

# THE STAND

## Data Center Optimization

### Q&A with an Industry Leader

*Government is faced with exploding demand to provide services to end users, be they ordinary citizens or war fighters. The data center is a primary resource that overworked and undermanned IT organizations will use to meet this demand.*

*THE STAND: Data Center Optimization gives insights from one long-time industry insider into how IT organizations can gain firmer control of their assets and bring them into line with agency business goals.*

*Learn how – done the right way – data center optimization provides crucial support to expanding agency missions.*



What are the advantages to agencies optimizing their data centers? Are there any that you think are currently underplayed that deserve more attention?



*Kapil Bakshi,  
Chief Solutions Architect,  
Cisco Systems Inc.*

***Kapil Bakshi***  
***Cisco Systems Inc.***

**A:** Cost efficiency with higher utilization is the most obvious of the advantages, though one of the more interesting is the ability in the optimized data center to be more agile in provisioning new services, and hence provide a much faster and much richer experience for the end user. Sustainability is also an important advantage.

It also provides an opportunity to optimize the business processes themselves that generate the application and the IT load in the data center. People often focus too much on the technology piece of optimization, and not enough on improving the business as a part of that and bringing the two together.

That is one thing that tends to get underplayed. Agencies optimize once, maybe twice, in the whole lifecycle of the data center, so it's something they should capitalize on to think about doing things differently.

What are the least appreciated or least understood issues involved with data center optimization, and why?



*Kapil Bakshi,  
Chief Solutions Architect,  
Cisco Systems Inc.*

***Kapil Bakshi***  
***Cisco Systems Inc.***

**A:** Agencies miss the efficiencies that can be gained in business and mission processes. At the end of the day, a data center is about running mission and business applications. To gain those efficiencies they need to cast as wide a net as possible when bringing people in on the optimization planning process. Don't focus just on IT and IT facilities, but also include application, mission and business leadership teams.

How does the government's need to assure the security of its data play in data center optimization efforts? Is security naturally strengthened as a result of optimization, and if so how? Or do agencies have to plan for it?



*Kapil Bakshi,  
Chief Solutions Architect,  
Cisco Systems Inc.*

***Kapil Bakshi***  
***Cisco Systems Inc.***

**A:** Security is a critical and key part of data center optimization. Security is naturally strengthened as a part of the optimization process because, as you revamp your data strategy, you also revisit your security.

However, you also need to take a step back and realize you are not dealing with security just from a technology perspective, but also from a compliance, control and service level aspect. You can have a secure data center but, if it's missing compliance, control, reliability and SLA elements, it's not really an effective trust strategy.

Again, that means you should have the right people involved in the discussions right from the beginning of the optimization process. It used to be that security would only participate far downstream, but our methodology requires that they be included at the start, so that security considerations are considered from the very beginning and not bolted on later.

There is a major push in government towards increasing use of cloud computing. Is data center optimization a part of that, or is it a necessary precursor. How does optimization relate to cloud computing?



*Kapil Bakshi,  
Chief Solutions Architect,  
Cisco Systems Inc.*

***Kapil Bakshi***  
***Cisco Systems Inc.***

**A:** Is data center optimization a precursor to cloud computing? Absolutely. From a data center perspective, cloud computing equates to a common way for services to be shared and consumed so agencies don't have to build their own infrastructure and deliver their own services. And that's what data center optimization is trying to solve.

Cloud computing and optimization are not the same thing, but they are closely related. They have the same kind of dependencies such as sound business case, standardization, and security.

How does your company view the status of data center optimization in the federal government today, and how do you see it changing over the next five years?



*Kapil Bakshi,  
Chief Solutions Architect,  
Cisco Systems Inc.*

***Kapil Bakshi***  
***Cisco Systems Inc.***

**A:** Agencies are either in the planning stages for optimization or they are already involved in the consolidation and virtualization aspects. The key trend to track over the next few years will be how cloud computing influences services that data centers provide. We fully anticipate data center optimization strategies will include cloud computing, initially in the form of private clouds, followed by hybrid and community clouds.

There is a lot of interesting activity in the industry around this trend. We are certainly leading in many of these areas. However, there's still a lot of work that has to be done in terms of standards, compliance, security and procurement and how you actually go about making the organizational and governance changes to accommodate all of this.

Many companies offer data center optimization services. What does your company bring to the table that's different or unique?



