Introducing VMware Cloud Director Availability

TURKCELL

"VMware Cloud Director Availability being our sole migration tool has enabled Turkcell to procure more and more customers, thanks to the easy usage of the technology that our customers are already familiar with. The assessment services we provide to our customers have made their lives easier in terms of understanding and purchasing only the required amount of target cloud they need. Our connectivity options allow our customers to use low-latency networking that doesn't allow those replications to fail. Moreover, our partnership with VMware has been worthwhile, and I hope our customers keep taking full advantage of the scalability and cost benefits that Virtual Cloud Director Availability has to offer."

ORHAN BIYIKLIOĞLU
Cloud Engineering Manager
Turkcell

Introduction to VMware Cloud Director Availability

The ever-growing data-centric world is fueling the latest gold rush. Nevertheless, it is ephemeral, difficult to protect, and risk-prone. Similarly, the adoption of the cloud and the Internet of Things (IoT) has grown exponentially in recent years; since the pandemic, cloud computing marketing has been on a rapid upward trajectory regarding cloud adoption, infrastructure, and spending. Many businesses have been compelled to rethink and shift their strategy to accommodate a new wave of working, communicating, and operating business functions. Therefore, most companies are now hybrid; some are still thinking about shifting gears and moving their on-premises environment to the cloud. If cross-collaboration is critical for businesses, they will ultimately need access and control over workloads accommodated on commercial, public, and private clouds or across hybrid infrastructures. The 'as a service' segments of cloud spending, combining shared cloud as a service and dedicated cloud as a service, will account for the majority of all cloud spending growing from 55.7% in 2021 to 64.1% in 2025. These 'as a service' segments will also see the fastest growth in spending, with a five-year CAGR of 21.3% (IDC Report, 2021).

Whether the business is transiting partially or entirely from on-premises to a cloud environment, VMware Cloud Director Availability offers disaster recovery and migration capabilities that can be implemented across several scenarios and use cases. VMware Cloud Director Availability has inspired cloud transformation and modernization for many businesses, with over 300 partners in production managing thousands of monthly migrations. Between multi-tenant clouds and on-premises, with replications and protections, VMware Cloud Director Availability migrates, protects, fails over, and reverses failover of customer vApps and virtual machines. VMware Cloud Director Availability is available through the VMware Cloud Provider Program. It is designed with cloud providers and tenants in mind with competitively managed and self-service capabilities.

It introduces a unified architecture for disaster recovery and migration of VMware vSphere® workloads. With VMware Cloud Director Availability, cloud providers and their tenants can migrate and protect vApps and virtual machines:

Angella W.
Financial Director in US

Machinery, 10,000+ Employees
Used the Software for: 2+ years

"In one case, good protection is achieved by providing automated recovery methods before disasters strike. It generates a lot of peace of mind to be able to count on this system in our organization, the characteristics are incredible."

Duncan W.
Cloud Architect in US

Information Technology & Services, 201-500 Employees
Used the Software for: 1+ year

