Deutsche Bank Technology Conference

Company Participants

- Scott Guthrie, EVP, Cloud and Enterprise

Other Participants

- Karl Keirstead, Analyst, Deutsche Bank

Presentation

Karl Keirstead {BIO 1542979 <GO>}

Okay, everybody. Let's get started for the lunch and keynote. Thank you for joining. I'm Karl Keirstead. I cover software and I cover Microsoft. We are very excited to have Scott Guthrie, the Executive Vice President of Cloud and Enterprise with us today. Scott doesn't keynote that many Wall Street event. So we're super honored to have you come to ours. The only catch Scott is that I attend a lot of Microsoft events, software events and I only see you in your red shirt. So I'm not totally convinced you are the right guy here. But I think you are. Thanks for dressing up for us. Before we begin, Scott's colleague, Zack thought it might be a nice idea for me to get you all jazzed up to read out an inspirational quote. So here we go.

Before we begin, Microsoft may make some forward-looking statements during this presentation and you should refer to their SEC filings for the risk factors relating to their business. And that's true whether you're here in person or listening on the web. So with that quote behind me, I'm going to let Scott outline himself the role he plays at Microsoft, the businesses that are under his umbrella. Scott is then going to take us through a 10-minute or so presentation and then he'll sit down and we'll chat. So thank you, Scott.

Scott Guthrie {BIO 15931914 <GO>}

Thanks for having me. People hear me okay. Great, it's a real pleasure to be here and thank you very much for hosting me. And as it was kind of mentioned, I was going to kick it off a little, just provide a little bit of context in terms of my role. And in particular the role that we kind of see the cloud playing at Microsoft more broadly going forward. And then open up to questions and we'll have more interactive dialog.

I think one of the things that we see in the industry that's happening right now and I think pretty much everyone is seeing it is, what we call the journey to the cloud, which is really a generational shift in computing that's happening right now and really is impacting every organization and every company out there in pretty

meaningful ways. And I think every enterprise out there, in particular right now, is trying to figure out a path from how they go from where they are now to take advantage of what the cloud has to offer.

And when we think about the cloud and Microsoft, we often think about it not just in terms of infrastructure or not just in terms of SaaS apps. But really across a wider spectrum of different capabilities that we think -- we think every organization needs productivity software that enables their employees to be able to collaborate in richer ways and be able to be even more competitive and be able to get more done. We think every organization out there is looking for business applications that are increasingly delivered in the SaaS-based way that enables them to reinvent business processes, to reinvent business models and become even more competitive.

We see this huge rise that's happening in the space of infrastructure in the cloud right now. And fundamentally believe that infrastructure is around enabling organizations to really unleash application innovation that is specific to their business. And I'll talk about some specific examples a little bit later on in the presentation where organizations of all sizes and all industries are looking to take advantage of the cloud to be able to connect to their customers better, to be able to drive revenue, to be able to improve their operations and achieve more. And lot of these applications are being driven by data and data is increasingly at the heart of pretty much every business model going forward. And when you think about IoT, when you think about the power of machine learning advanced analytics, it is a very exciting time really for the industry.

And last but not least, all these different scenarios need to be delivered in a secure way and in a way that an organization can really bet their business on it and manage it holistically with all the different compliance, trust and security capabilities that are involved. And it's really the combination of all these different capabilities that is what companies are looking for. And we at Microsoft are looking to deliver as part of the Microsoft Cloud. We sell each of these things as individual products in services. But it's often we see increasingly organizations are looking to figure out how I can put all these things together. And a big part of our differentiation in the market is that we deliver these capabilities with a common what you call global, trusted and hybrid promise. And I'll go in a little bit more detail about what each of those means.

On the global side, it's far the easiest to understand, which is the cloud needs to be something that works all over the world and in particular can meet the unique compliance data sovereignty requirements that organizations have around the world in order to run their business. And we've been hard at work at Microsoft building out our cloud infrastructure over the last several years and we now provide our services in more than 34 what we call Azure regions around the world, where customers can basically in a matter of seconds deploy and run their own code and deliver their own set of applications and solutions to their employees and their customers.

And we have more regions than AWS and Google combined and in particular, we don't just have broad coverage of regions. But also meet unique data residency promises that no other cloud vendor delivers, whether those are in China, whether

that's in Germany, whether that's for US government and Department of Defense, we can make guarantees around who has access to the data in for example Germany and China, we make promises, which is no American and no Microsoft employee has any operational control over those data centers or that data to be able to meet those specific markets. And again this gives sort of truly global scale at which companies can operate and deploy their solutions.

