WHITEPAPER

DELL EMC DATA PROTECTION ARCHITECTURE FOR VMWARE SOLUTION BRIEF

Realize & protect the software defined data center

ABSTRACT

This white paper explains how Dell EMC®'s superior data protection architecture translates to important feature differentiation in protecting larger VMware® environments.

August, 2017

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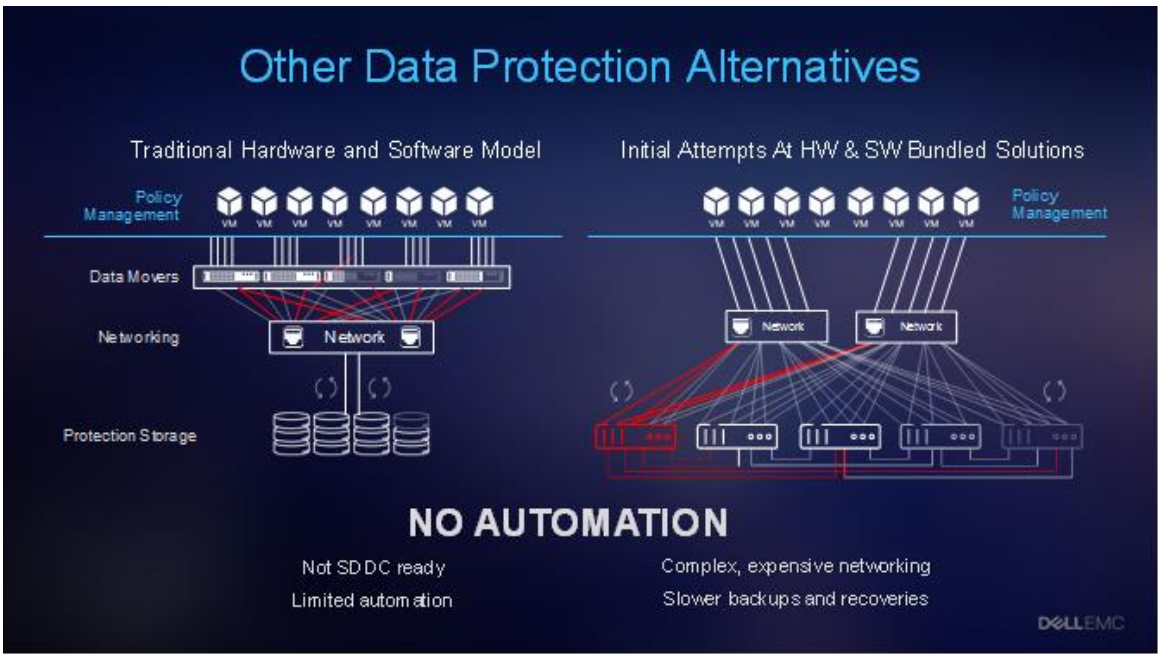
EXECUTIVE SUMMARY

VMware has been at the forefront of the drive towards the modern data center and SDDC, initially with virtualized compute (i.e. VMs), and more recently with virtualized storage, networking and datacenter automation solutions (i.e. vSAN, NSX and vRealize Suite) and the increasing transformation of the data center to the cloud and the "as a service" model. The modern, increasingly converged and software driven, data center enables all infrastructure to be delivered as a service, and the control of this data center is entirely automated by software. SDDC has enabled unprecedented agility to organizations.

However, protecting VMware workloads (applications and their data) in this new paradigm is more complex and presents challenges that are not easily met by data protection solutions built for legacy SAN based architectures. These challenges include:

- VM sprawl as a result of growth of virtualization and the ease of spinning up new VMs
- Increasingly stringent protection requirements (government regulations, more critical applications running in virtual environments, etc.)
- Shrinking protection/backup windows (more applications and more data to protect)
- Most data protection solutions are not architected for and are not SDDC ready

Data protection alternatives available in the market today are limited in their ability to provide holistic data protection and are forcing trade-offs between key requirements. The illustration below shows of the more common data protection architectures in the market today and their shortcomings – primarily, lack of automation beyond policy management, architecture that does not lend itself well to scaling easily to more VMs, is more complex, and has more expensive networking.



