

# Data Protection For the Modern Data Center

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DELL EMC

DELL EMC

# Tale of two worlds

Traditional Apps  
IT  
On Premise



You Need **Both**  
for Trust and Agility

Next Gen Apps  
Developers  
Cloud



# Are You Protected?

**\$914K**

Average Cost of  
Data Loss

**2.36T**

Data Loss

**90%**

Laggards or  
Evaluators



## Global Data Protection Index

**73%**

Unable to keep  
pace with Flash

**82%**

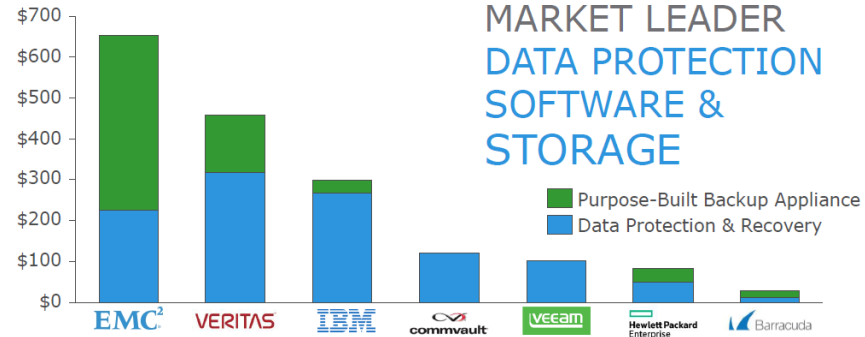
Unprepared for  
future business  
challenges

**50%**

Unprotected in the  
Cloud

# Dell EMC Data Protection – by the numbers

- World's Largest Data Protection Company
- Market Share Leader in Purpose Built Backup Appliances
  - Leaders in Open & Mainframe Systems
  - 3x share our closest competitor
- **70,000+** Systems Shipped and Installed
- **4,000+** Data Protection Solution Employees
- Recognized as Leader by Gartner!

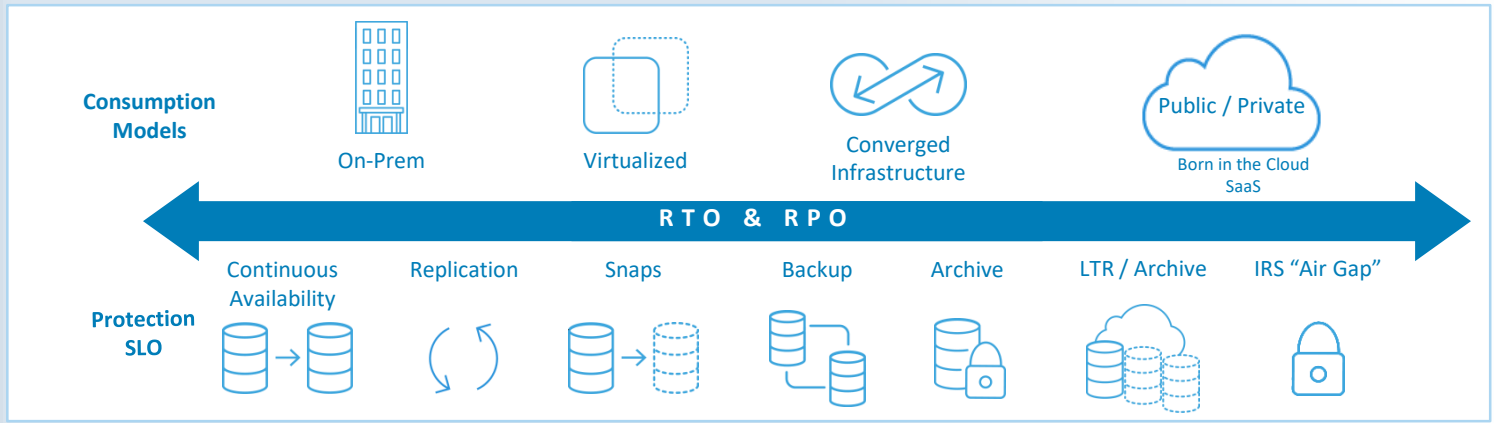


## Purpose-Built Backup Appliances



# Enabling simplicity - data protection everywhere

**Where You Need It**



**How You Want It**



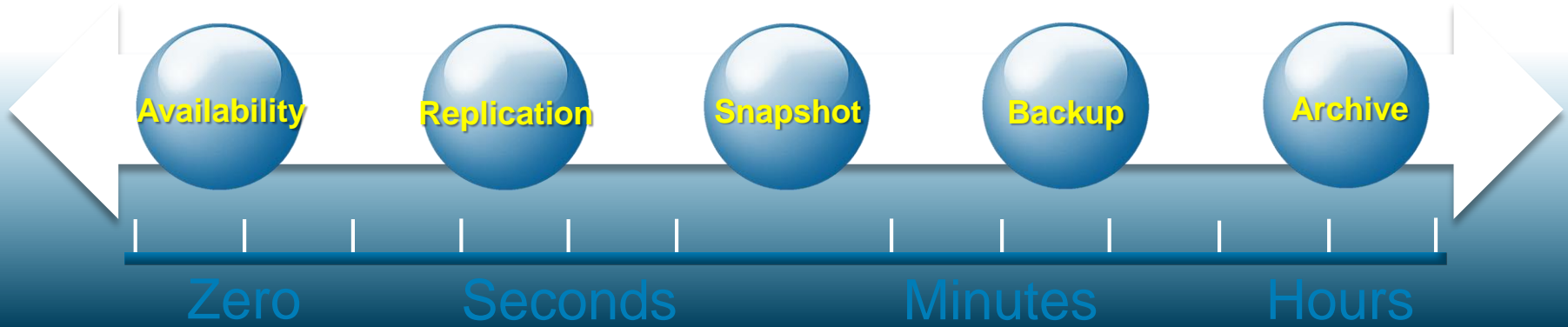
# DATA PROTECTION CONTINUUM

AVAILABILITY, REPLICATION, BACKUP AND ARCHIVE

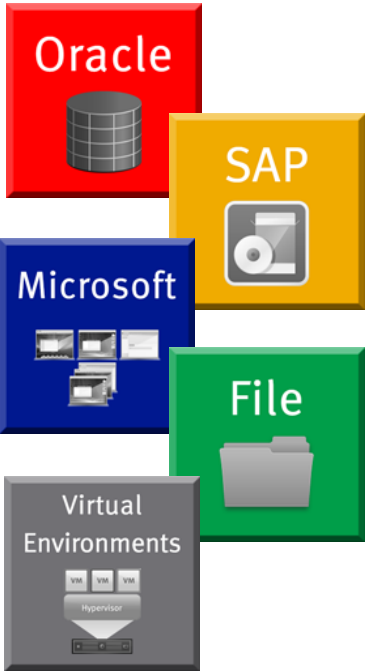
COMPLEMENTARY TIERS TO MEET ANY  
RECOVERY REQUIREMENT

DATA AVAILABILITY

DATA DURABILITY



# DATA PROTECTION CONTINUUM



**CONTINUOUS AVAILABILITY**  
Access Anywhere stretched storage volumes

**CONTINUOUS REPLICATION**  
*LOCAL OR REMOTE*  
Recovery to any point-in-time

**SNAPSHOTS**  
*HOURLY*  
Recovery points between backups

12AM 6AM 12PM 6PM 12AM

**BACKUPS**  
*DAILY*  
Copies on capacity optimized protection storage

MONDAY TUESDAY

**ARCHIVE**  
*DAILY*  
Archive and search on capacity optimized protection storage

MONDAY TUESDAY WEDNESDAY THURSDAY FRIDAY ∞

# DATA PROTECTION & AVAILABILITY

## EMC VPLEX

EMC Continuous Availability Platform  
Zero RPO/RTO Within And Across Data Centers

