# Virtual Morgan Stanley Technology, Media and Telecom Conference

## Company Participants

- Jason Zander, Microsoft Corporation
- Keith Weiss, Morgan Stanley

## Presentation

### Keith Weiss {BIO 6993337 <GO>}

Good evening. Good afternoon. This is Keith Weiss from Morgan Stanley's equity research department. I run the Software research group here.

Very pleased to have with us to end my day -- I think we have one more presentation after this -- day one at the TMT conference, Jason Zander, Executive Vice President of Azure from Microsoft.

Definitely a topic that we talk about a lot, and investors are talking about a lot. So we're really happy to have Jason with us this afternoon to chat through all things Azure, what's going on in that business.

Before we get started, a brief disclosure for important Morgan Stanley research disclosures, please be our website at www.morganstanley.com/researchdisclosures.

One programming note. I do have a bunch of questions that we're going to be going through. (Operator Instructions) So with that out of the way, Jason, thank you so much for joining us from the control room. It looks like you're going to be landing the next Mars Rover behind you right there.

### Jason Zander {BIO 20468487 <GO>}

This is my den actually. I went overboard. My wife's in an office. It's our cloud collaboration center here in Redmond. It's right on campus. We basically use this place for hackathons, et cetera.

A little bit quiet because of COVID. But normally this place is packed -- and will be hopefully once again.

### Keith Weiss {BIO 6993337 <GO>}

Excellent. So Jason, again, thank you for coming to the conference. Azure and cloud are definitely super high on the list of topical debates for investors. Azure is

definitely core to the investment thesis on Microsoft. So great to have you here.

## Questions And Answers

### A - Keith Weiss {BIO 6993337 <GO>}

Maybe to start out with, you could outline a little bit of your roles in responsibility at Microsoft as EVP of Azure. What does that cover in total.

### A - Jason Zander {BIO 20468487 <GO>}

Yes. So as EVP for Azure, my remit here, we're kind of like what you call the systems team at Microsoft, our CEO likes the call us that. It means that we'll do everything from the silicon and quantum computing, the operating systems, Windows and Linux that we provide to the rest of the company. All of the cloud software for infrastructure in PaaS. Data and analytics, IoT, we'll do the operational side of that.

And then we have a set of verticals that we actually help specialize in. And then more recently, we've been doing a lot of work around some of the telco communications operator space as well, and that's all part of the core strategy. So that's my job as -- day job as an EVP, and I'm also a member of Microsoft's senior leadership team. So that's me in a nutshell.

### A - Keith Weiss {BIO 6993337 <GO>}

Outstanding. So it's a great purview. So maybe to start out with a big picture question, just on sort of the overall kind of public cloud space, we've seen a rapid pace of innovation over the past 2 to three years.

We've seen Microsoft really see explosive growth in this category. Can you talk us through some of the bigger changes that you've seen in the overall marketplace over the past couple of years up into the sort of the crisis. And then we could talk about sort of what type of change or pace of change you see coming out of the crisis.

### A - Jason Zander {BIO 20468487 <GO>}

Yes. And leading up to the crisis itself, of course, we did have the big trend of people moving from their data centers into public cloud. That, of course, continues. We can talk about the pace of that in just a moment, maybe around the COVID-19.

But of course, that's been a huge amount of work for us. I would say some of the big areas we're seeing in returns of changes now is a lot more focused around data and analytics. Basically, how do I unlock all of the data silos that are out there, get more understanding of it, get some insights to say, competitive that one's super important.

We're also seeing a whole bunch of adoption across areas like IoT. That's an effort I started five years ago on the team, but we do trillions of messages a day. And we

have just an unbelievably really great set of customers, lighthouse wins, et cetera. So a lot of work there. And then AI and ML continues to be a hot trend.

I'd say one of the other big areas is, again, thinking about more vertical specialization and working with folks in their industry because a lot of stuff I talked about this horizontal could be just considered supporting IT. I think you're seeing us get more and more involved in vertical business value propositions as well.

## A - Keith Weiss {BIO 6993337 <GO>}

Got it. Got it. So that's great to hear. So more of those higher-value solutions really coming to the forefront, becoming a bigger part of the story. As an analyst and looking at it from a financial perspective, we like to hear that those higher-value solutions should be better gross margins.

As we kind of shift the focus to sort of what happened over the past year, calendar '20, and then moving forward from that. A lot of people are talking about -- and I think it started with Satya.

He came on the April conference call. And I think he's 1 of the first to really talk about the crisis accelerating the pace of digital transformation. You made a comment about seeing like two years of digital transformation in the past 6 weeks.

Can you talk about what you're seeing in terms of the customer interactions you're having. What does that mean to the customers you're talking to when they're accelerating their pace of digital transformation?

## A - Jason Zander {BIO 20468487 <GO>}

Yes. And Satya's totally right. I mean, what we saw, of course, is everybody needed to respond quickly. I got folks that need to work from home, they got to school from home, whatever it looks like.

And we found that those that were already on the cloud path were able to react to that very quickly, oftentimes in days as opposed to what might have been months if you didn't have a plan in place for that. So that really proved out the point of this digital transformation. It's hyperscale cloud, this SaaS services. So we saw a huge amount of volume in that.

I think what we have seen since then is that people in often cases, have then looked at it is, this is an opportunity for me to move faster. So I think for one thing, when teams were able to say, gosh, I just did something in 2 weeks that we had originally planned to go spend the next year on. It's like, okay, maybe I can actually move faster. Maybe we shouldn't be taking that long. So we see that sentiment in there.

I also think that as companies have looked forward-looking at how can I also impact my cost envelope. And so to the extent that the cloud is helping me get into a better

operational envelope, essentially, what am I spending, do I need to be doing everything myself?

Could the cloud take care of that for me? Then that's actually helped with acceleration for some of the migration workloads and some of the adoption for the future pieces.

And the question is if the economy gets stronger than, of course, my hope and expectation for us and everyone else in this space is that we'll be able to see additional growth related to that.

## A - Keith Weiss {BIO 6993337 <GO>}

Got it. Got it. I just want to sneak in one tactical question. And this is something that I think Mike Spencer, the Head of IR, had talked to us about. And we heard on the conference call that as we went through the crisis, that Microsoft reached down and helped some of your customers better use your Azure resources.

And they talk to us about kind of rationalizing some of their spend. Can you talk to us about exactly what does that mean when you went through and helped your customers, make sure that they're utilizing Azure as efficiently as possible?

## A - Jason Zander {BIO 20468487 <GO>}

Yes, absolutely. I mean, so for one thing -- and I would say we even did the same thing back in 2008. At the end of the day, it's about helping customers be as successful as they can be and what is often could be a challenging kind of situation.

