



Appistry Predictions Webinar 2008

December 18, 2008

Sam Charrington: Hi, this is Sam Charrington and thanks all of you for joining the Appistry Webinar "Forecast for 2009: Cloudy! An Interactive Discussion on the Future of Cloud Computing." We were chatting a bit earlier and we all like the idea of making this a bit of a tradition. I should say welcome to the First Annual Appistry Cloud Forecast Webinar.

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The webinar is going to be conducted just like a panel discussion. I'll introduce our panelists in a second, but each of them will take a few minutes to present one of the predictions. Then, I'll be asking questions both throughout, as well as at the end of the presentation.

Your input is extremely, extremely important in this process. So, please submit your questions as they come up. There is a Q&A panel on the right side of your screen. I'll make sure to work your questions into the discussion.

The best views of slides, we recommend that you view the webinar in full screen. To do this just select "View" from the main menu and select "full screen." Finally, following the webinar all attendees will receive a copy of the slides, as well as the links to the on demand recording, and the Appistry Cloud Computing for the Enterprise White Paper.

So, let's jump in. First, we'll do some introductions. I'm going to be moderating the presentation. This is Sam Charrington speaking. I'm Vice-president of Product Management and Marketing with Appistry. Our first panelist is Kevin Haar. Kevin is the CEO of Appistry. Kevin, why don't you say "Hi" and get folks to hear your voice?

Kevin Haar: Hello everyone. It's a pleasure to be here this afternoon.

Sam: Great. Our next panelist is Bob Lozano. Bob is the Founder and Chief Strategist of Appistry.

Bob Lozano: Hi everybody. Thanks for taking the time. I hope it will be well worth it.

Sam: And finally, Michael Groner. Michael is Co-founder as well and Chief Architect of Appistry.

Michael Groner: Good afternoon, everyone.



Sam: Great. So, we've got a handful of predictions that we're going to walk through for the discussion here. But, one of the things that we have just observed overall is that cloud is in a period of intense growth and intense change. There are a lot of very exciting trends that we're starting to see emerging. Many of these are focused on the enterprise and are really positioning the enterprise to take full advantage of cloud. So, we very strongly believe that the cloud adoption will soar in 2009 among businesses of all sizes, but enterprises in particular.

That really queues up for the first prediction. And Kevin is going to lead us through that. Kevin, why don't you tell us about your prediction around cloud for the enterprise in '09?

Kevin: Well, thanks Sam. I can do that. I'm sure that Michael and Bob will have opinions of their own, relative to this. It's a consistent topic here at Appistry, in terms of why we believe this. It really has a lot to do with the maturation of a whole set of technologies, as well as current business conditions and business necessities that I think are evolving in the market. So, from a technical perspective, we see cloud computing as a convergence of a lot of things that are becoming pretty mature in the marketplace. The first one that people think about is really the maturation of virtualization, both in terms of what virtualized environments can provide, but also what they can't provide.

So, I think that there's a level of comfort and expertise that is developing around virtualization technologies which I think has become an enablement for cloud computing.

I think the other thing that has been happening for some time now has really been the flattening of Moore's Law and the driving of the scale out of processing power. Really, the economics behind that in terms of the enablement of much more aggressive postures in the enterprise about commoditized hardware platforms, scaling those platforms out and using those as a way of reducing capital costs in the enterprise.

I think, one of the other things that doesn't always get connected to cloud computing as cleanly as it should is really the maturation of service oriented architectural approaches. Service oriented architectures have a long way to go and there is a lot of work to do, but I think that the understanding of the value proposition associated with SOA has really taken hold in a large number of enterprises. I think, cloud computing becomes a great execution environment for those kinds of architectures.

There are other things that we talk about all week here, which is the strong desire for simpler development models, things other than what classically was considered full blown J2E implementations and looking at more stateless approaches to building applications and so on.



These have all led to a desire to get to a simpler way of being able to scale applications. I think, cloud computing really brings that to the forefront. If you lay on top of that then the business issues that enterprises are facing, with just the pressure that the economy is putting on businesses and will put on businesses throughout 2009, relative to the cap act and op act expenditures, there is going to be a tremendous amount of pressure to look for ways to cut expenses.

A lot of people use slow downs in their businesses, an opportune to make key changes. A lot of emphasis is on new business models that are much more responsive and time sensitive, really pushing the scalability of applications. When you wrap that all up and then you lay on top of it the fact that security and reliability insurance, along with lock in issues, I think are going to continue to keep the enterprises a little bit away from deploying certain kinds of systems in the public cloud market.

I think, it's going to drive people to private cloud implementations in the enterprise. That's going to be the way businesses learn and experience cloud computing. So, that's kind of the reason why I believe 2009 is the "year of the cloud."

