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Why VDI Adoption Has Stalled

By Kevin Goodman

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In August 2007, Gartner predicted that "By the end of 2010, all new PC deployments will be virtualized." (Brian Gammage and George Siffler III, August 8, 2007). Aside from Cloud Computing, VDI may be one of the most talked about new technologies - yet it has failed to take off to the degree that some experts predicted. Indeed, by October 2008, Gartner changed their prediction to, "...However, despite ambitious plans for many organizations, deployments of hosted virtual desktop capabilities will be adopted by fewer than 40 percent of target users by 2010 ."

Everyone knows by now that VDI is a new way of managing user environments. The idea of replacing a traditional PC with a virtualized image in the data center and having the user access the virtualized image via a remote desktop protocol is appealing to IT staff for a variety of reasons that we are all now very familiar.

So, if the move to Virtual Desktops is so compelling why has the adoption rate been so slow? One reason could be that today's VDI software isn't up to par. It is reasonable to assume that since the technology is so new that the software is immature and lacks sufficient features to make the endeavor worthwhile. Another reason could be the unexpected downturn in the economy. Despite the bearish adoption rate, however, Gartner remains upbeat. Earlier this year prediction was bullish:

"The worldwide hosted virtual desktop (HVD) market will accelerate through 2013 to reach 49 million units, up from more than 500,000 units in 2009. Worldwide HVD revenue will grow from about $1.3 billion to $1.5 billion in 2009, which is less than 1 percent of the worldwide professional PC market, to $65.7 billion in 2013, which will be equal to more than 40 percent of the worldwide professional PC market ". - Emerging Technology Analysis: Hosted Virtual Desktops February 17, 2009.

It is easy to have a bullish attitude because it is certainly reasonable to assume in the next few years that the technology will catch up and the economic downturn will reverse. However, this article examines other more fundamental reasons why the VDI adoption rate is not what was predicted. And, if not corrected, these issues could continue to hamper the VDI adoption rate regardless of the state of the software and the state of the economy.

Typically, when an organization is deciding upon a new paradigm such as VDI they choose to conduct a proof of concept or "pilot". Pilots usually take place within a subset of the user community and users are expected to perform their normal line of business applications. That is, they are expected to perform the same functions they would normally perform except they are on a non-production system. If your organization is large enough, you may choose to run multiple pilots simultaneously with competing vendors' software. If the pilot is successful, you can expect to move from pilot to production at some point in time. If the pilot fails or languishes in the pilot stage for a significant period of time then there will be no production system. It is pretty simple actually: unsuccessful pilot equals no production system which equals no VDI adoption.

So if you are contemplating a VDI pilot (or are in an existing pilot that is languishing) there are five distinct issues that could subvert your pilot:

1. Incorrect management organizational structure
2. Lack of virtualization expertise
3. Failure to properly respect the user community
4. Poor understanding of the organization's hardware and software inventory
5. No way to measure success or failure

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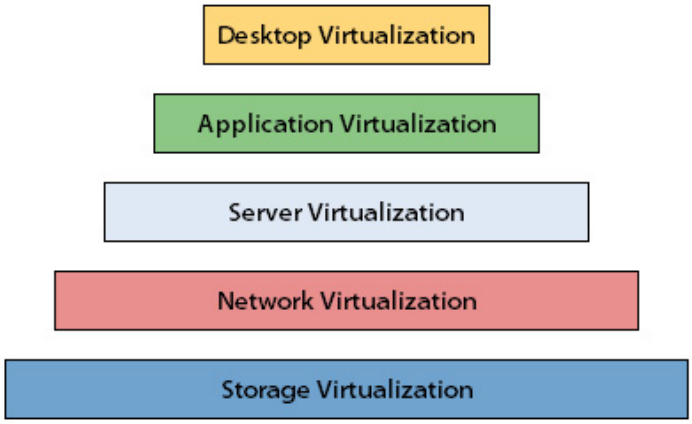
Incorrect Management Structure

Your VDI pilot may be predestined for failure based upon your company's organizational chart. If the person responsible for the servers in your data center is not the same person responsible for managing your desktops, and these people do not have a common boss for two or three levels, then watch out - the power struggle will overwhelm any chance of the pilot succeeding. In large companies these two functional areas also can be separated by geography. For example, if your server department is in St. Louis and your desktop division is located in Des Moines, there is a good chance that nobody knows each other.