Like to joke, each of these little blue dots, you can kind of see from space and in many cases are now massive, massive facilities. This is one in our east US region, you can sort of see the scale that little thing in the bottom right is a very large truck. This is another angle, the build out that's happening. This is ultimately -- this facility is now, I think actually built out, is about two miles long and this one location will ultimately host about a million servers. And this kind of scale at that global level is something we fundamentally believe really very few companies in the world are going to be able to provide. And for the most part we see ourselves instead of a two-horse race today with AWS as that provider.

Where we look to differentiate then is not just at the scale level. But really around the trust and some of the unique enterprise requirements that we see businesses have. We have now more trust certifications with our cloud than any other vendor and meet whether it's individual industries, whether it's individual countries, boundaries, the credentials necessary for companies to bet their business on top of us and then we deliver a unique hybrid cloud capability that none of the other hyperscale cloud vendors are able to deliver where we can basically tell a customer, you can run your applications, you can run your data, you can run your code, not just in our data centers. But in your own and be able to easily bridge the existing investments that you already have to take advantage of the public cloud without having to rip and replace every system to do so. And that works not just at the infrastructure layer. But all the way through that stack, at the data, at the layer security management layer, all the way up to the business application and productivity layer. And with our management tools and our security tools, we enable IT to look at all of this with a single pane of glass where they can manage this infrastructure in our set of solutions, again in our data centers at Microsoft, customers data centers or even third-party cloud data centers like AWS. And with our Operations Management Suite and our Enterprise Mobility Suite offerings, we can provide IT that secure way that they can manage all this holistically and is one of our more differentiated aspects of our platform.

We deliver all these things to be enterprise grade. Gartner has their legendary Magic Quadrant where they like to rate software vendors independently in terms of capabilities. We now have more leadership positions in the Gartner Magic Quadrant for cloud than all the other cloud vendors combined. And we're seeing tremendous uptake and adoption of our cloud. With about 85% of the Fortune 500 companies, now taking advantage of the Microsoft Cloud and more than 70% taking advantage of at least two elements of our cloud, for example, Azure and Office 365 or Azure and Dynamics 365 as an example

And I think the thing that we're also seeing in this industry is as people look to take advantage of the cloud, the real economic opportunity here is far beyond the traditional IT boundaries that we thought of before because a lot of these used cases aren't about internal IT, it's not around payroll applications, it's not around documents stores for internal documents. It's really around enabling organizations to take digital technology and really reinvent their business in fundamental new ways. And so examples of just some of these kind of customers on that logo wall, how they are really becoming software companies themselves and using the cloud to power their businesses could be organizations like BMW. How many people here have a BMW. Only two people that raise their hands, I think there's a lot more of you. But it's okay. But if you buy BMW today, it's connected as an example to Azure. And so the telemetry of the vehicle is flowing into our cloud and the entire user experience from a digital perspective, both in the dashboard of the vehicle as well as in the mobile companion application that they provide is all powered using Azure and cloud delivered. And they're basically looking at how do they infuse that type of cloud capability to basically make the vehicle smarter, to make the vehicle more directly emotional to an end user. And be able to kind of transform how they're building products.

And we're seeing other industrial icons like Rolls-Royce and Boeing and GE to name a few. They are also now betting on Azure in big ways. So when you fly across -- if you go home, there is a good chance there is Rolls-Royce engines on your aircraft, telemetry is being downloaded as soon that airplane lands about that engine and Rolls-Royce is now able to provide services with that engine to an airline that not only help improve flight safety and operations. But can even go so far now as to indicate individual pilots how well do they fly in terms of fuel economy to able to drive down cost in terms of aircraft.

In the retail space we've got lots of customers like Wal-Mart that are increasingly using Azure for advanced analytics and be able to optimize their supplier chain as well as the retail pricing. Jet.com, which Wal-Mart just bought for $3 billion a couple weeks ago was another great company using Azure as an example start up unicorn that had a great exit and it is yet another example in terms of the types of companies building on it.