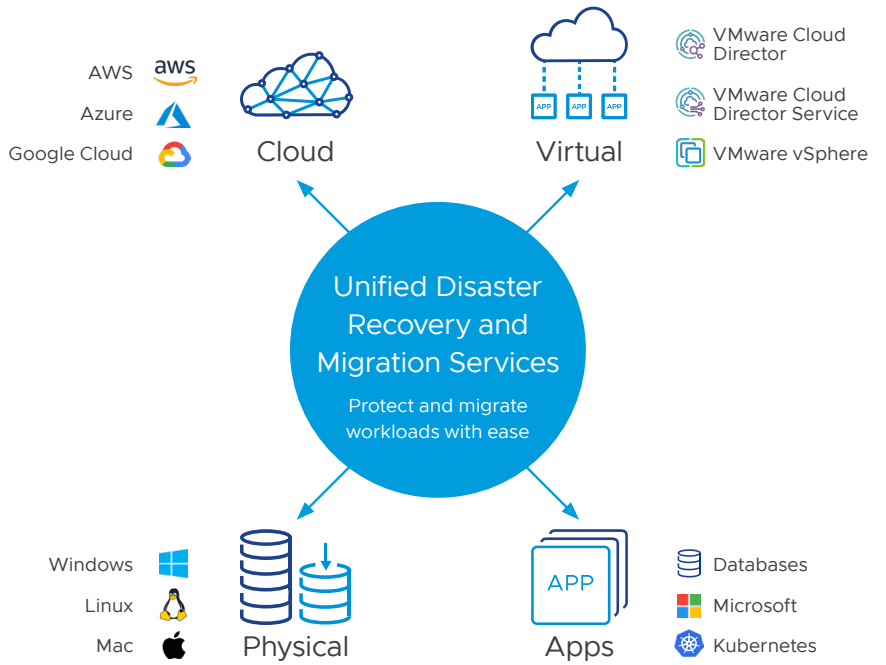
"The product is very polished and feature rich and pre-integrated into the VMware ecosystem. There is also great documentation and network diagrams already out there which will speed up the project to deploy this to production. The migrations are included at no additional charge which is a huge benefit to adoption of our cloud platform."

a. From an on-premises vCenter Service site to a VMware Cloud Director site

b. From a VMware Cloud Director site to an on-premises vCenter site

c. From one VMware Cloud Director site to another VMware Cloud Director site

d. From on-premises/cloud to cloud vCenter (v2v)



VMware Cloud Director Availability introduced a cavalcade of ground-breaking features in early 2022, which expanded the disaster recovery and migration use case for clouds based on VMware Cloud Director and vSphere. With this release, disaster recovery and migration is not limited to Cloud Director as the only endpoint. In addition, with competitive features such as 1-Minute RPO, One-Click Migration, Advanced Retention Policy, Recovery Plans Execution and Monitoring, VMware Cloud Director Availability is leading the way to offer cloud providers a fully holistic cloud disaster recovery and migration solution that meets the growing demands of a multi-dimensional cloud infrastructure.

The latest release champions a wide range of features that have been enhanced to cater for multi-cloud and multi-tenanted cloud architecture.

Key Features

vSphere DR and migration enhancement

Version 4.4 of VMware Cloud Director Availability changed the paradigm for VMware's DR and migration service offering landscape by supporting on-premises to cloud vCenter Replication using the existing underlying technology and ensured support for vCenter Replication Management Appliance. The latest release has enhanced the scalability, availability, and security of vSphere DR and migration capability to make it highly compatible with multi-tenanted environments.

Larik Jan
Cloud Technology Officer

Information Technology & Services,
51-200 Employees
Used the Software for: 6-12months

"Cloud backup and disaster recovery has never been simpler. With a comprehensive guide for installation and operability, getting your head wrapped around how this DRaaS works is a downhill task. We use it to effectively reverse failovers and for successful VM migrations."

Simplified pairing
VMware Cloud Director Availability 4.5 offers a new mechanism through a reverse tunnel. The pairing between the on-premises appliance and provider site can now be established without a public endpoint (i.e., public URL). Previously, the pairing from on-premises to a provider was a protracted process requiring multiple steps; however, pairing in version 4.5 is a single-step process. Establishing pairing between provider sites remains a two-step process, initiated from the provider site and completed from the other provider site.

Multiple replicators
Adding multiple replicators would scale out the deployment and prevent replication issues such as RPO violations. The new capability allows cloud providers to add one or more replicator appliance instances in the provider-hosted vCenter Server instance after configuring the vCenter Replication Management appliance. This support is available for the existing environment.

Extended recovery settings
Cloud providers can preconfigure the destination virtual machine location, compute resources and the network mapping that applies when recovering the workload in the destination site.

Replicate encrypted virtual machines
Encryption offers confidence that the data is protected in a multi-cloud world. To honor the mobility of the VMs most safely, VMware Cloud Director Availability now supports replicating virtual machines with an encryption-enable storage policy. This capability can provide end-to-end encryption for vSphere DR and migration.

