

Zerto

White Paper

BC/DR in the Cloud Era

Opportunities and Challenges



Today, enterprises of all sizes are virtualizing their mission-critical applications, either within their own data center, or with an external cloud vendor. One key driver is to leverage the flexibility and agility virtualization offers to increase availability, business continuity and disaster recovery.

With the cloud becoming more of an option, enterprises of all sizes are looking for the cloud, be it public, hybrid or private, to become part of their BC/DR solution. However, these options do not always exist. Virtualization has created the opportunity, but there is still a significant technology gap. Mission-critical applications can be effectively virtualized and managed; however, they cannot be effectively protected in a cloud environment.

Zerto Virtual Replication 2.0 is the industry's first BC/DR platform for the cloud, protecting applications in the cloud and to the cloud. Find out why Zerto 2.0 might be the right fit for your organization.

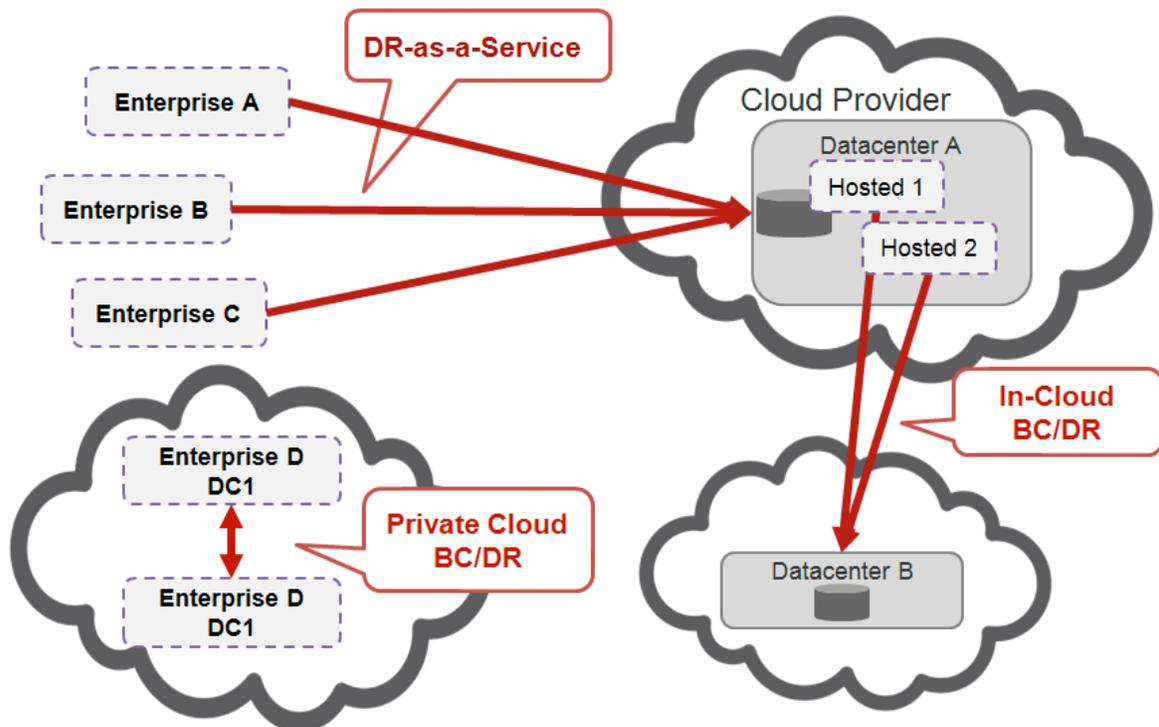
What is Cloud BC/DR?

Before we explain why, let's define the different forms cloud BC/DR can take:

- **Private Cloud BC/DR:** Business continuity and disaster recovery between two or more geographically separate sites, all under the control of the enterprise's IT team and deployed as a private cloud
- **Disaster Recovery-as-a-Service (DRaaS):** The production environment is within the enterprise's data center; however, a cloud service provider is used as the recovery site and replication target
- **In-Cloud BC/DR:** Production applications have been moved to a public cloud (IaaS or PaaS), and are protected by the cloud provider with full disaster recovery to another geographical site

Private Cloud BC/DR

Private cloud BC/DR occurs between two or more geographically separate sites that are both under the control of one enterprise. All functions, including BC/DR,



are managed by an internal IT team. When adopting a private cloud paradigm, enterprises should consider the following opportunities and challenges.