Sam: Now, Kevin you touched on the economy, but net this out for us. Are current economic conditions going to be, ruin the cloud or are they going to hinder cloud? What is the real impact going to be on cloud adoption? We hear this question all the time.

Kevin: Yeah, I think that it's an issue that we're all going know for sure in 12 months, but the fact of the matter is that cloud computing provides a very, very dramatic way of being able to cut costs. And we see with our customers, the ability to cut capital expenditures as well as operating expenditures. I think, a lot of traditional platforms decisions are going to come under pressure that say is there a way we can save money here? And I think that the net of it will be good for cloud computing and I think a powerful push to get people to try something different.

Bob: Well, this is Bob. I think, the price pressure is pretty clear but don't you think that at some level that there is another consideration above that which is risk aversion. People are afraid of making big capital expenditures right now. People, not only are they looking to drive costs down for whatever they do, but they would rather really defer having to make a big, what might be almost be a frightening capital commitment, an operational commitment. I think about what happened with, for example, GOI recently having launched a satellite. All the capital that they had to face because that was an enormous proposition. One of the factors there is the very possibility of enabling your business to do something, but you don't know what the conditions are going to be. Right?



Kevin: Right. I think that's exactly right. I think one of the things that we really pushed here the last couple of years I think is going to pay off big time in 2009, which is really the whole issue of making it as easy as possible to migrate applications into a cloud environment. The only hindrance...

Bob: It's kind of a risk mitigation.

Kevin: The one thing that gets thrown up in terms of the risk issue is, well, how far is it to get there? And I think we have made it so easy for so many applications that I think we have lowered that risk bar tremendously. I think that makes a big difference for cloud computing environment.

Sam: Now, Bob you jumped in there. As cloud takes off and gets adopted, your topic speaks a little bit to who are the winners and who are the losers and what has to change in cloud. Can you speak a little bit to that?

Bob: Sure. I really think what we're going to see this year is the beginning of the unthinkable. The truth is if it happens for a while, then we're going to start acknowledging it, which is the big app servers and the economic franchises behind those are history. They are not going to be history in an hour. And I'm not saying they are going to go away. What I am saying is they are not going to be dominant anymore. I was thinking about this a little bit, in a little bit of a historical perspective.

When we got started, a few years back there, we got started in the early part of the 2000s and we started talking to people about this idea that there was a simpler way that you could just take your business logic, expressed in whatever language you did it in and then spread it out across a commodity platform. We didn't have the word cloud to use.

But, when we talked about that, person after person we were told, this business of the J2E application server at the enterprise and .NET for the Microsoft folks. This is an impenetrable fortress. It has never going to break. It's never going to go away. The reality is in the six, seven that have ensued, what we're seeing is that they are starting.... the cracks are formed.

They actually run far deeper. I think, the reason is cloud is a forcing function, but it's not the only reason. I think when we take a look at it what's underneath this changing mindset. Nobody really thinks that the traditional cluster-centric, big app server is really the right way to go, either from an infrastructure perspective or how you build that. Except maybe applying the traditional relational database. Nobody really thinks that's right anymore.

It's really being driven by scale. If you come to the question when you look at what the design centers were, it was around a small number of big, heavy machines. It was OK to exchange statements and ways and so on. And scale,



when you start talking about driving it up into the thousands of individual computing instances, your using a tradition app server is inconceivable.

So, in a way what J-Boss did by having a more componentized app server was the beginning of that. Now, what we're seeing before our eyes is really the deconstruction of the traditional app server. You see things, people are always talking about lighter weight containers. You see Tomcat being so much more popular for more and more stuff.

That deconstruction is definitely stripping away layer after layer of crumb. Now, something has to replace it and that is where the rising set of these things like what we do are coming to fore. They are coming to prominence because in a way you can think of it... There's a complete mis-match, what I was trying to get to, between the abstraction that the traditional app server world was built for and the infrastructure on which it ran and what cloud provides.

So, it's just not the same thing. Now, people are tearing away the crop a little bit at a time and in the end you're going to end up with a much freer set of choices. You end up with your logic being stripped down without all of the ways to make it reliable, all the ways to make it scalable that were traditional.

Now, you can count on that from the app. I think, that's what's going to drive this. Because those people are no longer beholden to the big app servers. They can sit there and say, well, I got my business logic. I may have it in Java. I may have it in .NET. I may have it in Ruby. I may have it in a zillion other things.

But, I'm going to deploy it on a much more cloud friendly abstraction, one which is far simpler. One that is far more reliable, easier to operate. And have a lot more flexibility. It goes back to that risk mitigation that we were talked about before.

Sam: So, in that description you talked about the thing that comes next is you mentioned what we do. That's the cloud platform. What are some of the other characteristics of that, that cloud platform?

