Agility, Security, Efficiency:

How Enterprises Can Transform Their Businesses in the Cloud

Executive Summary

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Server virtualization and cloud computing have been changing the enterprise IT landscape for the last several years, but for many businesses, more questions than answers still remain.

Do you want to use a private cloud or move to a public cloud? How will you get your applications and data into the cloud and then get your operations ramped up?

Then there are the virtualization issues: Which hypervisor will you run and how will you be able to prepare your applications and data for the systems of your choice?

So what is an already stressed-out enterprise IT executive supposed to think about it all?

And that, of course, doesn't even take into account all the other daily IT pressures that already exist for enterprise IT leaders, from ultra-tight budgets to "do more with less" mandates. Adding to these pressures are new business mergers that force already squeezed IT staffs to accomplish even more every day.

There's just got to be a better way of analyzing it all and figuring out just the right roadmap and strategy.

That's where flexible, custom applications built using SUSE Studio™ (http://susestudio.com) come in to deliver a huge dose of sanity into the mix, aided by their easy-to-manage software-only form factors.

SUSE Studio

SUSE Studio quickly creates custom-configured applications that include an integrated operating system, database, middleware and whatever else is needed to make the applications run. These lightweight software "images"—sometimes referred to as self-contained "software appliances"— are deliverable and deployable through e-mail, downloads or via removable media for installation on physical or virtual servers.

There is no costly or soon-to-be-obsolete hardware involved to create them. Instead, SUSE Studio allows users to build the applications using a menu-driven web browser interface, where the user can select the desired components and options. Studio then does the work: compiling and configuring the applications and providing advice and corrections if any compatibility problems are found. After final testing and component confirmation, the user clicks the "build" button and the appliance is sent through final processing.

Once built, the images can be quickly placed on servers and are literally up and running in minutes, handling whatever workloads you place on them. And since they already include everything from an operating system to needed applications, databases and more, none of the usual IT delays are involved. No three-to-six month or more waits for acquiring or building servers, installing operating systems, configuring and testing applications and the rest. It's all done for you—in a matter of minutes!

Applications created with SUSE Studio can be built using a web browser on any computer, then run on any physical or virtual server that runs SUSE® Linux Enterprise (www.suse.com). No Linux experience or other special development skills are needed.

Later, if you want to replace a server, you can literally just move the running application image over to a new server, without major installation or configuration hassles. It's really that simple, and it's all because of the lightweight, software-only form factor inherent in the SUSE Studio-built applications.

So What Does This Mean for Enterprise IT Leaders and Their Staffs?

The efficient, innovative and ultra-flexible form factor of SUSE Studio-built applications provides huge benefits, including:

- **Cost containment.** *Build an application once and replicate it as much as needed, all without additional expense. Enterprises no longer need to install and configure complex applications on expensive, proprietary hardware that locks them into specific vendors. And perhaps most important from a cost standpoint, enterprises no longer have to keep buying new physical server hardware every time they want to deploy another instance of an application—they can just add new images onto virtual servers and get their work done while taking advantage of server capacity they already possess.*
- **Application standardization for easing into the cloud and virtualization.** *By building software applications and being able to replicate them as needed, enterprises can create standardized business programs that they can easily deploy to the cloud or to their physical*

offices around the world. That simplifies deployment, cuts costs and improves infrastructure reliability. Applications can be built for various virtualized and cloud platforms, including Amazon Elastic Cloud 2*, VMware*, VirtualBox*, KVM*, OVF* virtual machine and Xen guest, with more to come in the future.

- **Dynamic distribution capabilities.** *By being able to deploy applications through networks, e-mail downloads or via portable media such as flash drives or DVDs, enterprises can drastically speed and improve the distribution of applications and patches anywhere as needed. Applications can also be built in ISO and PXE boot formats.*
- **Application agility and process streamlining.** *Enterprises can become much more agile by being able to build needed applications very quickly using SUSE Studio, without the traditional lag times connected with software development. As a result project times for critical new applications can be reduced to hours or days instead of weeks or months.*
- **Simpler deployment to the cloud and virtualized servers.** *Without being tied to new hardware acquisitions, new virtual instances of the applications can be placed upon existing virtual servers on the fly, simplifying administration.*
- **Better security due to minimized code.** *Build your needed applications using the concept of "Just enough Operating System" (JeOS), while leaving out any software components and systems that aren't needed. Not only are your resulting applications smaller and more portable, but also they will be safer from hackers because they won't include unused code that will make them more vulnerable targets for attacks.*

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By building standardized application images and being able to replicate, update or modify them at will, software built in this way can be the critical bridge that can ease the transition to broader virtualization and the cloud for thousands of enterprise IT users.