Bottom line, prevalent data protection architectures such as the traditional hardware/software model and initial approaches to converged hardware and software in the models shown above don't work well for larger VMware environments and are not designed to support the software defined data center.

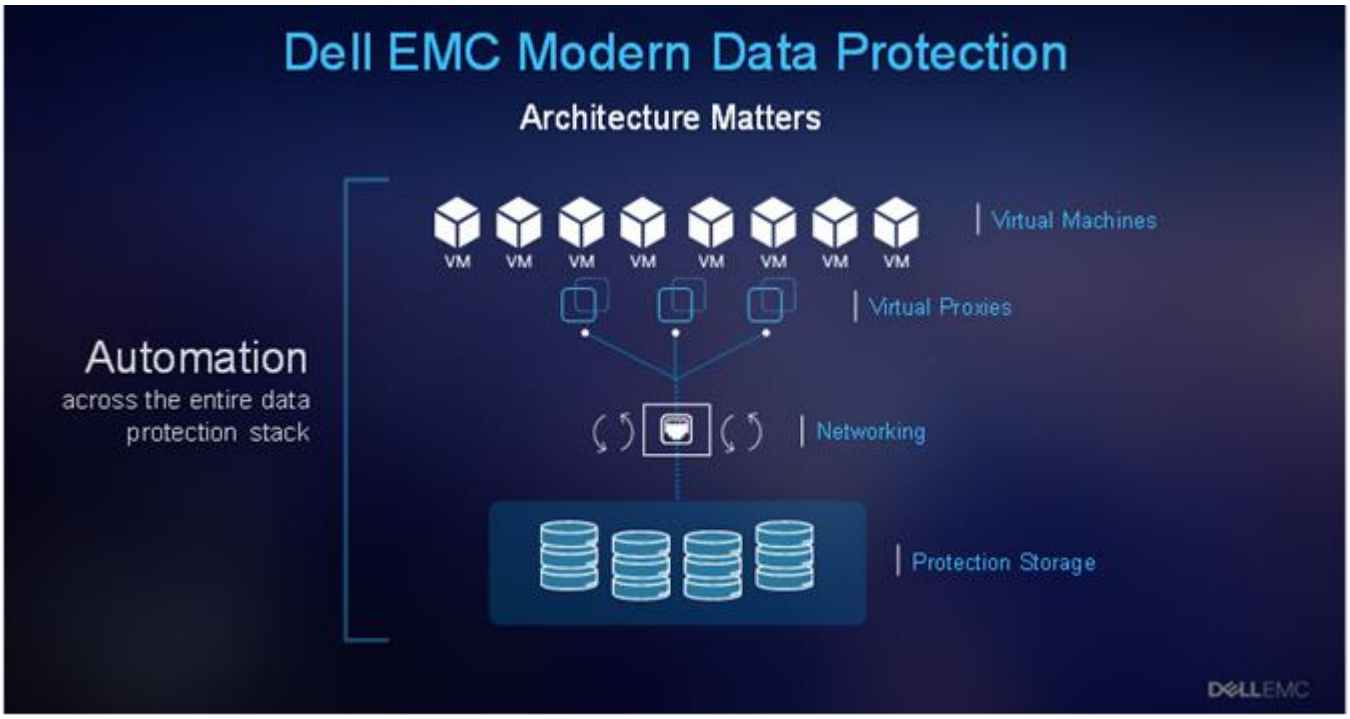
This paper will provide an overview of Dell EMC's data protection architecture, designed for the software defined data center, and show how it provides superior data protection capabilities for VMware with associated customer benefits. Dell EMC Data Protection + VMware means you can successfully realize and protect the software defined data center.

AUDIENCE

This white paper is intended for VMware administrators, backup and storage administrators, system engineers, technical architects, implementation specialists, technical consultants, Dell EMC Partners, and any individuals interested in scalable, flexible, automated, and easy-to-use data protection for VMware environments.