And in the financial space, we're seeing across my portfolio both on-premises as well as in the cloud increasingly large financial institutions starting to move to take advantage of the Microsoft Cloud and our technologies. MasterCard will be one example of a company that's using primarily on-premises today. But using a lot of our new data technology that runs both in Azure and on-premises to be able to streamline things like fraud detection and their overall retail operations. I know you heard from Keith this morning from DocuSign, they're another one of great customer of ours take advantage again both of our data products on-prem as well as some of our Azure services in terms of running their SaaS service.

And collectively, all these customers are driving huge amounts of adoption. We've got more than 120,000 new customer subscriptions being created every month, about 1.6 million production database is now being hosted in Azure alone, more

than 2 trillion IoT messages each week, more than 5 million organizations that have sunk their identity server and integrated their user employee security as part of our cloud, 4 million developers. And the thing we always like to emphasize is as much as we're focused on enterprises, having a cloud is great for enterprises also makes a lot easier for software vendors to build their solutions hosted on our cloud and reach those enterprises as well. About 40% of our overall revenue for example with Azure comes from start-ups and software vendors building solutions on top of us.

That's a little bit of context in terms of all the different pieces. Parts I run basically Dynamics 365, Azure, SQL Server. And our overall data platform with Microsoft including Cortana Intelligence, all of our management security offerings as well as our development tool offerings with the Visual Studio family and looking forward to chatting more interactively to answer questions about it.

Questions And Answers

Q - Karl Keirstead {BIO 1542979 <GO>}

Thank you. So much, Scott. One of the points you made up there that intrigues me is the idea that Azure is doing a lot of net new stuff. It's not just displacing what's being done on-prem and I think that's interesting because I think a lot of people might look at the total addressable market for Azure as basically what's the spend on-prem, what percentage of that might go to the cloud, use some price deflator for the ASP difference and boom you get your TAM. But maybe that's too narrow view of the world. And so, I want to get your perspective on that and how much of what is being done in Azure is in fact net new these days rather than displacing what was done on-prem?

A - Scott Guthrie {BIO 15931914 <GO>}

Yes, I'd say for the most part and I think what is true for Azure is also probably true for the AWS and other cloud vendors is, especially in the early phases of cloud, the vast majority of the usage has been net new scenarios. The number of customers that are looking to lift and shift the SharePoint server from their data center to Azure, I'm sure we've some. But I can't off the top of my head even name one of doing it, just because, it is interesting. But it's often been the individual business units or product units within organizations that have actually accelerated the cloud fast.

And the exciting thing about that is the TAM suddenly explodes far beyond what was traditionally possible with enterprise software to kind of include literally every type of physical device and/or digital transaction scenario out there. I mentioned BMW is one, Rolls-Royce or GE or Schneider Electric or others, it is just a few other examples. And ultimately, I think that pulls open the market in a big way. But we are starting to see, I would say in particular last 12 to 18 months more traditional IT organization shift starting to move and plan. And so that we are starting to see that now, which I think is new in the last two to three years versus where we were earlier. But I'd say still the majority of the usage, in particular, the biggest growth is often around those net new scenarios.

Q - Karl Keirstead {BIO 1542979 <GO>}

Got it. And if we talk for a second about the displacement of existing, if we sum up the revenues of AWS, Azure and GCP today, we're probably talking in the order of $15 billion. I don't know how you guys at Microsoft calculate the total IT spend. But let's say for the sake of argument, it's a trillion. I would suggest that public cloud infrastructure today is in the low, low single-digits of total IT spend. So if you had to put on your 10-year forecast hat, where do think that could go, Scott?

A - Scott Guthrie {BIO 15931914 <GO>}

Well I think in terms of the opportunity, I do think it's in serious limitless in terms of what the total TAM is. I mean, obviously there's some limit. But it's -- there's lot of zeros there in terms of the total opportunity and I think a lot of it is going to be bounded less by market size and more just around creativity. Some of the scenarios that we see used on Azure today, if you'd asked me say three years ago, would have sounded like science fiction whether it's fraud detection, whether it's hedge funds, doing quant analysis in terms of portfolio bursting whether it's around manufacturing scenarios again predictive maintenance for equipment. Lot of these things. And you never think of as "IT" at least I wouldn't have thought of and I think that's the exciting part. The trick is obviously we just need to keep growing and maturing that. But I think the exciting part is we are at the very beginning of a very long journey and it's going to be an exciting journey in terms of the net new used cases that we enable.