## EMC RecoverPoint

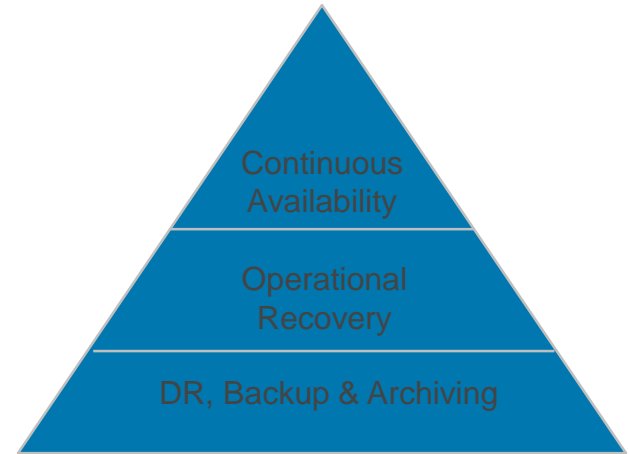
EMC Continuous Data Protection (CDP) Platform  
Minutes Of RTO And RPO  
Local And Remote Replication For Block-based Storage

## EMC Protection Storage (Data Domain)

EMC Storage Of Last Resort (DIA, Et Al)  
Storage Efficiency Benefits From Deduplication + Compression  
Consolidation Of Backup And Archive Environments

## EMC Data Protection Suite (Avamar, NetWorker, SourceOne, DPA)

EMC Backup Software Portfolio  
Hours And Days Of RTO And RPO  
Backup/Recovery For Virtual, Enterprise Applications, ROBO, And DTLT

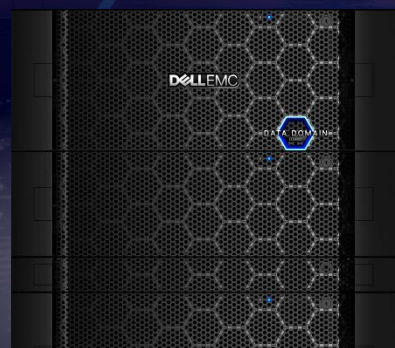




MODERNIZE, TRANSFORM and AUTOMATE DATA PROTECTION with

# Dell EMC Data Protection Portfolio

Protection and recovery for cloud



PROTECTION  
STORAGE



PROTECTION  
SOFTWARE

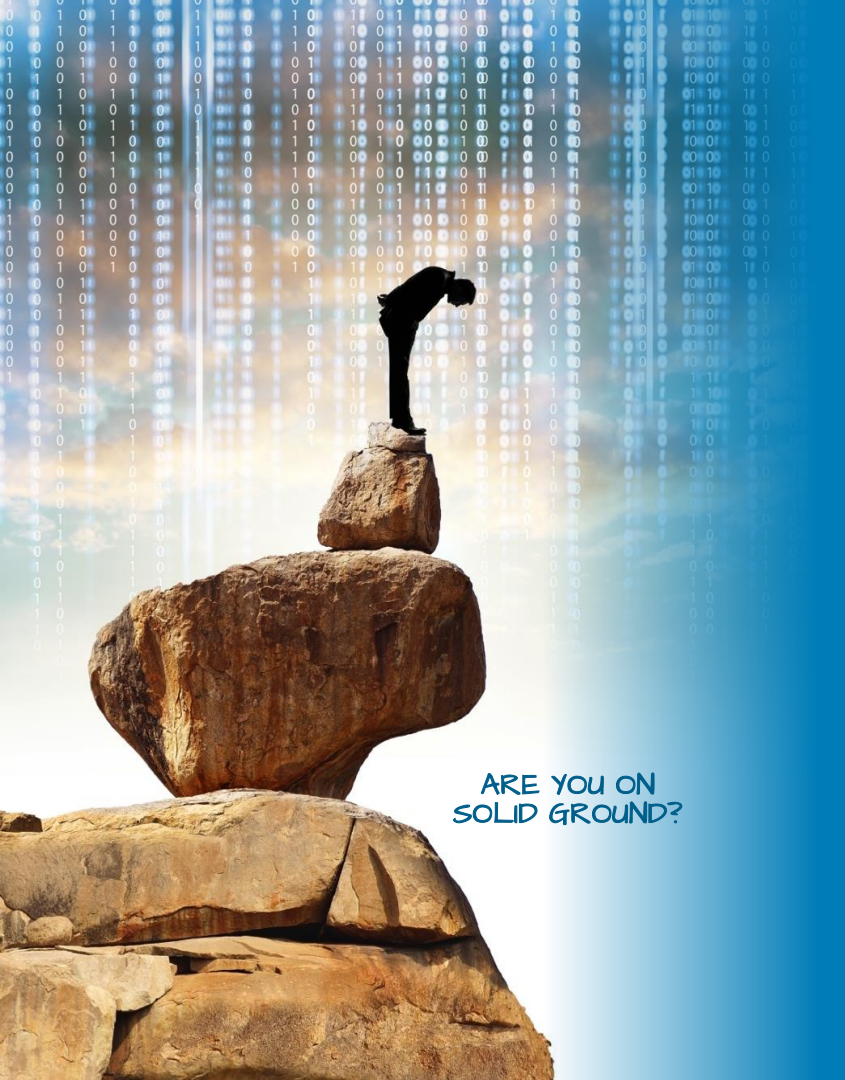


PROTECTION  
APPLIANCE

Best of breed



Integrated



ARE YOU ON  
SOLID GROUND?