So what we want to be is somebody who's actually partnering with our customers. What that means is we're usually looking for ways in which we can help them weather the storm as well.

Now this one that turns out is just a core value proposition of the cloud. We actually have tools that are built into the operational portals that allow our users to come back, and we'll give you recommendations, and we'll actually come back and say, you could actually be saving money on your bill.

Maybe you allocated a super big virtual machine to run the workload, but that workload is only really using that maybe once a quarter, and quarter in close. You can actually be downsizing it in between and saving money.

So we've actually built those things into the product systems itself. And so we think that's just the value -- and honestly, what I generally find is that if you help somebody save money on their budget, then -- modular of the recession COVID-19 kind of related stuff, usually, what happens is they've got more projects on their backlog. They'd like to get to them.

They may even be more strategic than what they're already doing. So if we can help them free up that budget, it just unlocks the next set of projects as opposed to even bringing it down. And then it's kind of a win-win at that point.

### A - Keith Weiss {BIO 6993337 <GO>}

Right. And I guess on the other side of the equation, if you prove Azure to be a more efficient platform, then it's utilizable for more use cases because it will be economical for more use cases. They understand that the real efficiency of the platform.

### A - Jason Zander {BIO 20468487 <GO>}

That's correct. And generally, what I find is there is kind of a hockey-stick pattern, right? I mean, you start off getting your operational environment in place. I start figuring out how to operate things.

I start training my staff. Once you get the first few workloads going, you start realizing, wow, this is faster. It's more efficient, to your point, it can actually help save money. And then we start seeing the steep rise that kicks in.

So I think overall, it's actually a great optimization for the customer. And like you said, it can increase usage when we do this in the right way.

### A - Keith Weiss {BIO 6993337 <GO>}

Got it. So as we -- hopefully, not -- exit this crisis and get back into a more normalized environment, do you think the -- and we talked about an acceleration of some of the sort of shift to the cloud -- or an acceleration of some of the digital transformation efforts.

Do you see any fundamental changes in the way people are thinking about their cloud architectures? Microsoft's always talked a lot about it being a hybrid architecture. It's going to have on-premise and public cloud.

Does that shift at all on a go-forward basis? Does it shift more towards public cloud versus on-premise, given what we went through? Or do you still think it's going to be a relatively hybrid environment on a go-forward basis?

### A - Jason Zander {BIO 20468487 <GO>}

I think it's going to be a hybrid environment. And of course, that's been one of the tenants of our design since the beginning of Azure. There were cases where other cloud companies, when they put up a hybrid slide that usually meant migration. In our case, we meant no, you're going to have on-premises and edge, and you're going to have the public cloud. You want a combination of both.

I think that's actually been cemented. And in fact, if you look at even from a competitive perspective, you're starting to see even companies that they compete with now start to produce what you actually call real hybrid solutions. So they seem

to have backed up the disk, that was the right strategy. Of course, the benefit for us is we have been doing it since day 1, so we've got a very rich product portfolio that supports that going forward.

I would say another thing, too, that is, frankly, as we went through COVID, supply chain and a bunch of other stuff. I think a lot of companies started to realize just how much they needed to keep track of where are my dependencies, where am I deploying things.

And so even in a world in which you may even want more control, whether that's your data center or it's a hybrid scale in your country, a hybrid cloud that is in your country, but I want regulation and rules around that. Those are areas that we've been investing in for, think of Office 365 over 15 years now. We've been investing in those controls and that support and that kind of thing.

So I think the way we've built our products and the way we can run it actually lends itself well to any trends that show up along those lines.

**A - Keith Weiss** {BIO 6993337 <GO>}

Got it. So we're talking about kind of definitions and sort of how we define various kind of cloud architectures. And one thing that gets thrown around a lot, but I think has different definitions to different people is the idea of multi cloud, right? We hear a lot of smaller best-of-breed vendors talking about how their customers want to have optionality.

They don't want to get locked into any one big cloud vendor. There's always going to be a multi-cloud type solution. Given your conversations with large kind of public cloud users, when a CIO of a large enterprise is talking about multi-cloud, what do they mean by that? How is it -- what does the multi-cloud architecture actually look like?

**A - Jason Zander** {BIO 20468487 <GO>}

Yes. In some cases, they have chosen strategically on their own to figure out how to (inaudible)

**A - Keith Weiss** {BIO 6993337 <GO>}

Jason, I'm sorry, your volume just got very low.

**A - Jason Zander** {BIO 20468487 <GO>}

Can you hear me, okay?

**A - Keith Weiss** {BIO 6993337 <GO>}

It's still very low.

**A - Jason Zander** {BIO 20468487 <GO>}
All right. Is that better?

**A - Keith Weiss** {BIO 6993337 <GO>}
Yes. It's much better.

**A - Jason Zander** {BIO 20468487 <GO>}
Okay. Sorry. That's -- even though I'm in a fancy area, I'm still using my laptop. So AB problems are still mine. No, so sorry, so yes. So I apologize, we were just discussing...

**A - Keith Weiss** {BIO 6993337 <GO>}
Talking about multi-cloud environments and what that means to the end customers.

**A - Jason Zander** {BIO 20468487 <GO>}
About the multi-cloud environment. Yes. Sorry, I'm just too busy doing tech support here. Yes. From a multi-cloud environment perspective, oftentimes, what will happen is people will make a decision around, I want to have more than one vendor that I'm working with.

And of course, we're going to absolutely respect that. In some cases, they may decide to make certain projects where they feel like we've got best-in-class solutions with Azure Synapse, Azure Purview. And I really want my data and analytics to absolutely be with you. Maybe I already started some infrastructure work with another cloud. So we want to support that.

There's a set of things that I think folks need to keep in mind. One, there is a certain amount of expense associated with that because I got to do my security controls. I got to do all the management-related work. I mean if you're going to do it, like ISVs do this, we do this all the time. ISVs will target more than one cloud. They have to actually invest in that, and it can be expensive.

This is why we created a technology like Azure Arc, which is designed to allow you to do things like security and policy protocols just once. That works hybrid. I can work against the other big cloud providers. I can work on-premises, on top of VMware, et cetera.

And we did the same thing with Azure Arc, but then also with our data discovery tools with Azure Purview, Azure Sentinel for security. And so in a lot of ways, what you'll see us do is produce a set of best-in-class technologies around security management, deployment, et cetera.

Then we'll work with everybody, and that helps you at least get that top level, you can still be multi cloud. We absolutely will continue to support open source. So if you're worried about lock in, great, you use open source, it works with everybody.

And of course, we still partner with a bunch of ISVs that are in a particular domain. And of course, they run on all the big clouds. And we make sure that they have a first-class experience. SAP is a fantastic example of that.