AUTOMATION ACROSS THE ENTIRE VIRTUALIZED DATA PROTECTION STACK

One of the main advantages of Dell EMC Data Protection architecture for VMware is that we provide automation across the entire virtualized data protection stack. Architecture matters! This is a key differentiator for operational effectiveness and long term scalability.



POLICY MANAGEMENT

Dell EMC integration with VMware includes important policy management features such as:

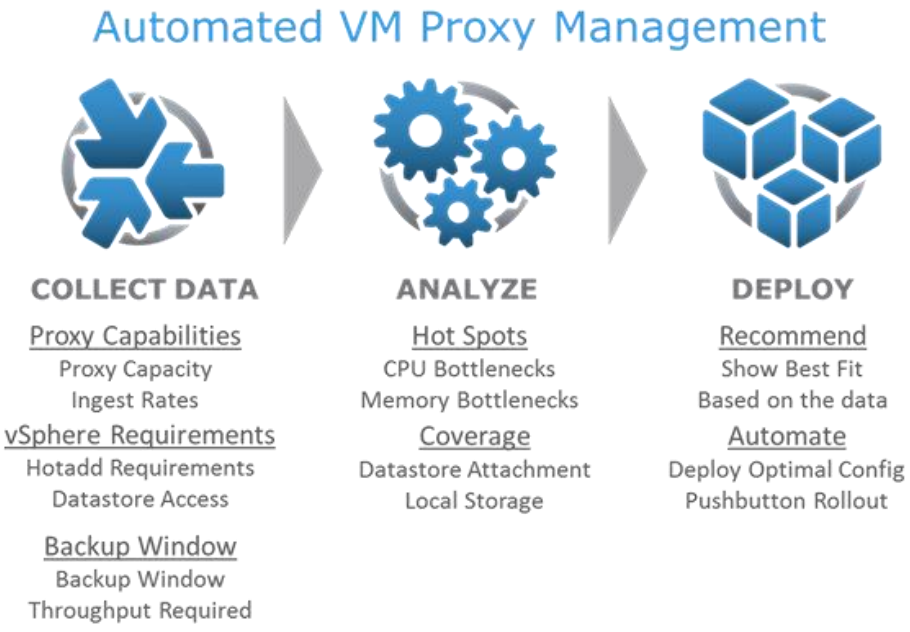
- Age based policy management with Dell EMC Data Protection Software and Cloud Tiering.
- Dynamic policies provide the ability to define rules that customize which policy a Virtual Machine client can be assigned to. This enables automatic on-boarding of newly discovered Virtual Machines into pre-defined backup groups.
- Multi-system management offers centralized policy lifecycle management.
- Support and integration with VMware's vRealize Suite which enables DPaaS for automated policy management.

DATA MOVERS (PROXIES/MEDIA SERVERS)

Dell EMC VM proxy management has been automated minimizing and virtually eliminating the manual effort and potential for mistakes. Dell EMC Data Protection Software collects the information needed, analyzes the environment and makes recommendations on how many proxies are needed and where. This greatly simplifies proxy management and eliminates many common proxy issues including:

- **Manual proxy management takes a lot of time and is error prone**
    - Many sequential manual tasks need to go right
    - There is ample opportunity for fat fingering mistakes
- **Manual Proxy Management is complex to set up and maintain**
    - Large environments can require 70 or more proxies
    - Each proxy needs to be deployed, patched, managed, etc.
    - Media Servers/Hardware proxies take time to procure hardware & licenses, SAN zoning, power and cooling
    - Proxy deployment is never done – the configuration evolves with the environment
- **Manual Proxy Management can require work in multiple user interfaces**
    - Backup application GUI
    - vSphere
    - Guest OS of the individual proxy
- **There are negative consequences for getting it wrong**
    - Unintended failbacks
    - Unpredictable performance
    - Missed VMs that are not protected
    - Overall impact to reliability and resilience

With Dell EMC data protection, Proxy Management becomes simpler with more visibility and awareness to potential conflicts.