# Protection Storage

# The Evolution of Data Protection

## Analytics & Search



## Backup software



## Intelligent copy oversight



## Backup servers/agents



## Protection storage



## Self service (from data source)

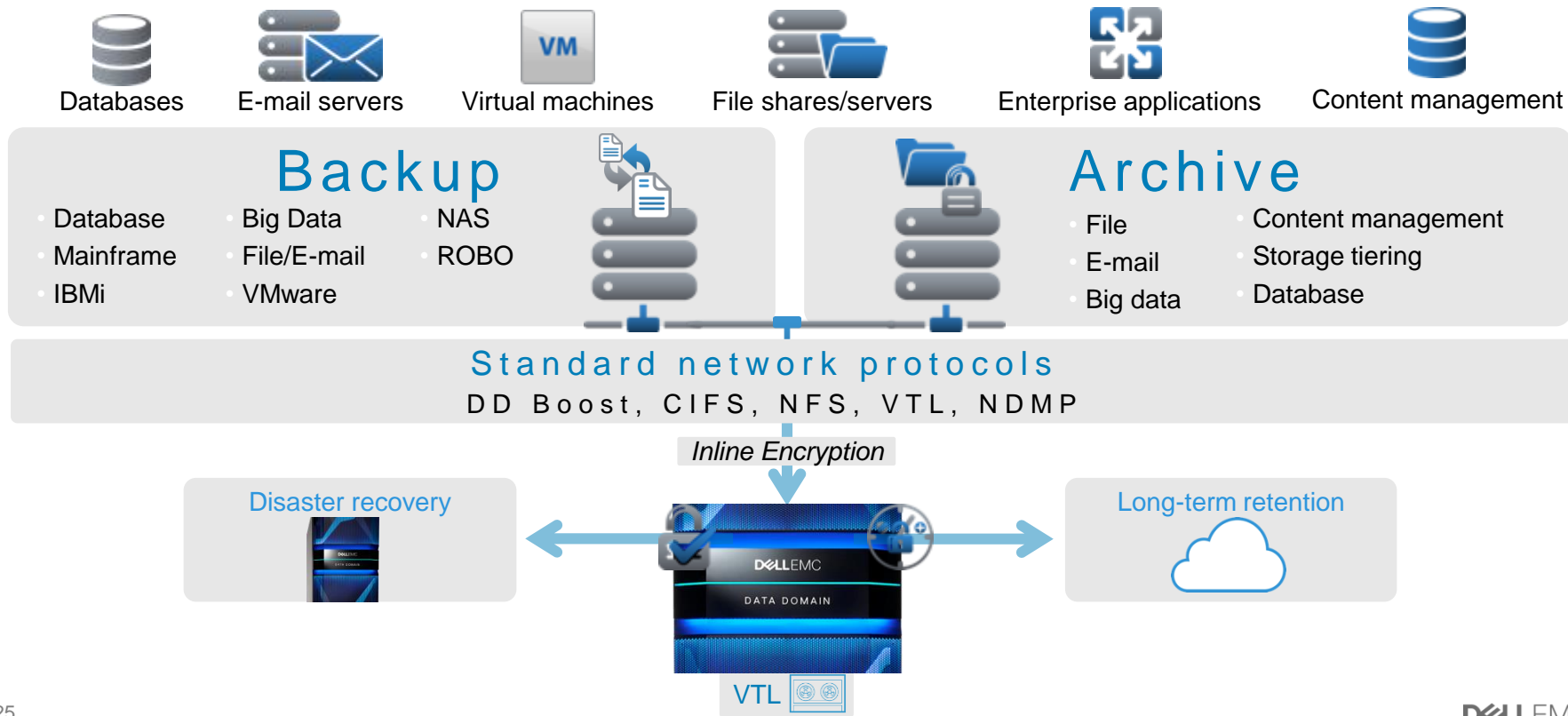


Traditional backup

Modern data management

# The Ultimate Protection Storage

## Data Domain - Protect everything on a single platform



# Why Dell EMC protection storage



## EFFICIENT

- Protect more data faster with industry leading speed and scale
- Reduce storage required by 10–30x



## RELIABLE

- End-to-end data verification, fault detection, and self healing



## FLEXIBLE

- Integrates with leading backup, archiving, enterprise applications and big data applications or directly with primary storage
- Deploy protection storage however you want it

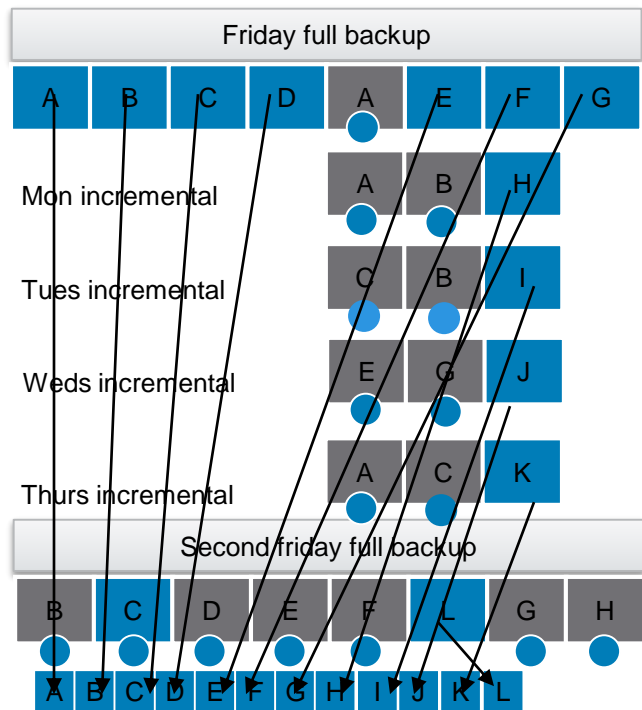


## CLOUD-ENABLED

- Natively tier deduplicated data to the cloud for modern long-term retention
- Deliver data protection as a service with logical data isolation

# Not All Dedupe is Created Equal

- Superior efficiency with variable-length deduplication



Backup data	Logical	Estimated reduction	Physical
Friday full	1 TB	2–4x	250 GB
Monday incremental	50 GB	7–10x	5 GB
Tuesday incremental	50 GB	7–10x	5 GB
Wednesday incremental	50 GB	7–10x	5 GB
Thursday incremental	50 GB	7–10x	5 GB
Second Friday full	1 TB	50–60x	18 GB
<b>Total</b>	<b>2.2 tb</b>	<b>7.6x</b>	<b>288 GB</b>

