

## ***Linthicum's Latest Book: SOA and Cloud Should Intersect for Productivity Benefit to Enterprises***

*Edited transcript of BriefingsDirect Analyst Insights Edition podcast, Vol. 45 with consultant Dave Linthicum on the convergence of cloud computing and SOA.*

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**Dana Gardner:** Hello, and welcome to the latest BriefingsDirect Analyst Insights Edition, Volume 45. I'm your host and moderator [Dana Gardner](#), principal analyst at [Interarbor Solutions](#).



This periodic discussion and dissection of IT infrastructure related news and events with industry analysts and guests, comes to you with the help of our charter sponsor, Active Endpoints, maker of the ActiveVOS and visual orchestration system, and through the support of TIBCO Software.

Our topic this week on BriefingsDirect Analyst Insights Edition, and it is the week of Oct. 12, 2009, centers on [Dave Linthicum's](#) new book, [Cloud Computing and SOA Convergence in Your Enterprise: A Step-by-Step Guide](#). We're here with Dave, and just Dave this time, to dig into the conflation of SOA and cloud computing. Welcome back to the show Dave.

**Dave Linthicum:** Thank you very much, Dana, thanks for having me.

**Gardner:** Congratulations. I know producing books like this is bit a like gestating and giving birth, so it may be as close as we guys can come to that experience.

**Linthicum:** Yeah. I'm already having postpartum depression.

**Gardner:** So, you're out with a new arrival and this is part of the [Addison-Wesley](#) Information Technology Series.

**Linthicum:** That's right. It's my fourth book with those guys, starting with the [EAI book](#) back in 1997.

**Gardner:** But, that's still moving off the shelves, right?

**Linthicum:** It sure is.

**Gardner:** When is the latest book available? How can you get it and what is it going to set us back?

**Linthicum:** Cloud Computing and SOA Convergence for Your Enterprise is available now. You can get it [on Amazon](#), of course, for \$29.69, and there is a [Kindle edition](#), which, I'm happy to say, is a few bucks less than that. And, I've even seen it on [Buy.com](#) for \$26. So, get your best deal out there.

**Gardner:** For those of our listeners out there who might not be familiar with you -- and I have a hard time believing this -- why don't tell us a little bit about yourself and your background, before we get into the timely tome that you've now developed?

### *Where Web meets enterprise*

**Linthicum:** I've been a distributed-computing guy for a number of years. I've been a thought leader in this space, including writing the EAI book, which we talked about, back in 1997. I was CTO of [Software AG](#), it was called SAGA then, and also CTO of Mercator, and then CTO of Grand Central.



I was CEO of a company called Bridgeworks and then founded my own consulting company called David S. Linthicum, LLC and ran that for any number of years.

I'm primarily focused on where the Web meets the enterprise and I've been doing that for the last 10 years. As the Internet appeared on the scene, I realized that it's not only just a great asset for information, but a great asset where you can put key enterprise applications and post your enterprise data.

There are lots of reasons -- economies of scale, the ability to get efficiency in reuse, the ability to rapidly provision these systems, and get out of the doldrums of IT, which a lot of companies are in right now.

[Cloud computing](#) has the opportunity to make things better. The purpose of this book is getting people to look at that as an architectural option for them. In the book, the step-by-step guide provides them with steps that it takes to understand your own issues, your own information, your own data, and your processes, and then figure out the right path to the cloud.

**Gardner:** It seems that cloud has also, just in the nick of time, come along to give [service-oriented architecture \(SOA\)](#) a little bit of a boost and perhaps even more meaning than people could conjure up for it before.

**Linthicum:** SOA is the way to do cloud. I saw early on that SOA, if you get beyond the hype that's been around for the last two years, is really an architectural pattern that predates the SOA buzzword, or the SOA [TLA](#).

It's really about breaking down your architecture into a functional primitive, or to a primitive state of several components, including services and data and processes., Then, it's figuring out

how to assemble those in such a way that you can not only solve your existing problems, but use those components to resolve problems, as your business changes over time or your mission changes or expands.



Cloud computing is a nice enhancement to that. Cloud doesn't replace SOA, as some people say. Cloud computing is basically architectural options or ways in which you can host your services, in this case, in the cloud.

As we go through reinventing your architecture around the concept of SOA, we can figure out which components, services, processes, or data are good candidates for cloud computing, and we can look at the performance, security and governance aspects of it.

