# Dell Technologies Data Protection for VMware Telco Cloud Platform

## Essentials

**Software-defined data protection:** Provide flexible data protection and compliance across applications and cloud-native IT environments

**Unique protection:** Ensure availability of all your Telco Cloud Platform components and workloads without business disruption

**Autonomous operations:** Automated discovery and protection of databases, virtual machines, file systems and Kubernetes containers

**Efficient protection:** Protect data directly to Dell PowerProtect DD series appliances with optional replication to secure Cyber Recovery vault

**Self-service backup and restore:** Enable data owners from their native interfaces

**PowerProtect Data Manager Appliance**: Integrated data protection platform that combines Data Manager software in a single appliance

**OTEL Assurance**: Validated by Dell's Open Telco Ecosystem Lab

## Key Capabilities:

- Protection for the entire VMware Telco Cloud Platform stack including your mission critical applications

- VM image and file-level protection for the management/workload clusters components or instances

- Namespace level/PVC protection for TKG cluster workloads

- VMware virtual machines in a reliable and efficient manner using Transparent Snapshot Data Mover (TSDM) mechanism.

## Protecting VMware Telco Cloud Platform™ with Dell PowerProtect Data Manager

VMware Telco Cloud Platform is a modernization solution that deploys cloud-native and virtual network functions consistently, at web-scale speed, and without disruption. VMware Telco Cloud Platform is a cloud-native platform that empowers communication service providers (CSPs) to manage virtual network functions (VNFs) and Containerized Network Functions (CNFs) across the core, far edge radio access network (RAN), enterprise edge, and cloud with efficiency, scalability, and agility. Telco Cloud Platform provides the framework to deploy and manage VNFs and CNFs quickly and efficiently across distributed 5G networks. You can run VNFs and CNFs from dozens of vendors, on any cloud, with holistic visibility, orchestration, and operational consistency.

Telco Cloud Platform is powered by field-proven compute and networking coupled with VMware Telco Cloud Automation and a telco-grade Kubernetes distribution. VMware Telco Cloud Platform empowers CSPs to modernize their 5G networks so they can rapidly deploy and efficiently operate multi-vendor CNFs and VNFs. The compute and networking, which are supplied by VMware vSphere® and VMware NSX-T™ Data Center, enable CSPs to run both CNFs and VNFs on consistent horizontal infrastructure. The Kubernetes distribution—VMware Tanzu Kubernetes Grid—is designed to support telecommunications use cases.

Any modernized infrastructure undoubtedly requires a data protection strategy to avoid downtime, prevent data loss and recover quickly in case of a disaster. Dell Technologies provides effective data protection solutions to help organizations solve a number of significant challenges. Dell PowerProtect Data Manager is one of the effective data protection solutions to protect VMware Telco Cloud Platform management/workload cluster components and application workloads.

## Dell PowerProtect Data Manager

PowerProtect Data Manager software is an enterprise solution that provides software-defined data protection, deduplication, operational agility, self-service, and IT governance. Data Manager gives you valuable insight into protected on-premises and in-cloud workloads, applications, file systems, and virtual machines (VMs). Plus, complete oversight and governance to ensure compliance.

Designed with operational simplicity and agility in mind, Data Manager enables the protection of traditional workloads including Oracle, Exchange, SQL, SAP HANA and file systems as well as Kubernetes containers and virtual environments. Restore data on-premises or in the cloud. Governance control ensures IT compliance, making even the strictest service level objectives obtainable.

PowerProtect Data Manager key features include the following:

- Software-defined data protection with integrated deduplication, replication, and reuse
- Data backup and recovery self-service operations from native applications that are combined with central IT governance
- Multicloud optimization with integrated Cloud Tiering
- SaaS-based monitoring and reporting
- Modern services-based architecture for ease of deployment, scaling, and updating

