

SERVER VIRTUALIZATION: KELCO discusses the benefits and real world considerations.

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SUMMARY

This document discusses the virtualization of computer network servers, specifically benefits and considerations associated with implementing this technology.

The contributors to this paper have managed, designed and deployed many successful virtualization projects with excellent outcomes.

We present an opportunity to leverage early lessons learned about the application and value of this innovative technology.

KELCO, a 20 year old technology consulting firm, has government & business experience and desirable small business certifications.



Virtualization ... has reached a level of technical maturity that will allow (for) rapid returns in cost savings



SERVER VIRTUALIZATION: THE REAL BENEFIT\$

As our world economy continues to ripple due a variety of historic and unique factors including State/Federal deficits, and budget battles. IT departments and business in general are being tasked to evaluate and deliver real cost savings – often with reduced budgets.

The concept of virtualization is not new, however this technology has reached a level of technical maturity that will allow for efficient deployment and rapid returns in cost savings.

The real benefits are achieved in reduced HVAC cost and physical space requirements due to the inherent reduction in physical servers. This is an operating cost benefit that can have an immediate and significant impact on the bottom line; especially in the midst of downsizing or relocation plans.

Let us not forget fewer physical servers equal fewer fixed assets to purchase, insure and maintain.

THE TECHNOLOGY: VIRTUALIZATION DEFINED AND CONSIDERATIONS

Virtualization started as software that allowed you run different Operating Systems (OSs) on the same computer simultaneously. Today's technologies extend virtualization to the application level also.

To determine if virtualization is right for you, it is important to understand the current virtualization picture— how all the pieces fit together, and the major players for various OSs.

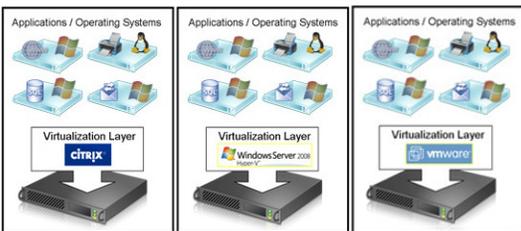


Figure 1: Virtualization Technologies

Virtualization software runs on top of the system's native OS (aka the host OS). The virtualization software provides a management interface and lets you create multiple virtual machines (VMs). Like a physical system, each VM has its own CPU and RAM and can support multiple hard disks and NICs, but the VM's components are virtual, not physical. Figure 1, shows the relationship of VMs to various host OSs.

Which servers do I consolidate? Which technology do I use? Which services should reside where? How many virtualized servers per box? Do I need to purchase new servers? These are all very important questions.

Some key elements to consider:

- Security/Trust relationships
- Performance
- Firewalls
- DMZ's
- Public access requirements
- Shared disk access(SAN, NAS, arrays)
- Redundant services and replication

Very early on, as you consider virtualization, you'll want to engage an experienced technology consultant to develop and test a proof of concept for your unique environment.

DEPLOYMENT: UNIQUE FACTORS

Unprecedented world events mandate that we take a hardened redundant stance with regard to our ever dependent technologies.

Recent natural disasters, acts of war and rebellion serve to reemphasis the potential vulnerability of our critical technological and structural environments.



Figure 2: Aftermath - Japan quake/tsunami of 2011



Virtualization is at the beginning of the curve, it is the foundation that anchors data center consolidation, which is a prelude to cloud computing.

*-Chris Roberts, CEO
Kelco Computing Solutions*



Fault tolerance and redundancy take on a renewed focus as work begins to review and reconstruct your existing infrastructure. It is understood that we are putting more of the proverbial eggs in one basket by virtualization of network servers. Fortunately ancillary technologies and solutions have evolved to adequately address these concerns.

There must be a cohesive effort to reevaluate rack layout, airflow, power requirements, generator needs, HVAC, fire suppression, growth and scalability. Naturally this sounds eerily like data center consolidation.

About Kelco Computing Solutions

Kelco Computing Solutions has been designing, installing, and supporting technology solutions for over 20 years.

Our highly skilled technical personnel have managed and performed on projects worldwide. Our engineers possess multiple vendor certifications. We adhere to industry standards and program certifications.

Our talented team has provided services and solutions for various business sectors including: Commercial- Private Sector (Large & Small Business), Municipal Government, State Government, Federal Government/Military.

As a reliable business partner we maximize our skills and certifications, culminating in excellent project outcomes and leverage for diversity & small business requirements.

Kelco has the following small business certifications:

- Service- Disabled Veteran-Owned Small Business (**SDVOSB**)
- U.S. SBA Small Disadvantaged Business (**SDB**)
- State of California Certified Disabled Veteran Business Enterprise (**DVBE**)
- Minority Business Enterprise (**MBE**)
- San Francisco Local Business Enterprise (**LBE**)
- Alameda County Small Local Emerging Business (**SLEB**)



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Mr. Chavez has over 11 years of designing & implementing complex IT enterprise services. Alex maintains an excellent rounded knowledge of emerging technology. Alex has exceptional talents in data center design, data/voice communication systems, virtualization and technology infrastructure. Mr. Chavez holds a BA in Computer Information Systems from The University of Texas, El Paso.

Chris Roberts

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Mr. Roberts founded Kelco Computing Solutions in 1991 after a distinguished military career with the United States Air Force. After his collegiate Computer Science curriculum and extensive Information Systems and Telecommunication Specialist training he was assigned to the 1993rd Communications Squadron at Dyess Air Force Base, TX. Possessing a TOP SECRET/SIOP-ESI/SBI clearance, he was part of a specialized team responsible for Information Systems operations and Information Security as well as various classified technology projects.