Bob: Well, I think one of the key characteristics is simplicity. Instead of an abstraction where this is all perhaps to think about each of the execution instances on which they are running, each of the servers, they really see one simple execution environment that might be composed out of tens or hundreds or thousands of disposable computers. But, it doesn't matter because they do one thing. It will also to be able to operate itself. The operational people won't have to worry about it, no matter how many there are. There is also a fundamental assumption in delivery of reliability inside that platform, so that in operation what somebody wants to execute a piece of logic and perhaps develop a growing amount of states, it's going to be reliable, even if the individual computer they happen to be running it on now breaks.



I think, when you take a look at the ability to scale out without having to manually coordinate all the individual machines you are working on, the ability to know that that's reliable and the ability to have that operating itself, I think those are some of the real key attributes.

Sam: Well, that is key because more clouds are built on X86 commodity...

Bob: Right. They'll break, right? [laughter] And that's one of the funny things. People when we first got started with this and said we can do a fall tower instead of software level, people thought that was only for the strange, tandem, fixated folks of the world. But, what we've come to see is that is really the enabler to run on a commodity oriented cloud.

Sam: There has been a lot of consolidation in the traditional app server world. You have the Oracle app server and VDA logic and WebSphere and then there were two. And Larry seems to have this real thing against the cloud. [laughter] What's up with that, Bob?

Bob: Well, I think his concern is relatively obvious. If people are building applications that they can be purposed for one cloud or another or maybe even better if they use a cloud enablement layer like what we do. You go anywhere, they are not writing them any check. Right? [laughter]

Bob: It's only for the apps that don't care much about. Now, I think there's another thing underneath that, which is going to bring him under more pressure which the whole data collection. We could talk about that a little bit later in the conversation. But, that same pressure to scale, that is putting all the first casualty if you will, the traditional monolithic app server is got the relational database that is traditionally constructed in its sites now.

Sam: Michael, you have something?

Michael: Yeah, I wanted to throw something in here. This is Michael by the way. Being the more developer centric guy in the room here, I just wanted to throw in... I agree with everything Bob said, but I just take a little different tact at the end of the app server in 2009. And it's just kind of interesting to see some of the things that happened in 2008. As you watch the popular tools that are out there and read through blogs and see how people are progressing in their development environment, you started to see the inadequacy of higher end database and app server systems.

People are constantly looking for ways to take advantage of lower cost, different ways of handling distribution and parallelization. And so we've seen execution tools, programming languages, data caches evolve over the years as people were



trying to solve this problem, get away from the inadequacies that the larger hardware system require and things that they were needing.

So, that trend is continuing. I expect it to accelerate in 2009 and really be... Bob is talking about some of the macro faces of what is tearing it down that you are going to see developers tear from the underneath as well, as they move to other tools and other environments to really accomplish what they want in 2009.

Sam: Now, you guys have been great at cuing up the segues here. How is that... One of the things that... It sounds like you are starting to see, from the ground up and the technology, are efforts around standardization and interoperability. Tell us about your prediction and what you think is going to happen there in design and...

Michael: Yeah. The prediction here is basically about standards in cloud computing and what they mean. And will they happen in 2009? Frankly, in short, I don't think 2009 is the year that we are going to see these standards emerge and be accepted. It is not that people don't want them.

I was recently, a few months ago, back at the Cloud Camp/Cloud Interoperability Forum, where about 50 or so various companies in the cloud space, and actually some power users as well, whether it be infrastructure platform cloud providers; they got together to try to figure out what should a standard be. Do we really want it? Is it time for the standard, yet?

The basic consensus in the room was, yes. On the one hand, vendors don't love standards, because it means that you can move between different solutions. You don't get that lock-in. But, we all know that there is a large population of customers who won't feel comfortable moving into an environment until they have the opportunity to choose and to move back and forth between different players.

There was a consensus in the room that it is going to happen. But, in looking over the environment, I just don't think that 2009 is the year that we are going to see that standard take place.

Why is that? When you read through the blogs and such, we are only just coming to consensus about what a cloud is.

[laughter]

Michael: It is still nascent. People are still trying out new combinations and new patterns about how the to do the best solution in the cloud environment. It is coming. I expect, like I just said about tools, that this is going to happen organically. Companies are going to come up with solutions. Some parts of it are going to stick and some parts aren't. We are seeing it already. Just recently, at VM World, VMware announced with their vCloud initiative the vApp model, where someone could declaratively put tools together. Declarative models for seeing



what systems and tools you need so that the orchestration tools can try to handle it...

Elastra has their cloud computing mark-up language. 3tera has come up with an infrastructure oriented in Cloudware attempt. These things are starting to come out there. People will try them. People will view them.

Again, some of them are going to be thrown up against the wall. People are going to try them out. We are really going to see the maturation of this effort probably in 2010, as these things really start to come together. You know, it is a very complicated issue. What do we want by a standard?