*Kapil Bakshi,  
Chief Solutions Architect,  
Cisco Systems Inc.*

***Kapil Bakshi***  
***Cisco Systems Inc.***

**A:** First of all, we have crafted an engagement model that embodies the fact that, over the next five years, you are going to see these technology-enabled business processes become more and more fluid, not just within a single data center but also across the spectrum of cloud delivery models, like private, hybrid, and community clouds.

What Cisco brings to the table most particularly in that regard is the deep understanding of what it takes for the network platform to perform as expected and enable the mission. If you look back at the evolution of the Internet and networking, a tremendous amount of the intellectual property involved with that came from Cisco. Carrying that forward over the next few years, you are looking at the continued acceleration of convergence across the technology silos, and a convergence of the network, storage and compute elements.

We have expertise all the way from business strategy, to data center architecture services, implementation and migration, and finally to operation and management services.

When will an agency know that its data center optimization is complete? Is data center optimization, in fact, ever complete?



*Kapil Bakshi,  
Chief Solutions Architect,  
Cisco Systems Inc.*

***Kapil Bakshi***  
***Cisco Systems Inc.***

**A:** Data center optimization is a process, as opposed to a deterministic end state. Hence, it's an ongoing process where you are trying to be as efficient internally and externally in providing the right kinds of services in the form that your users want to consume.

As soon as the mission stops changing, you're done optimizing. But the mission or the business never really stops changing, it's always evolving and the optimization continues on with it.

Is data center optimization an all-or-nothing endeavor? Can agencies pick and choose what parts of data centers they optimize? If so, how can they best make those choices? If not, why not?



*Kapil Bakshi,  
Chief Solutions Architect,  
Cisco Systems Inc.*

***Kapil Bakshi***  
***Cisco Systems Inc.***

**A:** Agencies can pick and choose. A coordinated and holistic approach is always the best in the end, but if they are pressed to take a structured piece by piece approach, that's also doable.

There are various approaches to this. They can optimize the part of their business or mission that needs the most refinement or the most efficiency. Through the data center optimization process they should have developed an application dependency mapping. That, and which part of the agency mission they want to optimize first, should guide agencies to which parts of the data center they should optimize. If application A depends on application B, you can't really optimize them together.

But, even with a piecemeal approach, you still need to keep the entire architecture in mind. If you optimize one part of the data center which directly affects one area of the business or mission process, then you need to understand the ripple effects in the other parts of the data center strategy.

How can agencies ensure that their current data center operations are maintained at a high level while they migrate to these next generation, optimized data centers?



*Kapil Bakshi,  
Chief Solutions Architect,  
Cisco Systems Inc.*

***Kapil Bakshi***  
***Cisco Systems Inc.***

**A:** This all goes into the planning phases. If you want to continue operations in the data center while making changes, then one really needs to go through migration planning to identify areas of risk and mitigation. Not to mention put in place a change management process or a system. Considerations like business process analysis, application dependency mapping, prioritization of which application and business process to move, and identification of move groups, need to be planned from the start.

Once you have identified all of the above then you can apply classic migration principles, such as setting up a parallel infrastructure for migration and operate it in parity, while you repurpose the old infrastructure.

There's also the fact that organizations that have been most effective with this process have adopted standardization throughout the data center. So, while agencies are getting themselves oriented and making their optimization plans, they should also be paying attention to making sure that enterprise standards are being adhered to, so that migration and optimization happen most efficiently once they get underway.

What is the single biggest mistake that agencies can make in implementing their data center optimization? What is the one thing they can do to make sure it has the best chance of succeeding?



*Kapil Bakshi,  
Chief Solutions Architect,  
Cisco Systems Inc.*

***Kapil Bakshi***  
***Cisco Systems Inc.***

**A:** The things that most often get overlooked are the mission and the business processes, and more importantly how the data center is architected to provide the required services levels to the mission.

That requires an end-to-end approach and bringing together people not just from the operations and business side of things, but from all aspects of the IT enterprise: application development, enterprise architecture, the program and architecture management offices, and auxiliary but important functions such as security. All of these things need to be aligned.

Is data center optimization for everyone? Is there ever a situation when an agency should not engage in optimization?



*Kapil Bakshi,  
Chief Solutions Architect,  
Cisco Systems Inc.*

***Kapil Bakshi***  
***Cisco Systems Inc.***

**A:** There could be a few situations where it might not apply. If there's a compliance reason that requires you to maintain the way that you create and deliver services through the data center, for example. Also, if you want to maintain the isolation of a particular mission domain from a data and infrastructure classification perspective. Something like that might be necessary in some specific communities where it would be difficult to consolidate or optimize across domains, because of compliance, sensitivity and security aspects.