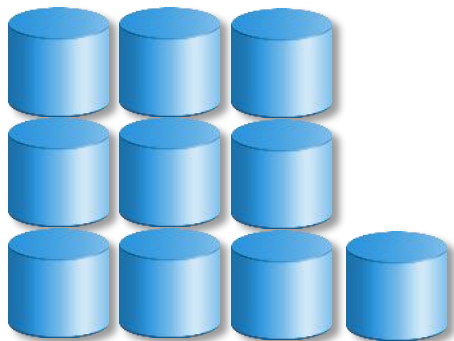
# Savings of Deduplication

A Real Life Customer Example

# 66:1

## Deduplication

21 PB



322 TB



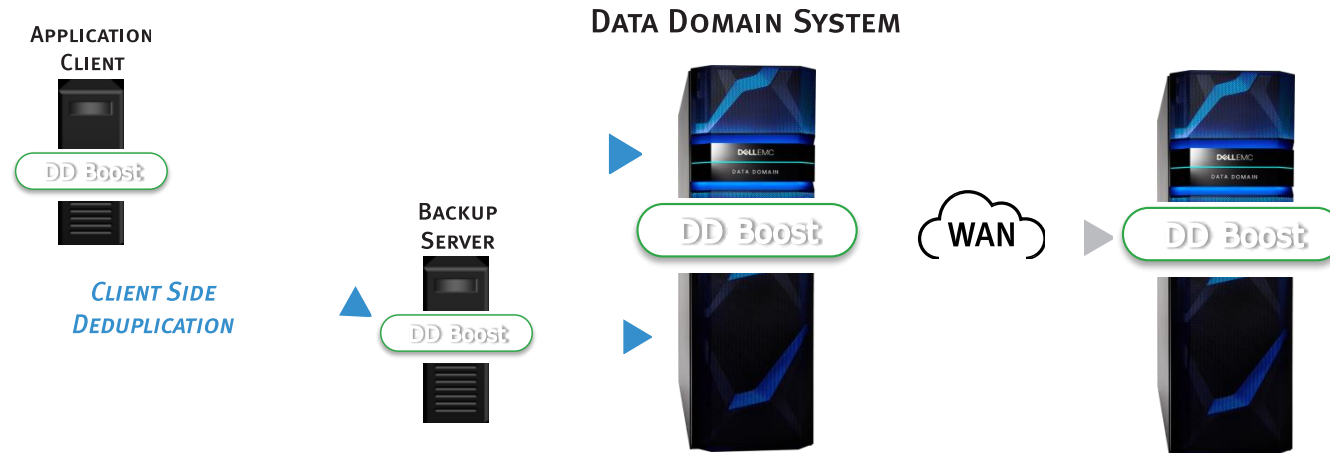
- 98.5% Data Reduction- 66 to 1
- 58% utilized in Data Center #1
- 66% utilized in Data Center #2
- Cost: 3.5 cents per Logical GB
- Cost to Serve:\$0.0009868

Location	Pre-Comp TB	Post-Comp TB	Dedup
Data Center #1	10,715.05	161.85	66:1
Data Center #2	10,461.07	160.34	65:1
<b>Total</b>	<b>21,176.12</b>	<b>322.19</b>	<b>65.7:1</b>

# Faster, More Efficient Backup

## Data Domain Boost

- Advanced integration with leading backup and enterprise applications
- Speeds backups by up to 50%
- Reduce network utilization by up to 99%

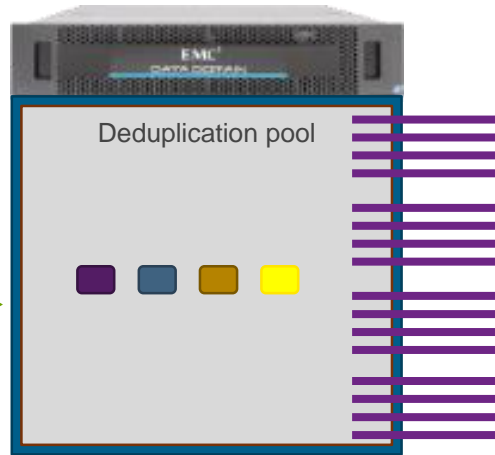




# Global deduplication across clients

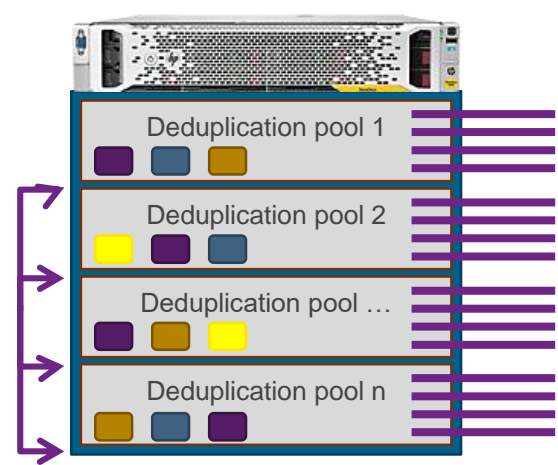
**Data Domain** offers a single deduplication pool per system, thus tremendously reducing data redundancy.

Data Domain: unified dedupe



Unique data stored only

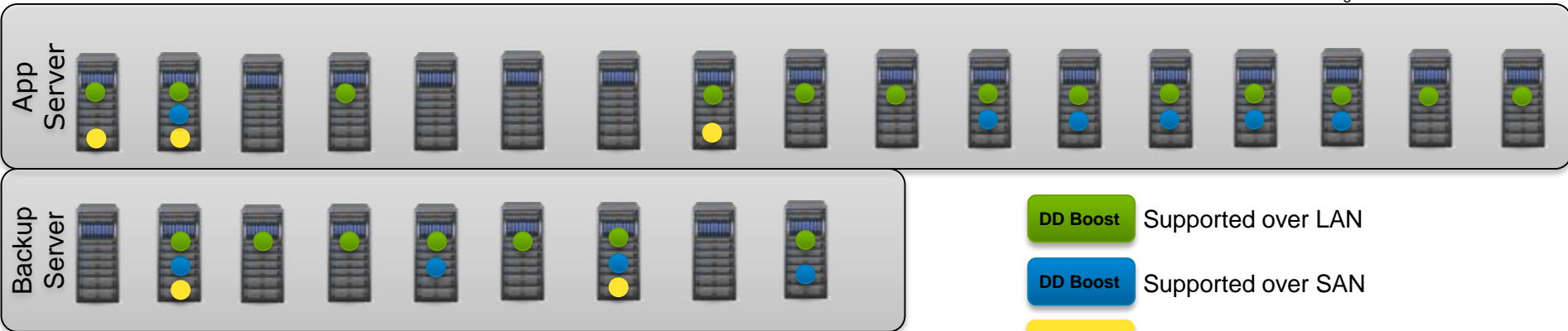
Fractured dedupe



Redundant data stored

*Reducing the number of dedupe pools reduces overall speed.*

# Data Domain Boost Ecosystem



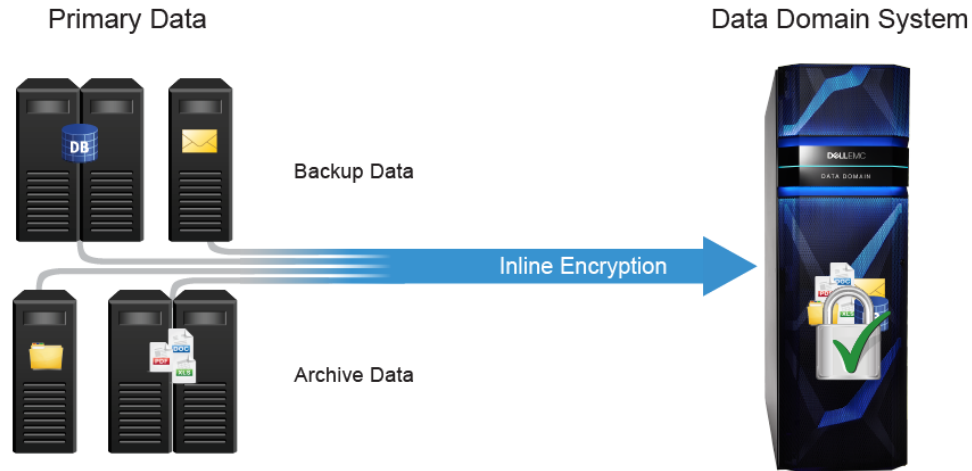
- DD Boost** Supported over LAN
- DD Boost** Supported over SAN
- DD Boost** Supported over WAN

