Preproduction Systems Need Love too

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Many organizations treat preproduction test and development systems as second class citizens. This means that these critical systems are typically outgrown, hand-me-down production systems from times past. It's important to know what roles test labs have in the development and production environment.

Virtualization technology as a whole and virtual machine software in specific are only now becoming a standard part of this environment even though they could offer organizations some pretty significant benefits.

Testing labs need to be thought about in a strategic, not just a tactical, way.

HOW AND WHY IT HAS BECOME A BOTTLENECK

IT organizations are typically focused on maintaining and extending the status quo. IT executives always face a great deal of pressure from customers, staff, partners, and now, regulatory organizations to keep their applications available at all time. The imperative they face is that their systems must always perform.

These executives know that if their application systems become unavailable, the organization is likely to lose revenues, customers and, in some cases, face penalties and fines.

Customers often won't wait. If they can't order the desired products or services, they'll just hop down the 'net searching for other suppliers. Staff members and partners face tremendous pressure to be highly productive and they view application failure as simply unacceptable. Regulatory organizations have no patience for late or inaccurate reports.

The focus on "incremental improvement" has typically resulted in a complex computing environment.

HOW DID WE GET WHERE WE ARE TODAY?

Organizations live on Internet time now. This means that their information systems and the supported applications must be up and available 24 hours a day, 7 days a week, and 365 days a year. There simply is no time for unscheduled downtime. There's little time for scheduled downtime for system maintenance or backup of critical data.

IT decision-makers have historically faced the challenge of making what the IT organization does able to match the ever changing list of requirements presented by end users and customers.

It often takes 18 months to design and implement IT-based solutions and bring them into production. During that time, the competitive market, what's available in terms of system technology and government regulations typically make the solution obsolete before it is even deployed.

It is obvious that IT systems must be developed, tested and deployed with a level of efficiency that has not previously been seen.

THE GOLDEN RULES OF IT AND THEIR IMPACT

Organizations do not make drastic changes to their infrastructure unless decision-makers can assure themselves that the benefits will outweigh the costs of changes. To make "the rules of IT" clear in papers, executive briefing sessions or at conference presentations, I developed "Kusnetzky's Golden Rules of IT" approximately 15 years ago. It is an attempt to present how IT decision-makers work in a humorous way. It has been published or presented in many forms. Here's "Kusnetzky's Golden Rules of IT" as published on ZDnet in June 25, 2007:

- If it's not broken, don't fix it. Most organizations simply don't have the time, the resources or the funds to re-implement things that are currently working.
- Don't touch it, you'll break it. Most organizations of any size are using a complex mix of systems that were developed over several decades. Changing working systems that are based upon older technologies, older architectures and older methodologies has to be done very carefully if the intended results and only the intended results are to be achieved.
- You touched it and it broke, it will take longer to fix and, in all likelihood, cost more than you think to fix. Most of today's systems are a complex mix of technology. If your organization is going to be updating part of that tower of software, be prepared for unexpected consequences and see Rule 2.
- Good enough is good enough. Although it would be nice to have the luxury of unlimited amounts of time, resources and funding and be able to develop every conceivable feature, most IT executives know that they are only going to be allowed the time, the resources and the funding to satisfy roughly 80% of requests for new capabilities.
- Don't make major changes unless people are screaming! If they're not screaming, see Rule #4, good enough is good enough. If they are merely asking for changes, see Rule 2, don't touch it, you'll break it, and Rule 3, if you touched it and broke it, it will take longer to fix than you think. If they begin screaming, you'll have to do something to respond, just touch things as lightly as possible.
- Embrace your "jerkdom." We all know that we have to move forward and help our organization be as efficient and successful as possible. In short we must do the best we can with the resources, the time and the funding available and accept the fact that years from now someone will look at what was done and come to the conclusion (based upon what they know then) that what was done was insufficient in some way or didn't properly forecast future events and requirements.

When these rules are considered along with the rapidly changing requirements an IT organization faces, they tend to move very slowly towards their chosen goals. They also tend to plan every step carefully to prevent minor changes from causing major problems or outages. This also means that the IT organization can be seen to live or die based upon the strength of their preproduction systems.

The impact of following these "Golden Rules" is that an organization's information systems evolved over a very long time. In many cases, an organization's first target was increasing the performance, reliability and efficiency of their back office functions. Mainframe computers or, perhaps, midrange systems from a number of IT suppliers were installed. Later as an organization's front office functions were automated, personal computers, file servers, and application servers were added. These were made to communicate with the back office

systems so that the organization could continually increase its levels of efficiency.