Q - Karl Keirstead {BIO 1542979 <GO>}

And I think the other exciting thing for lot of the people in the audience is that it feels like the spoils are going to go to a smaller group of vendors than in a lot of other big technology shifts that have opened up large TAMs. As you describe the investments, the CapEx required to make this business succeed are incredible, there's only a handful of companies that are even capable of doing that perhaps gone are the days when two guys named Bill and Paul could start a company in their garage and turn it into a behemoth, it's going to take a lot of investments. You suggested it's down to sort of a two-horse race, maybe you could talk a little bit about that and whether you think there's prospects for an IBM, a Google who are the other players that could do this?

A - Scott Guthrie {BIO 15931914 <GO>}

I think to be a hyperscale cloud vendor, which I think increasingly is going to be the thing that any enterprise is going to want to adopt. I think you ultimately need to have three things which create kind of a mode if you will around the market. The one is you need to be able to spend vast amounts of money in terms of CapEx, billions and billions of dollars a year, building out data centers, buying private fiber, building servers. And that immediately creates a pretty big barrier to the market. The second thing you need to have is thousands of engineers that can write distributed systems code. You can't just buy into this market, because none of the servers that we use now are off the shelf servers.

We're building our own server designs, we're manufacturing our own capabilities both at the server level, the network level, the storage level. This is not managed hosting where you buy off of traditional vendors to get in. You need to have engineers that are able to do that and be able to manage millions of servers in a very large environment and that again is a big, big barrier to entry, we need to do not just the infrastructure layer but then as a data and analytics layer and security layers up and down the stack to even be able to be credible that you want. Then the third thing you need to have is frankly time. A lot of these things that you learn in the cloud in terms of operating at the scale, there's no book you can go to Barnes & Noble, how do I manage a million servers.

Q - Karl Keirstead {BIO 1542979 <GO>}

It's all pretty new, right?

A - Scott Guthrie {BIO 15931914 <GO>}

It's all pretty new and it is very extensional order, you kind of learn it as you do it. You kind of can't really figure it out, I think the other way. You do need a couple of years of experience to be able to operate with SLAs and the security trust complaints boundaries that we provide. And so the combination of those three things creates a pretty big moat. And when I look at other vendors in the market, I think that's going to be very difficult for folks to break it. Right now we certainly see pretty much every engagement we're in. Amazon and us are in those engagements. I think in China, you've got Ali, which is very strong in China. I think they're going to struggle to succeed outside China. But I think they will be a very large hyperscale cloud in China.

Q - Karl Keirstead {BIO 1542979 <GO>}

Is there a place for Google do you think Scott? They've got the engineering chops, they've got a few dollars in the bank, could they pull it off?

A - Scott Guthrie {BIO 15931914 <GO>}

I think that would be of the -- outside China places, the only kind of I think other credible vendor could be Google. Yes. The challenge they're going to have is the lack of enterprise capability and even the way they've built their infrastructure historically, it's really been optimized search. And so if you look at for example the number of regions around the world they operate in, they currently I think have four versus our 34. And again if you want to compete in the UK and you want to go to a bank in the UK, you should consider using us for cloud. If you -- you can't say well, we can't guarantee your data is going to stay in the country. We can't actually meet your regulator needs and I'm not sure would you support whether we're going to be able to have a human on the end of the line who will pick up the phone. That ended of being kind of a non-starter for that conversation. And so I do think that they're going to struggle a little bit certainly over the next couple of years in terms of building up that enterprise credibility and being able to get to that point.

Q - Karl Keirstead {BIO 1542979 <GO>}

Make sense. So if there are two vendors on the right side of that moat, yourself and the other little company in Seattle, it's maybe an unfair question because this as we just described earlier, the TAM is so enormous that there's going to be room for two to have a fun time for the next 10 years. But I think a lot of people in the audience would love given that you're here to outline a little bit what some of the key differentiations are? When you're pitching against AWS in that Fortune 500, what are the two or three things that you hone in on and that your customers seem to appreciate, if you could just -- you touched a little bit in your slide deck. But I'd love to ask you again?

A - Scott Guthrie {BIO 15931914 <GO>}

I think, it's -- we are definitely in an arms race. The funny thing is we can kind of almost see each other across the lake. We have lots of respect I think on both sides between each other and with other vendors in the industry. So I think the thing is most important is you can't ever be complacent, you can't ever think who I got the killer thing it's going to make me invulnerable for many years. The technology industry is exciting because every six months or three months there is something that is going to coming along.