### *Architectural advantages*

We find that some of our services can exist out on the platform in the cloud, which provides us with some additional architectural advantages such as self-provisioning, the ability to get on the cloud very quickly in a very short time without buying hardware and software or expanding our [data centers](#), and the ability to rapidly expand as we need to expand basically on demand.

If we need to go from 10 users to 1,000 users, we can do so in a matter of weeks, not having to buy data-center space, waves and waves of servers, software, hardware licenses, and all those sorts of things. Cloud computing provides you with some flexibility, but it doesn't get away from the core needs to architecture. So, really the book is about how to use SOA in the context of cloud computing, and that's the message I'm really trying to get across.

**Gardner:** For some folks, the SOA adoption curve perhaps didn't grow as fast as many expected, because the economic impetus was a bit disconnected. Perhaps, it was too far in the future to make direct connections between the investments you would make in your SOA activities and the actual bottom line of IT. Then, cloud comes along. One of the rationales for cloud is that there is an economic impetus.

Of course, not everyone agrees with this. Not everyone agrees with anything about cloud, but if you do cloud correctly, you can cut your utilization waste, reduce your footprint and energy costs, offload peak demands on an elasticity basis, perhaps to third parties, and you can outsource certain apps or data to third parties. Is there an economic benefit from cloud that helps support the investments needed for good SOA?

**Linthicum:** There is, because one of the things people got wrapped around the axle on is having to reinvent their existing systems and go through waves and waves of software and hardware purchases. That became economically nonviable. It was very difficult to figure out how to re-do your architecture, when you had \$15-20 million of hardware and software in data center and personnel cost to deal with in support of the new architecture, even though the architecture provides more of a strategic benefit.

As we move toward cloud computing, there are more economical and cost-effective architectural options. There is also the ability to play around with SOA in the cloud, which I think is driving a lot of the SOA. In fact, I find that a lot of people build their first initial SOA as cloud-delivered systems, be it [Amazon](#), IBM, [Azure](#) from Microsoft, and some of the other platforms that are out there.

Then, once they figure out the benefits of that, they start putting pieces of it on premise, as it makes sense, and put pieces of it on the cloud. It has the tendency to drive prototyping on the cheap and to leverage architecture and play around with different technologies without the investment we had to do in the past.

It was very difficult to get around that when SOA, as many of the analysts were promoting it, was a big-bang concept and a huge systemic change in how you architecture. Cloud provides a stepwise approach to making that happen. It's much more economic, much more efficient, and it really allows you to play SOA success holistically off of a little success in using the cloud.

### ***Game changing approach***

**Gardner:** Something occurred to me that seems to be a game changing approach or aspect of this. For so long now, people have looked at the total costs of IT, and they went up and up and up. Even though you had things like [Moore's Law](#), commoditization, and maturity that drove some cost down, the total nut of IT for many companies just kept seeming to grow and grow as a percentage of revenue. This, of course, is not a sustainable trajectory.

It seems to me the cloud and SOA as this dream team, as you point out in your book, perhaps provides this inflection point, where we can start to decrease the total nut of IT, rather than just certain aspects of IT. Does that make sense?

**Linthicum:** It makes perfect sense, and I promote that in the book. One of the things I talk about in Chapter 1 is how things got so bad. The fact of the matter is that we have very ineffective states within the IT realm.

People look at IT and at the movement that's occurred over last 20 years in the progression of the technology, but the reality is that we've gotten a lot less effective in providing benefit to the bottom line of the companies, the missions of the government organizations, and those sorts of things. We need to do better at that.

Ultimately, it's about reinventing the way in which we do IT. In other words, quit thinking about buying the latest and greatest solution and dragging it into the enterprise and having another 20 racks of servers in the data center to support those things that almost never go away. You're getting to a much more complex inflexible state that's not able to change itself or adapt itself to changes in missions or changes in the business. That's just not sustainable in the long-term.

In fact, one of the things I urge IT people to do is to go to a CIO or a COO conference and start talking to them about their IT infrastructure, especially at the cocktail hour. You'll find that it's not a very popular group within most companies and it seems to be, in many instances, the single most limiting factor for them procuring for the companies and growing the business, because of the latency that's in IT.

