

DP4400 and... everything is ready!



All in one, top functionalities backup/recovery appliance

DELLTechnologies

Daniel.Olkowski@dell.com

What do we talk about today?

What do we talk about today?

EASY

What do we talk about today?

One of the leading trends
in Backup/Recovery

EASY

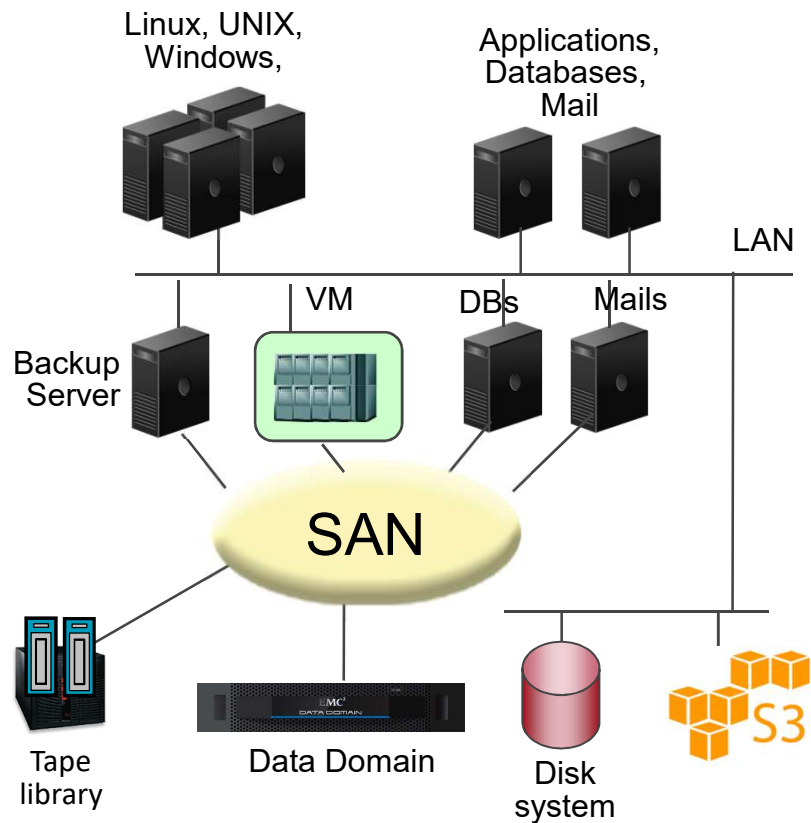
Agenda

- DP4400 – one slide
- Why IDPA?
- DP4400
- IDPA family
- DP4400 - Initial config
- The power of DP4400
- DP4400 - Licensing / pricing

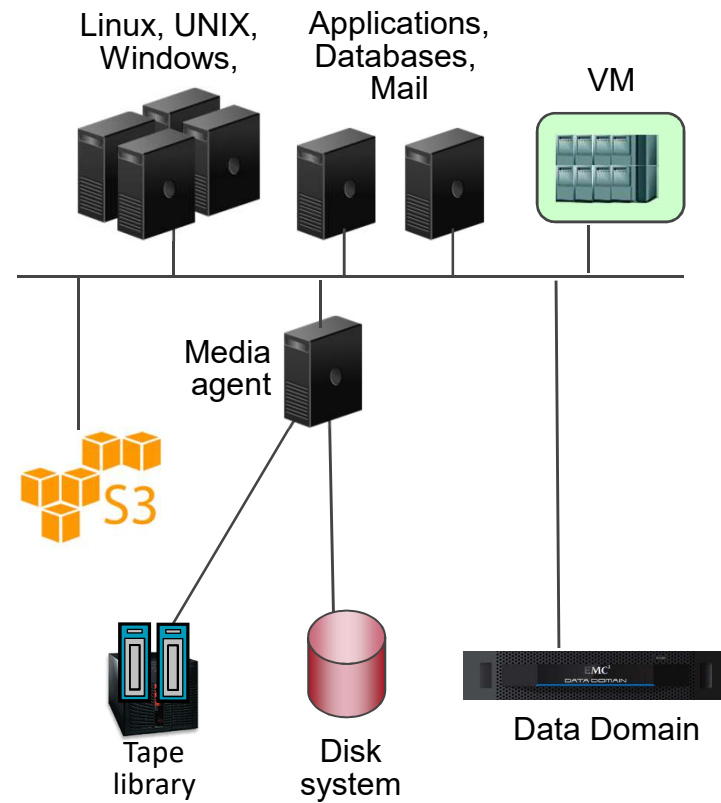
Why DP4400?