## PowerProtect Data Manager for VMware Telco Cloud Platform

The PowerProtect Data Manager is a virtual appliance that can be deployed on or outside of VMware Telco Cloud Platform environment to protect the management and workload components along with application workload data.
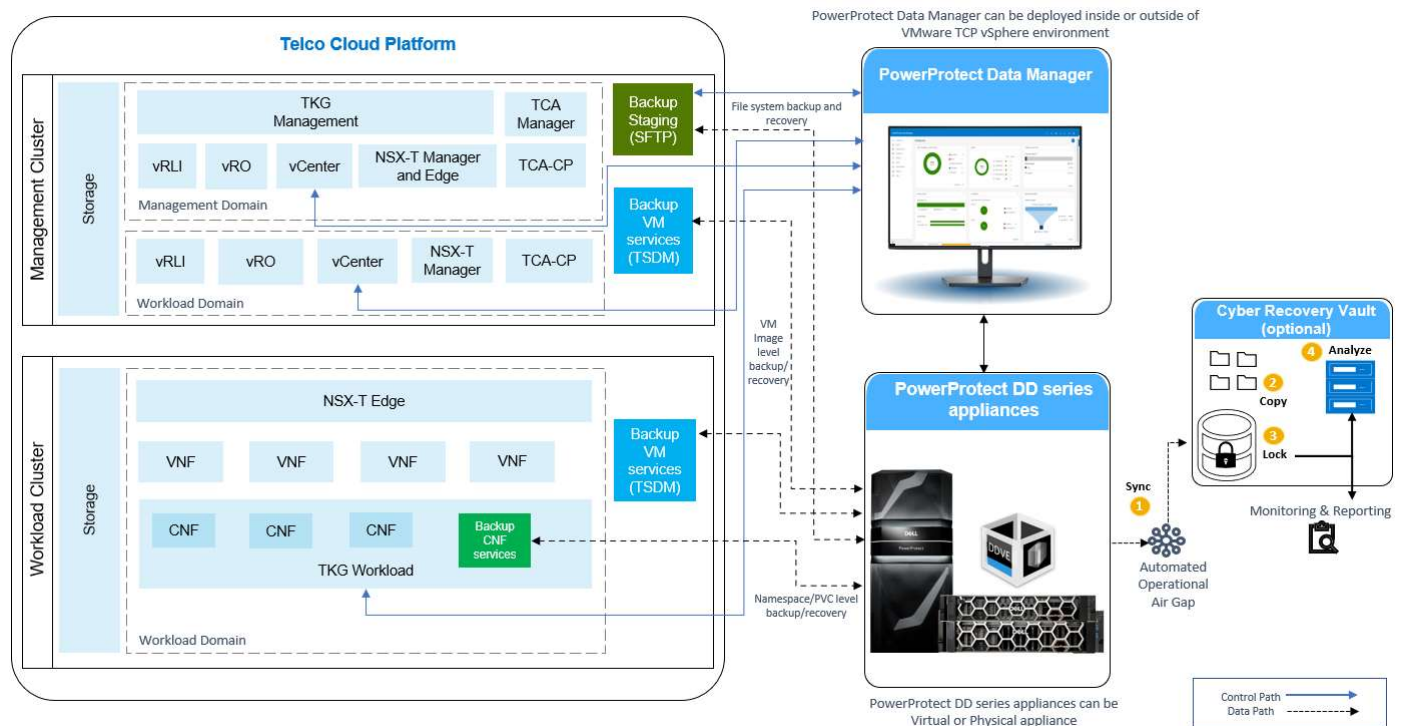


Figure 1. PowerProtect Data Manager protecting VMware Telco Cloud Platform

PowerProtect Data Manager is integrated with PowerProtect DD series appliances as the protection target where the backups are stored. PowerProtect DD series appliance can be a physical or virtual appliance.

Furthermore to being deployable stand-alone, PowerProtect Data Manager is also available as an integrated appliance, the Dell PowerProtect Data Manager appliance. The Data Manager Appliance offers an integrated data protection platform that combines protection storage with PowerProtect Data Manager software and cloud readiness – all in a single appliance. The Data Manager Appliance provides a unified user experience and automates discovery and protection of databases, VMs, file systems and Kubernetes containers. Optionally, data can be replicated from production DD series appliance to another DD series appliance or to DD series appliance in Cyber Recovery vault using the Dell PowerProtect Cyber Recovery solution.

PowerProtect Cyber Recovery provides proven, modern, and intelligent protection to isolate critical data, identify suspicious activity and accelerate data recovery allowing you to quickly resume normal business operations.