We've got to stop the insanity. We've got control IT spending. We've got to be much more effective and efficient with the way in which we spend and leverage IT resources. Cloud computing is only a mechanism, it's not a savior for doing that. We need to start marching in new directions and being aggressively innovative around the efficiency, the expandability, and ultimately the agility of IT.

### *Where the cloud fits*

**Gardner:** Now, looking over your book, Dave, I was impressed by the logic, the layout, and the order of things. You've got a certain level of background and premier information in couple of these chapters on SOA that perhaps we could have been just as well reading in 2005, but the way it fits together is quite interesting. On page 33, you get into when the cloud fits.

That's very much the topic of the day. I speak to a lot of people. Everyone has [grokked](#) this general notion of cloud. They understand the private, the public, and "[everything as a service](#)," but everybody says, "Yeah, but no one is doing it yet."

What is the right timing for this, and what is the right timing in terms of SOA activities and cloud activities, so they go hand in hand? Are they linear and consecutive? What's the relationship?

**Linthicum:** They are systemic, one to another. When you're doing SOA and considering SOA within your enterprise or agency, you should always consider cloud as an architectural option. In other words, we have servers we're looking to deploy in middleware, we're looking to leverage in databases we're looking to leverage in terms of SOA. It's governance systems, security systems, and identity management.

Cloud computing is really another set of things that you need to consider in the context of SOA, and you need to start playing around with the stuff now, because it's so cheap. There's no reason that anybody who's working on an SOA shouldn't be playing around with cloud, given the amount of investment that's needed. It's almost nothing, especially with some of the initial forays, some of the prototypes, and some of the pilot projects that need to be done around cloud.

One really is a matter of doing another. I found out that for people who were deploying SOA their initial success has the tendency to be at least a pure SOA play, as the tendency to be cloud-based. We're doing lots of things in pilot projects that are cloud-oriented and then figuring out how to do that at the enterprise level. Understanding how cloud computing fits in as a strategic option or another tool in the tool shed, they're able to leverage to drive their architectures.

Cloud computing is a fit in many instances. In some instances it's not, and it's a matter of you trying to figure out what's the limitations and the opportunities are within the cloud, before you can figure out what's right to outsource within your own organization.

**Gardner:** Getting back to where SOA fits in, in Chapter 3, you have a litany of things as a service -- storage, database, information, process, application, platforms, integrations, security, management, governance, testing, and infrastructure. Is there an order? Is there a proper progression? Is there a rationale as to how you should go about all these as services?

### *The macro domain*

**Linthicum:** You should concentrate on the big macro domain. So, one would be [software as a service \(SaaS\)](#), because SaaS is probably the easiest way to get into the cloud. It also has the most potential to save you the greatest amount of money. Instead of buying a million-dollar, or a two-million-dollar [customer relationship management \(CRM\)](#) system, you can leverage [Salesforce.com](#) for \$50-60 a month.

After that, I would progress into [infrastructures as a service \(IaaS\)](#), and that's basically data center on demand. So, it's databases, application servers, [WebSphere](#), and all those sorts of things that you are able to leverage from the data center, but, instead of a data center, you leverage it from the cloud.

Guys like Amazon obviously are in that game. Microsoft, or the Azure platform, are in that game. Any number of players out there are going to be able to provide you with core infrastructure or primitive infrastructure. In other words, it's just available to you over the 'Net with some of kind of a metering system. I would start playing around with that technology after you get through with SaaS.

Then, I would take a look at the [platform-as-a-service \(PaaS\)](#) technology, if you are doing any kind of application development. That's very cool stuff. Those are guys like Force, Google App Engine, and Bungee Labs. They provide you with a complete application development and deployment platform as a service. Then, I would progress into the more detailed stuff -- database, storage, and some of the other more sophisticated services on top of the primitive services that we just mentioned.

**Gardner:** For those enterprises that do have a sizeable app, Dave, organizations doing a lot of custom development, is that a good place to go for these tests, pilot, and experimental activities? I am going to hazard a guess that this might be the wellspring where cloud has already gotten some attraction, whether organizations recognize it or not?

**Linthicum:** PaaS with that [Google App Engine](#) is driving a lot of innovation right now. People are building applications out there, because they don't have to bother existing IT to get servers and databases brought online, and that will spur innovation.