As industry standard systems emerged that had the power of the old mainframes but at a sharply reduced cost, several layers of systems were installed in between the front office, the departments, the business units and the back office functions at the organization's headquarters.

If we examined the architecture of most organization's IT infrastructure, we would see a chronological layer cake of technology that stretches from 30 year old architectures to 20 year old architectures to today's newest technology. It's a veritable computer museum.

This layer-cake of technology has become an impediment to organizational agility and also to solution reliability. It's just too difficult to manage all of the intricate interactions between all of these layers of technology. It's just too costly to purchase different systems and software from all of the suppliers that are typically involved.

Organizations often come around to the view that they'd be willing to trade raw power of some of their largest systems for a less complex, more easily understood and maintained environment. The IT organization often longs for the day when they only had to develop applications for a single mainframe or midrange environment and then support it for the next 5 to 10 years.

PRODUCTION, PREPRODUCTION AND APPLICATION CHANGE

Most organizations are seeking ways to increase the performance and efficiency of their IT operations while also reducing the overall costs of computing. These requirements have led to an increasing reliance on distributed multi-tier computing solutions based upon industry standard systems as it is often believed that these systems can reduce the overall hardware acquisition costs an organization faces.

While it is true that these systems often are less costly than single-vendor midrange or mainframe-based solutions, the overall environment may not offer a lower overall cost structure. Cost of ownership studies almost always show that hardware and software, when combined, represent somewhere been 20% and 25% of the actual costs over the five year life cycle of a computing solution. Staff related costs of development, support, documentation, testing, administration, training and the like often represent 50% to 70% of the costs over that same five year period.

Why then do many organizations spend so little time and effort on their preproduction environments? These resources have an impact on the organization's IT environment at a strategic level and yet, they are often thought of only in a tactical way.

FUNCTIONAL DIFFERENCES

One of the commonly overlooked issues is that preproduction and production environments differ on a number of important levels. These two environments are used differently, have different needs and are typically funded in quite a different way. Let's explore those differences

DIFFERENT USAGE PATTERNS

Preproduction and production environments are used differently and each of them is quite important to the overall success of the IT organization mission to help the organization be more efficient, more agile, more scalable, more reliable and more secure. Let's review each of these environments separately.

PRODUCTION ENVIRONMENT

The production environment must be stable, reliable, and perform well all of the time so that the organization can provide the best service to its customers while also keeping a tight control on overall costs. This means that the operational environment is "locked down" and an elaborate testing and change control regimen is typically in place.

THE NEWEST AND MOST POWERFUL SYSTEMS

The production environment is often based upon the newest and most powerful systems and is funded as business critical function.

RAPID ADOPTION OF VIRTUALIZATION TECHNOLOGY

Virtualization technology, including virtual machine software, is rapidly emerging in this environment because it can offer enhanced agility, reliability, scalability or performance.

Research conducted for a private Kusnetzky Group study, revealed that the overall virtualization software market grew from $22.4 Billion in 2006 to over $27.8 Billion in 2007. The market is expected to continue its amazing growth to reach a projected $51.8 Billion in 2012.

PREPRODUCTION ENVIRONMENT

Preproduction environments are used quite differently. The environment is much more dynamic and must quickly adapt to an ever-changing set of requirements. The staff must be able to set up the environment to conduct extensive testing on one application and then switch the entire configuration to test something else later on that same day. What has been missing is the ability for users to have a self-service model, thus eliminating the requirements on IT.

FLEXIBILITY IS A KEY REQUIREMENT OF A PREPRODUCTION ENVIRONMENT

Flexibility is a key requirement for preproduction environments. This, by the way, is why the interest in virtualization technology in general and virtual machine technology in specific has been growing so rapidly.

This requirement for flexibility is countered by a need to maintain tight quality controls even though the development and support staff members are likely to be working in a distributed environment.

Preproduction environments must be effectively scheduled so that all of the changes and updates to systems, system software, application frameworks, database software and applications can be proven to work reliability before they can be released into production.

It must be easy for development and support teams to have self-service ability to reserve test lab resources so they can meet their deadlines and not make the whole organization wait for needed improvements.

It must be possible to configure test lab resources for one test run and then quickly reconfigure these resources to test something else. This may mean loading and unloading software, changing network configurations, changing storage configurations and possibly even adding or removing system memory.

In short, it is clear that the requirements of preproduction environments go far beyond those presented by production environments.

