

Jason Lopez:

For decades many have said healthcare needs to be fixed. They point to high costs, lack of access and less than desirable medical outcomes. But there's optimism – you probably already know this – that information technologies have great potential to essentially disrupt healthcare for the better, here in the age of the PC and the smart phone, the rise of the web and the constellation technologies we know as the cloud. It hasn't been an overnight process. But there are IT professionals who are on this. They're not concerned about making headlines, but rather they're working on issues like this:

Christian Aboujaoude:

...enabling future enhancements in patient care, expanding our services to our patients, and ensuring that we continue to push the limit on providing the most advanced, most supportive, most connected care we possibly can to our patients. Because at the end of the day, we all have a mission and our mission is simply to take care of those that need our help and everything we do in IT really is in support of that mission and nothing else.

Jason Lopez:

Christian Aboujaoude is the Chief Technology Officer at USC's Keck Medicine, which includes under its umbrella several hospitals such as the Keck Hospital of USC, one of the top medical centers in the country, as well as about 43 clinics based in Southern California. Christian oversees the IT infrastructure and security environments which support this organization. One of the things we wanted to do in a conversation with him was to get into the weeds of what he's thinking and doing in his job. The interview starts with how hybrid cloud infrastructure has been embraced in healthcare IT.

Christian Aboujaoude:

I think what happened when HCI was first launched in the, in the industry, everybody, you know, ran to it right away because they saw the simplicity of what's happening. What hasn't happened. I believe since that HCI deployment has taken place is a re architecture of the workforce to accommodate the changes. So a lot of organizations, I think they still use HCI in a tiered model, which is actually incorrect. They need to be able to adjust their team structure, to be able to be HCI focused in the sense where it's self-sufficient to, to really optimize how it's used in the environment. Meaning like don't, don't bring in the, don't continue to have a sand team and a server team and a, that routine when you're using a, maybe just have a network team and a sand server team, for example, somebody that is able to, to the two environments together and provide you a much more effective environment at that, at that point in time. But also with HCI, I think a lot of it now with the per pro proliferation of cloud available services, there hasn't been that clear roadmap yet that has been built for the transition from HCI to the cloud. And tie-ins back and forth. I mean, most organizations offer these services, but they offer them still, in my opinion, in a fragmented fashion, there hasn't been a clear, this is how we transition you over. This is how we shift the workloads back and forth and, and so on from a user perspective. And that's something that I would love to see change in the industry going forward.

Jason Lopez:

And if people understood that what would be different?

Christian Aboujaoude:

What would be different is actually in reduction in workload, right? A reduction in complexity, in how we run environments today. You see, look, look at applications that you're bringing into the healthcare industry. Nowadays, I'd say easily 85 to 90% of them are service driven applications. And they are living in the cloud. You're not having to stand up a significant infrastructure anymore, but you're still, you know, leveraging OnPrem resources to manage through this by doing and having clear roadmap. Now you're able to start looking at these service driven requirements and tied into your ACI. So you're not building very, very, you know, monolithic type environments to support the application, but instead you transition to compartmentalize service based you know, approach to how you deliver technology to your clients. I think we need to get there. We need to, we need to continue to reduce the complexity of the infrastructure, because the easiest way for me to correlate this, whether it's gas, powered cars, electric cars, what have you, you still need asphalt. Asphalt is the infrastructure, right? So you need to figure out how to actually make that environment last really, really long and avoid sinkholes and things like that that have, obviously I'm using in correlated the example here, but the, the ability for you to scale and tie into other functionalities from the cloud services perspective to help really push this technology to its limits.

Jason Lopez:

Let's talk about that mindset. Obviously there's constant advancement in tech, things we expect to be able to do just around the corner. But in a new era of a hybrid approach, does it gives you abilities that kind of go significantly further?