So, today, we could figure out we want to go off and build this great application and do this great thing to automate a business and, instead of having to buy infrastructure and buy a server and set it up and use it, we could go get Google App Engine accounts or Azure accounts.

### ***Huge potential***

Then, we can start building, deploying, defining the database, do the testing, get it up and running, and have it immediately. It's web based and accessible to millions of users who are able to leverage the application in a scalable way. It's an amazing kind of infrastructure when you think about it. The potential is there to build huge, innovative things with very few resources.

**Gardner:** I'm thinking about the SOA progression over the past five or seven years. One of the cultural organizational obstacles has been getting the development people, the production people, the operation, and the administrator folks to get in some of sort of ongoing feedback loop relationship.

Does cloud PaaS perhaps give a stepping stone approach to start to do that, to think about the totality of an application, the cradle-to-grave iteration, such as the SaaS model, where you've got the opportunity to have a single instance of one code base that you can then work on, rather than have to think about your upgrade cycle.

**Linthicum:** Yeah, because it's immediately there. That's one thing. There is the instantaneous feedback directly from the users. We can monitor the use. We can monitor the behavior and how people were leveraging the system. We can adjust the system accordingly. The great thing with the SaaS and PaaS models is that we're not doing waves and waves of upgrades that have to be downloaded and then installed, and, in some case, broken.

Everybody is using a centralized platform that's tested as a centralized platform, leveraging the multi-tenant application. We don't have to localize it for Linux, for Windows NT, and for Apple. We just use the platform as web-based, which is perfectly viable these days, when you consider the [rich Internet applications \(RIAs\)](#) out there and the dynamic nature of the interface.

If you're building a SOA and you are building an application instance within the SOA, the opportunities are there to create something that's viable for a long period of time. That's going to be so sustaining, much easier to monitor, and much easier to manage, but the core advantage is, number one, it's much more expandable and also much more cost effective.

We're not having to keep staffs of people around to maintain server hardware and software. We're able to leverage that out in the cloud with a minimal amount of resource consumption. We're also leveling the playing field between small businesses and large businesses.

Ten years ago, it was very difficult to do a start up. You'd have a million dollars in investment funds just to get your infrastructure up and running. Now, startups can basically operate with a minimal amount of resources, typically a laptop, pointing at any number of cloud resources.

## *A great time*

They can build their applications out there. They can build their intellectual capital. They can build their software. They can deploy it. They can test it. Then, they can provision the customers out there and meter their customers. So, it's a great time to be in this business.

**Gardner:** It cuts across and affects so many aspects, as you say -- the metering, the control of provisions that are more agile, rather than as long upgrades cycles that we traditionally get from commercial software vendors.

I sort of munged two questions together there last time, I want to get back to that culture and organizational issue. This has been something that's a challenge with SOA, and it's going to be a challenge with cloud as well.

Are there organizational stepping-stones or initial preparations that you can do? I'm thinking about IT shared services, perhaps some embracing some vital tenets in ways that you can, in a sense, recast your organization to be in a better position to exploit SOA and then therefore cloud.

**Linthicum:** I think the cultural changes are starting now as far as what cloud computing is going to bring. It's kind of polarizing.

There are two types of people that I run into. Number one: the cloud can do everything and, we really want to move into the cloud -- which is scary. Then there are the people who are looking at the cloud as evil. They always put in front of me all the Gmail adages as proof that the cloud is evil and it's going to destroy their business -- which is also scary.

There needs to be a lot of education about the opportunities and the advantages of using cloud computing, as well as what the limitations are and what things we have to watch out for. Not all applications and all pieces of data are going to be right for the cloud. However, we need to educate people in terms of what the opportunities are.

The fact of the matter is that it's not going to be a dysfunctional and risky thing to move pieces of our architecture out into cloud computing. Get them around the pilot. Get them to go out there and try it. Get them to basically experiment with the technology. Figure out what the capabilities are, and that will ultimately change the culture.

You need to go back to the early '90s. I remember when the Web first came around. I was working for a large corporation, and we weren't allowed to use the Web. If we had to use it, we had to go to the AOL terminal in the library and use it that way.

## *An understandable asset*

Of course, the Web just became bigger, bigger, and bigger and more of an understandable IT asset that could be used enterprise wide. We got web browsers and we're leveraging the Web. The same with the cloud computing. It's going to take a cultural reach. Many large corporations

who have embraced the fact are going to put processes and data out on platforms, where they don't know their host.