For everything else, use the DD Boost file system plug-in



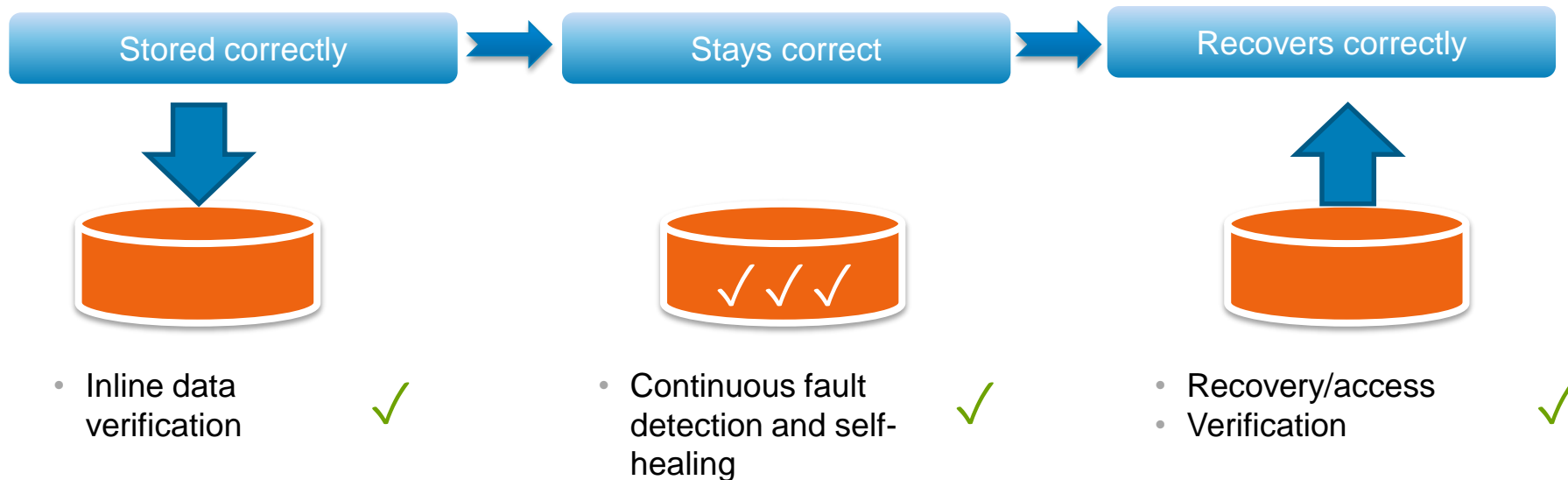
# Encryption

- Encrypts incoming data and store the data on the disk in an encrypted format
- Inline Encryption ensures that data does not reside in a vulnerable state on the disk subsystem



# Most Reliable Protection Storage

- Data Domain Data Invulnerability Architecture



# Storage integrated protection

## ProtectPoint



**20x**

Faster backup



**10x**

Faster recovery



- **Faster** backup & recovery
- **Eliminate** impact on application
- **Reduce** cost and complexity



# Data Domain Cloud Tier

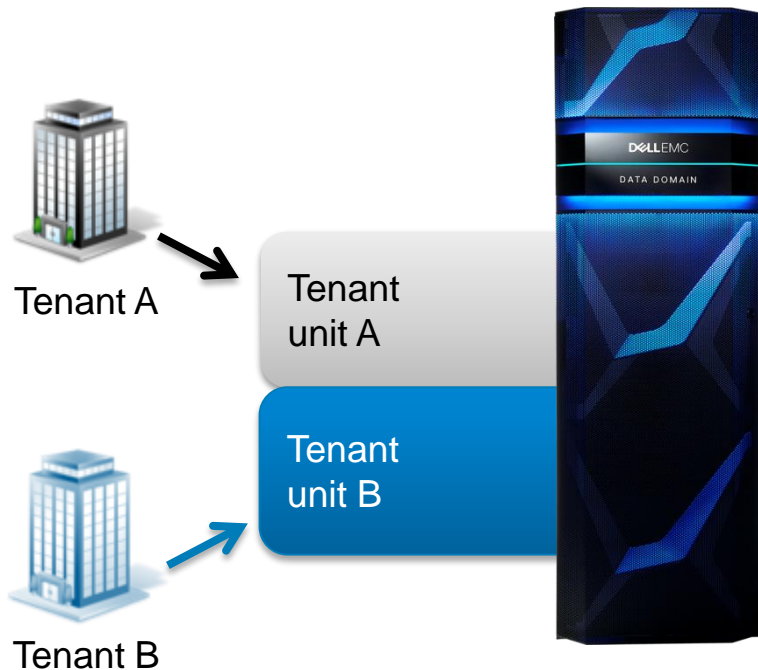
Unparalleled efficiency for tiering protection storage to the cloud



- **Simple:** automated, native tiering to public, private or hybrid cloud
- **Cost-effective:** send and retrieve only unique data for lower TCO
- **Open:** broad ecosystem and flexible deployment options

# Secure Multi-Tenancy

Delivering data protection as a service



- Deliver data domain in a private/hybrid cloud
- Logically isolate user data for secure self-service
- Tenant-level management and reporting

# Modernized Data Domain Portfolio



## Small Enterprise/ROBO – Midsize Enterprise

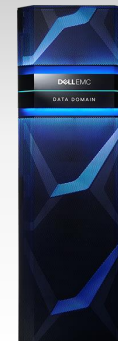
Speed (DD Boost): 5.6 TB/hr (16TB), 11.2 TB/hr (96 TB)  
Usable capacity: 0.5 TB – 96 TB, Logical capacity: Up to 4.8 PB

Data Domain  
Virtual Edition

## Large Enterprise

### Midsize Enterprise

### Small Enterprise / ROBO



	DD3300	DD6300	DD6800	DD9300	DD9800
Speed (DD Boost)	7.0 TB/hr	24 TB/hr	32 TB/hr	41 TB/hr	68 TB/hr
Speed (other)	4.2 TB/hr	8.5 TB/hr	14 TB/hr	20 TB/hr	31 TB/hr
Logical capacity	200 TB–1.6 PB <sup>1</sup> 600 TB–4.8 PB <sup>2</sup>	1.8–8.9 PB	2.8–14.4 PB <sup>1</sup> 8.4–43.2 PB <sup>2</sup>	7.2–36 PB <sup>1</sup> 21.6–108 PB <sup>2</sup>	10–50 PB <sup>1</sup> 30–150 PB <sup>2</sup>
Usable capacity	4 TB–32 TB <sup>1</sup> 12 TB–96 TB <sup>2</sup>	Up to 178TB	Up to 288 TB <sup>1</sup> Up to 864 TB <sup>2</sup>	Up to 720 TB <sup>1</sup> Up to 2.16 PB <sup>2</sup>	Up to 1 PB <sup>1</sup> Up to 3 PB <sup>2</sup>