Christian Aboujaoude:

It does. It absolutely does. I think the ability, so first you have to be able to build technologies that can scale second. You have to worry about how fast it takes you to scale third, you have to worry about how much does it take me to operationally sustain that scalability and so on. I think between HCI and the cloud, those requirements, those headaches have been reduced quite a bit because now I'm able to go buy things much quicker, much faster, much more smaller, you know, by a LaCorte versus having to buy the entire, the entire offering. For example, I think that technology itself is turning more into a services approach. It's turning almost into a concierge service. This is in my mind. That's why I think technology is headed. It's the ability to literally have it your way the burger king option, right? You can, you can do it any way you want to, as long as you're willing to pay for it. And, and the difference is that now my ongoing cost may be a little bit higher, but my barrier to entry is a lot smaller. So I think that that is a very, very significant mind shift change in healthcare and technology period because healthcare solutions also from an application standpoint, those solutions are changing quite a bit to actually actually just offer things that are consumer defined, right? So we still have the regulatory components. We still have to work on things at a, at a point where we have to report and provide data in a specific way. But the proliferation of apps that is actually exploding in the environment nowadays is forcing us to be a lot more service driven. And when you, when you

have a mindset of HCI and cloud, your ability to transition to that is much easier, much, much easier.

Jason Lopez:

You've said hybrid cloud infrastructure eases your path to cloud. What do you mean by that?

Christian Aboujaoude:

Yeah, I don't believe anytime soon there will be any single healthcare organization. That's a hundred percent in the cloud. That's just most likely, never going to happen. I do believe however, that it's extremely highly probable, that many healthcare organizations will have a hybrid cloud and I'll be willing to bet that most have that today. Cuz the hybrid cloud capability is coming from, you know, things as easy as if you use office 365, you have a cloud presence. If you're using external SA services for the lack of better term, you have a cloud presence of some degree. So I think the hybrid nature of that is absolutely something that is real and is to stay for a very long time.

Jason Lopez:

So in your experience with HCI, what happened when you implemented it?

Christian Aboujaoude:

Things got easier. My workload got reduced. I didn't have as much work to do. I didn't have as much downtime I needed to incur. I didn't have as much complexity from a scalability perspective. For all intents and purposes really was all plug and play. You know, there, there's an inherent kind of get you up and running faster with HCI, which is something that is a lot more difficult to do when you have a three tiered architecture that you're using. So the efficiency gain from going to HCI was significant, both on the resource end, as well as on the performance end, scalability is next. And then the last is operational impact in a positive way. Meaning the reduction of operational workloads.

Jason Lopez:

So just lately, what has the transition to HCI been like?

Christian Aboujaoude:

I will tell you that we have done in the last, just in the last six months or, or so we have refreshed a significant number of our HCI nodes, just because we had nodes that have come end of support end of life. So we're doing the transitions. And I did that to the tune of like hundreds of terabytes and client sessions and CPUs of blah, blah, blah, blah, all the, all the fun, little performance things that you would think of and not a soul in the organization knew that we were doing it. And I think that that is quite different doing it with an HCI environment versus a three tier product, because when you're doing a three tier product and you're doing cut overs, you must, at some point do a last commit, which means services will stop. And instead from an HCI environment, it's the idea of coming extremely close to that evergreen scenario and building things in N plus two N plus three configurations. So workloads are being shifted back and forth. You're doing maintenance, you doing all these things, I'm reducing the amount

of you know, non any kind of unscheduled down if you would, and we're reducing them from that perspective. So that's a fact about HCI that I think it's much more difficult to have in a traditional three tier environment.

Jason Lopez:

There must have been costs, whether financial or resources, or even challenges because, it's like anything else when you see the future written on the wall and you know you've got to respond in some way. Are you confident about your future path?