In addition, Dell EMC automatically manages and cleans up VMDK snapshots greatly simplifying VMware image backups, improving overall VMware operations, and reducing OPEX costs. This zero touch feature automatically performs the following value added VMDK Snapshot Management tasks:

- Discovery, logging, and alerting of problem snapshots for proactive awareness
- Automated cleanup and removal of problem and orphaned snapshots
- Improved system reliability, improved backup success rates, and less wasted storage resources
- Zero touch - All this happens without user intervention

NETWORKING

VMware has been a leader in providing technology for the modern data center and SDDC, initially with virtualized compute (i.e. VMs), and more recently with virtualized networking (i.e. NSX) and virtualized storage (i.e. VSAN) and the increasing transformation of the data center to the cloud and the "as a service" model. The modern, increasingly software driven, data center enables all infrastructure to be delivered as a service, and the control of this data center is entirely automated by software. SDDC has enabled unprecedented agility to organizations.

Dell EMC data protection solutions are software defined in their architecture and are VSAN certified. This enables much simpler and less costly networking to implement our solutions, especially as the number of VMs increases. Dell EMC data protection solutions provide automation throughout the entire VMware data protection stack via native dynamic protection and native automated data protection in vRealize Automation.

PROTECTION STORAGE

Dell EMC data protection solutions for VMware can leverage Dell EMC Data Domain systems, Dell EMC Data Domain Virtual Edition, or the Dell EMC Integrated Data Protection Appliance for protection storage all designed to work efficiently with the SDDC. Dell EMC data protection solutions also automate the data movement from proxies to protection storage.

WIDEST VIRTUALIZED APPLICATION ECOSYSTEM

Dell EMC Data Protection solutions have broader VM application support than the top competitor – significantly more than just Oracle and Microsoft. We have also recently added new capabilities that enable protection of mission critical, high IO applications on VMware as well as protection of VMware Cloud workloads on Amazon Web Services.

TRANSFORMATION THROUGH AUTOMATION & INTEGRATION

Dell EMD Data Protection solutions are fully integrated with vSphere to empower VM admins to manage data protection directly from native vSphere UI. With Dell EMC's advanced VMware integration, VMWare Admins are empowered to more efficiently control their own data protection resulting in faster backup and restores for virtualized mission critical applications.

VMWARE VREALIZE AUTOMATION

The vRealize Data Protection Extension provides out-of-the-box integration of vRA with Dell EMC Data Protection. Dell EMC Data Protection Software offers data protection natively as part of vRA Advanced Services. Using an add-on extension, a virtualization admin may create data protection service for end-users in a very short time and benefit from key features which include pre-built Day 1 and Day 2 workflows as well as file level recovery and application protection workflows. The vRA Data Protection Extension embeds data protection directly into the blueprints. These blueprints ensure that data protection is always applied during the VM provisioning process.

Dell EMC Data Protection integrates with VMware vRealize Automation providing the following capabilities:

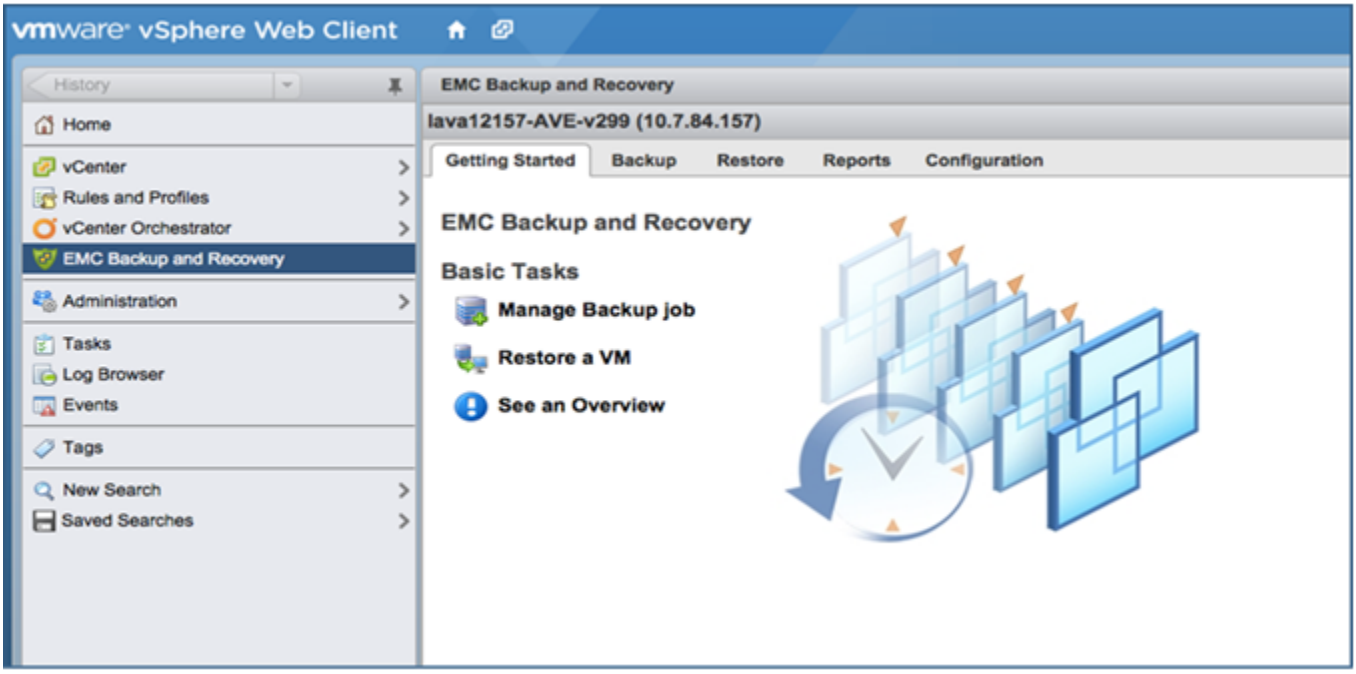
- **Backup and Restore**
    - Embed backup policies into blueprints

- Policy Management
- Restore VM to original or alternate location
- File level restores
- Backup services within the vRA UI
- Application consistent backups supported through agents

- **Monitoring and Reporting**
  - Review backup inventory and status
  - View failures and causes
- **Topology Workflows**
  - Multi-tenant workflows
  - Installation workflows

INTEGRATION WITH VSHPERE WEB CLIENT

Dell EMC Data Protection integrates with the VMware vSphere web client via a plug-in that provides the VMware administrator:



- VM Admin control to perform backups and restores
- The ability to oversee all backup and recovery activity
- Detailed reporting and configuration of data protection

TRANSFORM THROUGH THE CLOUD

Dell EMC Data Protection solutions are ready to support all phases of your journey to the cloud and provide you with superior cloud data protection for multiple common cloud use cases illustrated below.

LONG TERM RETENTION TO THE CLOUD

Dell EMC Data Protection solutions support native backup tiering to public or private cloud for cost effective storage of long term backup retention data eliminating the need for physical tape infrastructure.

CLOUD DISASTER RECOVERY

Dell EMC's Cloud Disaster Recovery solution provides cloud disaster recovery capabilities in the Amazon Web Services public cloud. Cloud DR protects on premise applications into AWS S3 with no additional Dell EMC data protection application server or Dell EMC deduplication protection storage components needed in the cloud. And, the solution does not require additional compute resources. Recovery of VM(s) can be done temporarily for DR test purposes or used to recover from an actual disaster.

VMWARE CLOUD WORKLOADS ON AWS

Dell EMC has been selected as the first VMware partner to deliver data protection for VMware Cloud on AWS. Dell EMC Data Protection software provides fast, efficient and secure image and guest level backup and recovery for workloads running on VMware Cloud. Tight integration into VMware enables self-service protection within native VMware interfaces. Customers interested in deploying or learning more about Dell EMC's data protection solution for VMware Cloud on AWS should contact Dell EMC sales.