Opportunities

- Allows enterprises to create a flexible and dynamic environment in which their IT departments can scale and mobilize applications depending on needs and resources at any point in time
- Enables enterprises to fully leverage IT infrastructures across multiple geographical sites
- Maximizes utilization rates and helps enterprises to gain efficiencies across all available hardware, independent of the vendor
- Helps enterprises to evenly distribute production load across multiple data centers and recovery sites

Challenges

There are several challenges enterprises face when trying to achieve their BC/DR objectives in a private cloud. Some of these challenges include:

- **BC/DR is not cloud ready:** There is not a true cloud BC/DR solution that is hypervisor-based and therefore, virtual-aware. Current BC/DR solutions for the cloud are storage-based, requiring lots of manual coordination between the VM admin and the storage admin. This is inflexible and rigid, the exact opposite of what is expected of the cloud.
- **Large enterprises have more than two data centers:** Many enterprises have two or more major data centers and often have several smaller data centers as well. This increases the need for effective BC/DR. Bi-directional replication, as well as multi-site support, is critical to ensure the availability of virtualized, company-wide, mission-critical applications.
- **Lack of centralized management:** Disparate infrastructures increase the complexity of current BC/DR approaches. These infrastructures are

managed and maintained separately, requiring lots of manual coordination. Manual processes can lead to an increase in errors, especially during a high-pressure situation such as the application that drives the business being completely unavailable to end-users.

- **Lack of multi-tenancy:** In order to gain the full value of the cloud, the infrastructure needs to be shared effectively across departments and/or applications. Replication can add another layer of complexity, especially when the solution is not designed specifically for the cloud. As a result, duplicate servers, appliances and networks are required in the environment and multi-tenant efforts are undermined.
- **Integration with VMware vCloud Director (vCD):** Some enterprises are considering implementing vCD as their cloud management platform, but none of the current BC/DR solutions integrate with vCD. This means that the entities native to vCD, such as vApps and virtual data centers (ORG vDC), are not supported by the BC/DR technology – resulting in endless manual processes to support protect and failover to a vCD environment.
- **Data mobility:** Getting production information to the disaster site requires a significant effort. Some customers even perform the replication locally to the storage array and then ship the physical box to the disaster site. With the cloud, data mobility should be easier; however, when it comes to mission-critical applications this is not the case.

Disaster Recovery-as-a-Service (DRaaS)

Disaster Recovery-as-a-Service (DRaaS) allows enterprises to host the production environment within their own data center, but use a cloud service provider (CSP) as the recovery site and replication target. Often times, DRaaS proves to be a win-win solution for the enterprise and the CSP. When adopting a DRaaS paradigm, enterprises should consider the following opportunities and challenges.

Opportunities

- Helps enterprises significantly reduce costs and complexity by hosting their replication site for BC/DR within the CSP's infrastructure
- Offers cost-effective services for enterprises by leveraging entire IT infrastructures across the CSP's multiple geographical sites
- Maximizes utilization rates and helps enterprises to gain efficiencies across all available hardware, independent of the vendor
- Enables enterprises to evaluate the cloud and become more comfortable with the concept

Challenges

Unfortunately, delivering a true DRaaS cloud offering for tier 1 or 2 applications is not a viable option due to costs and/or scale. With array-based replication, the requirement of duplicate infrastructures means that a CSP needs to create a separate, identical environment for each customer it is protecting. This significantly drives up the costs, in terms of the infrastructure and the associated management costs, to the point where the service cannot be offered. Other challenges include:

- **Duplicate infrastructure requirements:** With traditional, tier 1 BC/DR solutions, the storage needs to match. Whatever storage type, protocol, or LUN configuration is in the production environment, it needs to also be in the replication environment. This significantly drives up costs, not just because the same infrastructure needs to be purchased twice, but because the CSP now needs to have in-house expertise on all assets within the infrastructure.
- **Multi-tenancy:** The ability to leverage the cloud infrastructure to gain economies of scale helps the CSP keep costs in line to offer a robust service to its customers at an attractive price. However, the complex networking issues that are introduced when replicating multiple enterprises to a single cloud often impede

an effective DRaaS service. When replicating from separate sites, with separate networks to one site with one network, redundancy is required at the replication site. In many cases, this redundancy takes away the flexibility and scalability the cloud offers.