**Gardner:** Dave, in Chapter 5, you gave a lot of attention to data. I know there are some people working on that. Tell me about this special relationship between data and SOA, how they come together, and then where cloud fits in?

**Linthicum:** Understanding data is really the genesis of SOA. A lot of people like to work from the services to the data. I think that the data should be defined and understood in terms of what it is as an as-is state and what it needs to be as a to-be state, where you can build any kind of SOA, using the cloud or not.

Typically, if you're going to leverage the cloud as an infrastructure, it's going to be as a data repository, as well as and for the expandability and the shareability aspects of it, and those sorts of things. However, before you do that, you need to break the data down into a primitive state, understanding what the assets are, what the [metadata](#) is, what governance system is around using it -- and just do the traditional architectural stuff.

What I define in the book is definitely cloud related with lots of different examples and different leverages in the context of SOA. But, it's about understanding information the way we've been doing over the last 20 years and then coming up with models and physicals and logicals, trying to figure out what should be where and when we should do that.

It's fairly obvious what pieces and components of the information model you can host in the cloud and which ones need to be on-premise. By the way, it's perfectly acceptable from a performance standpoint to put pieces of physical databases out in the cloud and physical databases on-premise and then leverage those databases simultaneously within the context of applications. You're not going to find tremendous performance differences, and the reliability should be relatively the same.

It's a matter of looking at your information as really a foundation of your architecture, building up on top of that to your services, building up on top of that to your processes, and then really understanding how data exists in the holistic notion of your architecture, in this case, your architecture leveraging cloud computing.

### ***What makes sense***

**Gardner:** Dave, this whole notion of being able to slice and dice data, put it in different places, based on what makes sense for the data, the process, and the applications, rather than simply as a function of the database's needs or the central and core data set needs, strikes a very interesting cord. It allows us to do a lot more interesting things.

In fact, [Zimory](#), another startup, has [come out with some interesting announcements](#), about slicing and dicing caches and then placing them in a variety of ways in different places that can

augment and support applications and processes. Are we really going to get to the point soon where we can do things we just never could do before?

**Linthicum:** We're going to get to a point where the data is going to be a ubiquitous thing. It doesn't really matter where it resides and where we can access it, as long as we access it from a particular model. It's not going to make any difference to the users either. I just [blogged about that](#) in InfoWorld.

In fact, we're getting into this notion of what I call the "invisible cloud." In other words, we're not doing application as a service or SaaS, where people get new interfaces that are web-driven. We're putting pieces of the back-end architectural components -- processes, services, and, in this case, data -- out on the platform of the cloud. It really doesn't matter to them where that data resides, as long as they can get at it when they need it.

The other aspect of it is because information on a cloud is typically easier to share with other organizations, this has the ability to make the data more valuable by sharing it. That core component becomes a key driver for leveraging the cloud. I don't see a point where we're going to get hindered by where the data resides. We always have to consider governance and security issues and all these things. Every piece of information isn't right for the cloud.

But, for most of the transactional data out there that has semi-private information, which is low-risk -- and that's most of the data from most of the enterprises -- placing pieces of it in the cloud makes sense to better support your architecture and your business. It's perfectly viable.

I don't think people using these information systems are going to have any clue where the information actually resides. IT folks are going to have a tremendous amount of power and numerous options to place in the cloud information that is going to make it much more cost-effective, much more shareable, and therefore much more valuable.

**Gardner:** Perhaps the takeaway here is that the liberation of data will enliven people in some ways in cloud computing innovation. That really is about business process innovation management. Perhaps that's where we should look to next, and coincidentally, that's what your Chapter 7 looks at. Where does business process management fit into cloud, and can that give us something we couldn't do before?

### *Shared processes*

**Linthicum:** Yeah, it does. We've had the notion of shared processes. In fact, there is a company called [Extricity](#). Back in the old EAI days, it came up with this notion of private versus public processes. Cloud computing provides us with a platform to finally do that. So, not only we are able to drive processes within the enterprise, those going to exist either on premise or in the cloud, depending on where it's best economically and where it's a right architectural fit for those things.

The more important strategic benefit of doing that is that ultimately we're able to put processes on centralized cloud-delivered systems that are shared across multiple enterprises, or multiple divisions in the same enterprise.