## A - Keith Weiss {BIO 6993337 <GO>}

Got it. I want to shift gears a little bit and talk about the available market, the TAM, if you will, for Azure. A couple of years back, we had Dave O'Hara at the TMT Conference. And he made -- he's not an executive that I would say, is known for hyperbole.

And he made a statement on stage with me. He said like, "Office 365 is great, but you're limited by the amount of knowledge workers that are on the globe. The great thing about Azure is that like we target optimizing OpEx. It's like it's virtually an unlimited market opportunity." Which sounds excited and exciting and sounds huge.

But it's hard for investors to wrap their head around all OpEx. Can you give us a hand in understanding how Microsoft thinks about the market opportunity? Where are some of the dimensions that you think about in terms of trying to size it, trying to rightsize your investment in terms of where we are in the market opportunity today and how it's growing on a go-forward basis.

## A - Jason Zander {BIO 20468487 <GO>}

Yes. And Dave's my CFO, works directly with me. And yes, you're right. He's not prone to hyperbole. And so you're absolutely right about that. For those that know, Dave, you know exactly what we're talking about. But he's right about the opportunity. I would actually come top level for me.

The opportunity for TAM all up is probably more like ($4 trillion.) If you address everything, everything out of the silicon, the hardware, the up and through the vertical, et cetera. I mean, it's just a massive, massive, massive market.

Even if you bring it back down to it and you start thinking maybe it's $1 trillion, that's still $1 trillion. And you can get down to the estimates of, hey, infrastructure as a service, hundreds of billions of dollars, data, et cetera.

And so a couple of different things on this one. As we go back to address all of that TAM, we're, of course, going to start off with what you'd call like horizontal support. So of course, we do all our infrastructure. We do the data. We do the analytics. We do IoT.

Those can be used in any domain that's out there. I would say the big things you see there, it's a combination of kind of like your migration. I have those existing workloads, but I want to run them in a hybrid/hyperscale cloud. Of course, we get a lot of folks that will leverage us for that.

Then there's cases where people are actually modernizing. So I'm taking my Tier 1 workload, something that maybe was running in my own data center, but even with a different set of ISV software from 20 years ago, they're modernizing and they're saying, I want this cloud thing.

And man, you guys have got mission-critical Tier 1 support. That's another opportunity for us to go after that spend that perhaps was with different ISVs in the past. And now you can do both, the cloud and that vertical with us.

Then we do get into the verticals. And so if you see the work we've done, the Microsoft Cloud for health care, cloud for retail, cloud for manufacturing was just actually announced, agriculture, et cetera. I think you see more and more that the technology needs to meet the needs of those particular industries, and that's where it's TAM expensive.

Because we're not just the IT solution, where I can give you PowerPoints and Excel and everybody can use it for your kids' soccer game or $1 trillion sovereign wealth fund. Great. It can work for all of those. In this case, it gets much more vertical. So I think those are opportunities for us. And we are going after them.

## A - Keith Weiss {BIO 6993337 <GO>}

Got it. Got it. So that's massive in terms of the TAM that you're describing. When we think about the investment profile, and particularly the geographic footprint of Azure in terms of regions and data centers, that continues to grow.

How should investors think about that pace of growth on a go-forward basis in terms of is there a lot of new geos you need to be in there? Is there a lot of expansion of footprint that needs to be done? Or do you have a pretty good footprint right now, it's more about kind of filling up those data centers on a go-forward basis?

## A - Jason Zander {BIO 20468487 <GO>}

Yes. And let me also just one more comment. When I say we're going after verticals, I want to make sure I'm also clear on this. It is partnering with SIs, ISVs, basically, our -- we're not competing with our customers.

There are other clouds that do that. They actually think, gosh, I should just go capture that margin, looks like good opportunity. In our case, we're going to continue to partner. But I think there is a huge opportunity for us to go into that space and help enable an ecosystem. So I just -- I want to make sure I'm clear about that so I don't cause any confusion. Then to the question...

## A - Keith Weiss {BIO 6993337 <GO>}

I have a whole another section on vertical clouds that we're going to dig into, we'll be able to come back to that one.

## A - Jason Zander {BIO 20468487 <GO>}

All right. We'll be able to come back to that. So I just want to make sure I clarify my statements upfront. So then, yes, from a global expansion perspective, our -- my goal is to try and make sure that we are serving essentially the bulk of the world's GDP.

And if you look at the regions that we've got, there's over 60 of them, we are getting pretty much great coverage from a worldwide perspective. And we'll continue to go off and go do that. I think, again, this kind of increased thinking around sovereignty government, privacy, et cetera, those sorts of things, those are always going to be important.

I think that lends itself even better to a hybrid strategy because we can build hyperscale data centers regions that can cost billions of dollars to go off and go create. As you keep going through and providing worldwide coverage, that's not always going to be economically viable. That's where having a real hybrid strategy comes in Handy because I can still give you cloud assets and those sort of availability.

So we added another 7 data centers alone in just Q2. We've actually increased our efficiency on how fast we can go build these things out, get them ready, land them, operate them, and we continue to increase efficiency across a set of these things as well.

And so it's actually super important because if we're going to make the technology available and so much is pivoting towards the technology, we really want to make sure that it's available to the world's consumers and the world's business.

## A - Keith Weiss {BIO 6993337 <GO>}

Got it. And then could we sort of take a little bit of a detour and talk about the differentiation you can drive with the underlying infrastructure itself in terms of whether it's geographic footprint or the way you set up your infrastructure or one of the questions that we got from a client is whether you could differentiate with silicon at all and whether you guys are working to differentiate with silicon. Can you talk about any potential for differentiation on that core infrastructure layer, if you will?

## A - Jason Zander {BIO 20468487 <GO>}

Yes, sure. I mean the core infra layers still have a significant amount of R&D effort that needs to go into it. I mean, obviously, we've done well with respect to efficiencies. How fast can we build it out, fast time to operate.

That will impact, of course, your margin, et cetera. But it also impacts capacity for our customers to make sure that they can keep growing and always rely on us to provide that.

Then from a -- the other thing about this is when we build software that needs to run on any number of hardware SKUs, and who knows what kind of locations. We have that. It's called Windows Server, SQL server, we have a set of products that do that.

But if it's going into my data centers, with my hardware and everything certified, I can do significantly more optimizations north, south through the stack from the -- everything from the silicon, the hardware, up through the hypervisor, et cetera. That entire software, the hardware to silicon stack, we can optimize the entire thing.

And they also can then be pulled into the supply chain so we can figure out how to get that, and we run at scale, which means I can afford to go do this level of customization. That allows us to support new workloads, keep bringing the COGS down but then also continue to go after the kind of the price performance requirements that are in the space.

That's something you can't do unless you're a hyperscale cloud. There's only a few hyperscale clouds out there that actually can do this and have the scale to pull it off.