This situation can be avoided if the mandate for virtualizing desktops comes from the CIO or another person in the organization who has authority over both groups. But what frequently occurs is the VDI proof of concept is a grass roots approach initiated by a technician or well-meaning manager in either the desktop or server group. Their idea is that they will put together a quick pilot and if it succeeds they will submit a proposal to upper level management. What happens instead is that a project designed to reduce expenses and streamline support and management costs ends up in a turf battle. The battle can take place on one of two fronts: if the server team initiates the pilot it can be seen as empire building by the desktop team. If the desktop team is the initiator the server team can become territorial by refusing access to the data center and refusing administrative access to certain resources.

Lack of Experience with Other Forms of Virtualization

If VDI is your company's first experience with virtualization then the chance of having a successful pilot decreases significantly. When quantifying expertise, experience with the free, downloadable version of a hypervisor does not count as true virtualization experience. In order to successfully implement VDI you should have the virtualization experience with storage virtualization, network virtualization, server virtualization and ideally application virtualization. Figure 1, the 'Hierarchy of Virtualization Experience' depicts how experience in each discipline builds the previous. While arguments can be made as to the order necessary to run a successful shop, expertise in all of these areas paves the way for a successful VDI pilot. It also decreases the costs associated with the pilot. If you already have your storage virtualized then the costs for additional SAN space is incremental. The same is true for networking. If you already have a VLAN in place then cost for adding a pilot can be minimal. Although you will need additional ESX servers to support your pilot, if you already have some ESX in place then there will be no learning curve associated with adding additional servers. This goes for your applications as well. If you are already using some type of application virtualization (such as Microsoft App-v, VMware ThinApp, Symantec Workspace Streaming) then the process of providing applications to your users will be streamlined. If you are not however, then you will spend a great deal of time installing applications into the VDI image.



Hierarchy of Virtualization Experience

Lack of Respect for the User Community

It is sometimes easy for those in IT to forget that the main function of IT is to support end users and their line-of-business applications. Therefore, it is easy to forget the needs of the users when designing a VDI implementation. This is a mistake.

VDI pilots that have been designed without input from the user

community will not be as successful as pilots that have the correct human factors applied. One thing to keep in mind is that no pilot goes from start to finish without some hiccups. Anticipating this by allowing users to move between the pilot and the production system will ensure that the users have little to no down time if the pilot system has to go offline for any reason. Beware of the administrator in charge of the VDI pilot who quotes Sean Connery in The Hunt for Red October, "When he reached the New World, Cortez burned his ships. As a result his men were well motivated." The idea being that if users are constricted to the pilot system and not allowed to return to the production system both the users and the support staff will be motivated to ensure that the pilot remains available and accessible. But what IT sometimes forgets is that most users see a system as the means to the end and are less concerned about the success of a pilot. If the users cannot do their job they may revolt. If so, there goes your pilot. The quickest way to a user revolt is to prevent the user from being able to complete their assignments. Restrict a user to a pilot that has frequent down time and you have done just that.

Lack of Understanding of the Application Mix ("What's out there")

In preparing the pilot, the virtual desktop must be configured by installing or streaming the OS and the applications. This is known as building an image. One of the issues that plague VDI pilots is IT's lack of understanding of what to put on the image. Which OS to include is not typically an issue, but knowing which applications to build into the image can be a challenge. If your organization does not do a good job of maintaining an application inventory then determining which applications to include in the build is a guessing game. Make a mistake in building the image and users cannot do their jobs. It should now become apparent why expertise in application virtualization is so important.

Virtualizing an application reduces the time it takes to make the application available to the user. An image that uses virtualized applications can stream applications as needed on a per user basis. However, the real problem arises when a user needs an application that IT doesn't know exists. A typical scenario goes like this: The first day of the pilot a user calls to complain that they can no longer get to the XYZ app. Support is confused because they have never heard of the XYZ app and have never had to support it before. The user then says something to the effect that this application was purchased x-budget and installed locally because it was needed for the so-and-so project. With no way to clearly identify the application inventory of your user base there is no way to know ahead of time "what's out there". In this case it is clear that this particular user needs to be removed from the pilot and allowed to go back to the production system.

