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Carl Franklin

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Richard Campbell

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David Aiken on Azure
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[Music]

Lawrence Ryan: Hey, Rock heads! Take that mistletoe off your belt buckle and listen up! It's time for another stellar episode of .NET Rocks! the Internet audio talk show for .NET developers, with Carl Franklin and Richard Campbell. This is Lawrence Ryan announcing show #403, with guest David Aiken, recorded live, Monday, November 24, 2008. .NET Rocks! is brought to you by Franklins.NET - Training Developers to Work Smarter and now offering SharePoint 2007 video training with Sahil Malik on DVD, dnrTV style, order your copy now at www.franklins.net. Support is also provided by Telerik, combining the best in Windows Forms and ASP.NET controls with first class customer service, online at www.telerik.com, and by CoDe Magazine, the leading independent magazine for .NET developers, online at www.code-magazine.com. And now, the man who says, "If the shoe fits, throw it at George Bush," Carl Franklin.

Carl Franklin: Thank you, thank you very much and welcome back to .NET Rocks! This is Carl Franklin in New London, Connecticut. Richard will be here in just a moment and I'm flying solo for the intro which is going to be short. In fact, we're going to do some short intros during the holidays because we are just absolutely swamped and I'm sure you won't mind getting right to the content. One little thing I do want to mention is that if you are a Mondays fan, this is your happy day. There's been a new Mondays published at mondays.pwop.com. If you don't know what this is, it's adult-oriented humor and we've done 76 shows. It's Richard Campbell, myself, Mark Miller, and Karen Mangiacotti. It is funny; however, if you are offended by nasty words, you probably don't want to go there. However, if you are a Mondays fan, this is one you wouldn't want to miss, and again that is at <http://mondays.pwop.com>.

All right, let's get right to our interview with David Aiken. Richard, our guest is coming back for more. He couldn't stay away. David Aiken is an Architect Evangelist for Azure and Microsoft. Last time we heard from him was show #306 where he was talking about bridging the gap between dev and IT. Welcome back, David.

David Aiken: Hey, it's good to be back.

Richard Campbell: So still an Architect Evangelist but in a totally different role.

David Aiken: Absolutely; new gig. I often kind of say I did the last cool thing from Microsoft which was Windows PowerShell and did the next cool thing for Microsoft which is Windows Azure.

Richard Campbell: Nice.

Carl Franklin: So for those of us who weren't at the PDC or just happen to have our head firmly in the ground, give us the elevator speech on Windows Azure.

David Aiken: Okay. So probably the first thing to deal with is the naming of the platform. So the Azure Services Platform which comprises of the Windows Azure piece and then on top of that there is .NET services SSTs...

Carl Franklin: Wait, let's back-up even further and talk about what is this thing.

David Aiken: The whole platform is Microsoft's current offering and it's a set of services and basically capabilities that we have running in CTP and Microsoft's data centers right now that you can start playing within and start to build applications on.

Carl Franklin: So basically you've got data centers all over the world that are accessible via the internet that's why you call it Cloud Computing...

David Aiken: Yes.

Carl Franklin: And you're able to create your own servers and services on these systems and so the couple of questions first that come to mind, that came to mind actually for me when was at PDC is: A) What's available of course. B) How much does it cost? C) How is it different from the last time you guys tried to do something like this which was Hailstorm or .NET My Services.

David Aiken: Oh no, we had to bring that up.

Richard Campbell: He said the H word.

Carl Franklin: So I guess people would want to know, right.

David Aiken: Yeah, absolutely. So probably we'll work backwards. We'll ignore the last question completely and hope we'll run out of time but...

Carl Franklin: Hope it will just go away.

David Aiken: The middle question is really easy. At the moment we're in very much the CTP

kind of mode. We've not announced any price thing or when it's going to be available for kind of "production" kind of real RTM...

Carl Franklin: Okay.

David Aiken: That makes that conversation really easy. I would anticipate that we'd be in the same bull talk as the others and you can draw from that what you need to really. So that's easy, that's all good hard questions done with really.

Carl Franklin: Okay.

David Aiken: Back to what is it? Well, there are lots of different components and the one that I really want to focus on is the OS in the Cloud which is Windows Azure. The whole plot behind it really is to enable you to build internet skill applications, deploy them, and then kind of remind them and will them as a service very, very easily and just the same way you might do it on the data center and even on your desktop machine, you have an OS which takes care of things like hardware, drivers, printing, all those kinds of things that anybody would do. There's always a kind of level of indirection or abstraction that hides you from the hard stuff and lets you program against the nice API. So to print it very straightforward, you don't have to worry about any of the complexities of the printing language and that kind of thing. You just issue a few commands, give it an image to print and away it goes and does its thing. So when you kind of compare that idea and put it into the Cloud, you think, well, what types of characteristics does an operating system for the Cloud have to do? There are some similarities obviously, there's the hardware abstraction but this time instead of abstracting way in the CPU and memory and disk. We're abstracting away service.