Backup and restore automation

For convenience and accessibility, VMware Cloud Director Availability has introduced a new functionality to schedule the creation and upload of the VMware Cloud Director Availability appliance backup files. A new menu, ' Scheduled Backup Archives', has been added to the interface, allowing the system administrator to specify the schedule and SFTP server where the encrypted archives will be uploaded.

Advanced recovery settings

A significant area of improvement in version 4.5 is focused on the recovery settings. With intuitive navigation, cloud providers can modify the destination network settings, manage guest customization with fuller flexibility and continue to leverage pre-existing network selection and adapter settings. Following this improvement, cloud providers can set all the guest customization parameters available in VMware Cloud Director, including adding a custom script to be executed.

Additional improvements and operational features

Extended control and management of replication policies

This feature is an excellent addition to the replication policy management stack, allowing cloud providers to disallow cloud to on-premises migrations from cloud to cloud migrations. Once the cloud site is upgraded to version 4.5, disallowing migrations to on-premises stops all outgoing migrations to all on-premises appliances in the organization, regardless of their VMware Cloud Director Availability versions. **Note:** Each time a custom replication policy is created, it manually must be assigned to the organization.

Clone a replication policy

For easier creation and maintenance, the replication policies can now be cloned and include a new setting that allows or prohibits migrations from the cloud to the on-premises data center.

System-wide notifications to peer sites

The advisories notification now appears on top of the VMware Cloud Director Availability pages after creating them in VMware Cloud Director. Cloud providers can select a priority and duration for showing the message and its audience: to the administrator users, users within a specific organization, or users in all organizations. This handy feature ensures smooth collaboration and circulation of important information.

Service and Appliance uptime

VMware Cloud Provider Availability users can now monitor the uptime of the services and appliances via the System Health page.

VM sizing per replication

Along with the VM placement policy, VM sizing policy can be selected when creating or modifying a replication. A VM sizing policy defines the compute resource allocation for virtual machines within an organization VDC. This process is key to optimizing cloud providers' system performance by reducing resource contention.

View-only system user role

The view-only system user role feature restricts unauthorized users from making accidental or intentional alternations. This capability adds an extra layer of security for cloud providers by allocating different levels of permission for users. The view-only (read-only) privilege is appropriate for monitoring the replications, configuration, and system health.

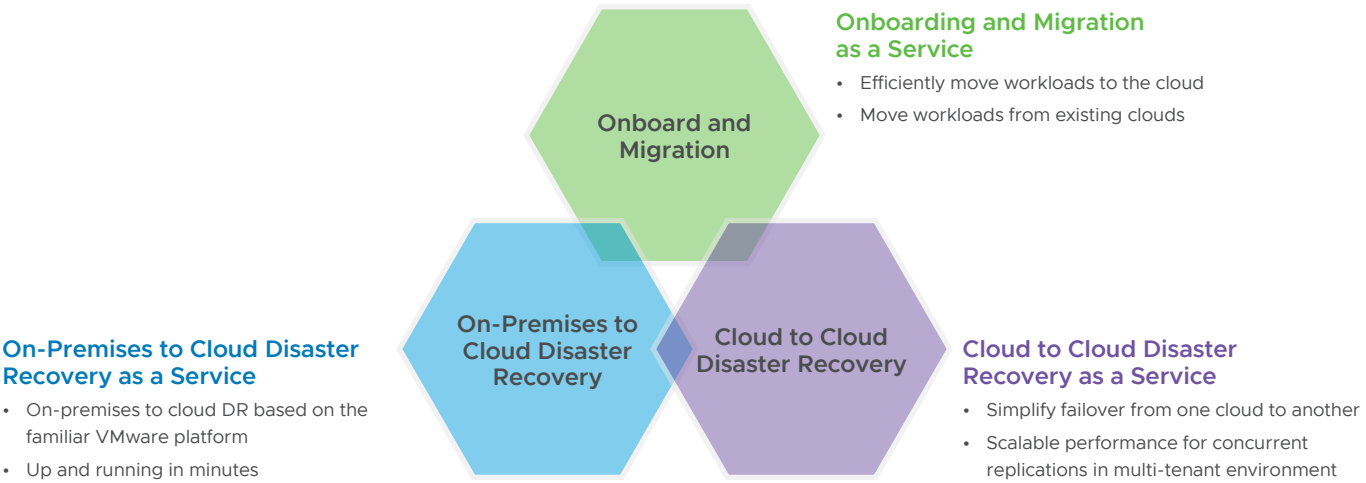
Simple, capable disaster recovery as a service