Christian Aboujaoude:

I'm confident that we're going to the future because a few years ago, I very blunt very, you know, simply and clearly, and bluntly came to my team and said, if we are to be successful long term, to leverage the cloud, to leverage things at a much higher rate, like HCI, we must change the way we think and look at it. Doesn't have to be large. It doesn't have to be big. It doesn't have to be blinking in my face for it to actually believe that it's working the way it needs to. We need to think about compartmentalizing and really narrowing down how we look at technology. So we are targeting the things that matter and start to think about how we operate the environment today. So for example, if you were to leverage if you were to tee on the edge of ACI and cloud technology in the cloud versus technology on-prem is not significantly different. The difference is you don't see it. The difference is you pay for it in a, in a, in a way that you're not accustomed to, but usually it's not a sunken cost. It's a reoccurring cost, but it exposes quite a bit of inefficiencies from a process perspective. I think the best way for you to evaluate whether or not you have an efficient it organization, call out, we are transitioning. 100% of our resources are support to the staff, to the cloud, to tomorrow, obviously on being I'm exaggerating. But the point is, if you were to pick up and move everything tomorrow and you change zero of your process, you are likely to bankrupt the department because there are significant inefficiencies of how people do things on prem, because there is no, there's no negative from it. There's no repercussions from the cost perspective. When you actually change that mindset and count and treat the cloud, treat the on-prem environment, even with HCI, as if you're in the cloud, you would have, you will have a significant, different outlook on things. And then when you transition, you're not going to be faced with you know, surprises that you did not plan for. And that's where I, that's why I feel confident that by going by going to to the cloud, we are able to be successful given that we started down this transition a few years ago.

Jason Lopez:

In a way it sounds like one of IT's roles in the healthcare industry isn't just to digitize what hospitals were doing with paper, but to sort of hack the system from within? Is that a fair point?

Christian Aboujaoude:

With yeah. What, what, we're, what I did, what, you know, the correlating example, Jason would be rather than trying to, you know, the, you know, the comment everybody uses a square peg in the round hole, or that concept think of the hole as being elastic, right? So it doesn't even matter anymore, right? Build an environment that can adjust to whatever peg shape you're trying to put into it. It doesn't

matter, right? If you think that way, then your ability to adapt and change to the business needs is so much more powerful than those that build for purpose. I don't build for purpose, I build for need. And when I build for need automatically, I need to adjust because that need is going to adjust. So I change the way and how I look at things by building it. That is not specific. And, and I, for example, I don't need an HCI. I don't my purpose is not to build an HCI. My purpose is to implement an HCI environment that feed that meets multiple needs. That's why HCI makes sense for me, going to the cloud for me is not a requirement. It's, it's, it's you know, it's a need for me to grow to the cloud. Therefore I'm gonna build a cloud presence that is elastic, and it can adjust to both services as well as, you know, traditional operations, because the cloud does offer traditional operations as well. Changing your mindset of how you look at that entry point, I think will benefit greatly those that are looking to go down this road.

Jason Lopez:

So if a shop has started on the road to HCI, based on the experience you've had, what's the mindset they need?

Christian Aboujaoude:

It's funny because HCI to some degree is a portion of a cloud on prem. There's a lot of stuff that goes on in that environment that we simply just don't know or don't care to know, quite frankly, as long as the performance that we're looking for is being delivered. The cloud is very similar, right? You buy a service, you buy this, you buy that. And then something magically happens on the back end and you're able to have a resource available to you. So this, the transition over to the cloud will be easier. I think your, your mindset is, is easier because once again, you focus on the impact to the, to the client, the client, in this case, being the clinical user in my case. And rather than trying to worry so much about the nuts and bolts, you tend to get closer to a positive outcome. A lot of these things, I think for, for some of us in hardcore kind of infrastructure technology stacks, we don't look at it that way and we should, because it, it will change our mindset. We will actually start to apply think architect and design technologies quite often quite different than we are doing and have done over the years.

Jason Lopez:

Christian Aboujaoude is the Chief Technology Officer at USC's Keck Medicine. Some resources you might find interesting. One is his commentary entitled cloud-journey-a-few-lessons at the publication [healthtechmagazines.com](http://healthtechmagazines.com). Here at the forecast, Tom Mangan has written a great profile of Christian and his vision, entitled Simplified Hybrid Multicloud IT Helps Healthcare Provider Focus on People. This is the Tech Barometer podcast I'm Jason Lopez. Tech Barometer is a production of The Forecast, which you can find at [theforecastbynutanix dot com](http://theforecastbynutanix.com).