## A - Keith Weiss {BIO 6993337 <GO>}

Got it. Got it. So turning to the Azure growth opportunity on a go-forward basis. I know Microsoft doesn't give an estimate of -- or it doesn't give a number on sort of what the run rate is of Azure.

We estimate it to be about $30 billion revenue run rate right now. As we think over the next several years, how would you stack rank the best growth opportunities? What are you most excited about in terms of driving new dollars to the Azure platform over the next, say, 2 to three years?

## A - Jason Zander {BIO 20468487 <GO>}

Yes. And then I'm actually quite pleased, of course, with our Q2 numbers that we did for our cloud segment. The $16.7 billion in Q2 and the (50%) number that we did mention on Azure, which, of course, is already growing off of a good-sized business. So we're excited about that.

With respect to your concrete question, where do we see the segments? Look, there's still a whole bunch of work that's in front of us and the industry with respect to making the shift into our hyperscale data centers.

A whole bunch of data center deals we're doing, a whole bunch of folks that are doing their migration work because they want that. Again, we talked about the pace of that kind of accelerating based on kind of some of the some of the other economic conditions that are out there. So that's still going to be bread and butter, and there's still a whole bunch of work there.

I really do think that data and analytics is probably one of the biggest ones that is popping right now as we speak. There's a need for people to be able to break down data silos. You have to get into a faster loop of tying your systems of record to your operational systems and being able to pull insights out of that to drive your business.

And the tech's been out there, but I think we now have just awesome solutions with Azure Synapse, Azure Purview, Cosmos DB. I mean we're seeing this pattern pop up all over the place because it's actually a really great pattern to be able to actually optimize your business.

So that's a huge area of addressable revenue as we speak. And then the ones that I've got the longer bets on and is, again, trying to work within the vertical industries and figuring out ways that we can help and how would that actually continue to grow going forward. So those are all part of that. And I think we've got really good plays across all of them.

## A - Keith Weiss {BIO 6993337 <GO>}

Got it. Got it. So -- and maybe you could dig into each one of these kind of growth categories a little bit deeper. When we think about sort of the core shifting of workloads to the public cloud.

We do a survey every quarter, and I think twice a year when you asked the question about what percent of your workloads are running in different environments. And I think in our most recent survey, we were about -- overall, cloud is about 24% of workloads that include Software as a Service. You had Infrastructure as a Service, Platform as a Service right around 10%, 11% of overall workloads.

One, does that kind of put to what you think the industry is at in terms of overall rates of penetration? And two, what are the kind of key drivers to sort of pushing people over there?

Are there like industries that have been stickier and just like having been able to get over the compliance or regulatory, and now they're ready? Is there security concerns are yet to be done? Like what are the incremental catalysts to driving that number higher from your perspective?

## A - Jason Zander {BIO 20468487 <GO>}

Yes. And those numbers, they roughly sound right. And when I say that I feel like there's still a lot of runway in front of us. It is what I mean. And directionally, if you're saying around those numbers, yes, it kind of makes sense. Because if you think about, it is big sets of projects for people to go off and go do.

The big thing that's really changed over the last few years is now just a matter of when. It's not an if. Like when I joined the Azure team in 2012, it's kind of like, now, you can prime my data center and my cold in hand, right? That was a different kind of era. So I think the fact that you're up to that number, and there's a lot of runway in front of us, it makes sense, and people are really just coming, you have to have a plan, you got to move.

The places I thought were stickier, even a couple of years ago. Financial sector and a couple of other, some health care, some other areas like that. And again, it was down to the regulatory systems, defense and other areas as well. And oftentimes, because

there is either specialization and/or there was a high degree of sophistication that was present. I think the clouds have matured significantly since then.

We run all of our -- we've been running SoCs workloads for Microsoft itself on our cloud for years now. And so I think the more we've done that. And if you start seeing, for example, defense adoption that shows up usually, the defense contractors in the defense space are looking at fintech, and the fintech guys are looking at defense. And all of those...

### A - Keith Weiss {BIO 6993337 <GO>}

Jason, I think we lost your audio again.

### A - Jason Zander {BIO 20468487 <GO>}

All right. Hold on. I'm going to take that one off. Can you hear me okay?

### A - Keith Weiss {BIO 6993337 <GO>}

Yes.

### A - Jason Zander {BIO 20468487 <GO>}

Yes. Okay. Good. Right. At the risk of you looking at me right in the face, I'm not going to risk that microphone. It worked for 2 hours nonstop. So (inaudible) my laptop will pick me up.

But anyway, like I said, I think you're seeing that there was people that were waiting for single lever that the security, the regulation kind of maturity. So that's there, and we've been moving fintechs, fans, et cetera, for quite a while now. And I think when you look at most businesses, retail is a lot quicker. It's been there a lot longer. So I think we're past some of those (inaudible).

### A - Keith Weiss {BIO 6993337 <GO>}

Got it. Got it. So on the data and analytics side, we did a deep dive report on just overall kind of where the market is in terms of data management on the on-prem side of the equation, on the cloud side of the equation.

And I think most investors weren't too surprised to see the market share gains that Microsoft has been making on the on-premise side of the equation. SQL server database has been getting a lot more performant, and it's a lot less expensive than some of the competitors like Oracle out there.

I think the more surprising part of the equation was Microsoft had, by far, the leading share of cloud-based databases. Can you talk about kind of what got you into that position?

I think the IDC number was something like $1.6 billion in cloud-based databases. Is that SQL server database? Or is it Cosmos? Is it Synapse? Like where are you guys

seeing the strength? And how do you guys think about the competitive dynamic in the cloud versus on-premise?

## A - Jason Zander {BIO 20468487 <GO>}

Yes. And our big thing is we want -- so first of all, which solutions is it? SQL server's absolutely a core part of the situation, but so is our open-source data business.

We offer post -- and MYSQL. These are open source databases that are out there. We run those as regular systems. And of course, we have licenses that people can run other third-party databases on top of our platform, too.

But we've been investing in SQL as a Service, Server as a Service, et cetera, for the last eight years, pretty solid. And actually changed how we built the product and ship the product. In addition to that, that's kind of the relational side of the house. If you look at Cosmos DB from an operational kind of database.

And then now with Synapse, we pulled the whole thing together so that we started to blur the lines between those categories. And so we see huge amounts of adoption across that. And that's why you're kind of seeing that adoption pull-through, which we're super excited about.

And it really, again, this idea of taking your system of record with your operational database in the Synapse link, pulling that together and getting a tight analytics loop without having to do all the old-fashioned transforms and stuff they just slow stuff down. That's differentiated technology. And that's also, I think, another good reason why we feel like we've gotten some really good adoption related to it.