<sup>1</sup> Total capacity on Active Tier only

<sup>2</sup> Total capacity with DD Cloud Tier software for long-term retention



# Dell EMC Protection Storage – How You Want It

Data Domain



Integrated  
Data Protection  
Appliance



Data Protection  
for Converged  
Infrastructures



Data Domain  
Virtual Edition



Data Domain  
delivered by a  
Service Provider



How  
You  
Want  
It

Best of Breed



Integrated



Converged

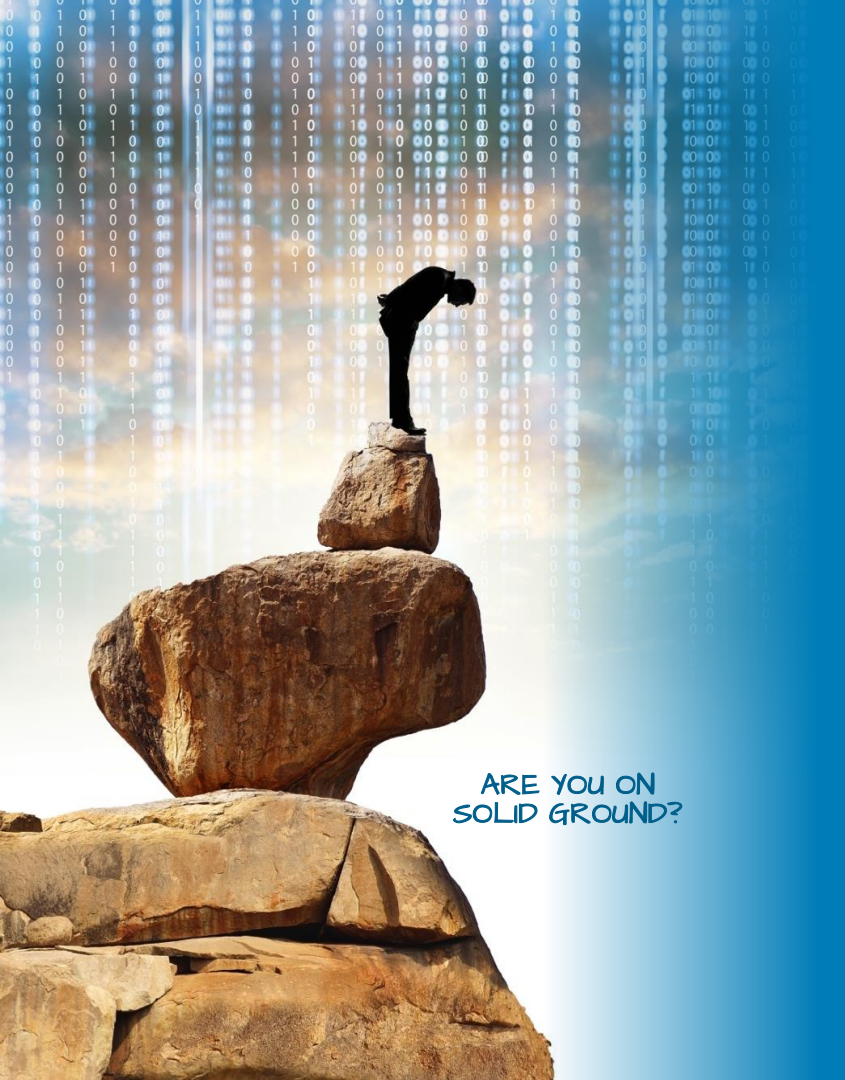


Software Defined



As-a-Service

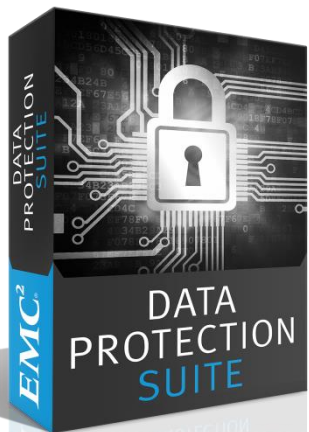




ARE YOU ON  
SOLID GROUND?

# Protection Software

# Why Dell EMC protection software



## COMPREHENSIVE PROTECTION

- Delivers protection across the data protection continuum
- Covers all consumption models, from on-premise traditional infrastructures to virtualized environments to hybrid and public clouds
- Delivers backups of data and applications WITHIN the public cloud as well as provides secure long-term retention of backups TO the cloud



## FLEXIBLE

- Includes 5 purpose-built offerings, protecting environments rich in mission critical applications, fully virtualized, focused on backup and recovery, requiring archive and compliance, or a complex assortment of these
- Supports a wide range of protection technologies including deduplication backup, backup to disk, snapshot-based backup, and backup to tape
- Delivers application owner visibility and control



## HIGH PERFORMANCE

- Up to 20x faster backup
- Up to 30x faster image-level recovery
- Industry's tightest integration with Data Domain, yielding deduplication rates nearly 4x that of our competitors
  - Reduces backup storage by up to 38x
  - Reduces network traffic by up to 99%
  - Reduces backup times by up to 50%