HAND-ME-DOWN SYSTEMS

Although preproduction environments are often made up of hand-me-down systems and storage that were used for production several years ago, they are often being deployed in a much more advanced, "utility computing environment" than their cousins in the production datacenter.

MOVING TOWARDS A UNIFIED, DYNAMIC INFRASTRUCTURE

Organizations have started to deploy datacenters that are full of a single type of computer, often an industry standard server, from a single supplier and use virtualization technology to treat those systems as a pool of resources that can be assigned to the highest priority tasks and reassigned to other tasks as needed to meet service level objectives.

What they've learned from this evolutionary step is that purchasing from a single hardware supplier and minimizing the number and types of software tools that are deployed often reduces their overall hardware and software costs. Using various forms of virtualization technology has made it often possible to deploy previously incompatible workloads on this unified systems architecture. With that learning in mind, organizations have been rapidly marching towards the deployment of racks and racks of industry standard systems and moving their application components into virtual environments.

An organization's IT department is often happy to make this move because it brings them closer to the unified environment they've been seeking for years.

Although this is not always the case, it would be wise for organizations to also consider the needs of their preproduction environments while planning this evolution.

MEETING THE REQUIREMENTS, USING THE RIGHT TOOLS

Production systems serve the needs of an organization's customers, partners and staff members. They have a direct impact on the organization's stream of revenues and productivity. Preproduction systems, on the other hand, typically serve the needs of developers and administrators within the IT organization. Since the impact of preproduction systems is only indirectly related to revenue and organizational efficiency, these systems are not considered in the strategic planning processes of most organizations.

Preproduction systems, however, have a *direct impact on the reliability of IT-based systems* and how quickly important application changes, product updates and other enhancements can be put to use. It's clear that these systems must be thought of differently if the organization is to achieve the highest levels of operational agility and reliability.

Organizations have begun the movement towards a unified hardware architecture running a diverse software environment. Workloads are being encapsulated into virtual machines and then these virtual machines can be deployed on a single type of computer.

VIRTUALIZATION TECHNOLOGY CAN HELP

Virtualization technology has been deployed in production environments for decades. Different types of virtualization technology have helped organizations reach towards the goals of greater levels of performance, scalability, reliability and manageability. Recently virtual processing software in the form of virtual machine software has begun to be deployed to support a consolidated, agile workload.

However, virtualization technology in general and virtual machine software in specific is just emerging in the use of industry standard servers in preproduction server environments. It has been an established part of desktop or workstation virtualization for quite some time.

Even though virtual machine technology has rapidly evolved over the past few years for production server environments, it has not experienced the same level of adoption in preproduction environments. If virtual machine software is being

utilized in preproduction server environments, it is often being scheduled, managed and configured using home-grown tools rather than using the available commercial products in this area.

It appears that this situation is a direct effect of organizational leaders not really understanding the scope of process management required for preproduction environments. Since these leaders often see preproduction environments as a tactical resource rather than being truly strategic, they haven't really taken the time or made the effort to learn more about the management and self-service software for virtualized resources that has been rapidly emerging over the past few years.

Powerful tools have been made available by a number of suppliers that target the requirements of staging and provisioning, resource management, orchestration and even performance management in a virtualized environment.

PROFILES OF SOME WHO ARE ON THEIR WAY

FINANCIAL SERVICES

A diversified financial services holding company with subsidiaries engaged primarily in investment and financial planning, in addition to investment banking and asset management has taken steps to improve customer service as well as lower overall costs.

In order to provide the best and most consistent customer service, this company provides all of the applications a financial advisor touches — over 40 windows based financial applications. This includes applications for Retail financial advisors, independent employees, as well as third parties. The company faced challenges dealing with all of the software changes and updates that were produced by the suppliers of their operating systems, development tools and application subsystems. This added up to over 400 software changes a month! Since the company was supporting many different users having different system configurations and usage patterns, it was increasingly difficult to test all of these changes before releasing them into production. Raymond James needed to find a way, other than building stand alone servers for every application, to quickly deliver its products to users.

This financial services company needed a self-service lab management and testing solution to be able to work with Microsoft virtual server in conjunction with HP Quality Center. After searching for a solution, the company selected the Surgient Virtual Automation Platform. The combination of Surgient's self-service and HP solutions made it possible for them to find and quickly fix a higher percentage of problems before its solutions make their way to customers.

The company has gotten the following benefits from making this choice:

- The use of virtualized servers has reduced the company's overall hardware acquisition costs.
- It has been able to hit quarterly release goals
- Using self-service, the company has been able to quickly address needed changes without causing disruption producing a more agile, responsive and reliable environment.