With respect to your question of like, hey, talk a little bit about kind of like the hybrid, et cetera, environment or what does it look like? We try to be super flexible there, too, because like the truth is nobody just moves all their data at the cloud overnight.

There's combinations where you've got some of it on-premises, you've got some of it in the cloud. You federate. You work workloads between them. Just because if you're a big enterprise, that's your reality.

And even if you want to move it all in the cloud, you're going to take a period of time for you do that. This is where Azure hybrid benefits, so I can bring my license with me. Like over 1/3 of the server users use our hybrid benefits. That gives you the flexibility of being able to move workloads, having in one place or the other. And then I can get the right kind of hybrid solution for that.

## A - Keith Weiss {BIO 6993337 <GO>}

Got it. Can you just dig in real quickly on that Azure hybrid benefits. It's something that, Amy -- has called out to us a lot as part of the core drivers what kept the on-premise serving tools part of the equation growing really nicely over the last couple

of years. Can you -- what exactly is hybrid cloud benefits? And why is it so important to CIOs? Why is this such a good growth driver for you guys?

## A - Jason Zander {BIO 20468487 <GO>}

The hybrid benefits, basically, what it allows you to do is have flexibility over where you use your license. And so if you've got Windows server, SQL server, I can decide to keep it on-premises or I can decide to actually put it into the Azure cloud.

And in fact, I can actually move those decisions as I go based on what my business requires. Like I mentioned, over 1/3 of our Windows server, SQL server users are actually leveraging hybrid benefits, those licenses and that kind of mobility and that flexibility.

And the truth is, it can be up to 5x more expensive to run those applications and other cloud providers. And so it's both cost economics is much cheaper to run when you use Azure and that flexibility of being able to decide, do I want to on-prem. Do I want in the cloud. Maybe I'm going to change my solutions based upon more projects, but that ultimate flexibility is what we're looking for.

## A - Keith Weiss {BIO 6993337 <GO>}

Got it. I want to sneak in one question from an investor. I think is pertinent to the sort of data and analytics story. Could new technologies like Snowflake, the very cloud-based data warehousing vendor, commoditize the hyperscalers and does compress long-term margins.

## A - Jason Zander {BIO 20468487 <GO>}

Snowflake is a partner that we have in this space. So first and foremost, I will absolutely always make sure that a company like Snowflake, SAP, VMware, there's a whole bunch of companies we partner with. They may have alternate solutions. Maybe I've got a solution in that space.

But first and foremost, we're going to make sure customer choice is right (inaudible) running Snowflake you can get it from the Azure marketplace. You're running it on the platform. It means that maybe the data warehouse is with Snowflake, but I can also put power BI and a whole bunch of other things in that ecosystem on the cloud, that's actually also a customer-friendly and a good win.

So with that, we're going to make sure that we can run those workloads best-in-class because, frankly, just I really wanted to work best-in-class, but even selfishly, if it didn't, then people would pick a different cloud where they could get that outcome. So of course, we want to make sure it's in alignment with us and our partners. So we're going to keep doing that.

Now with respect to the margin, again, there's multiple different ways to think about this because like in the end, if somebody has picked Snowflake, and that's their choice. I'm going to talk about how to best run it on top of Badger and then the

opportunities, like I said, for an extended ecosystem around Snowflake, that has benefits, and that's complementary to what Snowflake is doing.

If they have any pick no flat yet, and of course, I'm going to pitch them on Azure synapse and tell them what, I think it's the best possible choice, and let's let them make the call.

So at the end of the day, I do think that the cloud is the big picture win, getting folks on to the cloud, use my high order bid. Once I get within that, then, of course, I want to differentiate with by products, but let's take you on the cloud. And from a business perspective, that is a strategic win for us, and it opens up all sorts of other revenue opportunities.

## A - Keith Weiss {BIO 6993337 <GO>}

Got it. Another interesting investor question that we have here that I'm going to try to sneak in. And he kind of talks to the pace of workload adoption but also brings in sort of developers into the equation.

And the question was about Kubernetes and whether rising adoption of Kubernetes and those container architectures, could that make it easier. Could that provide a lubricant, if you will, to pushing more workloads to public cloud environments as more developers and more of the sort of new application development takes place in Kubernetes?

## A - Jason Zander {BIO 20468487 <GO>}

It is absolutely a great opportunity. I mean, if nothing else, the container environment makes it much simpler and more agile for a company to be able to take their workloads and start getting them to be -- even for dev and test purposes. But then as you point out, for like where do I want to go land it.

Once I get into the container world, then that allows me to leverage that. That does include looking into the public cloud. So that can be just a good win from an agility perspective, and it can help with the migration side.

The good news is the co-creator of Kubernetes is actually on the Azure team. Brendan Burns was actually at Google when he was a co-creator of Kubernetes, and then came over and he actually builds the Azure Kubernetes service in Azure. It's written by the guy that co-created the standard in the first place. And so we've got an awesome set of technology that we have built out.

Again, we have solutions that work from a hybrid perspective on the edge but then also in the cloud. And so we think that this development pattern, we use it ourselves for our own software development. We think it makes a ton of sense.

And it's a good step towards even doing completely cloud-native and server-less, which is another kind of set of technologies that's one step past containers. We'll see

some additional adoption that comes out of those sort of things as well. So yes. The modernization, it can be a really good productivity win.

## A - Keith Weiss {BIO 6993337 <GO>}

Got it. Got it. So I wanted to turn gears to cloud verticalization as something that you mentioned earlier. I think last year, you guys announced some of your first industry-specific cloud offerings, health care with last year. And you usually talked about Microsoft Cloud for retail.

I think you guys did at the NRF show. There was a, I believe, an announcement last week ahead of build this week about manufacturing cloud, I'm missing a couple of them. Can you talk to us about what a verticalized cloud is on one side of the equation?

And to your point, how is that different from a Amazon saying hey, listen, we're going to do a store, right? And your deverticalization actually come up with a solution.

## A - Jason Zander {BIO 20468487 <GO>}

Yes. And when Microsoft, we -- again, when we talk about vertical support at the cloud health care, cloud for manufacturing was last week, et cetera. Know that those are designed to be complementary with the ecosystem.

So again, works with SIs, works with ISVs, we are going to be more likely to partner with someone who's in that vertical like a retailer or logistics or you're going to take your pick.

We'll partner with them because we think what we're bringing is the software, the platform, the edge capabilities, we bring all of that to the table. And what we want to do is partner with the folks that are best-in-class at those different areas. So that's what those clouds are.

What do they provide? You will find -- rather than saying, look, I bet Office 365, you can do whatever you want with it. If you go on to cloud for health care, for example, you will actually see solutions that are around patients in telehealth and things like that do things like leverage Microsoft Teams or Microsoft Office 365 or Dynamics.