DELL EMC DATA PROTECTION FOR VMWARE STRATEGY

MODERNIZE

Modernize by simplifying existing processes. Dell EMC Data Protection solutions for VMware are comprehensive and scalable:

- With deep integration at the application and hypervisor level
- That scale elegantly without media server sprawl
- With lower capacity and bandwidth requirements with best-in-class data deduplication
- That support Converged Infrastructure/Hyper-Converged Infrastructure, physical/virtual environments and the widest application ecosystem

AUTOMATE

Dell EMC Data Protection solutions for VMware automate everywhere it makes sense resulting in high performance and low TCO:

- Automate protection policies and SLA compliance
- Make data protection disappear into a feature of the fabric
- Introduce data protection workflows at the application level
- API-driven automation to enable delivery as part of service catalog
- Lower management costs with automation across the entire stack, not just policy management
- Empower vAdmins with industry leading integration with vSphere UI and vRA
- Provide faster backup and recovery plus instant VM access

TRANSFORM

Dell EMC Data Protection solutions are architected for the Modern and Software Defined Data Center (SDDC) and Cloud to:

- Protect mission critical high IO workloads on VMware with hypervisor and application direct data path
- Meet your backup windows with SLO driven protection
- Do cloud your way – Extend to the cloud, DR in the cloud, or run in the cloud

DELL EMC DATA PROTECTION + VMWARE

Dell EMC Data Protection ensures that your entire VMware environment is protected and can scale easily as the number of applications and the amount of data you need to protect inevitably continues to increase. Dell EMC data protection solutions are VSAN certified and deliver higher performance data protection at a low TCO providing our customers with the assurance that they are getting the performance and the value they require. **With Dell EMC data protection + VMware you can realize and protect the software defined VMware data center.** Dell EMC Data Protection for VMware:

- Protects a wide virtualized application ecosystem – significantly more than just Oracle and Microsoft
- Enables extension of virtualization from business critical applications to mission critical high IO, high change rate applications that are more difficult to protect in virtual environments
- Scales easily and elegantly without media server sprawl and eliminates resources overprovisioning/overhead for scaling, which is common in brick based initial converged hardware and software appliance backup architectures
- Delivers comprehensive management capabilities across the entire VMware data protection stack for native vSphere integration and VM experience

- Delivers SLO driven protection with new hypervisor and application direct protection
- Enables backup admins to focus on capacity management and reporting vs keeping the lights on activities – automates most protection tasks as new VMs are spun off
- Provides transformational management functionality that is designed to enable self-service to vAdmins with oversight by backup/infrastructure admins
- Provides faster backups and restores
    - "Instant Access and Instant Restore of the VMware Image to browse file and applications"
        - Capable of restoring and running up to 32 VMs on a Data Domain system
        - Up to 10,000 IOPS for restoring and running VMs
    - 1 hour to protect 100 VMs[1]
    - 85 minutes to recover 100 VMs as new VMs[1]
    - 50 minutes to revert back to 100 VMs[1]
    - 4 hours to backup 1,000 VMs from a single vCenter full backup[1]
    - 72 concurrent backup streams and image recovery sessions per proxy[1]
- Protects mission critical, high change rate apps
- Delivers best in class data efficiency with average deduplication rate of 72x for VMware environments[2]
- Comes with subscription software pricing for increased financial flexibility

[1] Based on Dell EMC internal testing, November 2016.

[2] Based on "ESG Lab Validation: EMC Data Domain and Avamar," commissioned by EMC, October 2015. Results based on simulated 28-day back-up testing using (2) VMware vCenter ESX 5.5 servers housed on Cisco UCS 240 servers, each UCS server hosting 50 VMs for a total of 200 VMs. Actual performance will vary.

Learn more about Dell EMC Data Protection solutions for VMware

Contact a Dell EMC Expert