There is the question of the infrastructure clouds and the platform clouds. The infrastructure clouds being the clouds like the EC2-like model, where you are dealing with computational systems orchestrating VMs and getting them dynamically and renting storage on F3 or something like that. You see it in Goger, you see it in SkyCAP - being able to rent dynamically these pieces as you need to scale up and down.

And you see the platform pieces of cloud computing. Taking these, once you get the resources from the infrastructure layer, tying them together into that single hole, that platform in which your applications can run, and looking at the single system. Even though there are obviously large numbers of disparate resources underneath.

The problems of tying these together - the standards about - when you need what pieces of infrastructure, when you need which parts of application, how to watch, how to scale up and how to scale down... These are the challenges of 2009. Probably by the end of 2009, we will be getting there. Again, I think we will see it in 2010.

Sam: That resonates with what I hear folks bang out in the industry, as well, in terms of now is really the time for cloud innovation. Standardization will spring out of the innovation. But, I have also seen that the standards tend to happen at the bottom layers and work their way up. With that said, where do you think standardization will happen first?

Michael: Oh. What we are going to see is... I do think that we are going to see it in two elements, first. Again, it is really going to come down to the platform versus the infrastructure. You are going to start to see systems that start auto-scaling and start, on the infrastructure side, auto-scaling and...

Sam: You are talking infrastructure, here? Not the applications?

Michael: Yeah. I am talking infrastructure first. You are going to start seeing these systems in the declarative pieces that these infrastructure plays are going to



ask for administrators and developers to put forth, and to start describing those. We are going to see a platform layer where various tools of various - I don't want to say OSs - operating environments will start asking the application developers, the system administrators, you know... What are the building blocks of your app? How do we tie these things together?

Again, that is kind of where you are starting to see a bit of the commonality already. But, it is going to take awhile to evolve. We will see it coming.

Sam: OK. Great, great. The next one we have here is Kevin, talking about HP and changes in the middleware space. I guess, Kevin, I will turn this over to you with a big: Huh? HP? [laughter]

Sam: Middleware?

Kevin: I know, I know. This is going to sound like... I am probably going to have some fondness in my heart. I left Hewlett-Packard after starting my career there a long time ago. [laughter]

Kevin: Going with this, I still have a lot...

Michael: What were they making then? [laughter]

Sam: Fill us in on this idea. It sounds like you are going to tell them why they should be here.

Kevin: Yeah. I know. I think this is tough one. But, HP has actually tried to move into the space a couple of times with not necessarily a lot fanfare and probably less success. I think, if you look at the dynamics here. You say that, again you realize that as we do, cloud computing will in fact cause the biggest disruption in the middleware space and also the data space. I think, we are going to see it first in the middleware space, but what our industry has seen in 12 to 20 years. I could argue about how long it's been.

[laughter]

Kevin: It has been a long time. I think that you are going to see a lot of disruption, relative to the big, heavy app servers. I think, they offer very little or maybe absolutely negative value in the cloud.

Michael: That's assuming that they are free. [laughter]

Bob: Yeah. If you have to pay for them, it's really not good. [laughter]

Kevin: I think the lighter app servers, like Tomcat, Apache and IS-like technologies. They are all going to do, I think, much better in this environment.



Also, we talked about some of the lighter programming methods. There are more stateless approaches. There is just a lot of pressure on the way that people are going to view the middleware layer. If you throw on top of that, as we believe not long after that, relational database technologies have come under more and more pressure. There is an opening that is coming here relative to the middleware space.

Look at who is going to respond to that. I think, Oracle and IBM are both in the situation where they have tremendous install bases and tremendous customer needs to take care of. I know from my experience in the rational software days that when you have a tremendous amount of success with a product line, it is a great thing.

But, it also becomes a very huge problem in trying to migrate that to be something different from what it was originally intended to do. You customers are depending upon it being the way that it is. It is very difficult to adjust that to a new market trend. And I think that they are going to struggle with that.

You look at HP. To a degree, their failure in the middleware space becomes an opportunity now, where you can look at it with a really fresh perspective. Look at HP's infrastructure things. They have a lot of power in the infrastructure tier. They have great operational support, with their investment in ops ware, the open view technology, and the other things that they have.

They just went out and acquired EDS. They have a tremendous amount of implementation capability. The big missing [indecipherable 27:36] rate chief, HP, really becomes the position in the middleware space. It is available.

I think that, more than any other platform provider that is not in that space, they have the cleanest opportunities to enter that space in every dimension. I don't think that they are going to miss that window again. That window does not open up very often.

And I don't think it is a window. It is like a highway.

[laughter]

Kevin: I just don't think that they can miss it. I think they have struggled in those attempts, but I don't think there has ever been a cleaner chance to jump in the middleware than there is right now. And I think HP should be the one that does it.