PowerProtect Cyber Recovery key features include the following:

- Operational air gap with data isolation and immutability
- CyberSense analytics and Machine Learning monitor data integrity
- Accelerate cyber and ransomware attack data recovery

## Data Protection methods for VMware Telco Cloud Platform infrastructure components and application workloads

For VMware Telco Cloud Platform management domain (Management workload cluster), the following table shows the core components and the backup methods used.

| TCP component | Backup/Restore method |
|---|---|
| Management vCenter server | File level |
| NSX-T Manager nodes | File level |
| vRealize Log Insight | VM Image level |
| vRealize Operations Manager | VM Image level |
| vRealize Orchestrator | VM Image level |
| Telco Cloud Automation Manager | File level |
| Telco Cloud Automation Control plane | File level |
| Tanzu Kubernetes Grid Management cluster | VM Image level |

For VMware Telco Cloud Platform workload domain (Management workload cluster), the following table shows the core components and the backup/restore methods used.

| TCP component | Backup/Restore method |
|---|---|
| Workload vCenter server | File level |
| NSX-T Manager nodes | File level |
| vRealize Log Insight | VM Image level |
| vRealize Orchestrator | VM Image level |
| Telco Cloud Automation Control plane | File level |

For VMware Telco Cloud Platform general purpose VM's (Management workload cluster), the following table shows the core components and the backup/restore methods used.

| Other component (examples) | Backup/Restore method |
|---|---|
| DNS, NTP, DHCP, Web servers, database, filesystem | VM Image level /File level/database |
| Harbor registry, other registry | VM Image level or File level |
| Customized applications on VM's/Tanzu Kubernetes Grid | Namespace/PVC or Image level |

For the VMware Telco Cloud Platform compute workload domain (Workload cluster), the following table shows the core components and the backup/restore methods used.

| TCP component | Backup/Restore method |
|---|---|
| Virtual Network Functions (VNF's) | VM level (TSDM) or File level or File/DB level |
| Tanzu Kubernetes Grid Workload cluster (CNF's) | Namespace and PVC level with application consistency |

The following table shows the backup system components protection.

| Backup component | Backup/Restore method |
|---|---|
| Backup Staging VM | File level |
| Backup Server (PowerProtect Data Manager) | PowerProtect Data Manager disaster recovery process |
| PowerProtect DD series appliances | Replication to another DD series appliance or DD series appliance in Cyber Recovery vault |

## Protecting management/workload cluster components and VNFs using image-level or file system backup:

The management and workload cluster vCenter servers are integrated with Data Manager and discovered as an asset source once registered with PowerProtect Data Manager. PowerProtect Data Manager discovers the

management workload domain components and application workload (VNF's) as virtual-machine assets for protection. Data Manager can protect VMware virtual machines in a reliable and efficient manner using Transparent Snapshot Data Mover (TSDM) mechanism. Transparent Snapshots simplifies VM image



backups for near-zero impact to your VMs or VM resources – and it works with any VMware supported storage. For more details on TSDM, see technical white paper VMware Virtual Machine Protection Using Transparent Snapshots
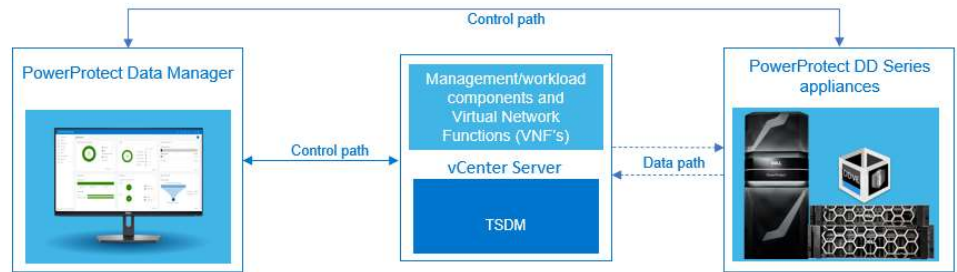
## Protecting TKG cluster workloads (CNFs):

With PowerProtect Data Manager, the Tanzu Kubernetes Grid cluster workloads such as namespaces and Persistent Volume Claims (PVCs) on Telco Cloud Platform are protected efficiently using the Velero component and cProxy pod (data mover). Once the Tanzu Kubernetes Grid cluster is added as an asset source in