We focus on a couple things with Azure to try to differentiate and we're obviously -- we're Number 2 and aspire to be Number 1. Sometimes, it is features and so, for example, we invested very heavily in IoT early. And so I mentioned like BMW or Rolls-Royce or GE or some of the other IoT wins up there. Some of those wins were first to market in a particular category, whether it's IoT, our new Data Lake service that's coming out this fall, we think we'll also be quite differentiated, BI is another area where I think we're quite differentiated and in the security management space. So those things we definitely are looking for higher level services beyond infrastructure that we can sort of get to market and have something that's really differentiated from an IT perspective.

So we definitely focus on those. Then I think the other area that we've really, from an enduring perspective, really spend a lot of time focused on is that global trusted hybrid where the hybrid in particular is probably our biggest single cross-cutting differentiator versus them where the ability to go to an organization and say, you can build apps and run it not just in our cloud but also in your data center or even across the street in AWS' data canter. And how that hybrid flexibility tends to really, really resonate less of start-ups that are trying to just move very quickly. But in particular with enterprise audience.

And I think that's something that -- if you use any of the AWS services, you can use them only in AWS, you can't use them in Azure, you can't use them on-premises and we're very different in that category. And that again fuels I think to this crowd and the customer target which is enterprises and the ISVs targeting enterprises is sort of our maybe the center of our bulls eye.

Q - Karl Keirstead {BIO 1542979 <GO>}

That makes sense. And Scott, I think another question a lot of investors have is, when they hear about a market emerging where there's massive CapEx, there's only two or

three viable vendors, one could be led to a conclusion that we're into a sort of a race to the bottom on price. That it'll become extraordinarily scrappy and one out dueling the other. I've noticed from my own checks in Azure and AWS community that that's frankly sometimes not the main differentiator. It comes down to other stuff. So on the pricing front, what's your comments on how tough it is out there?

A - Scott Guthrie {BIO 15931914 <GO>}

It's -- I mean, I wouldn't put it in terms of for the most part, we're not competing on price, I don't think either one of us versus each other. It's typically we're competing more in value I'd say at this point, which is the difference versus say two or three years ago where I think it was actually more about cost per VM or cost per storage.

Q - Karl Keirstead {BIO 1542979 <GO>}

And value you mean the features and performance of the infrastructure?

A - Scott Guthrie {BIO 15931914 <GO>}

The high level services, the features, the performance and really the ability to differentiate or really deliver true innovations in a way that isn't possible on-prem. The thing that's interesting also I'd say about hyperscale cloud vendors is because we don't have a large enough footprint, one of the ways that we can take cost out of the system is not actually by dropping the price on individual VMs, it's really around giving the flexibility to that particular customer to scale up and scale down when they need it. And that's the place where from taking cost out of the system, for traditional IT we often have the biggest bang and the biggest impact. And the other benefit which is as more capacity is needed by those organizations, they could spin off at a moment's notice.

And you will take for example just in the financial industry where we're starting to see a lot of customers starting to move to the cloud really in the last year in a substantial way. We like to joke, we can kind of tell what the bond prices look like because all of our financial customers doing quant analysis, whenever the bond market gets really frothy like massively diverse jobs inside our cloud so it kind of hedge and do Monte Carlo simulations. And so there's so many spending up lots and when it quite, they spin it down. It's not a cost thing because for them it's actually value that they're getting out, they want a good price for it. But that ability to kind of match what they need and scale up and scale down gives them a huge discount over what they would otherwise have to pay with existing on-prem infrastructure and again turn it into kind of value as part of it.

Q - Karl Keirstead {BIO 1542979 <GO>}

And I guess one thing that Microsoft can do and I'm sure your rivals are doing it too to stay competitive on that unit price decline is yourself to be lowering your internal unit costs. So you could pass on those savings to your clients. So you touched on it a little bit with respect to your comment that Microsoft is leaning a little bit more to custom and ODM versus off-the-shelf. But can you elaborate on the other things that Microsoft is doing in its cloud infrastructures to get leaner, meaner cheaper so that you can pass those savings on to your clients.

A - Scott Guthrie {BIO 15931914 <GO>}

Yes. You'll see, you'll see some announcements later this month at our Ignite Conference both in my keynote and then Satya's keynote about some of the cool things that are possible with technology that he is going to kill me if I tell anyone right now. So I'm going to be careful as I give away too much but you will kind of see again where it's not just about cost or about doing it in the cloud versus not but how do you use the combination of software and hardware together to kind of unlock new things you just couldn't do.