Michael: I am just curious. Who else do you think would have a crack at it? Because I think that it is theirs to lose, but I think they can. [laughter]

Michael: My guess is that they will. OK? Despite all of my friends that I still have there and so on, I wonder - who else... The opportunities are out there. Could it



be, you know... I think Michael will have another prediction and suggest that Amazon will make the play. Could somebody like that have enough credibility in the enterprise to really go into the private cloud world? Or something like that... Or who else could it be? Right? Does it have to be somebody like that? Could it be some crazy, like...

Kevin: Wal-Mart.

Sam: No, I think... I'm sorry, go ahead.

Bob: I think, that's a great question. When I heard you describe this prediction, I got two things out of it. "A" was you think if they can see, but also the idea of the gap. There is the hole in the line, and someone is going to drive through it. And, you know, the question is: Who? A follow-up question is really, what stars would really have to align for it to be HP? [laughter]

Bob: What do they have to do to really execute on this opportunity? Who are the other players that are waiting in the wings and are well positioned and will try to capitalize on what some may call the weakness of Oracle and IBM and the traditional middleware players on the market.

Kevin: Amazon is a great example of somebody that could clearly enter. But, their strengths, obviously, are not in the enterprise. Right?

Bob: Right.

Kevin: When you look at it from a distribution perspective, when you look at it from the perspective of complementing the other parts of the product line, when you look at it from the standpoint of who is there with the enterprise customer...

Michael: It's a cultural thing, sure.

Kevin: Absolutely. And, of course, it has been a long time since I worked at Hewlett-Packard. But, to me, it is a small step. [laughter]

Kevin: Hopefully, in the right direction. Even though I think, technologically and philosophically, Amazon may have more reason and emphasis to be there. There is not the fear of failure that I think exists a little bit with HP. But, there are all kinds of other components that are necessary to jump into that space that Amazon does not have. If you are going to go out and buy EDS, you know...

Michael: You better do some work.

Kevin: You better do something with it. I think, one of the things... Besides being a surfaces company, enabling them with a broader base of technology and



software, the key issue is that HP has been out buying software vendors. They are going to continue to do that. I think, it is the time to make that play.

Michael: Let me throw a bomb in here real quick. Some would say, at least if you read the blogs and read the news coverage... Some would say who cares about the enterprise, anyway. Right? Enterprise 1.0. Enterprise is dead. Cloud is really about Animoto and Twitter and Facebook... How do you respond to that? Should anyone care about the enterprise?

Bob: Only if they want to make money. [laughter]

Bob: I think that there definitely are great new enterprises coming out of cloud computing. Right? Great new business models... It is going to be very disruptive. Those are lots of exciting companies. And there are going to be more. We talk to people every day who have new enterprise ideas that just would not have been possible five years ago.

Kevin: Right.

Bob: So, that is going to happen. But, at the same time, it is a little bit like all of the excitement that came around the Web the first time. The prediction that bricks and mortar companies would no longer exist has not quite come true. Right? There are just a few very large enterprises. [laughter]

Michael: I was thinking about this last night. Obviously, with all the economic mess, Bob, with all of the economic disruption, you are thinking will I have anybody to buy a car from. You know? In the coming year... [laughter]

Michael: Toyota... This really cracked me up. Toyota is on record now as supporting the US bailout of US car companies. They know that they need competitors. They can't just beat everybody up. The point is, last night, I was sitting there and I was installing a new washer and dryer. What do you think the chances are... Somebody had to make that. Right? What do you think the chances are, maybe, that this company which I'd bought it from is going to fall apart?

The distribution model is completely different. But, I'm probably not going to buy, in the near future anyway, a washer and dryer which were made by Twitter, for example.

[laughter]

Michael: There you are. Or even Google. They may sell it, but they probably didn't actually buy the steel, bend it, put it together, and deliver it to my house. I still had dirty clothes that needed to be washed.



Kevin: Yeah. There is obviously the general feeling that more and more of those enterprises will find a way to host their capabilities through software service companies or public clouds. That truly will, in fact, happen. To most of the major enterprises, to most of the major governments, to most of the major enterprises around the world, the fact is that certain kinds of applications, certain kinds of data are incredibly essential to the way they do business. They are going to take a hard, slow look. They are not going to do things that lock them in.

I think that they are going to be, still, the major innovators for a very, very large number of applications. I think that the middleware market is still going to be critical. It is going to be critical in the public cloud space. It is going to be critical in the next generation data center. I think it will look like a private cloud.

Sam: Right. Thanks, Kevin. For our next prediction, we are going back to Michael, and I think taking a little bit more of a technology tack. Why don't you tell us about your prediction, here, Michael?

Michael: Yeah. This is Michael, again. This prediction is specifically about Amazon and their cloud offerings in 2009. You know, in many ways, Amazon has been the poster child for cloud computing at the beginning. They were the first out with S3, their storage environment and the infrastructure, followed shortly by EC2, the ability to dynamically rent and spin out virtual machines for your computational processing. Most of the time, people think of Amazon cloud offerings as being in the infrastructure there. We talked before about the infrastructure cloud dealing with the renting dynamism at the heart, at virtual layers of data and computation.

