



Virtualization: Don't Forget Technical Support

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As organizations are planning the implementation of a virtualization strategy, they often forget something that's very important — technical support. Technical support is an often under-discussed aspect of technology acquisition, though is part of nearly every technology-based solution. Depending upon the type of software involved, technical support contracts often cost between 20% and 25% of the software license fee for each product that makes up a solution. Furthermore, this cost recurs each and every year that solution is in use. When virtualization technology is added to the equation most executives in an organization's IT group are not clear on what will happen to supplier's technical support. As the configuration becomes more complex, so do the support issues.

WHAT'S THE PROBLEM?

Today, applications are far more likely to be based upon a distributed, multi-tier architecture in which systems are working together to take advantage of powerful, low cost industry standard systems.

Applications are typically layers of technology that work together to help an organization achieve a single goal. In the past, all of these layers resided on a single large system. Today, applications are far more likely to be based upon a distributed, multi-tier architecture in which systems are working together to take advantage of powerful, low cost industry standard systems. Each of these tiers typically is made up of several systems to make sure that the components of an application appear to perform well and is highly likely to be reliable. Distributed, multi-tier applications are complex making technical support is challenging enough even when these layers of software are running on physical systems.

As organizations host the tiers of a complex application system on virtual systems, they are often surprised to find that their technical support challenge increases dramatically. Suppliers, for the most part, haven't tested their software in these environments that are similar to what any given organization is deploying. These suppliers are unlikely to have trained their support engineers so that they can deal with any but the most common mix of physical and virtual environments. Because of this, most suppliers may not be able to support of their own software in that environment. If an environment mixes applications, development tools, operating systems and virtualization technology from many different suppliers, it is almost certain that the organization is going to be challenged to obtain support.

When an organization is facing an outage, the last thing they want to hear is "We don't support that environment. Please duplicate the issue you're seeing in one of our supported configurations and we'll do our best to help."

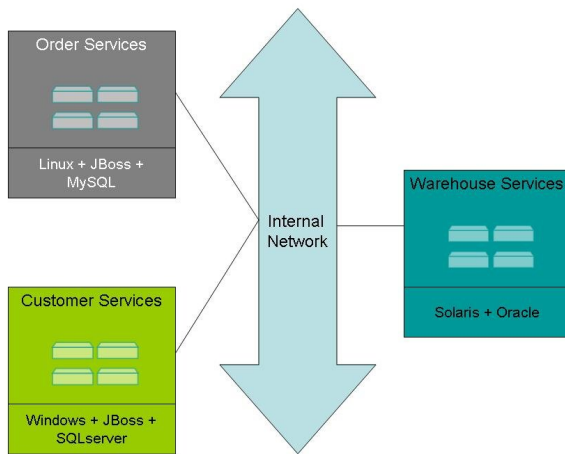
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EXAMPLE

Here's a scenario to help readers visualize what's meant by the previous section. Suppose an organization has deployed a Web-based application that displays an online catalog, allows visitors to select a product and shipping method, allows those visitors to pay for that product using a credit card. It is composed of the following services.

- ☒ Order services — a group of Linux systems that support a hybrid JBoss (insert your favorite Web services tool here) application (custom components plus purchased shopping cart software) that uses a MySQL database. This component displays catalogue information and once a product has been selected, gathers order information, discount information, shipping information; it validates this information and then sends information to both the customer services and the warehouse systems.

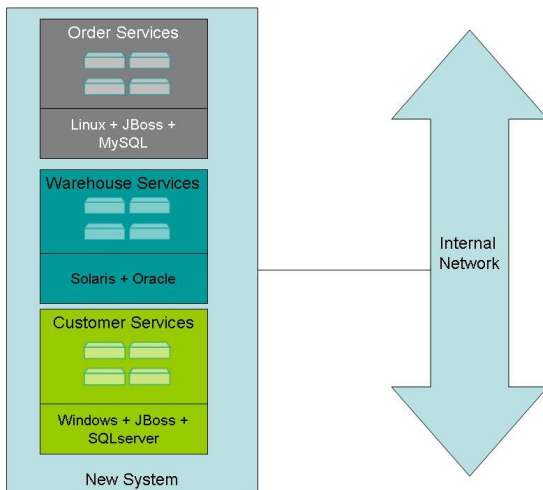
Figure 1 Original Configuration



- ☒ Customer services — a group of Windows systems that support a custom JBoss (or insert your favorite Web services tool here) application that uses a SQLserver database. This component acquires customer information, validates it and then allows the rest of the order process to proceed.
- ☒ Warehouse services — a group of Solaris systems that support a packaged inventory control system and shipment system. This system is runs a packaged application from Oracle that uses the Oracle database.