And so for example we talked about our ability to do programmable hardware inside Azure. And the fact that we use what's called FPGA processors inside our fleet now and that starts to enable us to do algorithms for whether it's healthcare, whether it's for financials, whether it's for other spaces where we can dramatically by like orders of magnitude shrink down the time or cost it takes to solve something.

So that would be an example of where just cost effectively there's no way you can do that with 10,000 servers. You really need to be able to have a fleet of millions in order to justify that level of investment. Similarly in terms of, as we build data centers or as we build out our data center portfolio, when you're adding hundreds of megawatts of capacity per year, the rates you're getting are a lot better than what you get in the traditional enterprise data center, where you're in the single-digit kilowatts in terms of power consumption. So there is lots of efficiencies and scale that we're able to take advantage of not just to drive lower costs from a procurement perspective. But really around investing in that IP technology layer as well to differentiate.

Q - Karl Keirstead {BIO 1542979 <GO>}

One thing I hear when I talk to prospective customers, considering the public cloud, Scott, is lingering security fears, data privacy fears. You mentioned, when you were describing the purview of responsibilities that security was one of them. So maybe it's opportune time to ask you about that and specifically what you and your team are doing to get those security conscious enterprises over the hump and feel good about putting their sensitive customer data in Azure?

A - Scott Guthrie {BIO 15931914 <GO>}

Well I think in general the threat environment that we all live in now is significantly scarier than it was a decade ago versus two decades ago. And I think the adversaries out there are getting more sophisticated, the types of attacks that are happening are happening more frequently and that's just going to be the new normal for us going forward and the important thing, when you think about security is you've got be paranoid and you can't take anything for granted. And your any vendor, who says, hey, use my stuff and you'll be perfectly secure, then run away from because you don't get security or they're lying. And we often when we talk to our customers say, there is multiple layers of security that we need to worry about.

There's -- our responsibility, which is how do we run the infrastructure and how we provide a cloud environment, where we do everything we possibly can to make sure

it's secure. And that the core capabilities there are secure. Then also there's responsibility for their customer, which is at their code level is they're building their application. How do they do responsibility to make sure they also invest in the security of their app and how can we provide for them features and services that can help them as part of that journey? And so as the example for, let's say Azure, we can detect if you turn it on. Anytime, it looks like someone is trying to access your database and what's called ex-filtrate information from it. So we see what's called typically a SQL injection attack where you've got a web app and you inadvertently encoded input incorrectly and allow someone to execute a SQL statement against your database. That's a very common security hole inside the app layer. We can now automatically warn on a given daily basis we will typically warn several customers, hey, we see something suspicious, we should go follow up. And that ability to automatically warn and identify when we see attacks happening is one of the feature differentiators that we provide. But again, helps with the app layer and helps keep the customer secure.

Then we're investing very heavily at the intro level on how do we again make sure that we provide and do everything we can in terms of best practices, in terms of defense in depth around security guidelines as well. Sort of examples would also be -- I think one of things that does help cloud vendors, especially, hyperscale cloud vendors, at the base level is, the fact that we do have so many servers and so much stuff we're managing. It does force you into a much more homogeneous environment inside your data center and when you're managing millions of servers, you can't have a human in the loop.

And so I do think one of things that sometimes security experts do say is beneficial about a public cloud environment is you avoid a lot of the themes that you have and see more traditional data centers where you've got a little bit of every technology and there's an awful lot of people that run the script or do this action. When you're managing millions of servers, you're going to have to automate it and it has to be homogenous so that it does kind of prevent some of the more obvious themes that we see in other environments opening up. Again, you really can't take any of this for granted and this is constant how do we get more secure even on a quarterly basis in terms of the defenses we put in place and in particular the defense in depth approach that we adopt. So that even if someone gets through something they don't actually get through the environment because there're 4-5 doors beyond that will catch him.

Q - Karl Keirstead {BIO 1542979 <GO>}

Albeit you are Ignite event at Atlanta and I'm sure you will be talking a little bit about the security angle there too. We could probably talk all day long about Azure. But you run a little bit more at Microsoft than just Azure. You've got this $19-ish billion on-prem server business too. So I would love to ask you about that, if we can flip. So one of the -- I think great things about the Microsoft story is that well, Azure and 365 have been scaling. Your on-prem server product business has actually been hanging in there like champ. That's not the case for a lot of other large technology firms that have seen great cloud growth. But their on-prem business is actually in steady decel, yours is still growing. So can you talk a little bit about that and how long that can last?