Carl Franklin: Right.

David Aiken: So we're working at the multi-server level and abstracting away those things. You don't have to worry about which server, which service is running off, where does the apparatus in the data center is light. Well, I don't want to care. I just want to know that I've got kind of them run or a hundred of them run. I really don't care about the load bounces that may defeat configuring, I don't want to care about the DNS. I want all of the things taking care of me. Just in the same way you program an app for the desktop, you don't really want to worry about threading and you know, all of the kinds of stuff the OS takes care of, same idea but on a much bigger scale in the Cloud.

Carl Franklin: Okay.

David Aiken: So that's what Windows Azure gives us. It's the operating system for the Cloud that allows you to build a service and deploy and execute that service and mind that service in a kind of automatic way in our data center.

Carl Franklin: So it really doesn't have anything to do with Hailstorm which was a bunch of services that Microsoft wrote and offered. This is a platform for you to create your own services.

David Aiken: Absolutely. Now as with anything, we do have a lot of piece and then we have some of the pieces which allow you to compose more complex applications. For example, in .NET services, we have basically a message post. an internet message post that allows you to communicate between different locations and it could be between the Cloud and the Enterprise or between two Enterprises but one of the services is that really allows you to kind of connect applications together. The good thing about it really is it lets you go through firewalls and kind of do lots of message publishing, subscribing that is so needed in this kind of world and there are some other services as well including some database services and then there's all the live services such as Live Mesh and the Live Platform Services as well. So there's quite a kind of spectrum all the way from kind of consumer oriented services down to very much kind of Enterprise and things like Identity and database services, but you don't need to use any of those things. You can just simply build your own service, not take any dependencies and just build what you need.

Carl Franklin: It seems to me that we haven't yet talked about Windows Live Mesh on this show, Richard.

David Aiken: It is really true and I don't think a lot of people understand the true power of what Live Mesh is. I'm not sure if you played with Mesh today but basically you can sign up, download the runtime and it gives you first of all some storage and you can create folders, those folders not only get synced with the Cloud but you can sync it with other devices so that could be your mobile devices, your Apple Mac computers, your desktops and so on.

Carl Franklin: Yeah.

David Aiken: So all the devices that you might use on a day-to-day basis. We'll eventually build a plug-in to the Mesh and to build access disk data so the first piece is kind of to understand them.

Carl Franklin: Now we're talking about not only your documents but your favorites, your emails, and all of those things.

David Aiken: It can be anything. It's really just a feed of data, really lots of things stored.

Carl Franklin: Yeah.

David Aiken: Then on top of that, you can actually build an application that uses that data and currently the application model would be using Silverlight 2.0. So you can imagine hitting a -- if we take a look at the Mesh running in the Cloud, you have a desktop in the Cloud and you can access folders and copy files in and out and do all of the things you would expect, but you can also run apps and the apps is Silverlight 2.0, and they really going to use the data stored in your Mesh so that's skill. So now the app runs Silverlight. Silverlight runs on a variety of platforms and that will grow overtime so you should be able to build one app that runs on your Vista box, on your Apple Mac box, on your mobile device and so on and build kind of one app that does that kind of thing.

Carl Franklin: It's good that you said on your Mac box because it's important to know this is just data so it can be shared between any machines.

David Aiken: Absolutely.

Richard Campbell: It occurs to me that means Silverlight 2.0 finally only just shipped a little while ago and...

David Aiken: Absolutely.

Richard Campbell: And really the optimal platform for Mesh is only just come to fruition.

David Aiken: Yes, but even Mesh is still a CTP, I'm not even sure we call it a beta, maybe we do but that's still in the early stages of development really. Kind of one of the sample apps we've been putting together which I talked a little bit about is kind of an auction site, it's the kind of sample at building internet skill kind of applications and we've got this concept of a wish list and at the moment if you go to a website, they may have a wish list but the wish list just stored in that website. There's no way of taking that wish list and giving it to new website...

Richard Campbell: Right.

David Aiken: So if I want to be cool if you could store this wish list in your Mesh and then first of all the website that you go to can put things into your Mesh if you give it permission. So you could go on the site, you could go on really and listen, now I'm going to add it to my wish list and that gets added to your wish list in your Mesh and then you can go and visit some of the other sites and actually should make your wish list to those other sites so you kind of own

the data there as opposed to your data being tied up on the kind of to consume the website.

Richard Campbell: This gets into that whole social networking thing or why do I have to keep creating my lists of friends in all of these different sites.

David Aiken: Absolutely yes.

Richard Campbell: So now you own your data.

David Aiken: Yes.

Richard Campbell: With a concept.

David Aiken: That's right, it is, I mean it's kind of what everybody thinks of this. You know, my data is mine, I decide until I give it to an all app kind of identity talk. It's kind of really, I think, Mesh enables a lot more of those scenarios.

Richard Campbell: And Mesh is very peer-to-peer, right?