† *Source: IDC, Worldwide Software Appliance 2010–2014 Forecast: Entering the Mainstream, Doc # 224297, Aug 2010*

Leveraging the Appliance Form Factor

The thing that makes all of these huge benefits possible in large part is the beauty and simplicity of the software "appliance" form factor itself.

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"With an uncertain economy, companies are looking for more cost-effective solutions that can be easily 'plugged in' to their existing environments—versus building and deploying applications that require onsite expertise and integration work. Software appliances are well suited to this type of economic environment because they are more self-contained and thus require less maintenance."†

CIOs: Finding Value in the Software Appliance Form Factor

In a recent interview, Jesus V. Arriaga, formerly with Keystone Automotive Industries and Spirent Communications, Plc., and current president and CIO of CIO Strategic Solutions

LLC, a consultancy firm in Glendora, Calif., said the genius of the software created using SUSE Studio is that it allows enterprises to "get just about anything you need from an application perspective and distribute it out [to users or to the cloud].

"It has definite promise, especially when enterprises have to move applications much more quickly and have development go much faster so you can have delivery to your end users," Arriaga said.

He continued, "One great example of the need for this kind of flexibility can be seen today in the healthcare marketplace in the U.S. Healthcare providers are in major flux because of the ongoing controversy and future uncertainty surrounding the Affordable Health Care for America Act; but, at the same time, they have to take care of their business operations while maintaining total flexibility. That means they have to be ready for any-thing and be able to change direction at a moment's notice.

"There's very little that's clear right now about the healthcare law, so how do you respond to that? In one case, one state told a client to go and build a needed application, with little guidance. Then the state told the client that once it was built, the state would review it and decide whether it's right or not. How do you go and build something like that? That's ridiculous. But by having a dynamic form factor that provides the flexibility and ease of building and pre-configuring applications using SUSE Studio and a web browser— and then quickly being able to change them at any time as needed to comply with new requirements—that could be a huge benefit for large healthcare enterprises that are undergoing this kind of tumult. Something like this could help you do that and make the changes you need to keep up. I think it has great applications." says Arriaga.

In a separate interview, Cathy McClain, an executive IT consultant with Chicago-based Tahoe Partners and a former CIO with sporting goods manufacturer Brunswick Corp., said the flexible SUSE Studio-built form factors make them a useful tool for enterprises, particularly for corporate acquisitions.

"When you have an acquisition, this ability to easily deploy a template, a ready-to-go environment, makes things so much easier and expedites the needed tasks to bring in the new company," McClain said. "Most large companies are international, so what this allows is that you can have a single source location and then things can be easily deployed with different nuances and languages. This allows that kind of configuration to be deployed around to anywhere it is needed."

That kind of needed flexibility can also be seen in other business areas, including the spreading use of sales staffs, customer service functions and support organizations that are remotely located. Those workers have computers and phones and other equipment, but they are often in virtual offices now, which could be aided by software appliances for many functions, McClain said.

The easy-to-use and simpler-to-distribute application form factor provided by SUSE Studio "can help enterprises keep those employees updated with new applications, security updates and more by dispensing them to the workers automatically through their server environment," she said. "Otherwise those people have to bring in their machines for upgrades, which would be much more inefficient and costly. So when you have to deploy a new software version to salespeople around the U.S. or anywhere else you drop it on a server and let them download it and install it. The real key is the virtualization of an organization."

Analysts: Deliver Better Security and Easier Transition to the Cloud

The beauty of the flexible application form factor also means that you can just include the components you need, while cutting out extra, unneeded software code that could be targets for hackers and security breaches.

That JeOS ability to build simpler applications using SUSE Studio is a boon for enterprises that want to minimize security risks with the applications they rely on, Joe Clabby, principal analyst of Clabby Analytics in Yarmouth, Maine, said in a recent conversation.

By using the software appliance model, enterprises can simply leave out the pieces they don't need, making it all work better, faster and more securely from the outset, Clabby said. "You can knock out a subsystem you don't need, such as storage. You're building applications specifically tailored to the needs you have. The operating system can be tuned and tweaked to respond to those calls. That is really cool."