Also, is optimization necessarily the first thing that should happen for any organization? That depends. The degree to which things are standardized affects how efficient it's going to be in the end. The degree to which they are going to be able to come together from their traditional technology silos, be it server, storage, operations, facilities, what have you. Optimization, ultimately, is for everybody, but the bases have to be covered.

The Obama administration launched the Federal Data Center Consolidation Initiative earlier this year. How does data center optimization relate to that? If you consolidate are you, de facto, optimizing?



*Kapil Bakshi,  
Chief Solutions Architect,  
Cisco Systems Inc.*

***Kapil Bakshi***  
***Cisco Systems Inc.***

**A:** Optimization definitely relates to the consolidation effort. Consolidation is one of the first steps to get to an optimized data center. The Obama administration, through the consolidation memo, is on the right path to getting all of the federal agencies moving towards optimized data centers. At least in our view you get consolidation, then optimization, then you go to some kind of cloud or automated service creation and delivery state. So, yes, they are very related.

Consolidation and optimization are certainly not the same thing, but they are part of the same spectrum of what's needed for the data center. But to get to that higher level of the optimized state you have to start with consolidation. You can't have the kind of asset sprawl and low utilization that you have now in data centers and expect to achieve optimization with that.

What do agencies have to do with their optimization efforts to make sure they are compatible with broader mandates for such things as Service Oriented Architecture?



*Kapil Bakshi,  
Chief Solutions Architect,  
Cisco Systems Inc.*

***Kapil Bakshi***  
***Cisco Systems Inc.***

**A:** In most cases, these kinds of other government initiatives are complementary to data center optimization. The whole notion behind SOA and other mandates is that you have some sort of a shared model that can be used to provide services to a certain community of consumers. And, if you look at data center optimization and all the cloud aspects of it, that is essentially the premise for them.

So there are points of intersection, there are points of overlap, and the things to consider would be how do you map things to each other, whether things would be subsets of each or not, and so on.

## What are some of the emerging technologies or processes that can be leveraged for data center optimization in the federal government?



*Kapil Bakshi,  
Chief Solutions Architect,  
Cisco Systems Inc.*

***Kapil Bakshi***  
***Cisco Systems Inc.***

**A:** The data center networking platform is the core competency of Cisco. Around that, there are innovations such as Unified Computing System, which offers a converged view of storage, compute and network aspects, and which provides the basis for a virtualized platform that will be the precursor of optimized data centers.

Unified fabric is where you take the network sprawl of local area networks, storage area networks and so on, and combine them into a single wire and make it easy to provision and manage network services, which takes a lot of the cost out of the equation. That's very important for an optimized and agile data center.

Then we understand that you need have to have some kind of standardized building blocks in order to get to an optimized data center. As part of that we are bringing some key building blocks, not just based on our technologies but also those from our best-of-breed partners that have been pre-tested and pre-integrated.

More importantly, we see that there is a whole value chain that different parts of the ecosystem will provide in optimizing a data center, and we contribute many parts of that value chain at the infrastructure and platform level. And, in turn, we enable all the other parts of the value chain that we don't contribute to but have some influence on, such as software applications and virtualized applications.

Finally, we also bring key cloud technologies and secure cloud services, including contributing to key cloud standards for further enabling data center optimization.

Are there any issues not central to the optimization efforts themselves that agencies should be aware of that could influence how effective those efforts will be?



*Kapil Bakshi,  
Chief Solutions Architect,  
Cisco Systems Inc.*

***Kapil Bakshi***  
***Cisco Systems Inc.***

**A:** Getting all organizations involved, across mission and IT functions, even if they don't have a direct play in the data center aspects of things. But, as consumers of the services that the data center provides, or as influencers, they'll need to be a part of it.

Second, you've got to have standards. And that plays directly into having a sound enterprise architecture strategy, where you're building these standards.

And then there are some issues that might not be totally central such as the compliance aspects of things, whether they are compliance for data, or applications, or facilities or mission processes. They may not sound very central to a data center optimization effort, but they need to be considered. In some cases, they may influence strongly just how that optimization is going to happen.

To that, add a communications plan as an ongoing vehicle for letting the consumer community understand about things that are new and about things that are possible. That communication mechanism is often overlooked but can be critically important.