From the installation in the provider cloud to implementation on-premises, VMware Cloud Director Availability is a simplified, skillful architecture making it easy for customers and providers to implement. Customers can now find and set up DRaaS with a partner with our new vSphere plugin for DRaaS and migration. Qualified DRaaS-validated and Cloud Verified partners are listed in distance priority to the customer vSphere console; with integrated lead generation, a customer can click on the partner and, through the form, fill out a request to learn more about their service.

Once a customer has an agreement with the partner and the destination details, they can self-serve deploy a replication appliance into their vCenter and connect to the provider's virtual data center via an encrypted tunnel, then start protecting their workloads directly from vCenter or the provider UI using the symmetric nature of the solution. VMware Cloud Director Availability allows customers to configure and manage incoming and outgoing replication from the source and recovery site.

Notably, there are no agents to deploy on ESXi hosts, and starting replication is a quick activity; the networking is simplified to make it straightforward to deploy and use. Providers who enable VMware Cloud Director Availability for customers would allow customers to understand their protected status and run DR workflows directly in VMware Cloud Director UI, thereby driving more consumption and better user experience for customers.

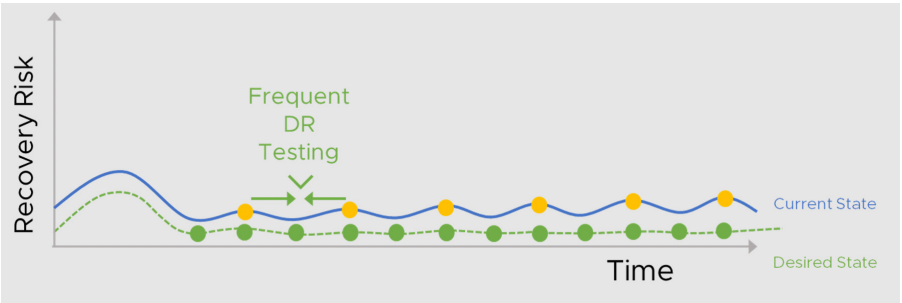
VMware Cloud Director Availability provides coverage for two prominent use cases: on-premises to cloud disaster recovery and migration, and cloud to cloud disaster recovery and migration.



Migration capability is cold and warm and quickly scheduled into maintenance windows to suit your customers. Cold migration is the complete sync of an offline workload before cutover, and warm migration just syncs the differential at the time of cutover and is faster to implement. Many providers use VMware Cloud Director Availability for migration as it is simple, at no charge to VMware, but significantly can be driven by customers and allows a customer to self-migrate when it suits them—which is a great experience and selling point.

This release's usability has significantly improved, and many UI improvements make the solution far more intuitive for customers to enjoy DRaaS and manage navigation with new collapsible sections. Having intuitive usage is preferential for customers to use the solution and drives better consumption simply. The **In-product Feedback** feature is a user-centric feature which is especially developed to **capture and prioritize customer feature requests at scale**, improve engagement, and increase user satisfaction. Similarly, the **System-wide Notifications to Peer Sites** feature has been introduced to support efficient collaboration and relay critical information between cloud providers and tenants across multiple sites.