# Data Protection Suite Family

- Comprehensive, industry-leading data protection

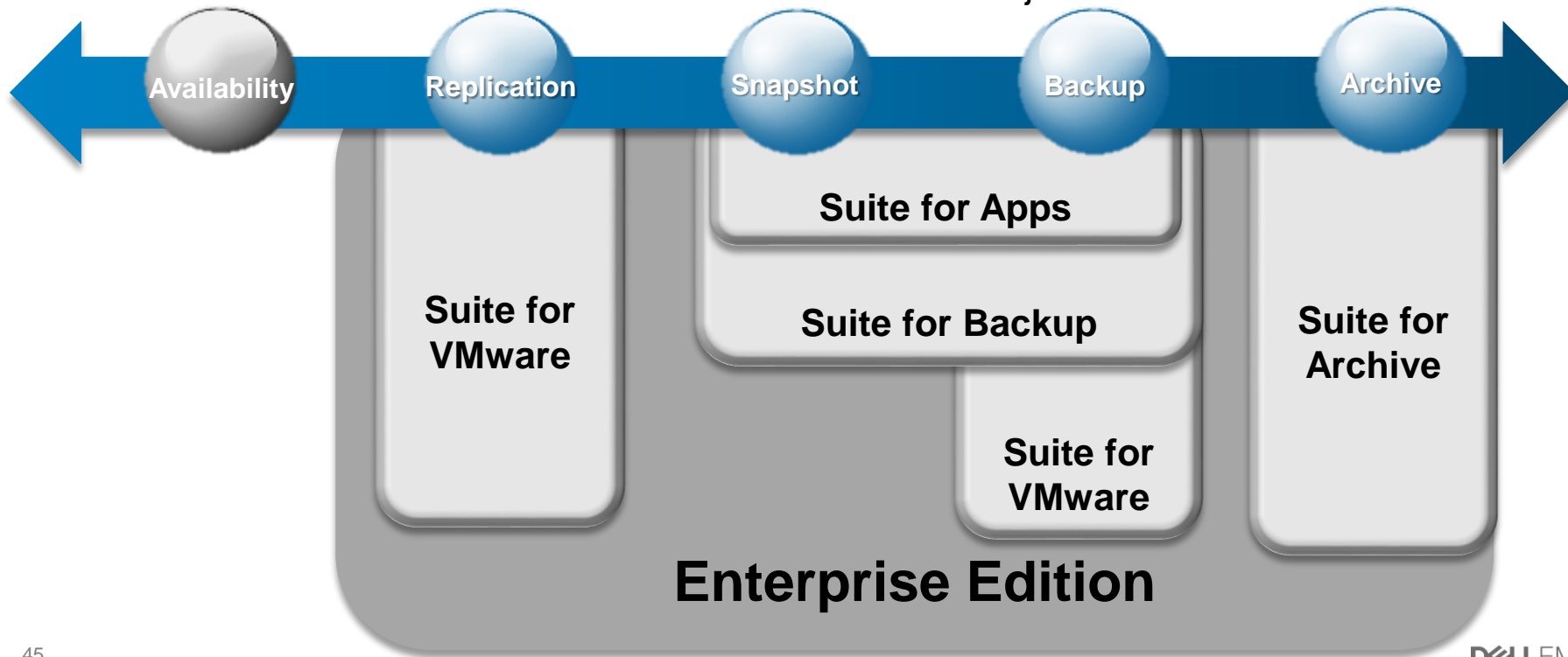
**Choose the right solution for your environment:**



# Data Protection Continuum

## Protection and Continuity

Based on Data Value and Business Objectives



# Data Protection Suite Family

- What's included

## Data Protection Suite Enterprise Edition

### What's Included:

- Avamar
- NetWorker
- ProtectPoint
- DD Boost for Enterprise Apps
- RecoverPoint for VMs
- AppSync
- Data Protection Advisor
- Enterprise Copy Data Management
- SourceOne for Email, Files and Microsoft SharePoint
- CloudBoost
- DP Search

## Data Protection Suite For Backup

### What's Included:

- Avamar
- NetWorker
- DD Boost for Enterprise Apps
- Data Protection Advisor
- CloudBoost
- DP Search

## Data Protection Suite For VMware

### What's Included:

- Avamar
- Avamar Virtual Edition
- RecoverPoint for VMs
- Data Protection Advisor
- DP Search

## Data Protection Suite For Applications

### What's Included:

- ProtectPoint technology
- DD Boost for Enterprise Apps
- Enterprise Copy Data Management
- Data Protection Advisor

## Data Protection Suite For Archive

### What's Included:

- SourceOne Email Management
- SourceOne for File Systems
- SourceOne for Microsoft SharePoint

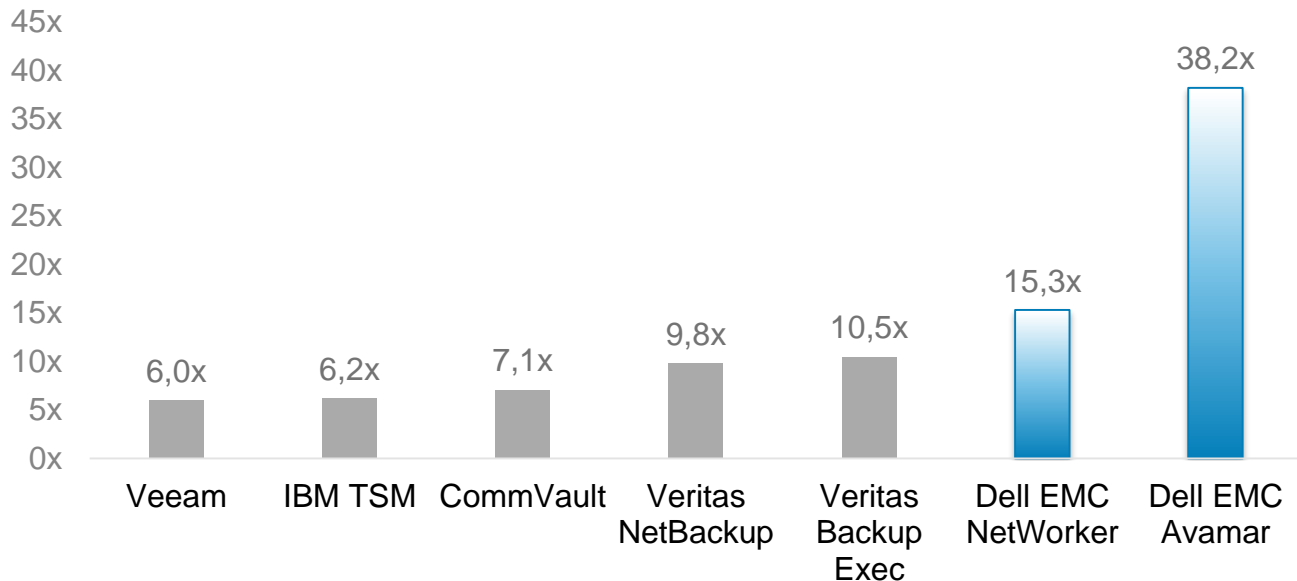
**The combination of components within each Suite offering are hand-picked to meet your data requirements**