You'll see those things in a more integrated solution. So rather than having to go in and build things from scratch, I can actually leverage that tech.

If I'm also using multiple ISVs, then one of the things that we've seen in especially larger organizations is they also need to bridge between them. And so they may still have a particular area where one of their partners is really their vertical solution, but I've got another department that uses a different one.

How do you bring those things together. Those are some of the solutions that we're optimizing in our vertical cloud. And we think that the approach works pretty well

because it's no longer kind of a chemistry set where I can -- I could do anything, that's kind of hard to do.

We're making it actually more of a first-class solution for that. It makes it faster for adoption. And it actually is partner-friendly. Versus, again, setting up shop and saying, well, that looks like a good industry. When you go look all the cookies and just own it. I mean that's definitely not our (inaudible).

## A - Keith Weiss {BIO 6993337 <GO>}

Got it. So you give the end customer and the ISV or the systems integrator, a head start in building out these solutions by having templates that fit to the industry templates that are already kind of aligned to some of the problems or some of the business process is trying to be automated there.

Are there specific technologies that would align to -- like, is there like a commerce technology in the retail cloud versus a I don't know, maybe a HIPAA type technology in the health care cloud? Are there technologies that are specific to those verticals?

## A - Jason Zander {BIO 20468487 <GO>}

Yes, absolutely. So let's take a couple of good examples. I think in health care, the idea of being telehealth and the ability to go through. I mean, especially since we're still in the COVID protocols, in most parts of the world, being able to come in and leverage something like Microsoft Teams with some of the transcription and the subtitling and all the rest of that work plus, of course, the communications, the IMs.

Like that's an example where health care that is super, super interesting. It's not that you couldn't also use the universal comms for other industries. But that's a case where it's very specific and very relevant.

If you think about manufacturing, this is a case where the lead we built up in Azure IoT, the fact that we are already actually used by most of the big OEMs that are out there that build, let's say, industrial equipment, there's things like buildings and elevators and milling machines and lines.

I mean, we already have been in. So the fact that we can come in and help pull some of those things together, we're looking at this as an accelerant for even our partner ecosystem so that not every project has to turn into a start-from-scratch kind of thing.

And so those are examples. The IT manufacturing, the universal coms in telehealth, et cetera. A good example. And there are several of those.

## A - Keith Weiss {BIO 6993337 <GO>}

Got it. Got it. And then when we think about maybe kind of wrapping this all up. You talked about kind of machine learning and AI being one of the core drivers on a go-forward basis.

From my perspective, I think one of the things that we're learning more and more we've lean more and more over the past year or couple of years. Is that machine learning and AI's so dependent on the data side of the equation, right?

And I think the software opportunity as much of anything, is being able to make use of all that data out there, whether it's IoT data, whether it's existing data that's taking place in your legacy systems and being able to pull that out and being able to make sense of all of this data when you put it together.

That's one side of the equation. And then putting the machine learning algorithms and the underlying kind of compute together to solve a specific problem. Where do you guys try to bring it all together, if you will, right?

You have such a broad set of technologies to put at, or how do you sort of weigh that balance between like for a customer that wants the technology side of the equation and just needs data integration and data manipulation tools, we have that.

But if we need the overall solution and saying, listen, here's how you do inventory management, inventory optimization, here's the whole solution. How do you present a go-to-market that spans that spectrum and those exactly like what type of machine learning solution that the customer is looking for?

## A - Jason Zander {BIO 20468487 <GO>}

You definitely capture the challenge. I mean, because the truth is everyone that we partner with maybe at a different layer of the stack. So if we think of it though as more of a logical thing, starting off with the foundation, the stubs in the wall, the floors, the ceilings, the shingles. If we kind of think of it in that particular way.

We, of course, want to make sure that first and foremost, we have the best possible infrastructure for anyone that wants to run AI. And that could be the most advanced companies out there.

We have a deep partnership with OpenAI, and they're doing some of the most advanced research anywhere out there, just massive -- a huge, huge compute huge number of parameters and models like unbelievably big. In that case, we're going to partner with them and make sure that they have that base and that foundation.

Now you can go up to stack, you can find folks that are like, look, what I really just want to do is add some kind of image recognition, and we do things like with IoT, image recognition that gets trained cameras on a conveyor belt, looking at parts being treated and picking out defects. It's probably, don't want to start from scratch, and I don't want to go build my entire whole data center to go do that. I just want some simple image recognition.

This is where we provide PaaS services that just provide those as simple API cost to developers. They can just plug in some data, they can actually do some simple training. And all of a sudden, I can get off and running. I don't have to have all the

expenses. I don't have to have hire 18 data analysts to come work for me just to get that value. So that's the other end.

And then of course, when you get it to the top level, we've integrated a lot of the AI into our SaaS applications. And so this is cases where -- I mean, you'll see this with Office 365.

Productivity recommendations, heck even in our developer tools, we have kind of in telecode inside the visions to the inter developers. It analyzes your code as you're running compares it to a whole bunch of code that's been analyzed and tells you when you could have written better, cleaner, safer code, which is really freaking amazing. And that's driven off from a whole bunch of data.

So again, I think that infrastructure layer, we got it. The APIs and the simple use, I just want to get started. We have that the SaaS layer, we have that as well. So we think we can pretty much help you with any layer of that. And again, the R&D, last thing I'll mention on this one.

Our R&D efforts around AI are massive. The work we do with OpenAI, just one example. The other one I like using is the holographic processing unit in the HoloLens when you think about what that sucker is doing, you have essentially photons coming at your eyeballs, captured by a camera, augmented with holographic images, and then they come off of that to your eye and your brain can't tell the difference.

Like it takes one month to train the AI models that go into the holographic processing unit that you put into the HoloLens, like, wow, like if you want to know if Microsoft invested like wow.

So that's what people like oftentimes, people don't think about that, but we have incredibly advanced AI. And again, that's just another example of -- given the infrastructure, we give them the tools and the libraries. Anytime we do hard stuff like that, we try and make it available as a service offering inside of Azure. So others can do the same.

## A - Keith Weiss {BIO 6993337 <GO>}

Got it. Got it. I wanted to us a little bit to security. And it's such an interesting conversation with security and Microsoft. If you go back 5, seven years ago, right? Security was a friction to getting people to adopt public cloud, adopt Azure security was perhaps something that Microsoft was working on to get people more confident in using the software overall.

And on the most recent conference call, we've gone so far the other way to where now security is a $10 billion business for Microsoft. It's not just that your underlying infrastructure is secure enough for you guys to run your stuff for firms like Morgan Stanley to run within Azure. But your security expertise is now productized and you're selling it out in the marketplace.