David Aiken: It kind of is and it has the cloud elements so even if just kind of create content on your desktop, you still sync it up to the Cloud so you can actually go to any machine in the world, log on to mesh.com and access your live desktop if you like...

Richard Campbell: Right.

David Aiken: And gather your content and bail the Window apps so yes, it can be kind of a single machine but there is that Cloud storage element.

Richard Campbell: Which is interesting because it's almost like they're conflicting products in some ways, Azure and Mesh.

David Aiken: Kind of. I think Mesh is much more made towards building that kind of client experience. Now, just take the next leap and the Mesh is if you have your data sink into Mesh and it's on your laptop and you're going down on the plan, you can still work with that app because it's going to use a local copy of your data there and when you get back on that connection, you're app doesn't have to worry about synching back up. The Mesh is just going to take care of that.

Richard Campbell: So that this stuff sort of happens.

Carl Franklin: So the next question is how easy it is to take a server site right on your desktop and move it into the Cloud?

David Aiken: So it's -- that's a little bit question. It's really simple. So first of all, it's really

simple and it's really hard and I'll explain why I said both. First of all, Windows Azure, currently in the CTP's supports the .NET framework. It's ASP.NET 3.5 SP 1 and running on 64-bit server and so that gives you an idea of where it is. It's running in Medium Trust so basically if you can build an ASP.NET app that runs in Medium Trust, there's a good chance it's just going to run inside the Cloud with fairly little changes.

Richard Campbell: Wow.

David Aiken: Now, that's great, everybody gets real little excited, super duper. One thing we don't give you in the Cloud is SQL server or an Oracle server or SQL...

Richard Campbell: Any database at all?

David Aiken: At all, yes. We don't give you a database as you would think a database kind of is and you kind of...

Richard Campbell: My point is I want to write SQL expressions.

David Aiken: Absolutely. You want to build an -- pretty much most of the apps will work with data.

Richard Campbell: Right.

David Aiken: So we've in, as part of the platform, we have a set of this essential storage services that you can build your application to use and there's three pieces of storage. There is blog storage and that's kind of obvious, you can store files in there, you can put pretty much anything you like in there. Max size in the CTP is 50-gig. I don't think we have hit a limit yet so that will increase absolute blog storage which is great for kind of doing that file storing for those movies, all those kinds of things. Then we have queues and queues allow you to communicate kind of in a typical high scale internet fashion. You know, you never really do anything. When the users ask you to, you queue it open. Some background process kind of does the real work at a later date. I tell you that's one of the ways you can achieve scale and actually the platform itself provides you with a background process which we don't call a background process. We call it a worker role. That kind of sits in the background and you can write so it reads messages from queues and then does all of whatever it needs to do, place the order, obtain the inventory, all those kinds of things.

Richard Campbell: But there is a philosophy here that you always do everything uncoupled, asynchronously as much as possible.

David Aiken: Absolutely, absolutely decoupled, everything decoupled and there's a kind of multi-coupled you own that the smaller the unit of work you're trying to do, the more you can scale out and one of the things to remember about the working and building for the Cloud is that you're not going to build on a big huge box with 32 cores and hundred million terabytes of RAM. You're going to build on almost the commodity hardware. It's like whatever the mainstream hardware is probably that's all we have but we have lots of them and that's the key here, it's that you're going to run on a fairly insignificant kind of server really. It's nothing special you don't have like a save on a 32 cores to play with but you could have 320 of them servicing your service.

Richard Campbell: Right. This is where you get into the challenging part of the Cloud which is it's all well and fine to say these things are just going to scale, but you've got to build your app to scale.

David Aiken: Absolutely, absolutely and that really is the challenge. Just one more thing on storage, one more insignificant thing on storage I laugh at the irony of that; we have a table storage which people think, oh, tables, primary keys, front keys, group by...

Carl Franklin: Yeah.

David Aiken: All the variables kind of things, we provide basically an entity store where we can install objects.

Carl Franklin: Okay.

Richard Campbell: So much more an object store than an actually table store per se.

David Aiken: Absolutely and that in fact is only columns or two properties of the entity that we actually have take any notice of and one is the partition key and one is the role key. The partition key, the idea here is that you have more than one partition key for your data and that gives us a clue on a couple of things. One is if you can imagine, you've got billions and billions of rolls of data in your table, we don't fit that on one machine for starters.

Richard Campbell: Right.

David Aiken: So we have to put it on multiple machines. How we do that, we split it by partition.

Richard Campbell: So you're basically allowing -- you have a way to define data that should stay together.

David Aiken: Absolutely, absolutely yes.

Carl Franklin: You can obviously reach out to other sources of data, can't you?

David Aiken: You can do. So in the platform, we give you these three pieces of data. You could then go and use another service that we have which is the SQL data service which provides more or is threaded to provide more relational database like features. So maybe you need all device and joins and those kinds of things, that's kind of the next level. Of course there's nothing stopping you from going out the real SQL server...

Carl Franklin: Yeah, to your own database.