This provides us to place an information sharing mechanisms and also process sharing mechanisms, which drives together all of this information in the context of a business process. It allows us to do things like real-time supply-chain automation, real-time event-driven sales-force direction management, and a lot of real-time processes around any business event that spans multiple enterprises. We've been trying to do this for years.

Back in the day, [business to business \(B2B\)](#) was the big buzzword. We had technology guys like Extricity and other process-management technologies to provide us with the capabilities to make this happen. But, it really hasn't been widespread. That's because there was no agreed-on platform to leverage processes and create processes that are shared across multiple enterprises.

Cloud computing provides us with that capability. So, we have innovators like [Appian](#) On Demand and a few other folks out, who are building processes that are sharable on the cloud. We're able to link those to our existing services and data and have our existing systems and our IT assets, such as data and services, participate in these larger process that may span multiple enterprises.

It gets to this point where I can walk into a car dealer and they can tell me exactly when the car I'm ordering is going to show up -- not "8-12 weeks." They know who's going to build it, where the supply is going to come from, where's it going to put together, and how it's going to shipped. All of these things are automated between these very disparate organizations to support the customer better. That's how you're going win this game. That's really the true value of cloud.

**Gardner:** I agree. We're getting toward extreme visibility all across the exchange -- buyers, sellers, participants, suppliers, and value-added participants. That visibility, of course, gets to more intelligent decision making, less waste, and much higher productivity. Productivity is the key here. If you're in an economy, like we are now, where we've got to grow our way out of this thing, you can't do it by cutting costs forever. The up side is going to come from productivity.

This whole discussion about business process is the cloud discussion that we should be taking to the board of director level, to the COO, and the CFO. They probably don't care too much about the cloud, but they will probably like the fact that the cost for IT can go down. Please help me if you agree or feel free to flesh this out, isn't this the thing that's going to get the business people jazzed?

### ***Bottom-line questions***

**Linthicum:** That's great thinking, Dana. Ultimately, people don't care about whatever hype-driven technology paradigm is coming down the line. Cloud computing can be inclusive of that. How can you save me a buck? How can you get my business out of the doldrums? Can you do

that through innovation, and can that innovation cost me less at the end of the day? Those are the questions being asked.

We're not getting, "How can I spend more to get more?" They're saying, "How can we be more effective and efficient with the organization and what innovative changes can make me more effective and efficient?"

Cloud computing is an example of technology that has a potential of doing that. A lot of CIOs and CEOs that I talk to are going to say, "Cloud-Schmoud. I could care less if you do it with pixie dust or cloud computing. I just want it to happen."

Those in IT need understand that this, ultimately, is the motivation. At the end of the day, they need to put together a plan of attack in how to get them to that more effective and efficient state.

IT shops, in the next five years, are going to look very different than they are today. Typically, they're going to be much smaller. They're going to have a lot less hardware and software around, even though it's never going to be eliminated. They're going to be evaluated on their effectiveness and efficiency toward the bottom line in the business.

In the past, we've been exempt from that -- for what reason I don't know -- but they've given IT carte blanche to spend a lot of money. The results come in, but they're not measured as carefully as those in sales and marketing. I think those days are over.

So, we need to buckle down, be more innovative, figure out what our options are, and figure out a way to move our existing infrastructure in more productive directions. Or else, your competitor is going to figure it out before you and they're going to put you out of business.

**Gardner:** There is a ton of information in this book, but it's still tight and concise. It doesn't go on and on and on. So, I commend you for that. We've got whole chapter on governance. We've got whole chapter on testing. But, the one that really jumped out at me was Chapter 10, "Defining the Candidate Data, Services and Processes for the Cloud."

To me, this really gets at the heart of the issue that IT folks are going to be grappling with. How to get started? What's the right approach for me as an organization for our culture, skills, capabilities, and budgets? How do you tailor this? How do you get started? Maybe you can just dig in and give us a little preview on Chapter 10.

### ***Following the checklist***

**Linthicum:** Chapter 10 is really about what you need to do, once we've gone through these steps of understanding your data, services, and processes, creating a governance model, and understanding security issues and all those things that are good candidates to move onto the cloud?

Once you have this understanding of how to select services, processes, and pieces of data that should be moved out there, it's a matter of going through those checklists to see if the processes, applications, and data are independent or loosely coupled.