After this solution was in production for a number of years, it became increasingly clear that the systems were seeing full utilization only a part of the time. The rest of the time these expensive IT resources sat largely idle.

Figure 2 Goal for Virtualized Configuration



The organization decided to take a few steps to consolidate each of these formally separate functions onto a significantly more powerful new system. The first step was to encapsulate the functions of each of the single systems using virtual machine software. For this example, the virtual machine software selected was from VMware.

After these functions were seen to run well on their host systems, the consolidation effort began. First the customer services virtual machines were moved to the new server. Once this appeared to work well for a time, order services virtual machines were also moved to the new server. After this combination appeared to work well, warehouse services were moved.

Unfortunately, this final move didn't work so well. The performance was spotty. On occasion the application would appear to hang. Other times, the application would appear to work as expected.

Since the original warehouse services machines were still available, the work was moved back to these older systems and IT sought help from all of the suppliers involved in this experiment including, the suppliers of the systems, the operating systems, the database management systems, the application suppliers and even the supplier of the Web services tool.

What they found was that the suppliers of all of this software where only going to be of assistance if they could reproduce the problem on physical systems. Since this problem only appeared when the applications were run in a virtualized environment and then again only in this complex configuration. I might not be possible for the problem to be reproduced.



A conservative person might point out that a more likely scenario is that the various ISVs involved would simply point to one another as the problem and use that as a way to avoid getting too involved. A technical person might also point out that the migration might have been done improperly and ask what tools were used for the physical to virtual transition before getting involved.

HOW DID WE GET HERE?

For the most part, technology suppliers do their best to offer their products in the most commonly seen configurations. They follow the well known "80/20" rule in this area.

Let's step back from this sad situation for a moment to consider how this happened. For the most part, technology suppliers do their best to offer their products in the most commonly seen configurations. They follow the well known "80/20" rule in this area. That is they select and test the most commonly seen configurations (somewhere near 20% of all possible configurations) knowing that this approach will serve the needs of roughly 80% of their targeted customers.

When one considers what's found in most datacenters that means that these suppliers must offer support of their product running in a complex mix of hardware and software environments. This typically includes several different hardware configurations and operating systems: Windows, several UNIX implementations and several Linux distributions.

NEEDED: ONE TEST LAB

Suppliers have been forced to construct sophisticated test labs that house each and every one of the configurations they're supporting. Regression testing is done on each configuration.

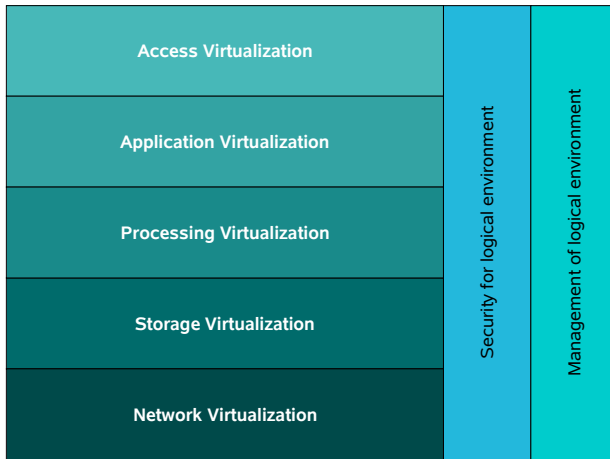
In most cases, this also means that suppliers have been forced to construct sophisticated test labs that house each and every one of the configurations that they're supporting. Regression testing is done on each configuration. This may mean changing I/O devices, graphic adapters, storage adapters and network adapters many times during the test runs. This may also mean loading and unloading various software components that are likely to be found in a customer's environment.