VMware Cloud Director Availability is helping customers drive better protection and testing. In case of any issues and to simplify troubleshooting, cloud providers can access cloud support bundles. This allows the provider to easily obtain new on-premises support bundles for VMware Global Support Services troubleshooting if necessary. One big aspect of the solution is the ability to test the bandwidth and capability to ensure that you have limited any uncertainty in your capability to recover in the event of a disaster.



Testing frequently is the key to decreasing risk and protecting against a disaster. Unfortunately, it is perhaps the least-used feature in DRaaS. Typically, this is because disaster recovery is provided by products that do not suit self-service or because the provider needs to ensure resource availability at the target is managed between multiple customers. VMware Cloud Director Availability offers highly competitive failover testing capabilities and the tools to evaluate your existing cloud infrastructure's DR and migration readiness.

In 4.5, the recovery settings have been improved for guest customization, and all the properties available in VMware Cloud Director can also be customized for each replication, including the option to add a script to be executed. Moreover, additional features to manage, clone, and control replication policies will offer extra support for cloud providers to accelerate and streamline their replication processes.

VMware Cloud Director Availability is self-service and can also be a managed service or self-service. This means a customer can test their failover, non-impacting, at any time on any frequency. Managed service would mean a provider does this testing for the customer, which could be complemented with additional application testing services. As a self-service capability, it is essential that there are adequate resources at the target end to manage all customers' compute requirements, as potentially, all could choose to failover or test failover simultaneously. The recommendation is to promote testing as a feature to decrease the risk of recovery uncertainty.

Workload distribution

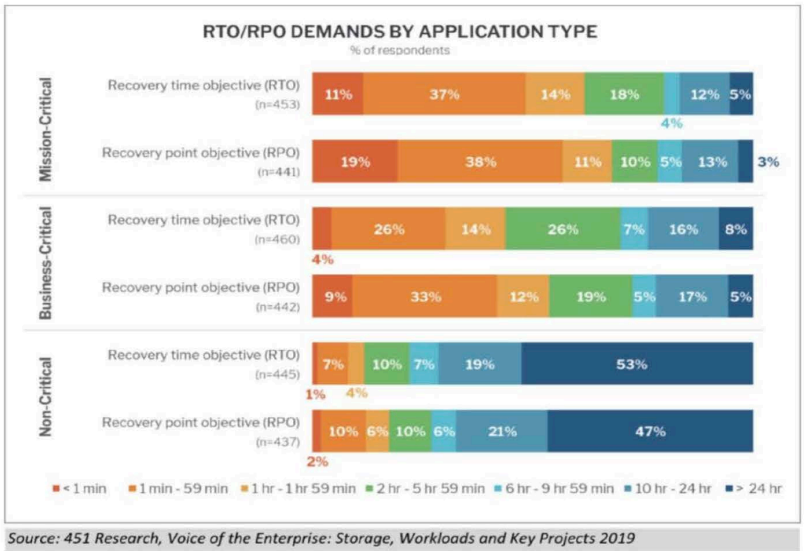
It is essential to realize that not all workloads are equal in requirements. Some may require much higher replication frequency and granular recovery due to the nature of the speed and criticality of the changing data, while others may be non-critical and have longer cycles with less granularity. When considering disaster recovery, you need to have functionality allocated correctly to cost. The higher the importance of a workload, the more expensive it is likely to be, as it will consume more data and replicate more frequently.

Mission-critical workloads affect the entire business; business will stop quickly due to an outage. These applications severely impact a broad part of the business and can be deemed mission critical. For example, financial systems that transact millions of transactions per minute are essential to the business's success. Customers for DRaaS need to consider what applications are in their business that they cannot survive without for even the shortest duration.

Business-critical characteristics are different and affect the Line of Business (LOB), but overall, a business can operate and survive. These LOB applications can be viewed as business critical. For example, an unavailable HR payroll system will interrupt payroll, but the business will carry on.

Lastly, some non-critical workloads and applications affect people personally. They may delay deliverables, but ultimately, they are not affecting the business or teams in the industry for a short duration. Items such as personal file systems and possibly email could be viewed as non-critical; it all depends on how you run your business.