A - Scott Guthrie {BIO 15931914 <GO>}

I think there is -- we've seen our on-prem business stay pretty healthy, despite a lot of the cloud shifts were happening and I think there is probably fundamentally a couple reasons for that. From a technology perspective, the hybrid story really resonates with customers. And often when you see kind of a disruptive change happening in the market, like cloud is, what end up happening is people put purchasing decisions on hold because hey I'm not sure I am going to need that thing, if I go to the --

Q - Karl Keirstead {BIO 1542979 <GO>}

Or they'll plan to buy less (inaudible) white board with their what's is going to look like in three years?

A - Scott Guthrie {BIO 15931914 <GO>}

It's our ability to tell a customer that you can buy that database and you can use it in your own data center. You can lift it up and move it into our data center and not pay anything extra to do that. And you can use it in our data center as a service and have the same data API, the same data capabilities in all three of those locations. It's something let's say an Oracle or other database vendors that have not been able to articulate or be able to promise. So that's helped us quite a bit, I think in terms of unlocking that.

I think the other thing that we've kind of focused on and have had a good set of products that come out is, with SQL 2016 that went GA earlier this summer, it's our best database product ever. For Gartner Magic Quadrant for operational database systems, there's been -- Oracle has been the leader for -- I don't probably since they started, I don't know for 15 to 20 years. This past year was the very first year, we passed Oracle, both on execution and vision in the database category with SQL 2016 and is testament to just sort of amount of innovation that's in that product on-prem and the beauty about it not just from value and capability perspective, is the fact that from a TCO prospective customers can run it at about 11.7 times cheaper than the equipment Oracle solution.

So that's put us in a very nice place, where we can go to pretty much every organization out there right now, that's feeling frankly some angst about Oracle price increases and be able to say, we can give you more value, we can give you a lot more capability and we can do it at one-tenth of a price. That is hunted and resonate. Those Tier 1 database take outs there -- they take long. So they're not like a quick one we conversations. But when they do happen they are really, really big wins. And I think we've got a good motion and we're seeing some good traction in the market versus Oracle in particular in the database space. Similarly in the management security space, we've been able to keep growing at a nice cliff and even in our developer space, which I think it has been great from a revenue. But from a usage perspective it's kind of been roughly flat for a couple years -- going back a couple of years. And we've seen now our actual number of developers using the Visual Studio family of products more than doubled in the last 18 months and we're reaching now new developers doing Mac development, doing iOS development, doing Android

development that we previously didn't have any tools to even sell to and starting to reach those end markets. So we're still, think there is a great role for on-prem. And again the combination of on-prem with cloud is where we think there's a real, special sauce that we kind of enables part of it.

Q - Karl Keirstead {BIO 1542979 <GO>}

And on SQL server as an exact note, I have been a bull on that part of your business that's been growing at a very heady clip. When you talk to Oracle they always characterize Microsoft on the SQL server database side as being down market, not at functional parity. Yet when I talk to database heads at large firms, they refute that and say in fact, it's at functional parity and there are some displacements that even I hear about. So I trust you would agree with that assessment.

A - Scott Guthrie {BIO 15931914 <GO>}

Really think so. I do think, even since they've Gartner study the Gartner Magic Quadrant that one was in the database business. A little bit of an earthquake, because Oracle have been able to say yes, they're more cost effective, they're easier to use but they weren't till the leaders.

Q - Karl Keirstead {BIO 1542979 <GO>}

It remind us what that was, that was the recent Magic Quadrant where I think on the database side you guys were neck and neck with Oracle on the.

A - Scott Guthrie {BIO 15931914 <GO>}

Neck and neck and then this year is one we passed them as already the top right the absolute leader in that space. Then the combination of that plus the TCO savings that we're able to deliver plus hybrid ends up being a conversation started with pretty much. We got a good partnership for example with Hewlett-Packard Enterprises where we now can even do kind of Exadata style hardware take-outs. Then we can basically deliver the hardware and the software fractions across the Oracle and say let's do (FOC) for three months. And price performance and value perspective we pretty much win those every time. And we are seeing some good success right now in the market as part of it.