If they're independent, then the chances are they're going to be more easy to move out to the cloud. If they're loosely coupled, they're easy to move out to the cloud. If they're interdependent, which means they're bound to different things, it's very difficult to decouple them and move them out to the cloud.

You need to figure out the points of integration. Ultimately, if we move something out to the cloud, can we link that information back to the enterprise, can we do that in efficient and effective way, and will that lower costs for us?

In many instances, we can put systems out in the cloud and we can say it's more cost-effective to have them out there? But when you factor in the integration cost, it's much less cost-effective and much less effective and efficient for the enterprise. You find that with the lot of the salesforce.com installations. Integration wasn't really factored in, and it ended up being a huge issue.

You need to consider your security. You need to consider the core internal enterprise architecture and making sure that it's healthy. You are not going to be able to put cloud computing on top of an existing dysfunctional architecture and expect miracles to occur. As part of this process, as you mentioned earlier Dana, you need to understand that cloud computing needs to be leveraging the context of the SOA, which spans on-premise and off-premise.

This is about getting your existing architecture healthy and leveraging cloud computing as an option. It's not really bolting cloud computing onto existing bad architecture and hoping for changes that are never going to occur.

### ***Looking at the cost models***

Ultimately, it's about looking at the cost models and trying to figure out which are the right candidates to move out the cloud in terms of the efficiencies and effectiveness, while looking at the strategy of the company.

I was helping a disaster company a while back. It had to go from 10 users to 10,000 users in a week. Cloud computing is a great candidate for those things and those types of processes. Instead of having a data center that's dark and that you turn on and fire up whenever you need the capacity, you can just go ahead and call Amazon or Google and turn on the capacity to make that happen.

Those are good candidates for cloud computing. But, you need to consider governance, security, how tightly or loosely coupled those processes are within the system, cost effectiveness, integration, other assets of data, the larger strategy of the company, and the direction of the IT architecture and where it's looking to go.

All those things are fundamental considerations of whether or not something that you've identified as a core component and understood as a core component are outsourced to the cloud or not.

**Gardner:** Then, you come into Chapter 11. It's a practical and pragmatic tip on analyzing and providing candidates around platforms and around picking private or public approaches. One of the things that occurred to me in looking that over is that perhaps now is the time for companies to be thinking along these lines as well. That's how to protect themselves against lock-in and making choices they might regret later. This is around the whole neutrality and portability issue.

While we're experimenting, Dave, and while we're getting our feet wet with cloud, this is also a good time to start putting pressure on all the parties involved for as much neutrality in standards and portability as possible.

**Linthicum:** It is, and that's not there, generally speaking, in the cloud community. We have security that's still lacking a bit. We have to figure out better mechanisms for that, and for portability, which is still lacking. We have to figure out better mechanisms for that.

So, you have to factor that into the cost and the risk. Right now, if you're moving into the cloud, and you're going to localize a system for a cloud provider, it's going to be very difficult in the future to take that code and data off of that system and put it on another cloud provider, or, in some instances, bring it on premise.

### *Looking at standards*

As you look at the cloud providers, one of the factors in selecting those guys is number one, do they have a vision for interoperability standards? When will that vision be laid out? What kind of standards organizations are they bound to currently, and how are those standards organizations progressing? What does your application do that's going to cause portability issues?

If they're trying to sell you their cloud, have them look at your application and tell you how easy is it for that application, either new or porting to the system, to move off that system in time in the future.

Typically, the pat answer is that it's easy to port your system off because they're using some standard language and a standard database. But, you'll find that many proprietary [application programming interfaces \(APIs\)](#) and interfaces are there, and they're going to make portability very difficult. All the different cloud providers have built their infrastructure and their products in their own little proprietary ways, because they haven't done close coordination one to another.

So that's going to be a trade-off going forward, and I would grill your cloud computing provider of choice to make sure that they have some kind of a vision going forward and how they are going to provide interoperability. But I think it's going to be some time before it occurs, I am a lot more skeptical than some of the other people out there, and it's going to take a lot of

customers who are actually paying these guys money to demand that portability exists and they adhere to some sort of standards.