David Aiken: But we don't do that SQL: hosting.

Carl Franklin: Yeah.

Richard Campbell: All right, it's just logical limits.

David Aiken: Yes. So the other thing on partition cases, we also do all of our queries by partition as well so it's a good idea to figure out which partition the data is in that you're looking for and that really helps narrow down kind of searches and those kind of things. So taking it's just a SQL database that exists on your kind of laptop or your desktop machine or even in your data center and putting in the Cloud, it just isn't going to cut it and whilst we have a lot of the same terminology, you can't just kind of -- there's no Wizard that goes and imports it; because you have to really think differently about how you access data at the kind of skill that we're building a lot of these services to handle. Partitioning, data partitioning and kind of de-normalizing your data are some of the techniques that will kind of help with that, I think.

Carl Franklin: Okay.

Richard Campbell: So when I do development like this, am I always communicating to the Cloud or do I run a service locally like what is the sort of order of scale here? When do I have to actually go out onto the Cloud?

David Aiken: So we thought that would be kind of bit of a pain to build, to write a service and have to kind of deploy to the Cloud to run it and test it. So we have a mock Cloud as part of the SDK which you download on your machine and then you can apply that in Visual Studio and actually spins up the kind of local Cloud which we call a local fabric and actually simulate the Cloud on your local machine.

Carl Franklin: Cool.

David Aiken: We do the same thing for storage as well. So to do like a Cassini-like

experience but it gives you a kind of Cloud in your box.

Carl Franklin: Cloud on your desktop. You know, I heard that phrase uttered at PDC and thought to myself, yeah, Cloud on your desktop.

Richard Campbell: These guys are getting crazy. You know, David, it immediately becomes a happy medium between these two things. Of course, I fall heavily on the IT side of this stuff as well and so my customers immediate reaction to Cloud is, "My data is stored where?"

David Aiken: Yeah, right.

Richard Campbell: And so hear me out here, I can run the Cloud on my desktop to do my development, I can go all the way out to Microsoft's Cloud out there, is there some place in between? Can I run Cloud server in my data center?

David Aiken: We've never heard this question at all.

Richard Campbell: The very first time, huh. I am the originator of new ideas.

Carl Franklin: Originator.

Richard Campbell: That's it, me, I think of them.

David Aiken: That's going to stump me.

Richard Campbell: Yes.

David Aiken: So there are several kinds of points there really. One is my data is in your data center. Ha, ha, ha, no, it's not. Lots of people are uncomfortable with putting their data in someone else's data center first off, regardless of whether it's ours or somebody else's and I deny, sometimes I just feel like just get over it but sometimes there are legal reasons why they can't do that particularly in financial and medical kind of world that needs to be a lot more kind of certification of the platform and those types of things before they're allowed to kind of install the data in these kinds of environments. So that's one kind of angle on the data kind of thing. The other one is kind of simply can you run this, it's great and it looks like it works great and it's also a lot of problems for deployment and all those kinds of things, can we run it on our data centers and the answer to this is no. The plan is very much today it's a service that we offer, you can build your service or your application and we host it for you and we run the application and you don't have to worry about billing the data center out and all those kinds of things. So that's kind of the position, that's not to say that won't change in the future and there won't be a kind of version that you

could install in the data center, but today we have no plans to do that.

Richard Campbell: All right, I mean that is just how it is today and Microsoft is not above changing their minds someday but you're not going to tell us that.

David Aiken: We've changed our minds before.

Richard Campbell: I've heard that.

Carl Franklin: So for those who aren't at the PDC of course, Don Box and Chris Anderson did a really cool demo with Azure. Do you remember it?

David Aiken: I do.

Richard Campbell: Yeah.

David Aiken: Well, not that I saw it, but yeah, I remember.

Carl Franklin: And they basically sort of wrote up on the fly, this fairly complex scenario where they had data services. Well, they had services running locally that called out to Cloud service which they deploy dynamically right on the fly. It was pretty impressive actually and it looked very easy to do.

David Aiken: It is and everything is on the .NET platform, on the .NET framework anyway. So there's an example in the Windows Azure piece, we funded a new kind of -- there is a new DLL you add to your web projects and if it contains more than 10 methods across over all the classes, I'll be really surprised. It's like everything was already in the framework, why reinvent the wheel and there's a couple of things we had to reinvent the wheel for just to make it work in the Cloud but it really is already very simple so people are already familiar with building ASP.NET abdications, we are already familiar with hosting WCF services in building those things at. Accessing storages have been through ADO.NET data services or REST interface so again people are familiar with those things so how many kinds of language used point of view people are already there, they already have the skills to go and write applications for the Cloud. The thing where they're going to be challenged, where they have to think a little differently is when they're thinking about that scale, how do they get the scale, how do they build the applications so they decoupled, how do they handle the new storage paradigms. What is truly interesting is, you know if you talk to an ISE and say, "Hey, you know what, we've got no joins," and they kind of pass out on the floor and they're like how can I build an app with no joins. Then you go talk to a web 2.0 kind of company in course who is already being through this and perhaps built the fifth Google app, or