Q - Karl Keirstead {BIO 1542979 <GO>}

It's got the other big chunk of your on-prem server product business other than SQL server databases, your window server OS. That to me has been a tougher market and I'm wondering if you could comment around the -- your outlook for Windows Server, I think there's some nervousness about what a traditional server OS looks like in a cloud world. Does cloud end up going all Linux? Do you need to strip down lighter weight OS? Maybe you could offer some comments on the Windows server part of your business.

A - Scott Guthrie {BIO 15931914 <GO>}

Yes in terms of, that has, that is an important part of our portfolio today. And the other thing that we've been hard to work on and have a really great product coming

out later this month is our Windows Server 2016 release. And that is specifically going after some of the points you mentioned, which is builds in containers in a deep way and has doctor support natively, right out of the operating system, has support for what we call a nano server, which is a very light weight version that's very minimalist and we think designed for new application workloads. And in the big part of Window Server 2016, I think for existing customers has been the focus around security that we baked into it.

In particular, it really enables IT to run their existing Windows Server applications in a much more secure environment and have much more protection. So we think that combination resonates very well with what the market wants. And we're pretty excited to see that grow and that uptick over the next couple of months as it comes to market and I think the trick is, it's a mature market for sure. And the trick is, I think there still lots of innovations that we're able to provide and -- for on-prem business all up, from a licensing perspective, it is the vast majority is annuity based as opposed to kind of license transaction. And so, as we're able to add -- continuing to add additional value to that footprint that also helps in terms of from continuation perspective making easier for customers to adopt it since they already own it. Then also I think makes the value proposition even more valuable.

Q - Karl Keirstead {BIO 1542979 <GO>}

And maybe just in our last minute, the other business under you responsibility is Dynamics. And I think everybody in the room their eyes popped a little bit couple days ago, you announced a win at HP Inc. and that's significant in a number of respects and perhaps you're limited from giving us too much detail. But we all thought HP Inc. was a Salesforce client. So is this a take away and what does that say about Dynamics CRM, because I think there has been a general perception that that's more of the mid-market product and I wonder if this win with HP Inc. is perhaps a harbinger of Microsoft having a little more success up-market against Oracle and Salesforce?

A - Scott Guthrie {BIO 15931914 <GO>}

I think the HP Inc. takeout yesterday was a Salesforce takeout.

Q - Karl Keirstead {BIO 1542979 <GO>}

It was.

A - Scott Guthrie {BIO 15931914 <GO>}

Yes. They were very large Salesforce shop or were until yesterday and they are planning a massive migration and big bet on Dynamics. And it's one of -- one of the more public ones that we've had. But we're starting to see some really good success in the market at a broad level, in particular around enterprise. And I would say for CRM in particular enterprises are sweet spot. Other parts of the Dynamics, this maybe a little bit more mid-market in European states. But in particular for customer engagement solutions, I think we've got a very strong enterprise product and we are growing very, very fast. I think we've kind of talked about the cloud growth that we've had, obviously with Azure and Office 365. Dynamics has been on an absolute

tear as well. And we see a huge upside with that and the exciting part -- we announced plans to acquire LinkedIn, it's not complete yet. So kind of all the standard caveat there. But the other interesting thing, assuming regulatory approval. And all the right caveat, Zack wants me to say -- the signal you get from a professional graph, say for example from LinkedIn where you know who knows each other, you know the relationships and yow know their skill sets, who they worked with in the past.

The insight you get from a sales reps or customer service reps inbox with Exchange and what we have in Office 365, the insight you get is someone's calendar and even with Skype all of their phone and voice communications and IM traffic, if you take all that together and have a cloud that can do deep insight of analytics and machine learning and AI on top of that, you create the ultimate selling tool -- the ultimate customer support tool in the industry, because you have so much insight that can assist a sales rep or assist the customer service rep that no one other vendor can provide. And we're very excited in terms of over the next year or so to make that really come to market and you'll see a lot more announcements and demos of that types of technology even in the next couple weeks.

Q - Karl Keirstead {BIO 1542979 <GO>}

Well congrats on that deal. Congrats on the great success with SQL server and most importantly the amazing growth trajectory at Azure. Well done. And thanks for attending our event. I learned a lot and hopefully everybody did and thanks to the Microsoft IR team for bringing Scott. Thank you.

A - Scott Guthrie {BIO 15931914 <GO>}

Thanks.