# Data Domain + Data Protection Suite for Backup

Better Together



## Average dedupe rate by backup software





**DELL EMC**

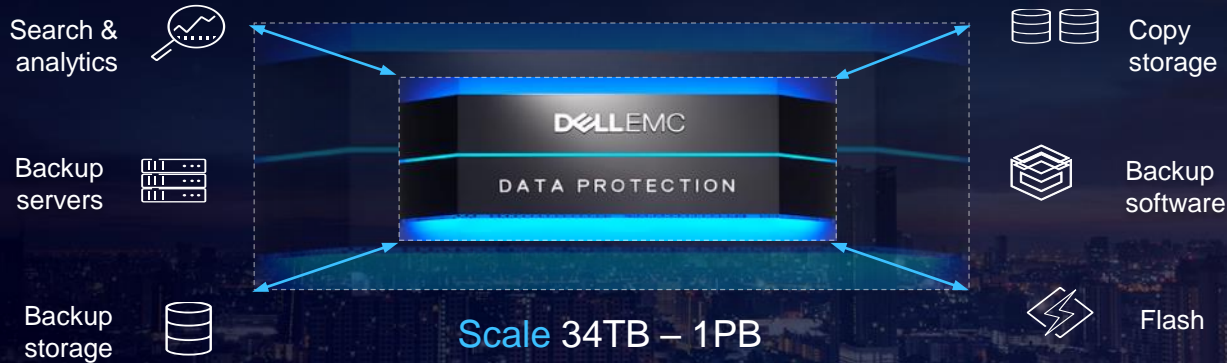
**DATA PROTECTION**

**INTEGRATED  
HARDWARE &  
SOFTWARE**

**DELL EMC**



# Integrated Data Protection Appliance



Fast and modern

Converged and comprehensive

High value and low cost

20%  
Faster

10X  
Faster Time to Protect

55:1  
Avg Deduplication Rate



# IDPA – Maximum Choice & Flexibility

	MID-SIZE & ROBO	MID-SIZE ENTERPRISE		LARGE ENTERPRISE	
	DP4400	DP5300	DP5800	DP8300	DP8800
<b>BACKUP INGEST</b>	9 TB/hr	24 TB/hr	32 TB/hr	41 TB/hr	68 TB/hr
<b>LOGICAL CAPACITY<sup>3</sup></b>	240 TB to 4.8 PB <sup>1</sup> 720 TB to 14.4 PB <sup>2</sup>	340 TB to 6.5 PB <sup>1</sup>	960 TB to 14.4 PB <sup>1</sup> 2.8 to 43.2 PB <sup>2</sup>	1.9 to 36 PB <sup>1</sup> 5.7 to 108 PB <sup>2</sup>	6.2 to 50 PB <sup>1</sup> 18.6 to 150 PB <sup>2</sup>
<b>USABLE CAPACITY</b>	24 to 96 TBu <sup>1</sup> 72 to 288 TBu <sup>2</sup>	34 to 130 TBu <sup>1</sup>	96 to 288 TBu <sup>1</sup> Up to 864 TBu <sup>2</sup>	192 to 720 TBu <sup>1</sup> Up to 2.16 PBu <sup>2</sup>	624 TBu to 1 PBu <sup>1</sup> Up to 3 PBu <sup>2</sup>

<sup>1</sup> Total capacity on active tier only

<sup>2</sup> Total capacity with cloud tier for long-term retention

<sup>3</sup> Logical capacity based on 10x to 50x deduplication

DELL EMC DP4400

# Simplicity is a Converged Solution



Densest 2U appliance—up to 20% more capacity<sup>2</sup>

<sup>1</sup>Based on Dell EMC internal testing, May 2018, compared to traditional deployments. Actual results will vary.

<sup>2</sup>Based on Dell EMC internal analysis, May 2018, using Rubrik's and Cohesity's published data. Actual results will vary.

# DP4400 Configuration Details

- Available in 12TB Increments
  - 24TB, 36TB, 48TB, 60TB, 72TB, 84TB, 96TB
  - Any capacity point can be ordered from the factory
  - Can be upgraded to any supported capacity point in the field
- All Required Hardware is Shipped at New Purchase
  - Upgrades and field options only require license enablement
- Networking: 10GbE SFP+ optical (negotiates to 1GbE)
- DP4400 Licensing via ELMS Portal

# Easy and Fast Deployment

## Appliance Configuration Manager Install Wizard

**DELL EMC** Integrated Data Protection Appliance

Welcome to Integrated Data Protection Appliance configuration

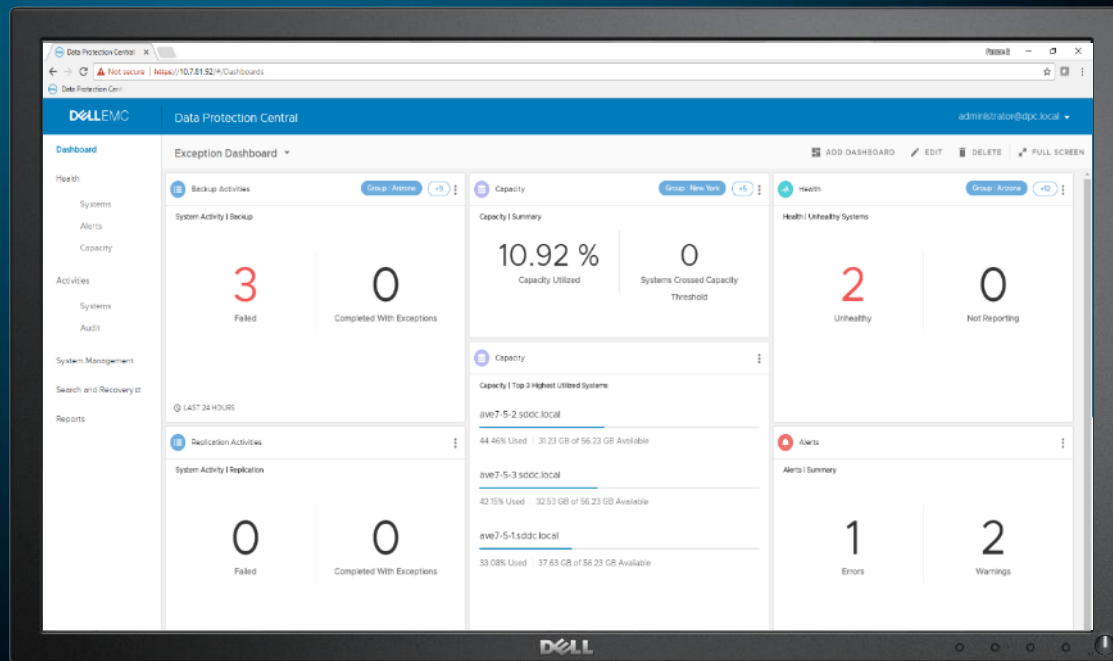
- Protection Storage: DDVE 3.1
- Backup Server: Avamar 7.5.1
- IDPA System Manager: IDPA System Manager 18.1
- Reporting and Analytics: Data Protection Advisor 6.5
- Search: Search 18.0
- Cloud Disaster Recovery: Cloud Disaster Recovery 17.4

I have read the pre-requisites for Integrated Data Protection Appliance configuration

Previous Next Submit

# Modern and simplified customer experience

- ✓ Centralized Protection Experience
- ✓ Modern HTML5 UI
- ✓ **vmware**® vSphere Plugin
- ✓ Customized Dashboards / Widgets



# WHY Dell EMC for data protection

- Data Protection Everywhere
  - One vendor delivering simplicity, flexibility, and investment protection
- Market & Technology Leadership
  - #1 In Deduplication
  - #1 In Purpose Built Backup Appliances
  - #1 In Combined Data Protection Software & Storage
  - #1 In Replication
  - Isolated Recovery Solutions
- Unparalleled Investment
  - \$16.5B cumulative R&D investment, \$17B in technology acquisitions
  - 4,000+ team members dedicated to helping our customers

**D**  **LEMC**