No Way to Measure Success or Failure

In the same vein of establishing an application inventory, you need to be able to measure the user experience. One way to determine if your pilot is successful is to compare it to the legacy system. Unfortunately many pilots are started without first measuring a baseline of the existing systems. When you run a pilot without first capturing performance metrics, you will have no way to objectively compare the user experience before the pilot and during the pilot. Waiting for users to complain may be the only way to determine if problems exist. Inevitably, some users will be frustrated or feel put upon that they have become a guinea pig in an experiment. These users then complain about issues that existed in the production system. Other users who may be excited about using new technology may unwittingly believe that the new system should solve every problem. They may also complain about issues that exist in the production system. Pilots that are implemented without establishing a baseline may get trapped into trying to solve unsolvable problems.

What to Do About It

Hopefully, you now will be able to recognize some of the pitfalls that companies encounter during their VDI pilots. The question is what can you do to avoid the same problems?

Some of the following suggestions will give your pilot a fighting chance and, if successful, lead to a production system.

Make Sure You Have Buy-in from Upper Level Management

Recognize that a VDI project goes across departments, and ensure that you have the buy-in from upper level management before you begin. VDI pilots that are conducted as "stealth projects" rarely succeed. Although it is tempting to request funds for a VDI project after you after proved the concept, experience shows that the more prudent route to take is an up-front approach. Oh, and by the way, nobody likes an empire builder. Reach out to your co-workers in the other departments and include them up front as well.

Recognize Your Level of Comfort and Expertise

Before you embark on your pilot, assess the skills of your organization. Do you have the expertise in the necessary virtualization disciplines? Do you have existing hardware in place to take advantage of economies of scale? If you aren't comfortable with all levels of the hierarchy of virtualization then perhaps now is not the time to embark on a VDI project. If you have to acquire a significant amount of equipment then the cost of the VDI pilot will seem to be too expensive.

Include Users in Planning

Picture this. When corporate users leave work on Friday, they have a desktop computer. When they return to work on Monday, their desktop has been replaced with a thin client. If the only difference they notice is the box on or under their desk is gone, then your VDI pilot is a success.

The users' end goal in the transition to VDI is for nothing to change. They still want to be able to get to all their data and use all their current applications to get their work done. At the same time, they still want to be able to customize their desktop, set personal preferences that help them be more productive, and keep the picture of the kids and the dog in the background.

Since your users are your true customers, include them in the planning process. Users tend to be very vocal and opinionated about their expectations in a pilot. Their approval and satisfaction during the pilot greatly affects the adoption process. The biggest complaints users have in moving from a personal desktop computer to a virtual desktop have to do with their loss of control, loss of freedom, and a degraded user experience. All of these items can be mitigated with proper planning.

Including users early on in the pilot may seem to complicate the pilot planning. But if you ignore your customer's needs and feedback, you will do so at your own peril.

Another suggestion is to use a subset representative of your entire user base in your pilot. This allows you to be more responsive to user issues that may need to be fixed without frustrating all users and severely impacting productivity. You could do one pilot that includes users from different departments. Another idea is to do several smaller pilots, one for each department. By including users that represent the enterprise as a whole, the pilot will be a comprehensive test of your users' use of applications, access to data, and response times.

You also should be prepared to allow users to move between the VDI pilot and production. When users in the pilot run into issues, they can continue to be productive if IT can temporarily move them out of the pilot until the issue is resolved. Once the issue is fixed, IT can move the user back into the pilot to continue testing. More users will be willing to participate in the VDI pilot, and the pilot will be less stressful because no one will be stranded and unable to get any work done.
duction system.

Establish a Baseline

Without a baseline and measurements of current performance, you have no way of making your VDI pilot an objective test.

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Whether VDI impacts your performance positively or negatively will just be a matter of perception and opinion.

Before embarking on a pilot, you need to inventory your current hardware resources, identify applications being used across the enterprise and dependencies among them, and audit license utilization and deployment. Basically, you need to ask what's out there now. Ideally, your inventory discovery process should be an automated process. But if you do not have the necessary tools on hand, a manual process will suffice.

Measuring your current performance before the pilot is critical to being able to compare the two technologies. If you know the users' logon times and application transaction times on the production system you will be able to compare them to the pilot.

Once you have converted your pilot users to virtual desktops, measure their performance again with the new technology. This data will not only help you compare the performance differences in the two technologies, but it also will help you zero in on what areas need optimization.

It is critical that upper management have performance data measurements to decide whether to adopt VDI throughout the enterprise. Without the objective performance data, pilots frequently are either extended in hopes of a more concrete proof-of-concept or canceled and considered a failed technology trial.

No pilot can succeed if you can't measure success.
Whether VDI impacts your performance positively or negatively will just be a matter of perception and opinion.

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