built the kind of photo sharing sites and that kind of thing and we all know it can go, yeah, this absolutely makes sense, this is perfect and they get that traditional database, relational databases as very hard to scale, real big, real fast where a lot of the substance we provide are already scalable and you do the hard work of front to kind of fit your data, your usage into there, where I think with SQL, it's very easy to get started but then as you scale you need a lot of kind of rocket scientists working on how do you get SQL working across 12 different services and then you have to start thinking about partitioning your data and all that kind of thing and it's like we make you do all that up front so from the language point of view, real simple. From kind shifting the emphasis to decoupled apps and using a new storage for that internet scale is very, very different.

Carl Franklin: Now, the other question I need to ask is the services that we create in the Cloud can be consume with standard REST clients or...

David Aiken: Absolutely.

Carl Franklin: We don't need Windows clients to do this standard stuff, web services, etc?

David Aiken: Absolutely. So you can just build a WCF service and expose all REST interfaces if you wanted to.

Carl Franklin: Sure.

David Aiken: You could access the storage directly through REST interfaces so we already have some samples in the web like Python, Ruby on Rails, and all of those kinds of things.

Carl Franklin: Great. That's very cool.

David Aiken: And in the planning for the platform, we are looking at what kind of service might you want to run in there and today it's .NET services. We've talked a lot at PDC about being able to run native code there so that you can build your kind of media encoder and all those kinds of applications as well and any kind that doesn't take a big leap of the imagination to go, well, if it runs native code then you can pretty much run anything. So it's going to be pretty exciting, I think, the kind of services we're able to run there, but absolutely you can, just as you can go and host today on IS and consume it from anything, you can absolutely do that in the Cloud.

Carl Franklin: Sure.

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control suites? RadControls for WPF and RadControls for Silverlight? That's right. If you started building next generation applications, you now have UI components with Telerik quality and Telerik reliability. Both product lines are derived from the same codebase and share the same API so transition is seamless. They have many improvements in the other robust suites for ASP.NET AJAX and Windows Forms also, as well as the intuitive reporting tool, but product alone isn't everything. To jumpstart your projects and help you easily get up to speed with these great tools, Telerik has got a couple of unique training resources, the Telerik Interactive Trainer and Telerik TV of course, which I am the host of. Now, that's what I call summer heat. Go check out all the details at telerik.com, and if you happen to run into those guys, say thanks for supporting .NET Rocks!

Richard Campbell: When are we going to see Microsoft products running on Azure? That's something that Ray Ozzie talked about in the Keynote, that the inspiration of this was the fact that you guys have a bunch of huge web properties and that they duplicate a lot of work so why not bring them up to a common framework.

David Aiken: Yes, absolutely and the underlying platform and technology is absolutely something that we're almost desperate for now at the data center...

Richard Campbell: Right.

David Aiken: And it's like all the different Microsoft sites, and we call them properties for some reason, but all the different properties like MSN autos and the weather stuff and all those kinds of things, all have machines sitting there to handle that maximum load.

Richard Campbell: Right.

David Aiken: And most of the year, you'll appreciate most of the machines that are sitting there and not doing very much.

Richard Campbell: No, and plus the minimum provisioning for a new website even in your Microsoft website, it's got to be so big.

David Aiken: Yeah absolutely and it's got to have all the failover stuff, it's going to be on a different physical locations and all those kinds of things and it's just an absolute kind of nightmare to try and plan and deploy those things. I know that might have actually go into those things and it's scary, it really is, it's really, really painful.

Richard Campbell: I sort of fall into the IT site. This is very much an IT conversation about you

developers go often build these wonderful apps and then say deploy and everything is going to be fine and it's the IT guys that sit back and say how much gear is this, how would .NET business need to be, what's our peak load going to look like, how much time do I have to provision additional resource for it? It is really tough but it also raises the bar like I know you build that app and I know you love that app but I can't deploy that app because the return on investment you're now showing me for this app does not cover its basic infrastructure.

Carl Franklin: Yeah.

David Aiken: Absolutely. So wouldn't it be good if you don't have to worry about all the infrastructure side of it. A couple of things perhaps that stuck out for me at PDC, I think it was a talk while we were talking about, I don't know if it was search live ideas or something, but they recorded some number like they have -- because they have so many servers and drives and everything like that, even just the standard main time, the failure on hard drives meant that they were getting 30 hard drives failures per day.

Carl Franklin: Whoa.

Richard Campbell: Just because there are that many hard drives.

David Aiken: Just building the kind of the resilience in your system to build and keep running the servers with kind of failures popping up all over the places is kind of, you know, it's something that an IT pro has to worry about. I mean...

Richard Campbell: So the math here is the idea that meantime the failure on a hard drive depending on the model is anywhere between 500,000 and 3 million hours. Now, if I have 10 million hard drives, how many are likely to fail on a given day? It's fun math when you get to that scale.