"Not only does it make it easier to deploy an image, but then it is also easy to deploy on a cloud," Clabby said. "It sounds to me like they've taken direct aim at that."

Once built and tested, these appliances can allow you to have and maintain standardized applications for your enterprise that can be quickly replicated and used anywhere and anytime as required—even on the spur of the moment as your business demands are growing.

That's also huge from the standpoint of taking advantage of all of the performance that's in your existing or future server infrastructure, said Charles King, principal analyst at Pund-IT Inc. in Hayward, Calif., in an interview.

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Cathy McClain
Executive IT Consultant
Tahoe Partners

"We are in an era when an average x86 server tends to have much more performance than an application does, so that's one of the reasons why virtualization has become much more popular," King said. "It allows you to get more bang for your server buck. It also allows you to match up the applications better with the hardware."

Then, when you are ready to replace servers as they degrade in performance, moving your existing software appliances to fresher, faster hardware is a breeze.

"When you reach the point where the server is out of date, you just move your software appliances over to a new server and they can run there," King said. The SUSE approach takes the hardware part out of the equation. You've got lowered capital expenses, better performance and far more flexibility in the ways you use or manage the workloads than with any traditional hardware appliances.

"The notion of software appliances fits into every cloud scenario you can come up with," he said. "Optimizing applications is really what this is all about. A software-based appliance fits like fingers in a glove."

Dana Gardner, principal analyst with Interarbor Solutions LLC in Gilford, N.H., told us that the attraction of the software form factor for enterprises becomes even more compelling when you consider stagnant IT budgets over the last several years due to the recession. Now, though, the economy is beginning to turn around so companies need to bolster their service levels and meet increasing demands from customers, all while their budgets are not seeing any immediate growth.

That's where software appliances and their flexible formats and attributes can help, Gardner said. "Enterprises are looking for

any ways of trying to accomplish this trick of trying to pull a rabbit out of a hat by producing more workload support with less. This is one of the reasons that we're seeing an interest in cloud and Software-as-a-Service (SaaS). Now we're starting to see organizations move to 25 to 50 percent virtualized workloads."

Applications built with SUSE Studio "can provide virtual instances of bedrock architecture in a faster, easier way" for already-stretched enterprise IT departments, he said. "Now can they double down on their virtualization expertise and capabilities by being able to move into more flexible software support. That's where I think the pure software appliances are starting to have a more positive impact."

Another benefit is that while they bring great capabilities for enterprises, the use of custom applications built with SUSE Studio doesn't require more hiring and new IT skill sets, Gardner said. "Companies want to be able to use their same IT people to accomplish this addition of a software appliance on top of their investment in virtualization without additional expense and bringing in more staff and skills. This is where companies like SUSE are bringing in this ability to deliver with these software appliances."

Flexibility That Can Move Your Company Forward in Today's Business Environment

Michael Hugos, CIO and principal at Center for Systems Innovation, a Chicago-based IT consultancy, and former CIO with Network Services Co. said in an interview that he sees promise in how applications built with SUSE Studio can help enterprise clients in a wide range of ways today, from easier software creation, distribution and deployment to increased server utilization.

"We're going through a real difficult transition in the IT profession," said Hugos. "The time-honored tradition of IT is coming to an end. For the last 50 years, IT has basically been all about tinkering with hardware and software. In today's vernacular you'd call it 'server hugging.' Nowadays we are looking for solutions that can scale if the business applications ramp up. That's where things like SUSE Studio and others can become critical tools in the tool chest of the agile CIO."

Hugos continued by saying, "You really have to find ways to increase revenues and increase profits and that means to try new things. The days of just throwing money at things are largely over. We need to now think big, start small and deliver quickly." SUSE Studio "fits into that tool chest that we IT

people now need to bring to the job," he said. "Whether we use our own virtualized infra-structure or go to Amazon's cloud, it hardly matters. Enterprises need to do it to succeed."

With SUSE Studio, he said, enterprises can quickly build applications and deploy them, then make on-the-fly changes and quickly head into different directions as needed, all at lower costs and in less time compared with traditional software development and deployment processes.

"That's the sort of thing we need," Hugos said. "This is what can get IT finally out of the backroom and into the hands of the business people. It is now about showing the business people how these things can make money."

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Michael Hugos
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