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Mission-Critical Disaster Recovery in the Virtual World:
10 questions you should ask when choosing a DR solution for your virtualized mission critical applications

Disaster Recovery Planning & Infrastructure
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Disaster Recovery – A Speed Bump in the Virtualization Highway

Enterprise application virtualization is no longer an emerging technology. Businesses of all sizes are deploying applications on virtualized IT infrastructures, and reaping the benefits of ease of management, flexibility, and cost-effectiveness.

But there's a speed bump on the virtualization highway. Traditional replication and disaster recovery (DR) solutions were not conceived to deal with the demands created by the virtual paradigm. No matter how vendors try to fit the square peg into the round hole, existing DR solutions are hard-pressed to adapt to the scalability and flexibility that enterprise-class applications require when running on a virtual infrastructure.

In light of the challenges facing DR for virtualized mission-critical applications, we have put together a list of 10 questions you should ask yourself about your DR solution, to ensure its suitability to the virtual paradigm.

Question #1 – Is it “virtual ready”?

Today, your applications are managed and provisioned as virtual machines (VMs) and virtual disks (VMDKs). Requests for new services (new applications, additional application resources, etc.) are handled by the virtualization team, because that's the paradigm you've adopted. Thus, when it comes to DR, you need to know if your solution is “virtual ready”. For example:

- Can you manage replication at the VM and VMDK level, like your infrastructure, or do you have to actually manage it at the LUN level?
- If you need to replicate a complete application running on multiple VMs, will you need to first consolidate storage locations, and then define replication policies?

If the solution isn't virtual ready, your management overhead may effectively be more than doubled. This can mean that many of the benefits you've achieved through virtualization of the rest of your infrastructure may be lost in the DR sphere.

Question #2 – Can it support your mission-critical application needs?

Can your DR solution provide you with the level of functionality required for protecting mission-critical applications?

For example;

- Does it support consistency grouping of VMs across hosts and storage, to ensure write order fidelity of an entire application?

- Can you achieve a Recovery Time Objective (RTO) of less than a minute, and Recovery Point Objective (RPO) levels of seconds?
- Does your DR solution offer near-synchronous replication?
- Does it include Continuous Data Protection (CDP) capabilities?
- Does its scalability meet your enterprise needs?

Question #3 – Is it vendor agnostic?

From CIOs down, everyone is careful to avoid vendor lock-in whenever possible. In both public and private cloud scenarios, vendor heterogeneity is crucial to both flexibility and cost-effectiveness.

- Is your DR solution hardware-agnostic?
- Does it support replication and mobility between different vendors and different storage technologies (FC, NAS etc.)?

True heterogeneity will enable you to replicate from high-end storage to a lower tier of storage at your secondary site, or even replicate to a cloud provider without changing your environment – driving down the cost of establishing a DR site.

Question #4 – Is it application aware?

The essence of your virtualized infrastructure is application-awareness – it's the enabler for the high level of IT service that your clients demand. Does your DR solution replicate at the application level? Does it support VMware vApp objects? Can you configure replication policy for an entire application at one time? Can the solution, for example, consistently replicate an application spread across 10 VMs, located on different ESX hosts, and using storage from different LUNs?



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Question #5 – Can it provide mobility and migration?

Does your enterprise DR solution interact with tools available through your hyper-visor?

- Does your solution support VMware Storage vMotion so you won't have to worry whether replication will be moved with storage?
- Can you use replication to move workloads between datacentres, while still maintaining full transaction integrity and nonstop service availability?

A cloud-based DR solution lowers the time and cost barriers to replication. Although you may prefer to keep the DR solution in-house today, in the future you may want to leverage the cloud for DR, or at least parts of it.

- Is your DR solution truly cloud-ready?

As open as cloud storage is, both cloud service providers and cloud users need the flexibility to replicate between different environments, different vendors, and different technologies.

- Can your solution integrate both with cloud management tools and cloud provider technologies?

Question #6 - Does it add or remove control points?

DR is a critical operation, involving a number of technical resources and demanding a high level of cooperation and inter-communication. One way of keeping overhead, complexity, and resource consumption down in any complex process is to keep the number of control points to a minimum.

- Does your DR solution add new control points?
- Will it work within your existing vSphere and vCenter infrastructure management environment (and actually reduce the amount of control points by replacing existing replication solution consoles)?
- Does it offer an API for integration of cloud enterprise management and workflow applications?
- Does it offer standardized web services and PowerShell API?

Question #7 – What's the learning curve?

Like any other tool, a DR solution will have a learning curve. The question is: how steep a curve? Even if you adopt a solution through a MSP, there will still be key facts that your staff need to know in order for the solution to be most efficient.

- Does it introduce new concepts, requiring your staff to learn new methodologies, or does it use concepts and methodologies already well known to your team?
- Does your DR solution work seamlessly with (and ideally within) your existing enterprise management and workflow applications?

- How long will it take to get a new employee up to speed on the solution?

Check the ease of installation and overall time to production. Does the solution automate key implementation processes, which can significantly lower setup overhead?

Question #8 – How scalable is the solution?

Scalability has two components: deployment and management. As your virtual infrastructure grows, you need your DR to grow with it seamlessly, without the need to purchase, install, and configure additional proprietary hardware.

Managing tens and hundreds of VMs is not trivial:

- Does replication increase this challenge?
- Can your DR solution perform operations and configure policies at the application level, managing groups of VMs?

Question #9 – What's the performance impact?

There is one acceptable level of performance impact in mission-critical replication: zero.

Some virtual replication solutions – many actually delivering data protection built around cumbersome snapshot or backup paradigms – often negatively impact application performance, perhaps even interrupting service.

- Does your DR solution rely on a “data path splitting” paradigm:
 - » Which has no negative performance impact
 - » Which doesn't introduces data lag
- Or does it rely on snapshots, which slow down your applications?

Question #10 – Does it provide clarity of your DR readiness?

Having the perfect setup for your DR environment is only half the solution, in order to be fully prepared for a disaster you need to have complete visibility of your recovery environment.

To make a DR solution water-tight, you need to be able to maintain it and react if problems arise.

- Does it provide reporting?
- Does it provide alerts if RTO and RPO objectives are not being met?
- Is there a single pane of glass which allows you to perform status checks?