It is easy to see how the recovery characteristics can be composed for different workload types. The following graphic indicates how customers look at recovery point and time objectives by workload type. Although this data is from 2019, it is unlikely to have changed much, if at all:



Mission-critical example: Finance / Billing
RPO Average 1 min
RTO Average <15min
Suggested service – 15min RPO

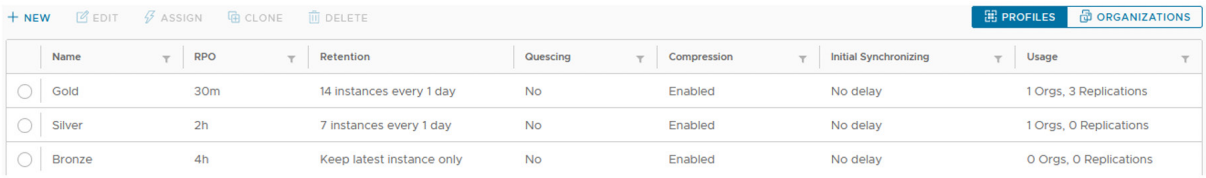
Business-critical example: eMail / SharePoint
RPO Average 15 min
RTO Average <2hrs

Non-critical example: Personal File Folders
RPO Average >24hrs
RTO Average <48hrs

Source: 451 Research, Voice of the Enterprise: Storage, Workloads and Key Projects 2019

It's essential for a customer to be able to match a workload to a tier of service for disaster recovery as it will be more cost effective to have the appropriate resource capacity aligned to the workload. Having a single-tier DRaaS portfolio does not provide the flexibility to cover mission-critical workloads vs non-critical. There will be underused functionality/capacity, which may cost the customer more overall. From a partner perspective, consumption will be much higher and better aligned with a tiered customer offering.

VMware Cloud Director Availability SLA profiles offer out-of-the-box service classes; the defaults are detailed below and can be added/modified or changed to meet your overall or per-customer DRaaS cost-to-performance needs. With a simple nomenclature, customers understand what they are getting, from a Gold service with a low RPO and long retention time to a Bronze service with a longer RPO for less critical workloads and a short, limited retention time.



Name	RPO	Retention	Quescing	Compression	Initial Synchronizing	Usage
Gold	30m	14 instances every 1 day	No	Enabled	No delay	1 Orgs, 3 Replications
Silver	2h	7 instances every 1 day	No	Enabled	No delay	1 Orgs, 0 Replications
Bronze	4h	Keep latest instance only	No	Enabled	No delay	0 Orgs, 0 Replications

As already noted, the retention time in these SLA profiles is the 'span' of the Multiple Points in Time (MPIT) instances. With 4.5, these are flexible and in 4.4x, these are extended with Advanced Retention Policies, permitting even more granularity over the MPIT cycle.

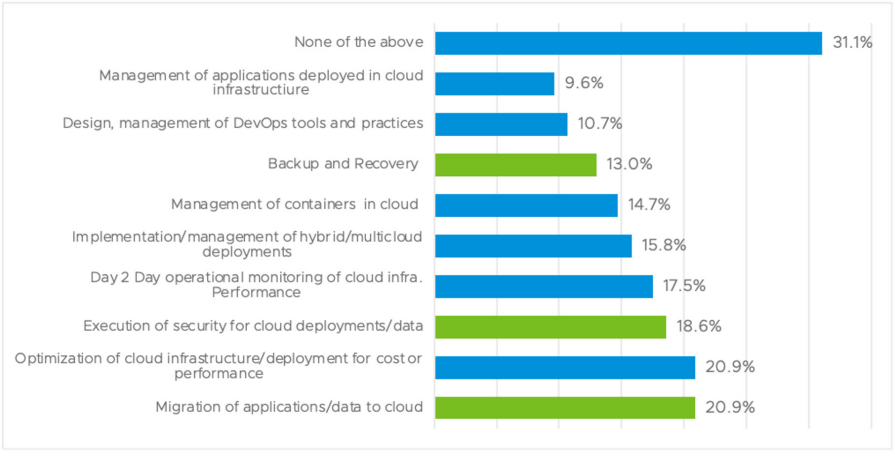
Resources are not unlimited, so having suitable options and taking advantage of the Advanced Retention Policies will mean better overall coverage and more revenue. SLA profiles are an essential feature that allows providers to start tiering services in this way to tenants, making the decisions for them on the DR capability and functionality at each tier and, if required, allowing customers to have their custom profiles.