David Aiken: It is. it's kind of scary and everybody does this, everybody kind of -- even in any small kind of 3,000 user thing, you really want to put it on the cluster at the back-end and maybe a couple of front-end web servers and that kind of thing and if you're building those in up-stand and you get hit by, you know, slashed out at this...

Carl Franklin: Slashed out of it.

David Aiken: And all of a sudden you've got twice as many users or five times as many users...

Richard Campbell: Right.

David Aiken: Then it's really a fight to kind of keep up hardware wisely, let alone having to rewrite the software because I know you felt maybe one SQL server would be enough and now you've got two and you need to put some queries to one, some queries to another and how do sync all that are open and it becomes a big firefight and we've talked a lot with customers with those kinds of problems and being told of the pain on that and it's a bit of an eye-opener to be honest and the new kind of the Cloud wall, the plot should really be that you've built your service, you've deploy it and what you do today is you describe what you saw that looks like so we have a service model and you can tell us how many instances of each piece you'd like to run.

Richard Campbell: Right.

David Aiken: And then what we do is we go and provision the servers, we go and set up the road bounces, wire up the DNS's and all those kinds of things that you would have to do and we deploy used service and then we monitor the service. So let's say you've asked for 10 front-ends and 15 back-ends. We keep an eye on that and when we get that hard drive failure, because there is no denying we go and get hard drive failure because things break...

Richard Campbell: Right.

David Aiken: We'll go oops, your 10 front-ends is now 9 front-ends. What we need to do is spin up a new front-end to keep you at 10 so we'll do that automatically and the decision time from kind of going oops, you've gone below your threshold just kind of set in the command away to spin it up. There's probably less time than the email would take to reach you so by the time you read the alert that we send you, we're already in the process of spinning up the new thing. With the hardware advances, we can kind of – well, a lot of manufacturers give you a lot of the insight into the hardware and it's almost like, well, hey, we know this problem because one of the fan is running slow or something.

Richard Campbell: Right.

David Aiken: We're going to have to take that machine out, we can just say, well, let's decommission out that machine and what the fabric will do in the Cloud is it will take everybody running out on that machine, go and put them somewhere else and it's completely the automated process, very, very efficient.

Richard Campbell: How much is the customer going to be involved in that whole process? Why would you even tell me that a machine had failed or anything like that?

David Aiken: Absolutely lots of people want to know hey, you know, some people go, well, how do I know which machines I'm running or things like that...

Richard Campbell: Right.

David Aiken: And it's irrelevant. All you need to know really is that your service is running and normally you have this much capacity in your service and what I mean by that is the model today is very simple but it has been designed to be kind of enable you to build more complex service.

Richard Campbell: Right.

David Aiken: One of the things we want to do is for you to build and describe how you want your service to be run. For example, it's not too unfeasible as to write here's my service, I want to have at least three calls on the front, three instances on the front, I want to make sure that my response time for these calls is less than a second and I'd like you to keep it like that. So it means bringing on more instances automatically, just go ahead and do it but I'd like you to keep my monthly kind of bill less than this amount, not much this value and maybe you send me alert when I hit -- you know, when I get over a set of refresh you send me alert, when I get over more machines you sent me alert.

Richard Campbell: Right.

David Aiken: And then we take a service and we go, we spin up, and then the load starts coming in, we're monitoring the load that gone cranky. We need to pull another one in so we pull another, spin up another instance automatically for you, we send you another work saying hey, you fit this threshold, we spun up another instance and you kind of sit back and get the kind of the emails of the alert saying, oh, we have that three more instances, oh, it's really quite an amount so we took four away.

Richard Campbell: Yeah. I don't know why I would want to specify any number of instances other than one that I would just put in the initial instance and then you figure out how many more I need base on demand.

David Aiken: Yes, absolutely.

Richard Campbell: The other angle on this is, yeah, we have already heard no pricing is identified but...

Carl Franklin: Obviously it's going to be commercial.

Richard Campbell: Eventually yeah, this is going to cost some money.

David Aiken: Yes.

Richard Campbell: We just don't know how much, but the other angle on this is this service level agreement. You know, the other Cloud products out there like it start with an A have had major outages like multi-hour outages so I've got to think if I'm a guy who is selling a product or, you know, relying on this service, there's got to be some kind of service level agreement like I got some guarantees that I'm going to be up. What's going to happen when I'm down?

David Aiken: Absolutely. This question and this kind of discussion comes quite a lot when we're talking to a lot of the area doctors and probably some we're working with and it really boils down to these two angles here really. One is I don't care if you go down but I want to pay as little as possible for my service.

Richard Campbell: Right.

David Aiken: And maybe like hey, if we went down for five hours, heaven forbid, and you know it will be a big deal for some apps but it wouldn't be a big deal for us. We'd just hit nowhere and we do what's best so what while we're down we'll be back obliterating or you know not fine for us but we don't want to pay for an SOA because we don't care about it. Then there's the other angle where you go right. If you're down, I'm down and if I'm down, my customers are suffering and I don't want my customers to suffer. I have to pay a penalty, you have to pay a penalty.