HEALTHCARE SYSTEM

A large healthcare system in the United States consists of 18 acute care hospitals, a heart hospital, outpatient care facilities, physician practices, skilled nursing and long-term residential care facilities, clinics, a managed care organization and other health-related services.

Today, the company operates in a seven-state area encompassing Arkansas, Kansas, Louisiana, Mississippi, Missouri, Oklahoma and Texas. Health System

services are provided by 29,000 co-workers and 4,000 physicians / staff members.

In 2006, the company began implementing a new Enterprise Resource Planning (ERP) system to streamline finance, HR and supply chain operations, and to ensure compliance with stringent healthcare industry regulations.

At the same time, it was executing a multi-year initiative to consolidate the IT environment including reducing the 32,000 workstations and 25,000 client applications deployed across the enterprise.

While the company was able to reduce unique workstations and client applications to 15,000 and 2,000 respectively, the new ERP system implementation forced a rebuild of these components and created a massive compatibility testing effort to verify operation against 40 core back-end applications prior to rollout.

To achieve full test coverage would have required 6 years of total testing time based on the existing test lab and manual testing process – a delay that would leave the company unable to meet critical ERP rollout deadlines. “With a 3-person QA team, no test automation, and a test lab consisting of 8 physical machines, we could only test 8 applications per week,” said the QA Team Lead for the company. “We had to make some changes and quickly – not only to get the ERP rollout back on track, but to establish a long-term solution for reliably performing a high volume of client application testing.”

The company has replaced their manual, time-consuming process with an automated and self-service process that orchestrates HP Quality Center, HP QuickTest Professional, Surgient Virtual Automation Platform and Microsoft Systems Management Server (SMS).

Saved test environments may be quickly and easily restored to verify results, perform additional testing and to facilitate problem diagnosis and resolution efforts with the application development group.

The company has gotten quite a number of benefits from using test automation. The time it takes to test a single application has dropped from 5 days to 4 hours. The organization has been able to text 80 applications per week rather than the 8 applications they were historically able to test. This was done without an increase in testing resources.

SUMMARY: SERVING THE NEEDS OF BOTH PRODUCTION AND PREPRODUCTION

The drive toward a simpler, more dynamic infrastructure brings along with it the requirement that the needs of both production and preproduction systems be considered on an equal footing from a strategic not just a tactical level.

It is clear that satisfying the needs of both can be done with today’s industry standard systems combined with modern virtualization technology, such as virtual access, virtual application environments, virtual processing software, network virtualization, storage virtualization and the appropriate tools to make these environments both manageable and secure.

The proper deployment of these tools would lead to a malleable infrastructure that would allow centralized management to reduce the overall costs due to management staff while allowed flexible, high performance self-service access for customers, partners, consultants and the organizations own developers.

THE RIGHT TOOLS

Creating a centrally managed and yet dynamic infrastructure requires the selection of the right tools. These tools must make everything in the infrastructure visible to administrators including systems, system software, database management software and application software. These tools must be easy to

deploy and easy to use or they won't be used. It's also important to make more and more of the IT infrastructure "self-service." Tools from suppliers such as Surgient such as the Surgient Virtual Automation Platform can significantly reduce the time and manual effort needed to manage and meet line-of-business requests, reduces operating costs, enhances administrative control, maximizes IT infrastructure utilization and improve business user satisfaction.

IT DOESN'T HAVE TO BE SEEN AS A BOTTLENECK

The goal of most IT executives is enabling the organization rather than inhibiting the organization. A strategic vision can be implemented using the automated tools available today that and manage and orchestrate the use of key system resources rather than consuming staff members' time to do the same thing, albeit more slowly.

HOW THIS IMPACTS IT STRATEGIC PLANS

Moving in the direction of a unified hardware architecture supporting a diverse, self-service virtualized software environment can make it possible for an organization's development efforts to more closely match the rapid pace of the market. It can also help the organization meet its cost reduction goals. Less costly systems can be deployed and staff members can make optimal use of their time.

While this appears to be a somewhat utopian viewpoint, it is clear that the organization's needs for cost effective, highly reliable and highly agile systems can be met. Furthermore, these needs can be met with today's products not products that are still on someone's drawing board.

It would be worth a decision-makers time to learn more about these tools so that strategic decisions can be made on a solid foundation of knowledge. For more information please visit: http://sb.surgient.com/8313