PowerProtect Data Manager and discovery is complete, the associated namespaces are available as assets for protection. The PowerProtect Data Manager supports agentless, application-consistent backups of database applications that reside in Kubernetes pods. The PowerProtect Data Manager provides a standardized way to quiesce a supported database, back up the data from that database, and then return the database to operation.
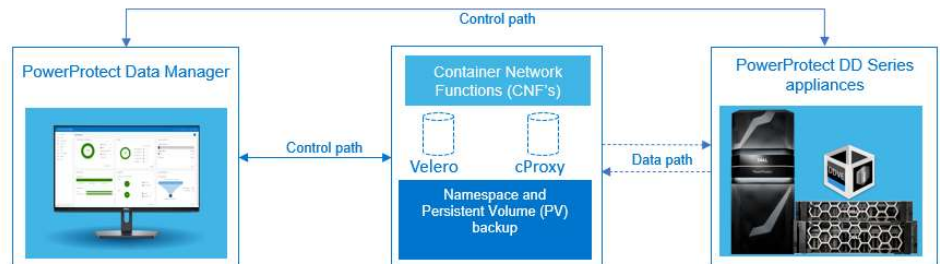
## Protecting the SFTP server (Staging VM):

For file level-based backup of VMware Telco Cloud Platform components, the respective VMware Telco Cloud Platform management and compute workload component dump is created and sent to SFTP target (staging VM). Later, the SFTP target (staging VM) is protected using file system agent-based backup method with PowerProtect Data Manager.
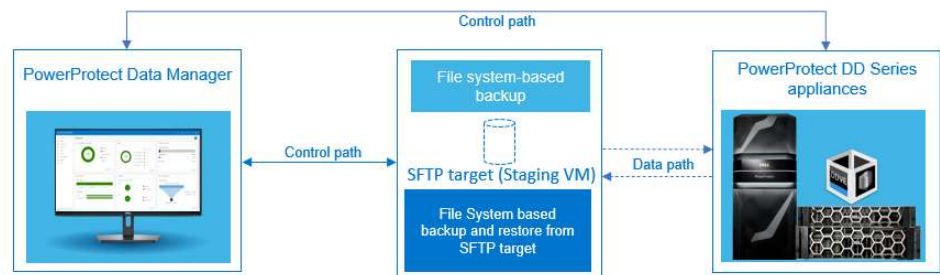


Dell Technologies enables you to simplify the experience of adopting modern data protection. PowerProtect Data Manager enables users to protect, manage, and recover data in on-premises, virtualized, and cloud deployments. This platform provides centralized governance that helps mitigate risk and assures compliance of SLAs and SLOs through simple protection workflows. PowerProtect Data Manager is one of the effective solutions to protect VMware vSphere components and application workload data on VMware Telco Cloud Platform.

**Note**: This solution brief focuses on protecting the CNF's and VNF's on VMware Telco Cloud Platform infrastructure, however it can also be used to protect other VNF's and CNF as well as VMware components outside of VMware Telco Cloud Platform infrastructure.

## Assurance provided by OTEL

The Open Telecom Ecosystem Lab accelerates and simplifies the creation of an open, modern telecom ecosystem. By validating complex technical solutions through our virtual and physical OTEL labs, we're helping partners reduce the costs and risk of deployment while opening new 5G and cloud native opportunities.

OTEL Offerings driving the open 5G opportunity

- Partner/Industry Certification
    - Self-Certification enabling independent software vendors to de-risk deployments and make the ecosystem consumable
    - Joint-Certification improving outcomes and business value by verifying ecosystem partner compatibility
- Solution Validation
    - End-to-end CSP and telecom partner solution validation, life-cycle management, and enhanced service support.
- Proof of Concept
    - Work with partners and CSPs to develop early evaluation and sand box development to drive ecosystem adoption.
- Demonstration and Training
    - Showcase new capabilities and support technical training activities.

To learn more about our Open Telecommunication Ecosystem Lab please see additional resources at: OTEL (Open Telecom Ecosystem Labs)

## Technical References

The following Dell Technologies resources provide additional and relevant information PowerProtect Data Manager:

- Dell PowerProtect Data Manager

- Dell PowerProtect Data Manager Appliance

The following VMware resources provide additional and relevant information about VMware Telco Cloud Platform:

- About the Telco Cloud Platform 5G Reference Architecture Guide

The following Dell Technologies resources provides additional and relevant information about OTEL and VMware Telco Cloud Platform:

- Dell Technologies Reference Architecture for VMware Telco Cloud Platform 5G Edition 2.1

Learn more about PowerProtect Data Manager

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