Richard Campbell: Yeah.

David Aiken: So the other side of it is like when we come out with pricing, I would imagine it will be back by SLA's and then when you get into the SOA conversation, different people want different kind of levels.

Carl Franklin: Yeah.

David Aiken: And it kind of becomes a minefield because the thing typically associated with Cloud Computing or utility computing if we bring laughter to them as well because I pay for what I use, but some businesses, they want to go, well, hang on a minute, so my IT forecast for the year is what. You can tell it, you can say it to me, this is how much it's going to cost but then I'm going to sit down and work out how much my app consumes per day for the month or whatever and then figure out what my cost is per year. It kind of becomes really complicated and there are a lot of people saying, hey, can I just buy in bulk and it's kind of almost like a cell phone plan

where you go and buy and you go I'm going to have a thousand minutes and this is going to be the fixed price and then if I go over, then you can charged me differently for that. So there are all sorts of different building and pricing plans that we're looking at as well, and again, what SLA would you have with that and this and all sorts of different things. it's really interesting kind of discussion but I can say we've kind of we're not talking about pricing or SLA's yet but when we do, the two go together.

Richard Campbell: Yeah. I really wouldn't want to compare your pricing model to cell phone pricing.

Carl Franklin: You know the other thing that's really important to say here is it's not a content delivery network, right. It's not like you can take large files and distribute them. It's different.

David Aiken: Yes.

Carl Franklin: Yes.

David Aiken: I said yes, I'm not quite sure what you mean by that.

Carl Franklin: Well, you know, a content delivery network is really for files. So let's say .NET Rocks wanted to put our MP3 files in the Cloud.

David Aiken: Yup.

Carl Franklin: You know, that's not really what it's all about. It's about services, not about large files being distributed like you're not Akamai or...

David Aiken: I would disagree with that because if you put .NET Rocks in the Cloud, and I think you should, then you basically lose any data center requirement first of all. So if you get more uses, and you will do after the show, then you probably need more capacity and in the Cloud, it's a case of going in and saying instead of two, I want three and that's it, you don't have to go on all the hardware, wait for it to arrive, install the OS, install IIS and all those kinds of things. You just go out, let's just have another one there. Blog storage is probably where you'd store all those MP3's and things like that so again you got lots of place to put those files which we replicate and in the future you barely replicates on a GO basis so if you got lots of people from Europe, you can make sure that you've got copies of that data sitting next to them in Europe and so on.

Carl Franklin: So you do have a content delivery network then.

David Aiken: Potentially yes.



Richard Campbell: It's all on how you use it. I mean, this is worth talking through from a .NET Rocks point of view. Maybe we should be on Azure.

David Aiken: Absolutely you should be.

Carl Franklin: The whole thing about going to a content delivery network for us is being able to get good reporting.

David Aiken: Yeah.

Carl Franklin: We need to know how many times a certain show was downloaded.

David Aiken: Yeah. A lot of the business metrics, you're going to have to put in yourself but if there's a metric lot, we bill you one, you can be absolutely sure that you're going to get some deep filled report on that.

Richard Campbell: Yeah. I wonder if we're going to get billed for bandwidth. I mean there are really three different consumables here, right. There's bandwidth, there's storage space, and there's CPU.

David Aiken: Yeah. I would suspect that we'd bill you for all three but like I said we've not announced pricing for any of that so that's merely my speculation.

Richard Campbell: Yeah but that's fair. It's certainly that's an issue and then you get into the reliability of each of those, the availability of each those. Now we're starting to get to sort of defining what the customer is for Azure because part of me just thinks this is the web 2.0 thing so it's the garage developer guy who has got no money, he is trying to do this on the cheap until he gets successful.

David Aiken: That is absolutely one type of customer that we have for this. I've also expand that into your traditional IIS fee. In fact, at PDC one of our launch partners had an application, a service that he could not build without our platform because they need to be build with skill on demand but also they need to have kind of zero footprint into businesses data center. You need to be able to build the kind of say I want to use this application or service and not have to go and add more things to your data center. In fact, one of the customers didn't really have a data center. They might argue with that their rack with two machines on is a data center but I will check out the full armor piece on the Ethiopian government group policy project. It's such a great example of where an ISV is going to build a service on Windows Azure and couldn't really do that without the tried out platform. And then as the Enterprise, I'm going, well, to write, I just want to use extra capacity or I want to build these applications that will allow me to do business-to

business kind of operations or even just get rid of my data centers. We have a lot of enterprises looking at our Cloud and I'm thinking, well, if I move this part of my operations there then it could save me a bunch of money because I don't need to maintain the data center space for this kind of thing so there's a whole bunch of different place for this anywhere from the obvious stand down to the Enterprise, hope to the Enterprise, hopefully.

