protectio Solution Brief

# Modern Protection of VMware® workloads in IBM Cloud

## Introduction

ProtectIO is PrimaryIO's on-demand disaster recovery as a service ("DRaaS") platform. ProtectIO is delivered as a web-accessible, multi-tenant, IBM Cloud-Native SaaS platform and helps customers by providing a robust disaster recovery solution while leveraging the latest cloud economics for an attractive Total Cost of Ownership.

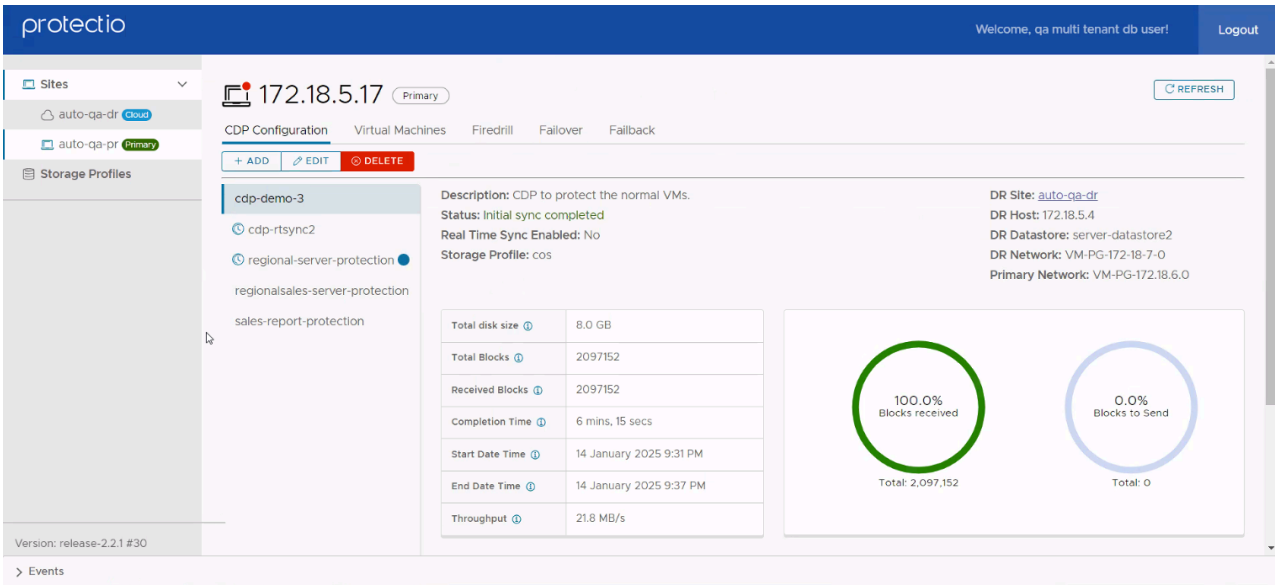
RecoverIO is a ProtectIO feature utilizing immutable cloud storage to enable organizations to roll back to a pre-ransomware/data corruption point-in-time.

ProtectIO protects primary site VMware workloads by replicating them to an IBM cloud VPC or IBM Classic target DR site. Using Continuous Data Protection via PrimaryIO's VAIO replication filter, changed I/O blocks are replicated via a proprietary Block Stream Protocol into low-cost IBM Cloud Object Storage. As an option, ProtectIO supports other volume types, including NFS enabling the fastest recovery times. Supported environments for protection of Primary VM workloads include on-premises, IBM Classic and IBM VPC primary sites.

## Design

ProtectIO has been designed to not only be robust in functionality, but also easy to administer from a centralized intuitive browser accessible UI.