- **Multi-site capabilities:** CSPs have customers in different locations and multiple data centers serving them. If the solution cannot support bi-directional replication across multiple sites, the CSP cannot offer the service, period.
- **Centralized management:** The CSP cannot manage, configure and report on each customer's environment separately. This manual coordination would require too many resources and even with experts, it would undoubtedly lead to errors, causing service level agreements (SLAs) to deteriorate. The CSP would likely then have angry customers on its hands as well.
- **Integration with VMware vCloud Director (vCD):** Current BC/DR solutions are not integrated with vCD. As a result, entities within vCD, such as vApp and virtual data centers, cannot be used for replication. The replication solution must be built around these entities, enabling protection from vCD and failover into vCD, otherwise significantly reducing the value derived from leveraging vCD in the cloud.
- **Integration with cloud management platforms:** Many CSPs deploy customized cloud management platforms and require BC/DR to be managed, provisioned and automated through these platforms. This requires tedious integration support between the two.
- **Support a range of SLAs:** The CSP has a range of customers with varying requirements. The replication solution needs to be able to support mission-critical applications with RPOs of seconds and RTOs of minutes, as well as other applications with less aggressive recovery needs.

Some CSPs are positioning backups and snapshot transmission as DRaaS. However, this is not appropriate for enterprise-class, mission-critical applications.

- Recovery can take days, resulting in data and time lost, and ultimately leading to lost customers and revenues.
- Snapshots slow down mission-critical performance and complicate storage planning.
- Backup is not replication – force-fitting this solution as a DRaaS offering will not meet customers' needs and will deter them from moving forward with any other offerings from a CSP.

In-cloud BC/DR

When implementing an in-cloud BC/DR solution, production and replication environments for an application are moved to a public cloud where they are hosted and protected by the cloud provider. In this BC/DR situation, data is recovered to another geographical site. When adopting an in-cloud paradigm, enterprises should consider the following opportunities and challenges.

Opportunities

- Helps enterprises to significantly reduce costs and complexity by allowing the CSP to host their replication site for BC/DR
- Offers cost-effective services for the enterprise by leveraging the flexibility and agility of the cloud, coupled with efficient resource utilization
- Creates a dynamic environment where applications are easily scaled and mobilized depending on need and resources at any point in time

Challenges

However, CSPs looking to protect mission-critical applications hosted in the cloud are facing many challenges because current BC/DR technologies are not aligned with the cloud. A public cloud is a very dynamic environment,

with new customers on-boarded every day and others adding or changing services. Cloud BC/DR needs to be granular enough to enable protection of specific VMs, automate change and onboarding processes and enable flexible management of shared infrastructure. Some other challenges are:

- **Multi-tenancy:** In this scenario, multi-tenancy is more critical because the CSP needs to be able to maximize its environment to keep costs down. If duplicate infrastructures are required, complexity of the environment is increased significantly and the benefits seen with the cloud – flexibility, ability to scale and adaptability – are reduced. Additionally, networking conflicts can be a significant issue if true multi-tenancy does not exist, which greatly increases the complexity of the replication process.
- **Multi-site capabilities:** A CSP is going to have multiple locations – if the solution cannot support bi-directional replication across multiple sites, the CSP cannot offer the service cost effectively.
- **Integration with VMware vCloud Director (vCD):** Current BC/DR solutions are not integrated with vCD. This means entities within vCD, such as vApp and virtual data centers, cannot be used for replication. The replication solution must be built around these entities, enabling protection from vCD and failover into vCD, otherwise significantly reducing the value seen from leveraging vCD in the cloud.
- **Integration with other cloud management platforms:** A true BC/DR platform for the cloud must enable integration with all cloud management platforms
- **Support a range of SLAs:** The CSP has a range of customers with a range of requirements. The replication solution needs to be able to support mission-critical applications with RPOs of seconds and RTOs of minutes as well as other applications with less aggressive recovery needs.

Introducing Zerto Virtual Replication 2.0 – The Cloud BC/DR Platform

Zerto Virtual Replication 2.0 builds upon the 1.0 version to support cloud environments as well as virtualized environments. This release enables private, public and hybrid clouds to deliver on the promise of simplified BC/DR, bringing replication into the cloud rather than forcing IT to create a workaround to ensure application and information availability. Zerto offers enterprises a BC/DR solution that truly aligns with the cloud – it is highly available, flexible and automated to deliver cost-effective services to customers. Most companies investigate the cloud not only for increased flexibility and scalability in the production environment, but also because they expect BC/DR to be simplified. With Zerto 2.0, it finally is. Zerto 2.0 unique features include:

- **Multiple site support:** Zerto supports multi-directional replication across as many sites as the infrastructure requires. Combining this feature with multi-tenancy delivers a true, cloud BC/DR solution.
- **Native multi-tenant architecture:** With Zerto, replication from multiple sites to one shared infrastructure, without networking conflicts, is simple. Additionally, manage the entire environment with one management infrastructure – no duplicate entities are required – ensuring simplicity and flexibility.
- **Hardware-agnostic replications:** Zerto Virtual Replication is completely storage-agnostic and is able to replicate from any storage to any storage. This enables enterprises and CSPs to deliver BC/DR at a dramatically reduced price. Traditional solutions require the storage at the production site and the replication site to match exactly. With Zerto, that requirement is gone. Additionally, Zerto supports replication between different versions of VMware vSphere. This tolerance for different versions allows an additional level of flexibility because the chance of all customers using the same version of VMware vSphere is slim to none.
- **Seamless integration with no environment changes:** To remove barriers to entry for DRaaS, the offering needs to completely integrate into the customer's existing environment. As discussed, the CSP cannot require the customer to make any changes to the existing environment, so the solution needs to be able to replicate between hypervisor versions. Zerto Virtual Replication, being hypervisor-based and software only, can be installed remotely in two hours or less and does not require any configuration changes.
- **Centralized management:** Independent of how many sites the enterprise has or how many customers the CSP has, Zerto is able to leverage a shared infrastructure. With Zerto, the CSP can report and act on all customer environments from a central console, including initiating automated failovers and failover testing. There is no need for manual correlation of activities across the environment.
- **Deep VMware vCloud Director (vCD) integration:** Zerto 2.0 is integrated with vCD and has full awareness of vCD entities, including virtual data centers, vApps, networks, datastore settings and more. This integration enables and automates the protection, failover and failback of applications to and from vCD – all managed centrally.
- **Zerto is built for scale:** Whether the environment has a few VMs or thousands, Zerto can scale to effectively support it. Leveraging features such as multi-tenancy further delivers scalability as duplicate assets are not required, such as management servers. Zerto scales with the environment, leveraging one Zerto Virtual Manager for the site and additional Zerto Virtual Replication Appliances for each additional ESX host.

Zerto 2.0 – Offering the Right Fit

Whatever path enterprises chose in their application deployment, Zerto provides a BC/DR solution that fits. Zerto Virtual Replication is the only cloud-ready BC/DR platform providing enterprise-class protection to applications deployed in virtualized environments and private or public clouds. It enables Disaster Recovery-as-a-Service and true, cloud BC/DR for cloud service providers and enterprise customers, respectively.

Enterprises can expand BC/DR support to include not just the traditional data center, but also smaller branch offices and other sites through multi-site capabilities. Additionally, this lowers barriers to entry for the enterprise to evaluate the cloud for other applications in the environment, perhaps a tier 2 application. The multi-tenancy features greatly increase efficiencies at the disaster site, especially if there are geographically separate production sites replicating over to the same disaster site. One infrastructure, managed centrally through VMware vCenter and vCloud Director, can now simplify management and reduce operational costs.

Cloud service providers are able to attract new customers by offering a cost-effective service that enables customers to effectively evaluate the CSP without complete dependency. CSPs can make the price very attractive to enterprises as they do not have to create a completely duplicate infrastructure with matching hardware, software and networking. Additionally, they do not have to have a widely specialized team and can focus on what they have in their environment. Finally, with true multi-tenancy, economies of scale can be leveraged to further drive down costs for customers.

Zerto 2.0 – The Only Choice

Zerto Virtual Replication 2.0 is the only cloud-ready BC/DR platform.

- **Multi-site:** Protect applications between multiple sites on a single infrastructure
- **Multi-tenant:** Leverage shared clusters and storage for protecting multiple applications from multiple locations
- **Technology agnostic:** Replicate between different storage technologies and VMware versions
- **Centralized management:** Use a single console to manage and report on multiple sites and customers
- **Comprehensive automation:** Automate failover, failback and testing, both in vCenter and vCloud environments
- **Range of service levels:** Support tier 1 applications with seconds of RPO and minutes of RTO, as well as tier 2/3 applications

Zerto Virtual Replication 2.0 is the industry's first BC/DR platform for the cloud, protecting applications in the cloud and to the cloud. Contact Zerto today for more information or for a trial to start reducing costs while delivering higher service levels to the business. ■