It is clear that if a configuration has not been tested, it is unlikely that the supplier can or will offer support. No supplier, no matter how large, has the capability of testing every conceivable configuration that might be found in the marketplace.

Only after tests are run successfully on each of these configurations can a product be made available to the public. All observed anomalies or issues must either be resolved or "work arounds" documented for their internal support team. The internal support team must be trained. Training materials must be prepared for partners' support teams. Sales literature must be prepared for both internal and external sales representatives. As you can see, this can be a long, very expensive task.

It is clear that if a configuration has not been tested, it is unlikely that the supplier can or will offer support. No supplier, no matter how large, has the capability of testing every conceivable configuration that might be found in the market place. One would hope that the best suppliers would at least make a good faith attempt to help.

Figure 3 Kusnetzky Group Model of Virtualization Software



Kusnetzky Group © 2007

Virtual environments add another layer to this already complex environment. If we consider the fact that there are six layers of virtualization technology found in industry standard datacenters today and several choices at each layer, it's easy to understand why vendors have been unable to offer support in virtualized environments. Virtualization technology can add a great deal of time and expense to an already intensive process. So, many suppliers have not included a broad array of these technologies in their testing regimen.

Even without the addition of virtualization technology, nearly all enterprise software vendors have been facing support challenges for quite some time. Their technical support policies are now being challenged by the onset of virtualization software in the industry standard datacenter.

Every day something new emerges in one of the layers of virtualization technology. Just to make the point a bit more clearly, the Kusnetzky Group has interviewed executives of nearly 100 companies that are offering some form of virtualization technology! How could vendors have tested their products with each and every one of the products these companies are offering?

SUPPORTING THEIR OWN PRODUCTS HAS BEEN THE STORY

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This rapid emergence of new technology is overwhelming the software industry's ability to respond in several areas including software licensing and technical support. Suppliers know that their customers need broad support offerings and yet, they must have actually tested products in their lab to successfully satisfy the requirements their customers present.

FINDING OUT IS A CHALLENGE

In order to discover what support policies major suppliers are offering when facing this customer challenge, I followed a process that is quite similar to that that would be used by nearly any IT executive.

- 1) I visited the suppliers websites and searched for their support policies
- 2) I visited the websites of major industry media sites and searched for announcements made by the major suppliers that might be relevant
- 3) I called the local offices of these suppliers to learn what I could from their local representatives

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I was amazed by the fact that it is very difficult to uncover what a supplier would actually do when faced with a difficult challenge, such as that mentioned in the above example. Since my deadline was rapidly approaching and I wasn't getting to the bottom of this issue, I then did something that many IT executives couldn't do. I called my contacts at these companies, told them that I was working on a paper and asked them for help.

WHAT ARE SEVERAL MAJOR SUPPLIERS DOING NOW ?

It's important to remember that it would largely be impossible for one vendor to support another vendor's software. They just won't have enough information or access to the right source code — **unless** they had all of the following in place:

- Mutual support agreements in place with **all** of the appropriate suppliers to solve customer problems.
- Their staff would have been given all of the training necessary to understand the other supplier's technology as well as the company's own technology
- An extensive set of processes must have been set up so issues could be escalated to the appropriate support teams
- In the example, the operating system suppliers, the database suppliers, the Web application framework suppliers, and the supplier of the application code would **all** have had to work together to solve the customer's problems.

The following section shows the results of my research into this situation.

HP

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Although I searched high and low on the HP Website, I wasn't able to find a definitive answer to the question of what HP would do for a customer facing the challenge described in my hypothetical example. Although the local HP representatives were very pleasant, they really had no idea what the company's policies would have been in our hypothetical situation. It was fairly clear that they knew how to deal with issues that could arise from supported configurations but, didn't have all of the information necessary to resolve this complex situation.

It does appear that HP will do its best to support its own products in a virtualized environment.

IBM

As with HP, it is clear that IBM will do its best to support its own products in a virtualized environment. Once again, it is really not clear what would happen in the complex environment mentioned in our example.