Kevin: The hardware itself?

Michael: The hardware itself.

Kevin: The machines that...

Michael: Yeah. I think what we are going to see in 2009 from Amazon is that they will continue in this space. They will keep building upon it. What we are going to see is them move up the stack, if you would. We are going to see them moving more into the platform layer. This is the part of the cloud system in which you tying these resources together and making it appear as common systems. Then, the developers and the administrators can take care of it more simply and straight-forward.

In fact, I think we are seeing it already. I don't think that Amazon gets enough credit for the efforts that they have had in this area. In 2007 and 2008, they have been working on what they call their simple cuing service and, now more recently, their simply DB - the first non-relational cloud oriented data-store for handling whatever non-relational data that you need to call out.



These are the beginnings of the tools that developers are going to need to build their applications. It is one way, I should say, that a developer needs to tie together the infrastructure to make it look like a single system. Whether it is a cuing system that creates your publish/subscribe model... Or, again, the simple DB where you are removing a tie against a single relational database that you might have been stuck on...

They are clearly moving up the stack - helping to build these tools that developers would have had to use a higher caliber developer to tie these systems together if you were doing it privately, if you were tying it together.

The recent blog posts about releases from Amazon hint that there are more things coming out in 2009. For example, we are going to see more cloud monitoring and management tools coming from them, single dashboards to be able to take care of your instances, more load balancing of requests and, very interestingly, the automated scaling as we see machines spin up - as EC2 instances get busy.

Again, the beginning of a standard for seeing when something gets busy, and spinning up a new instance and tying them all together... These are the beginning of these platform tools. They start to feel like infrastructure and then you notice that they are helping you to build the platform to get it together.

Amazon is pushing in this space. It is interesting. You can see the heavyweights. You see the Googles. You see the Microsofts. They are all pushing these new models, the Google App Engine, the Azure platform of Microsoft.

They are all coming at it trying to help the developers get these tools together. But, I still see Amazon taking this lead that they have as one of the big boys and continuing, pushing it through and keeping it going. I expect to see the most out of them in 2009.

Sam: A couple of follow-up questions... One is, who went there? They have tried to stay agnostic so far. They have built out a bit of a partner, an ecosystem around folks like RightScale. There are some other tools out there. Elastic Bottom, Firefox... They are all trying to help folks make EC2 actually view the world [laughs].

Michael: Exactly.

Sam: Are they easy to work with? How does Amazon pushing into this area really impact that ecosystem?

Michael: Yeah. I know. This is clearly a dangerous line that Amazon is walking here. They are getting a lot of play of many vendors building solutions and value-add on top their infrastructure. Again, you are talking about the RightScale. We



have a version of our software that we can run on top of Amazon's systems. We get very excited about helping build that platform on top of their infrastructure. I guess for now, I hope to see that it is a competition that pushes all features forward.

We are all looking to create this great ecosystem for cloud solutions. Each one of us has our own angle on it that will serve us for various needs. Of course, we would all like to be the one source. But, there is always a multiple layer.

Yeah, I do think that Amazon needs to be careful. We have seen Google with their efforts in 2008, maybe tied too tightly too single platforms and single solutions and maybe not being... One of the reasons why App Engine is there is because it is Google, but you don't hear a lot of motion in that area. I could keep on going.

Bob: This Bob. I think the reason that it is, of course, is that as you move up the stack, the whole business philosophy becomes a real serious problem. The economical case that people cited during the first couple of years of cloud is that, if you are a start-up, why in the world would you buy a lot of infrastructure? Why not use this? Of course, that's true.

And it is particularly true with infrastructure. But, as you move up to these platform tools and beyond... Right? People build with them. And where else are they going to go?

If you build an App Engine, an app application in App Engine [laughs], and then do something crazy like store data. And then you want to get it back. Then you are going to need a BigTable. Right? Where else are you going to get an instance of BigTable if you decide you are not happy with App Engine and you want to move someplace else?

One of the reasons Kevin cited of having to pay to have it be sensitive or something like that. Google... On more than one occasion, I have seen... I remember a structure when one of the BigTable folks would sit here and try to make the case that well, you know, you can just do something different. Well, what?

[laughter]

Bob: My point is that when you go up the stack, you are causing applications to be so intertwined with that particular as-of-service instance that the flexibility that enterprises have always looked for and valued, and in fact with most organizations, just isn't there. That is where I think... This year I think we will start seeing a real desire to enable applications that are native in this world - in this public world, in that public world or in their own private instances - and not have to change to do that.