Can you talk a little bit about where Azure security is, both in terms of where you've gotten to in terms of the security of the infrastructure itself. But also, what are the solutions that you're selling to the end market? I know we have Sentinel in terms of Sim. But what are the security solutions that are now built on Azure?

## A - Jason Zander {BIO 20468487 <GO>}

Yes. And it's been a huge area, as you point out. We've always had to do this work because we have to secure, of course, our own services. So Office 365, Xbox, you name it, we've always had to go do that. And we built out systems that can handle that. One of the things that we've done -- and of course, we've had Windows and Window sockets, et cetera.

But what we've done is we've gone back to take the things that we've built for ourselves and then actually pull them in that our customers, again, (inaudible) use them. So it starts off with all the end points that are out there. And that's not just Windows PCs. But also like Android, your iPhone and IoT.

We're actually doing security for IoT devices. So we can actually pull those in and understand what's going on there and make sure your firmware's up to date, et cetera. So that's part of the security regimen that we're doing.

Then you can come back on to the cloud side, you look at Defender, which is you use apps Defender as well as Microsoft, Microsoft Defenderfor Office 365 and there's other pieces that go in. That's super important because it gives you a look at all those devices in historical.

And you mentioned Sentinel, that's actually a differentiated piece of technology. It's a cloud-based seat, which basically needs that we've done it entirely in the cloud. And we were already handling petabytes into unbelievable numbers of signals every day, and we pull all that stuff together.

So our expectation is that being able to use a combination of Defender, will the end point -- the protection that we've got. Sentinel to be able to track what you're doing and be able to use the steam based technology on that. All those things come together quite well. And so when you see this business traction that's out there, and that's what we're doing.

We think the value proposition and why the business, I think, is going to be super valuable is that we can put much more simplicity in it because we're handling so much more of the space.

You don't have to cobble together some of these solutions. And we build it in by default into our own products, Office 365, Azure, the security things come together. So we think it's actually a pretty powerful combination.

Then we can still plug-in and work with other vendors, other sources of data. You can actually look at hybrid environments, too, like cloud based, like I mentioned, already

heterogeneous end points, other vendors kind of devices.

## A - Keith Weiss {BIO 6993337 <GO>}

Got it. Got it. We have about 10 more minutes left in our session. I have a bunch of investor questions here that I want to get into. There's a couple of categories. So I'm going to try to kind of bunch them in. A lot of questions on the competitive environment, particularly versus AWS and GCP.

So maybe sort of the question that I'll pose is how do you guys think about competition? And does that -- with the other hyperscalers? And does that change as you move from like Infrastructure as a Service level to the Platform as a Service level? Is it a different type of competitive dynamic there?

## A - Jason Zander {BIO 20468487 <GO>}

Yes. I'd say on the infrastructure level, of course, what we compete on is the fact that we've done the hybrid work, and we've really invested over the years from software to even appliance-level solutions that we've got worldwide coverage. At the infrastructure level, that's, of course, what we look at.

From a PaaS perspective, there's a few areas that we really have pushed hard for a long period of time. I mentioned IT a few times. I think with the data analytics space, Purview, Synapse, et cetera, we think those are differentiators. And those are super interesting for us to be able to, again, compete against.

There's also just a Dynamic, again, of we're going to partner with you, not compete with you. So that is still relevant in a lot of cases, for a lot of folks. They want to make sure when they're picking somebody that's a technology provider that's helping them. And not actually going into their business. And it's why that complementary thing is just so important. So those are a few of the things that we do.

And again, the more that we can help our customers get to the premium services. That's a higher-margin structure for us, which makes it a lot easier. And so that also can be beneficial to the business. So it's a very competitive environment. That's good for customers out there.

But we think, again, a few of our big long-term strategic bets like hybrid have been super important. And honestly, for a lot of -- especially enterprise customers, they have probably been working with us as a vendor.

We probably have been their preferred vendors for decades. That does count. So that trust also in delivery, that trust of the partnership that we've had for a long time also goes into some of the competitive evaluations.

## A - Keith Weiss {BIO 6993337 <GO>}

Got it. Got it. That's helpful. I've been actually getting a lot of questions about silicon and semiconductors. So one here says, are we entering a time where value/IP is

migrating back to the semi layer to the hardware layer?

Are there interesting things that Azure can enable from a compute side that no reasonable company could do on their own. And then there's another question about your vision or your road map for ARM. And what portion of workloads do you expect migrating to custom silicon over time.

So a lot of questions about value migrating back down to the silicon layer. How do you address this?

## A - Jason Zander {BIO 20468487 <GO>}

Yes. And the cloud is going to often be different than some of your kind of client form factors. And so let's just talk about the cloud, that's my core remit. From a cloud perspective, again, I am spending all the money. I'm buying all the equipment, and I own the software stack as well, pretty much.

So that gives me ownership north, south. And so even when I partner at particular levels like component vendors, the chips for CPUs, whatever, I'm still buying enough of it, and I can still optimize for the entire stack, which means that we've already for a long period of time, worked with even some of the silicon providers on customizations that make sense for our environment. And some of those things could be proprietary. Some of them actually go back and fit in the core.

I'll give you a concrete example is confidential computing. The secure enclave technology that I think is going to be critical to a bunch of the forward-leaning security work out there.

That's something we worked with Intel for five years that nobody else had. And we've already gone deeper on it, and there's an AMD version, and there's actually ARM versions of that same technology. So those are examples that if I just own a data center, and that was an enterprise, I can go back and ask for that, but I'd never have enough volume to probably be able to justify it, and I don't have a staff of electrical engineers.

I do have a staff of electrical engineers since so we can go to that kind of work. So I think you can and should expect that we'll continue to make those sorts of investments. And again, it's not just the silicon, it's also the hardware form factor around that.

The components integration, et cetera, I mean NVRAM and kind of distributed memory, another great example of innovation in the industry that's showing up in clouds is the first and primary thing. So you get all of that benefit and the fact that I get to run the fleet the way I want to run the fleet means that I can make sure it's fully optimized north, south.

You had -- I can maybe stop there if that makes sense. And then you had asked a question about what -- which types of CPUs. So first of all, any other -- the follow-up

on that. Otherwise, I think I can answer your question around the ARM versus x64, et cetera?

## A - Keith Weiss {BIO 6993337 <GO>}

Yes, let's go into the like ARM and ability to sort of customize more loads to that shift.

## A - Jason Zander {BIO 20468487 <GO>}

Yes. Great. Yes. So if you look at this, I mean, like a couple of different things. One, we fully expect that you're going to continue to add more and more capabilities. That's GPUs, (inaudible) so again, it's not just the CPU. There's other components that are in there.

Networking gear and things like that are places where we've done a whole bunch of customer work as well because we want fast times, we want more control, et cetera. So we've done a lot of customer work around that. So you'll see more and more there.