Market opportunity

As more customers move to cloud or find themselves in cloud provider VMware clouds, the need to protect their workloads becomes more and more critical, not only from disasters but also from malicious intent as more and more hackers threaten the company's intellectual property.

For these reasons, the global **disaster recovery as a service market** generated $6.5 billion in 2021 and is projected to reach $60.4 billion by 2031, growing at a CAGR of 23.9% from 2022 to 2031 (Allied Market Research, 2022). Furthermore, the global cloud migration services market touched a valuation of $ 92.4 billion in 2021 and is projected to generate revenue of $ 340.7 billion by 2028 at a CAGR of 24.30% during the forecast period, 2022–2028 (Vantage Market Research, 2022).

Migration, security, and backup and disaster recovery are also some of the highest-in-demand hosted and cloud-managed services organizations are planning to introduce in 2021/2022:



451 Voice of the Service Provider, Workloads and Key Projects 2020

With the migration to the cloud being a primary use case customers are looking for, VMware Cloud Director Availability provides inclusive cold and warm migration at no additional cost. With a simple vSphere plugin or via the VMware Cloud Director user interface, customers can self-manage their migration or providers can deliver migration as a managed service.

Considering security and malware attacks are prevalent, the ability to restore quickly is key to business recovery. With Cloud Director Availability 4.5 and 4.4, a 1-Minute RPO, One-Click Migration, and Advanced Recovery Plans are the front lines to delivering the granularity of restore points and the fastest time to recover (RTO), ensuring businesses can get back working as quickly as possible.

Similarly, with competitive features such as replicating encrypted VMs, **One-Click Migration, RPO Compliance, and Advanced Reporting Capability,** Cloud providers can offer highly efficient DR and migration services with insights that can influence their customers to make informed decisions and mitigate numerous threats and challenges.

The market is neither fragmented nor, at this time, consolidated from a provider selling DRaaS perspective, so there is plenty of opportunity for all VMware Cloud Providers. Hybrid (on-premises and cloud-based) configurations account for much of the current market share and represent an opportunity provided by several global and regional providers and hyper-scale providers like AWS and Microsoft Azure. However, solutions to Hyperscale or different target hypervisors are viewed as migration solutions and not accurate disaster recovery solutions due to disk conversions making failing back very complex and manual. VMware Cloud Providers, therefore, have an excellent opportunity to sell DRaaS from a hybrid on-premises customer to their cloud solution with the benefit that it is not a migration (although it could easily be used for this); it is a proper self-service disaster recovery as a service capability.

Additional Information

Upgrade

VMware Cloud Director Availability 4.5 supports direct upgrades from 4.3.x and 4.4.x. Please refer to the official documentation for the exact upgrade steps or if you need to upgrade from an older version.

For more information on cloud computing and VMware Cloud Powered services, please visit https://cloud.vmware.com/providers or contact your VMware representative.

For more information about VMware Cloud Director Availability 4.x please see https://www.vmware.com/products/cloud-director-availability.html

If you would like to understand what your opportunity could look like using VMware Cloud Director Availability, please use our online calculators https://cpscalculator.vmware.com/

Access the VMware Learning Zone for Cloud Providers to learn more about cloud technology you as a provider can use
http://bit.ly/VCPPSolutionEnablementLearningPath

If you would like to connect with the VMware Cloud Director Availability team, please use Slack, Facebook, Twitter, LinkedIn.