Sam: You have brought up a couple of really interesting points here. Before I ask those, I want to remind everyone to use the Q&A panel on the right hand side of the screen to submit questions as we go. A lot of great questions so far... We would really like to hear everything that is on your mind. So, get those questions in. A couple of things that came to my mind... The first is portability. Maybe we will table that for a second, actually. Because the other issue is data.

Bob: Yeah.

Sam: You talked about BigTable. Michael mentioned Simple DB. Somebody wrote a blog based on, I think, a presentation that you made...

Bob: Yeah.

Sam: ... Or something like that. It talked about...

Sam: Larry Ellison dying. [laughter]

Sam: Maybe that is why Larry doesn't like cloud light issue. What about the cloud and data? Is everyone moving to... Is the traditional relational database dead, along with the app server? God, why don't you guys predict that? [laughter]

Bob: Well, I think because people... Their heads would just spin off, like the old Arnold Lemmings games and things like that. But, I think Werner Vogel... God bless him, Werner is an entertaining fellow. I think, they have done some great work over there, but... This is Bob speaking. You know, I've heard him on more than one occasion. I have agreed with this for quite some time. At some level of scale, the problem, the bottleneck, or the barrier that you have to get through always comes down to the database. For most of the problems that we deal with...

I know you can construct, modeling simulations where that won't be the case and so on. But, it is always about... For most enterprise applications, for the vast majority of the time, at some level the database becomes the problem. I think the reason why... I think at a very base, core reason why the relational database starts to come under fire is that a lot of what happens to enable scale is about respecting the independence of the problem.

Kevin touched on people talking about stateless developing... I think about it as keeping the commonality of the data. What happens is that by habit and by deep cultural roots for 25 plus years, we have always been taught that you normalize the data, you throw it in a relational database and then you do something.

The problem with that is you have now introduced a dependency between data that was never dependent before. Because now it has the commonality of being in



the same database. Now, you are going to have to do joints. You have to do something like that.

It is interesting where you start to see it. I remember there was a conversation over the last couple of years with people who have tried to scale. I remember the instance of Dig having to do this. They were based on MySQL. They started scaling. They talked about sharding the database vertically, horizontally and others.

In the end, when you looked at what they were doing... They were using a relational database as a blog store. That is a really bad idea.

[laughter]

Bob: You know, you have this relational infrastructure, and you are making an object and that is before that. If you want another one, then you do it in another one. Sometimes you can have different kinds of those. The point is, abstraction is starting to lose its value. That becomes a problem. And it has really been driven by scale. Product exacerbates that because it enables scale.

Sam: Can we... I see a lot of nodding heads here. Can we agree that maybe the relational database won't die in '09? But, there is also kind of a chink in the armor there?

Bob: I think it has a chronic disease.

Kevin: The chink in the armor - it will be in the prediction by '10 or '11. [laughter]

Sam: Great. We are winding down a little bit, here. I have the opportunity to toss out the bonus prediction. That is, that Jack Bauer will use the cloud on "24." I'm trying to keep it light here, folks. I am actually a big "24" fan. It always drives me crazy when he says, "Chloe, open up a socket to the vision." What the heck does that mean, right?

My prediction is that this season, he is going to say something about the cloud. How he will use the cloud, I don't know. "Chloe, use the cloud to figure out how this terrorist..." "What's the drive time polygon radius?"

[laughter]

Sam: "Where the bottom might be, or something like that..." You know, I am joking here. But, I think that the broader prediction actually is that cloud will start to penetrate the mainstream. Right? We are already starting to see... I think it was CNN that regularly talks about Twitter now and uses Twitter. We will start to hear the notion of a cloud percolate into the mainstream. And I think that's important



because all of us - three out of the four of us are on Twitter. I'm not pointing out anyone here, Kevin.

[laughter]

Kevin: I think you may have. I'm not sure I know where I am. [laughter]

Sam: Well, that's something else. But, for us in the industry, there's always the risk of the echo chamber, right?

Kevin: Right.

Sam: We're all on Twitter all the time talking about cloud.

Kevin: And who are we? [laughter]

Sam: Exactly.

Kevin: I think it's weird. Think of a Twit. [laughter]

Sam: So, there's always that validation question, right? Is that real. And of course the true validation is, are people going to pay for it? And we're starting to see some of that. But, there's also a broader question, which is: does it have any meaning to my mom? Does it have any meaning to the vast majority of regular folks? There's a lot of things in the technology world that kind of never cross that chasm. Routers don't really cross that chasm. But, cloud is, I think, in kind of unique position to have some awareness on kind of the general populace. And I think '09 is the year that starts to happen. And Bower is going to help make that happen.

Kevin: He's going to make that - yeah.

Sam: That's Sam's prediction here.