IBM offers a very broad portfolio of hardware and software products. Support options, of course, differ from product to product. As with HP, it is clear that IBM will do its best to support its own products in a virtualized environment. Once again, it is not really clear what would happen in the complex environment mentioned in our example.

They were, on the other hand, quite willing to send out time-and-materials consultants to help.

MICROSOFT

Novell and Microsoft have a comprehensive support agreement that allows software from one of these two companies to be supported running on top of the other's hypervisor. These configurations have been tested and support elevation processes are already in force for these two suppliers.

Microsoft offers a broad portfolio of its software products. As with HP and IBM, support options differ from product to product. Comprehensive support options are available for enterprise-level products. Microsoft offers support for its current generation of products running in an all Microsoft environment.

If the vendor of another virtualization technology has validated its products using Microsoft's server virtualization validation program (SVVP), some level of support for the combination of Microsoft's software with that third party's products might be available. Microsoft has presented its policies in a document "Microsoft's Support policy for Microsoft software running in non-Microsoft hardware virtualization software", Microsoft number KB 897615. Otherwise, it would be necessary for an organization to reproduce the issues they're seeing on a physical system as would be the case for all of the other suppliers I reviewed.

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If Novell SUSE Linux was being used in our hypothetical example, Microsoft and Novell would work together to help our organization to resolve the problems being experienced with the virtualized environment.

Like the other suppliers, VMware hasn't tested each and every combination and permutation of hardware and software that might be found in an organization's datacenter. If a problem is with hardware or software they've tested, they know how to help or, failing that, how to pass the problem along to some of the other suppliers.

To repeat something said earlier, no supplier, no matter how large, has the capability of testing every conceivable configuration that might be found in the market place. The rapid pace of announcements of new technology is overwhelming the software industry's ability to respond.

As others validate their offerings with Microsoft's SVVP, its joint support offerings will no doubt improve over time.

NOVELL

Novell offers to support their own products in virtualized environments and will make best-faith efforts to support other products if the issue can be shown to be the result of their software working improperly. It is necessary for organizations to duplicate the problem seen in a purely Novell environment before a resolution can be made available.

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If Novell SUSE Linux was being used in our hypothetical example, Microsoft and Novell would work together to help our organization to resolve the problems being experienced with the operating systems in this virtualized environment.

ORACLE

Oracle is able to support its own products on a physical machine. They can even extend their support to cover the situation that they're products on running on their own version of Linux using their own Xen-based hypervisor. It's pretty clear that they wouldn't be able to go much beyond that level of help.

VMWARE

VMware, like the other companies listed, is happy to offer a support contract on their software. As with all of the others, they're quite willing to help an organization configure their software and have relationships with many of the major suppliers of applications, development tools, operating systems and storage software. That being said, they don't appear to have mutual support contracts with all of the vendors mentioned in our hypothetical example.

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If an organization is using software it developed or has purchased software from a supplier that hasn't been tested by VMware, the organization will find it necessary to duplicate the issue without the "offending" piece of software or hardware.

SEEKING A FAIR AND EQUITABLE APPROACH

To repeat something said earlier, no supplier, no matter how large, has the capability of testing every conceivable configuration that might be found in the market place. The rapid pace of announcements of new technology is overwhelming the software industry's ability to respond. Suppliers know that their customers need broad support offerings and yet, they must have actually tested products in their lab to successfully satisfy the requirements their customers present.

Suppliers are trying to find an approach that will both be fair to the consumer and equitable. They expect to be compensated for the value they're offering to their customers. They are also doing their best to prevent being forced to "boil the ocean" and test every combination of products that may be found somewhere in the world or on the Internet.

The rapid adoption of products in each of the layers of virtualization technology, such as access virtualization, application virtualization, processing virtualization,



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storage virtualization or network virtualization technology, is making it increasingly difficult for suppliers of systems and software to keep up.

Some are making the attempt to test and support the top three or four products in each category on configurations which are commonly found in their customer's IT environment. Others are not going to that effort and are waiting for loud customer demand to drive their testing and support process.

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It would be wise for organizations to build complex virtualized environments using technology from trusted partners and their partners rather than building a patchwork quilt of technology.