From a CPU perspective, I think the truth is a significant portion of the existing software, especially enterprise software out there is still x64 and I can and will be for a long period of time. That's what you're optimizing for. So big database runs, big kind of ISV software, et cetera.

The bulk of that stuff that's running out there is x64 today. So of course, we had great partnerships with intel. We have great partnerships with AMD, who are the primary silicon vendors in the CPU space that do that kind of work.

From an ARM perspective, in server, absolutely. There's been a whole bunch of work in many different silicon vendors out there that have produced ARM parts that are designed to do the big scale and not just the things we would put in our pockets, but the things we've put it in our data center.

So I do expect that over time, we can and will continue to see a good distribution of this. Always keep in mind the x64 workloads again are running the bulk of stuff today. I think that there's a lot of other workloads in the future. Especially if you start looking at some of the kind of cloud-native solutions, some of those as well. Those are all good candidates.

I think you'll see a lot of noise that's out there. The other thing I always keep in mind is that the CPU is only one component of cost. It's not the only component. It's one of the things you pay margin on, and you have to do design around. There's also RAM, there's disks, there's a whole bunch of other components, networking, et cetera, that go into a cloud.

So it's not all dominated by one thing. And I think it's important that as an industry we don't hyper conflate price performance as just being a CPU thing because that's only part of the equation.

There's a bigger broader thing. That's different than trying to go off and drive scale on something new you're bringing to market. I think we should just be careful we don't conflate those things that have caused a lot of customer confusion.

## A - Keith Weiss {BIO 6993337 <GO>}

Got it. Got it. I think that's a good segue into the last topic that I want to cover in the last couple of minutes that we have, which is the potential to drive more operating efficiencies out of the plan.

Microsoft has seen a tremendous increase in overall cloud gross margins over the past several years. You don't break out what Azure gross margins are in particular, feel free to if you wanted to do right here. Michael will never forgive me.

## A - Jason Zander {BIO 20468487 <GO>}

I have a next meeting with (inaudible) very awkward. I'll let her (inaudible) decision (inaudible)

## A - Keith Weiss {BIO 6993337 <GO>}

But Amy has said that Azure efficiencies are garnering increasing efficiencies within the Azure plant has been a big part of moving those overall cloud gross margins higher.

Can you talk to us a little bit about what's left? Like is there further room for efficiencies? Can you squeeze more sort of out of the existing plant? Or does it necessitate, it's got to be the higher value solutions unless we're selling a higher mix of database, you're going to tap out pretty soon.

## A - Jason Zander {BIO 20468487 <GO>}

Yes. No, I think there there's still opportunity. There's still work that we are doing. I set targets from a planning perspective, every six months on the semester boundary, new targets for efficiency for the team. And we continue to go off and go do that.

So even the stuff we talked about, how do I even do more optimization? There are several things we continue to work on. So supply chain, optimizing the supply chain. How can I make sure that they get parts in faster, I get them up and running and quicker to customers?

How do you make sure that you get a macular utilization on work that we're doing. Those are things that we invest in. Basically making the software more efficient, the hardware, more efficient, supply chain more efficient.

We'll continue to do all of those. And I -- the bottom line, you should expect that the Azure cloud is going to be competitive in this market. We're absolutely going to be competitive. There's no other magic in there. Anything that's required, we are investing will continue to do that.

Now that said, from a -- my perspective is that it does become harder and harder over time. Are we there yet? No. But it does become harder and harder. So there's a bunch of low-hanging fruit. It's just takes a lot of hard work.

We've got to keep doing that. And I think it's also important to a Microsoft perspective, that we continue to invest ahead of revenue so we can go capture share. And so adding 7 more data centers just in the last quarter alone, investing in our secret and top secret clouds for the U.S. those are examples where we are investing so that we can capture share.

In some cases, highly specialized share that, frankly, only a couple of clouds in the world can actually do. We are one of them. I mean those are examples continue to invest, and we will.

## A - Keith Weiss {BIO 6993337 <GO>}

Got it. And then I know ESG initiatives, and particularly carbon initiatives, has been something that's very top of mind for Microsoft. Bill Gates' just published a book talking about it.

You guys had some pretty aggressive targets out there for not just carbon neutral, but sort of sticking back all the carbon that you guys have ever admitted over your lifetime. Does that run counter to sort of driving these efficiencies? Does it get into the way? Or is it part and parcel, listen, if you want to be more green, if you want to be cleaner, you should be a lot more efficient as well.

## A - Jason Zander {BIO 20468487 <GO>}

Yes. And they don't have to be mutually exclusive. And our stated goal is to be carbon-negative by 2030, and we are an over 40-year-old company. So that's like the lifetime of Microsoft back to Bill and Paul and 12 of the people all the way up to the company we are today.

We're going to go negative. And that's technology. We announced this cool thing in Europe called Northern Lights, which is carbon capture, where we can even use the work we do for seismic and HPC work was in order to be able to capture carbon and actually get it stored. There's all sorts of energies there.

Back to your point of, does it cost us? Well, the truth is there are areas of the world, especially if I look at the Nordics, where actually, the renewable energy there is the energy system.

The fact that you have fjords, you have hydro, et cetera, I have that in my home state here in Washington, Washington state. But that actually is the system that's there. And so we can, I think, the both green and go after the ESG goals, help with the carbon work that's there.

I think one of the things you'll see is Microsoft, we're trying to take a very deliberate approach, and we recognize that you need a balance of all of these things, and we also need to help the world get to where it needs to be. So we hope to be not an exemplar.

We also hope to be a partner while folks that are generating the energy systems we use today, but also innovating in sustainable solutions that we'll be using tomorrow. How can we actually leverage those and do them.

And then by the way, when you get back into industry, we want to be able to come back and help companies that they may have a big carbon footprint, figure out ways through IOT, technology, carbon capture, whatever the tech is, figure out how we can actually reduce that and then have them also be part of the ESG solutions that are out there.

I mean, I think if you do it right, I think we can actually balance this all out. And no one extreme is just going to win. It's going to have to be a balance of some pretty practical stuff if you want to pull them.

**A - Keith Weiss** {BIO 6993337 <GO>}

Excellent. Jason, you've been more than generous with your time. Fascinating conversation. A lot going on within Azure and within broader Microsoft right now. Thank you for sharing your views on it. Again, very much appreciate your time. It's a fascinating discussion.

**A - Jason Zander** {BIO 20468487 <GO>}

Thank you, so much. I appreciate you inviting me. Hopefully next time we can do it in person. I'll be using your microphone and not mine.

**A - Keith Weiss** {BIO 6993337 <GO>}

Sounds great. Thank you, Jason.

**A - Jason Zander** {BIO 20468487 <GO>}

Awesome. Thank you, so much.