Richard Campbell: The mere Enterprise. Well, do you think this is also going to be sort of bridging point here between your data center's capacity rather than adding more capacity of data centers, you start putting stuff out to the Cloud. Is the Cloud always going to be Microsoft or are there going to be third parties running this?

David Aiken: At the moment, the plan is to be Microsoft Cloud.

Richard Campbell: Okay. But again, these are just other possible modes to this thing.

David Aiken: It is and I mean if we purely speculate, it would be great to see a Cloud operating system like we have being run by different Cloud providers if you like.

Richard Campbell: Sure.

David Aiken: So we kind of, at the moment, we're running the servers as opposed to just providing the software that runs the service, but if we ever did decide to kind of resell the software so that people could host it, then I think personally that would be a good thing and you could see that different providers could offer different kinds of services. For example, somebody could be like hey, you know, we're on this because our data centers were being certified to this level and we have all these extra things in place for storage and we're going to buy that and then you grab the cheap chip disks and you're like hey, you're going to shatter the machine with another 900 people...

Richard Campbell: Yeah but the price can't be touched.

David Aiken: And have all those kinds of different spectrums but they were never able to build one app that run across the border anyway, kind of how it's appeal thing.

Richard Campbell: The challenge of course for me is that the developer right now is saying I'm committing to a platform that's brand new. The code that I'm writing here right now only runs at Microsoft Cloud, you know, the work that I'm going to do here, so it's really a question of how much energy do I put into this this new in the game.

David Aiken: Yes and that's a great comment and a great kind of thought but I think it's the same of any platform if you look at, let's say, the Google app engine, it has a similar kind of quality about it., it's running at that data center, you'd follow that programming model and so on so there are some similarities in that between them but...

Richard Campbell: Sure.

David Aiken: We can speculate what might happen in the future but today, just to be clear in case this gets how it does, we have no plans to kind of make Cloud available for...

Richard Campbell: Any other way, yeah. That's how it is right now.

David Aiken: Yeah which if we'll announce something tomorrow, then that's something different.

Richard Campbell: Well, and the main reason to jump on now is that early adapters get a jump on their competition. The real struggle you've got is I have a great app idea and I've started to price out what's it going to take to operate the infrastructure for it and it's prohibitive. I'm not going to be able to do this.

Carl Franklin: Yeah.

David Aiken: Yeah and today, you can put together an app and if you want to stay in your garage or in your bedroom on your laptop, build and test it on your local machine, do all the debugging, go hey this is really cool, deploy it to the Clouds on one instance, see what happens, and today it's free so you can really give it a try without any incur at any cost. If the service for the application is successful and you know you have the ability then to scale out in the future, so you know we're growing all the time, we're adding more capacity to our data centers all the time so your service becomes popular, you can scale it up and keep going.

Richard Campbell: Right.

David Aiken: So that's kind of cool.

Richard Campbell: Yeah. Definitely, we're at the early stages here. It's interesting to see what's going to happen next. For me, I'm really excited about seeing Microsoft properties appear under the Azure gallery.

David Aiken: Yeah.

Richard Campbell: Seeing that content there so that you know because I know once Microsoft starts consuming their stuff, it gets good. It gets good fast.

David Aiken: Right.

Carl Franklin: So what's the call to action for developers?

David Aiken: I would say the call for action for developers absolutely is to check out azure.com where you will find links to not only to Windows Azure piece but also the .NET services, SSTS Live Platform Services and so the entire kind of platform that are in there. Download the SDK's. The similar services you need to kind of connect to the Cloud for like the internet service plus the relay. You're going to need a token to access those things.

Carl Franklin: Yeah.

David Aiken: There are instructions on the website on how to do that. For the Windows Azure piece, you can download the SDK and you have the Cloud running on your box so you can start building your app and there are some great SDK's samples in there that will help you get started. We have a turn of hands on labs, that means about 11. We kind of walk you through kind of getting started in all of the different services so I think that kit is linked to from the azure.com site as well and we'll have a link on the show I guess as well.

Carl Franklin: Okay.

David Aiken: But do download that kit, it will help you get started really quickly specially on the storage pieces and some of the other services and keep an eye on the blogs because as we kind of figure things out and as our customers figure things out, we're trying to put it out on the blogs like hey, if you're doing this kind of thing, this is the technique or the approach. You should perhaps take those. So download the SDK and start building some services.

Carl Franklin: All right, David, is there any last minute stuff that you want to mention?

David Aiken: Probably I will single something on my way home but no, I'll not.

Richard Campbell: There's also your blog too, right.

Carl Franklin: Yeah, www.davidaiken.com, let's not forget that.

David Aiken: Yes, absolutely. It will prove myself.

Carl Franklin: Yeah, all right, David, thanks a lot. This is interesting and intriguing stuff and we encourage everybody to check it out too.



David Aiken: Yes, absolutely and great talking to you guys.

Carl Franklin: You too, David. And we'll see you next time on .NET Rocks!

[Music]

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