**Gardner:** It's up to the market to throw its weight around, right?

**Linthicum:** It's up to the customers to throw their weight around. You have to build it with your dollars.

**Gardner:** I also suppose that lessons learned in the software realm over the past 10 or 20 years -- having good contracts, having lawyers look things over, writing the proper safeguards in, whether it's indemnification or what have you -- should all be brought right along into the cloud domain. All those lessons learned in software should not in any way be forgotten?

### *Understanding the contract*

**Linthicum:** That's right. We had a recent issue. It was well-publicized problem with an on-demand CRM provider and [Pulte Homes](#), and they had a problem with the contracts. They didn't understand the contracts and things went wrong in their implementation. The CRM provider, the SaaS provider, wouldn't let them out of their agreement and made them pay fees for basically no services provided.

I'd argue that there are some customer service issues there on the SaaS provider area, but the customer ultimately needed to read the contracts to make sure they understand what the issues are and any kind of consequences that will come out of that. At the end of the day, we're getting into contractual agreements again. You have to approach them with your eyes open and understanding how the stuff is going to work.

**Gardner:** Now, closing up a little bit, we've certainly seen a lot of projections from folks like [Forrester](#), [Gartner](#) and [IDC](#). There are a [lot of different numbers](#) and lots of throwing darts at the various boards around these organizations. But, all of them seem to be quite bullish on cloud and that this is something that's here to stay and is going to be high growth.

When I speak to a lot of folks like you, they are very busy. There is lot of demand for [data-center transformation](#), [modernization](#), and [virtualization](#). These are under-girding movements that will enable or support cloud options. So, how about some forecast Dave? Even if it's in general terms, this is really quite a growth opportunity.

**Linthicum:** It is. It is. The funny thing in cloud is that it's this big amorphous thing and it's tough to name. In fact, I was kind of wrestling around when using cloud computing as the title of the book, because we're getting into something that's been around for a long period of time as an existing concept. But, I think cloud computing is going to grow a lot over time and just become part of the infrastructure.

We've been using aspects of cloud computing for years and years. [Application service providers \(ASPs\)](#) and SaaS were the first forays into cloud. Now, we're using additional infrastructure

providers, such as database and middleware and applications, and all those things that we're able to deliver as infrastructure and as service. Then, we're also getting development platforms that come out of the cloud and office automation systems like Google Docs, and Office Live.

Things are going to move from our clients and from our data centers out into the cloud providers through economics of scale and efficiency. When it comes right down to it, there are very innovative solutions out there, and coolness is going to drive people to the cloud.

### ***Economies of scale***

In other words, you're going to be able to turn off very inefficient and cost-inefficient applications and turn on these that are cloud delivered. Through the sharing mechanism, the RO update mechanisms, economies of scale, the scalability of it, and the amount of money you're going to have to spend on the cloud versus on-premise system, it's just going to be the way to go.

In the next 10 years, IT, as I mentioned earlier, is going to be very different place. I'm not one of those guys that thinks everything in the existing IT infrastructure is going to exist on some cloud some place. But, a good majority of our applications and our processes, things that exists on premise these days, are going to exist in the cloud. It's just going to be the way in which we do IT.

It's not going to be that different than leveraging the Web presence that we're doing these days. Cloud computing is about putting additional IT assets out on the platform of the Web. The adoption curve is going to be very much like the Web adoption curve was in the '90s. Significant cost savings are going to be made. We're going to be a much better, more effective place, and it's much more exciting as an IT person. I look forward to working in that environment. I think it's going to be a lot of fun.

**Gardner:** I agree. It's going to be very exciting. Well thanks. We have been talking with Dave Linthicum. He has come out with a new book, Cloud Computing and SOA Convergence in Your Enterprise: A Step-by-Step Guide. It's coming to the market through [Addison-Wesley Information Technology Series](#) publishers.

It's out now on all the usual book purchasing sites and, as you pointed out, it's also on Kindle. That's very exciting. I want to thank you, Dave. It's been really enjoyable and a great way for us to get into a lot of the interesting aspects of cloud and SOA. So I wish you well on your book.

**Linthicum:** Thank, you Dana.

**Gardner:** I also want to thank our sponsors for the BriefingsDirect Analyst Insights Edition podcast series. They are Active Endpoints and TIBCO Software.

Thanks again for listening. This is Dana Gardner, principal analyst at Interarbor Solutions. You've been listening to a BriefingsDirect podcast. Thanks, and come back next time.

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