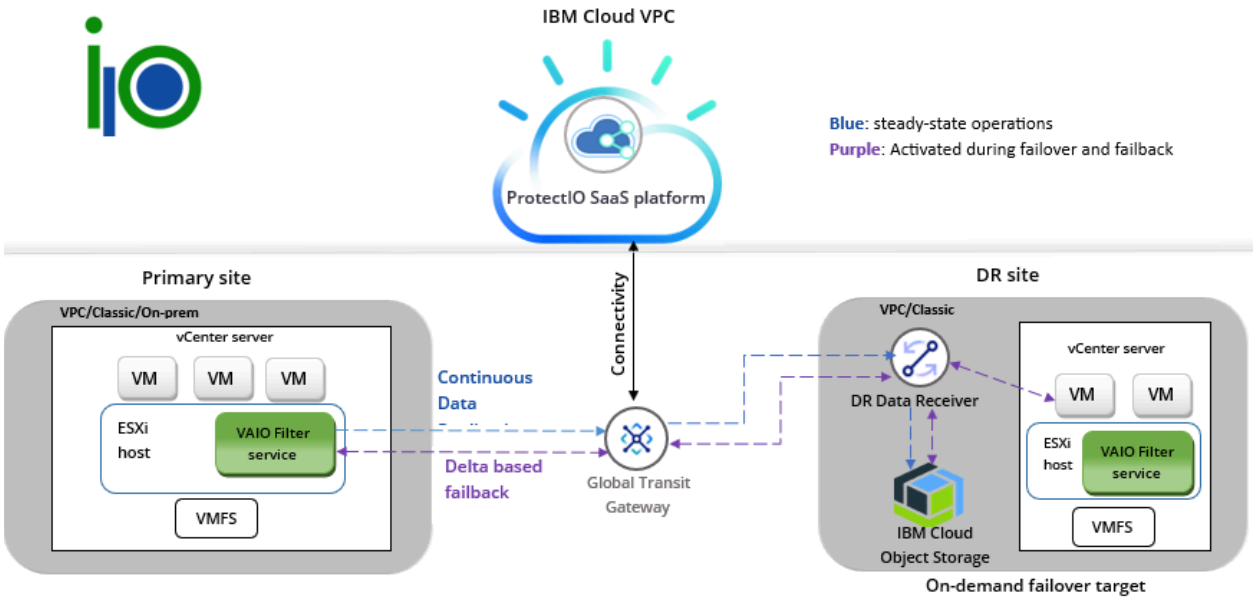
This easy to navigate design, coupled with the on-call PrimaryIO services team negates the mandate to utilize and pay for a dedicated managed service provider. This combination of simplified UI, hosted



SaaS application and a services team results in the outcome of near-zero-seconds RPO for VMware-virtualized application workloads.

The component architecture of ProtectIO is detailed in the diagram below.

- The VAIO filter service is a replication filter built on VMware's VAIO framework. It is a VIB (Vsphere Installation Bundle) that is installed on each ESXi host where the virtual machines to be protected reside. The VAIO filter sends changed data blocks to the target DR site where the blocks are stored in low-cost Cloud Object Storage.




ProtectIO Component Diagam

- The ProtectIO SaaS Platform (control plane + UI) is a multi-tenant, cloud-native component that presents a User Interface to consume the service offering and includes several disaster recovery orchestration capabilities to automate the disaster recovery process. The DRaaS manager enables the following tasks:
  - Create CDP (continuous data protection) policy
  - Review the list of protected virtual machines
  - Initiate a failover in the case of a disaster
  - Monitor failover progress
  - Initiate failback process when the primary site returns to a healthy state

- Monitor failback progress
- Initiate. monitor fire drill non-disruptive runbook validation process

- The DR receiver is a component running on the target site and is responsible for receiving data blocks sent by the VAIO filter and storing to either cloud object storage or NFS storage.

## Deployment considerations:

The following are options and considerations when determining how to consume the ProtectIO disaster recovery service:

### Protected/Primary site

ProtectIO supports on-premises or Classic or VPC vCenter environments as a primary site.