Bob: Famous closing prediction. I don't know about "24," but a plug for "Terminator." "Terminator 3," had - without using the word "cloud" - the idea, right? But I think the reason for that, and that's really an important point, all kidding aside - is that even in the technical community, it's becoming rapidly part of the overall conceptual framework. And where we have first seen it over the last year plus, was when we first got started - to tie back to one of the earlier discussions - if you said, "Why don't you deploy this application on 5000 or 10,000 things that might break, so that you can count on it." People would think that's crazy.

Kevin: Or even five or ten.



Bob: Or even 10 or 20 or 30. And I remember even one of the people who now work here, when we first had that conversation, he said, "No enterprise will want to deploy that application on a hundred machines." This was 2002. Because of the operational component. But, I think what is the same thing driving this prediction is that people use Google search, of course, and they use whatever cloud-based email they use, and so on. And they might not use the term, but they understand that it's possible to do things at very large scale and not care where they run, and be able to reasonably count on them.

And that permission to think this way - in fact, we've seen it in a material way in many of our discussions within the industry, where an enterprise that might not have thought that way two years ago says, "I realize that people are going things on the kind of mega-scale like Google and Amazon, so I'd like to do the same."

And that took a lot of time to start. I think that's what we're seeing here, is that kind of broad permission to think of applications this way.

Sam: That's great. So, we're ramping down here. I just wanted to make sure everyone has our contact info. We've all got blogs and Twitter IDs there, except for Kevin. But, you can feel free to ping us and use this opportunity, if you've got any more questions, shoot them in via the Q&A panel. We do have a question here. Let's see. Ah, so the question is about predictions about cloud and mobile markets. Anyone want to take that on? Cloud and the mobile industry.

Kevin: There's probably a little bit more. Let's see what the whole one is.

Sam: Where does cloud go in these markets? What's the impact of cloud in this market? You know, one thing that I thought was interesting was, I forget who did it, but when Android came out....

Kevin: That was the neatest.

Sam: What's the company?

Kevin: [indecipherable 52:07].

Sam: When Android was getting a lot of press, they jumped on the opportunity to announce - we'll they call it an Android grid. And you can kind of imagine extending that to an Android cloud. And that's actually kind of literally a cloud. It's like a meta-cloud, a cloud of the clouds.

Kevin: Right.

Sam: But you have all these - are they Linux? Linux boxes kind of flowing on the mobile network. I don't know if that's what the questioner is asking about, but that's one kind of interesting.



Bob: This is Bob. I think, that's the one thing you can say it's not going to be. Because the dumb thing about that is battery life is the constraint there. When I use an iPhone 3G, I charge up four times a day. So, I am not going to want to contribute cycles so somebody else doesn't have to charge their phone. That doesn't make any sense. Now, having said that, as a broadcast activity with a good visual device, all the services intrinsically are apt to be out there. I mean, by definition. So, I think that if you take a look at the first generations of applications on Android and on the iPhone, and so on and so forth, that are reasonably rich and can actually make use of the kind of aggregation you can do on the cloud and so on and so forth, those are happening.

And I think, it's funny the ones that pick up. I think we were just talking about - on a lighthearted note - Ocarina, in the iPhone world. And that ability to be connected to whoever. And that's fine. The first year applications may seem funny and people try them out and all that, but over this year and the next, I think we'll start seeing ones that you just can't do in other ways.

Kevin: Right. We're going to see a tremendous number of cloud activity based upon the availability of local devices.

Sam: Kevin? This is Kevin speaking.

Kevin: Yeah, I'm sorry. But, we see it already. People are trying to enable applications for the cloud for a lot of times to actually enable more mobility for the devices that are the end points for their clients. So, clients are moving away from desktops and laptops, so trying to figure out how you bring that information to the phone. And that's driving a lot of these cloud implementations that we see. I think, the other places you see it is things like text messaging platforms and multimedia messages.

Sam: The volumes are going through the roof, right?

Kevin: The volumes are going nuts. All the telecommunication platform providers are making that more and more available and offering unlimited volume to their customers. It's driving volumes. And as those economics come down in terms of the cost of using text message or multimedia message as a platform to distribute information, you're going to see more and more applications take advantage of that as a vehicle for being able to distribute information from cloud-based apps. I think, you're definitely going to see it.

Sam: So cloud, and the economic value proposition that cloud offers becomes an enabler for dealing with the volume of SMS messages and mobile video and all these other things.



Kevin: We're already working those apps. It's people that need lots of scale and need it fast and need to be able to go crazy with it.

Sam: Great. So, we're unable to take any more questions, but thank you all very, very much for joining us. Again, following the webinar, everyone will receive a copy of the slides as well as the podcast, the on-demand version, if you wanted to hear any more of these guys blabbering. But, this was a lot fun, and I'm looking forward to doing it next year. If you've got ideas for other topics for us to do, shoot them over.

Kevin: Thanks, everybody.

Bob: Hey, thank you.

Michael: Take care.

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