where you don't buy software to do that. That's a service. It's a SaaS-based service. You just say, "Here is my FlexPod systems on-prem, here's my VDI environment, I want to manage it." And if you've got 12 of them in the world, you can manage all 12 from a single pane of glass. You might also have, let's say, a couple of workspaces in Azure

in some parts of the world where you don't have a physical location for it, and that's all managed from the same single pane of glass. That's what Virtual Desktops Servers or - we affectionately call - VDS brings to the table.

And then, for your data and storage layer, NetApp's cloud manager allows you to see where all of those ONTAP instances are, it allows you to back them up directly to, let's say, low-cost cloud-based object storage. So, you don't even have to install backup software. It will literally back it up directly from the FlexPod ONTAP systems into the cloud or from your untapped cloud-based versions, like Azure NetApp files or Cloud Volumes ONTAP into Cloud Object Store. And while you're at it, you might as well just point and click a button to have compliance audit and governance scans run on them as well to protect, not only your data, but your company. All that can be done from a single point.

That's kind of where we've evolved to as our customers have said, "I kind of want to lift these control plane functions, these management functions up and make them a cloud-based service. Make it where it doesn't matter if it's my on-prem systems or my cloud accounts that I'm doing it with. I want to look at them all from one place as if they were ubiquitous." That's what NetApp's putting in the hands of our users.

CC: That's awesome. And so, now, with Cisco's providing, again, looking at Intersight being the centralized management platform for UCS that's inside of FlexPod, I know there are some things that we look at. So, Chuck specifically spoke about the desktop infrastructure running. And it was a lot of things that NetApp is bringing to the table.

There's one aspect of this that we need to consider as well, and that's really the hardware aspect of what's actually supporting VDI in this case. Intersight does that very well when it comes to the hardware aspect of it. So, we're looking at things, whether they're peace certs, whether they're alerts, whether they're updates to firmware. So, we're like at the hardware layer. Brad, if you can give us a little bit about that aspect of management.

BT: Fantastic. Where do I start? There's a lot to talk about here. Well, let's pick on just normal device health, we'll start there. When it comes to hardware health of a physical server, one of the key foundational principles of Intersight is, every single server maintains that secure connection with the device connector. And it does so by talking to an API on the endpoint. And that endpoint can be a physical server, it can be a lot of different things.

But let's just say it's a physical server that's running VDI. Well, that physical server, if it should get sick, if something should go awry, if something is not performing correctly, or a power supply goes out, or something like that, what happens is, internally, within the device, a fault is generated. And the integrated management controller will pass an alarm or pass a notification via a message, via the message bus, specifically to Intersight. Intersight will receive that as an alarm. And then, based on that alarm, the administrator can see that within the Intersight platform. Now, depending on how you've configured it, there are different ways to alert and notify the user of that particular situation.

But another characteristic of that is, let's hypothetically say, it went down hard, like, maybe it had a dim failure. Or maybe not so hard, and it had an internal drive component fail or something like that. Well, one of the other slick things is, because Intersight is functioning as the SaaS-based service, our Technical Assistance Center, or TAC, is actually looking at the Intersight platforms that are under management. And if this happens in a customer environment where there is a support contract in place, let's say a dim fails or a disk fails, our TAC team can actually begin the process of proactively RMA-ing that failed component, and carry that forward from that particular action without any involvement from the user.

And I'm happy to talk more about peace certs, too, if you want to talk about that. But I should yield the discussion back to you.

CC: Yeah. Brad, I think we're going to carry into the next conversation or next podcast, Part 2. So, right now, we'll end Part 1 of our discussion in managing today's VDI infrastructure. I do want to thank you, Brad and Chuck, for joining me. Please join us for our next, Part 2, of this podcast.