### Recovery/target site

Recovery/target site supports both IBM Cloud Classic or VPC. ProtectIO needs vCenter to be available for recovery. Changed I/O blocks are, by default, stored in low-cost Cloud Object Storage, delivering the most cost-effective DR site economics. At customer option, higher cost can be traded off for improved RTO, giving customers flexibility in price/performance. The highest performance configuration utilizes NFS-residing VMDK VMware volumes which are continually synchronised with the cloud object stored data repository. Upon failover or fire drill, the VMware volumes are already updated with the most recent data. Upon rebooting the VMs, the DR site becomes the active primary site.

The following table presents ProtectIO deployment details:

| Parameter | Details |
|---|---|
| Backup Method | Continuous data protection |
| RPO | Near zero RPO |
| RTO with NFS Storage<br>RTO with real time VMDK sync<br>RTO with Cloud Object Storage | 15 minutes<br>1-5 minutes<br>1-10+ hours |
| Target site requirement | At least one ESXi host is required to be available on the DR site |

| | | |
|---|---|---|
| Supported IBM cloud regions | • Dallas<br>• Washington DC<br>• Toronto<br>• Montreal | • Frankfurt<br>• London<br>• Madrid |

* Note: NFS/Block storage vs. Cloud object storage is a trade-off between storage cost and RTO. With NFS/Block storage, rehydration process latency is eliminated. Cloud object storage dramatically lowers the costs but increases the RTO by rehydrating workloads from cloud object storage in the event of a failover.

ProtectIO is made available for purchase from the IBM Cloud Catalog. There are two methods of consumption. "ProtectIO DRaaS DIY" is the customer-managed version. The PrimaryIO on-boarding team assists in getting everything up and operational, but after the first few Virtual Machines, the customer will self-manage. ProtectIO is also offered in a cost-effective, fully-managed implementation: "ProtectIO DRaaS Managed Service". This option comes with full onboarding, runbook creation, ongoing runbook support and failover management in full coordination with the customer resources.

## Cloud Economics

Cloud Object Storage is a lower cost per MB storage format than file or block storage formats. Therefore, developing a modern DR application leveraging object storage will by its inherent nature bring the most current technology to optimize cloud economics.

Furthering the cost reductions associated with a modernized SaaS application, ProtectIO's approach to not duplicate the always-on primary site requirement, but instead storing the VMs themselves in a state that gets rehydrated on failover means that the bare metal servers required in support of the running virtual machine workloads are not required. Only one Bare Metal ESXi host in the DR site is mandatory. As such, the on-demand scaling of IBM Cloud VPC yields savings on server infrastructure hardware in addition to reduced cost of storage.

The third major area of modernization of the DR application is in the cloud-native SaaS architecture. The single-pane-of-glass (single screen) web application and UI designed for a non-technical administrative resource enables the environment to be managed by fewer and lower cost human resources. This means that unlike a typical managed service provider (MSP) relationship that is standard for cloud-based DR services, ProtectIO is designed for end-user

management. Despite the ease of use, there are fundamental costs associated with a transition to cloud computing. PrimaryIO offers its ProtectIO Managed Service as a comfortable entry path into the DRaaS environment by bearing the up-front infrastructure costs wrapped with services to facilitate and ease the customer cloud journey and transition.

In summary, PrimaryIO has leveraged the latest technologies available in order to balance the lowest Recovery Point Objective (PRO) capability of near-zero seconds with Continuous Data Protection functionality, while also dramatically reducing cost. At the end of the day, disaster recovery cost is analogous to an insurance payment. And no business wants to put their hard-earned profits into insurance payments.

## Customer Entry Point

The PrimaryIO ground-breaking technology is so compelling that during this first-half of calendar year 2024, the company is choosing to offer potential customers that want to leverage modernized DR the opportunity to engage in Proof-of-Concept (PoC) implementations. Should this be of interest, simply reach out to PrimaryIO at engage@primaryio.com. We would love to understand and accommodate your unique requirements.

PrimaryIO provides a VMware conversion platform, ConvertIO, to migrate and convert VMware workloads to native IBM Cloud VSIs, at scale. The technology is wrapped with services that assist organizations in rapidly moving some or all of their VMware estate and replatforming into IBM Cloud.