Backup solution ecosystem

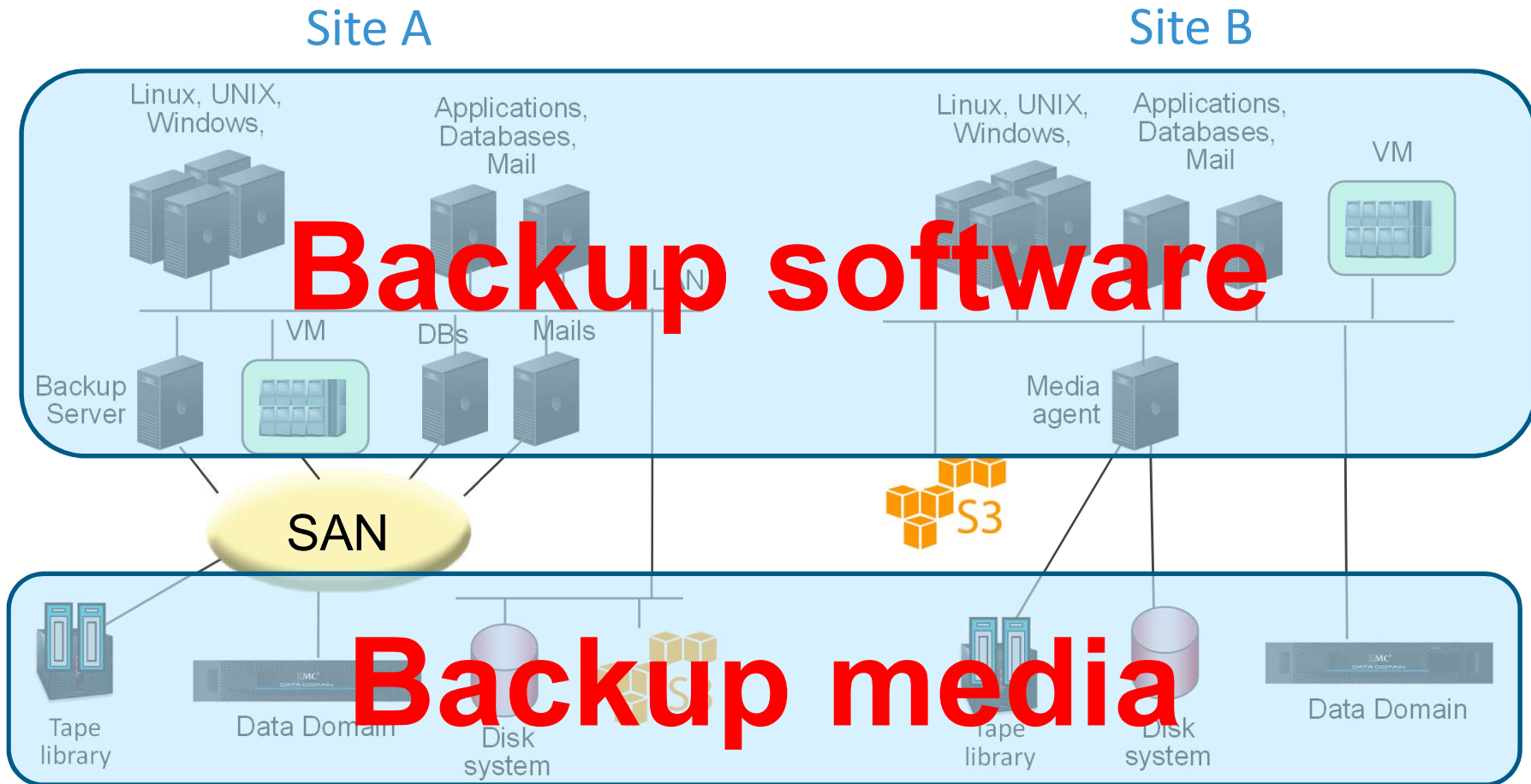
Site A



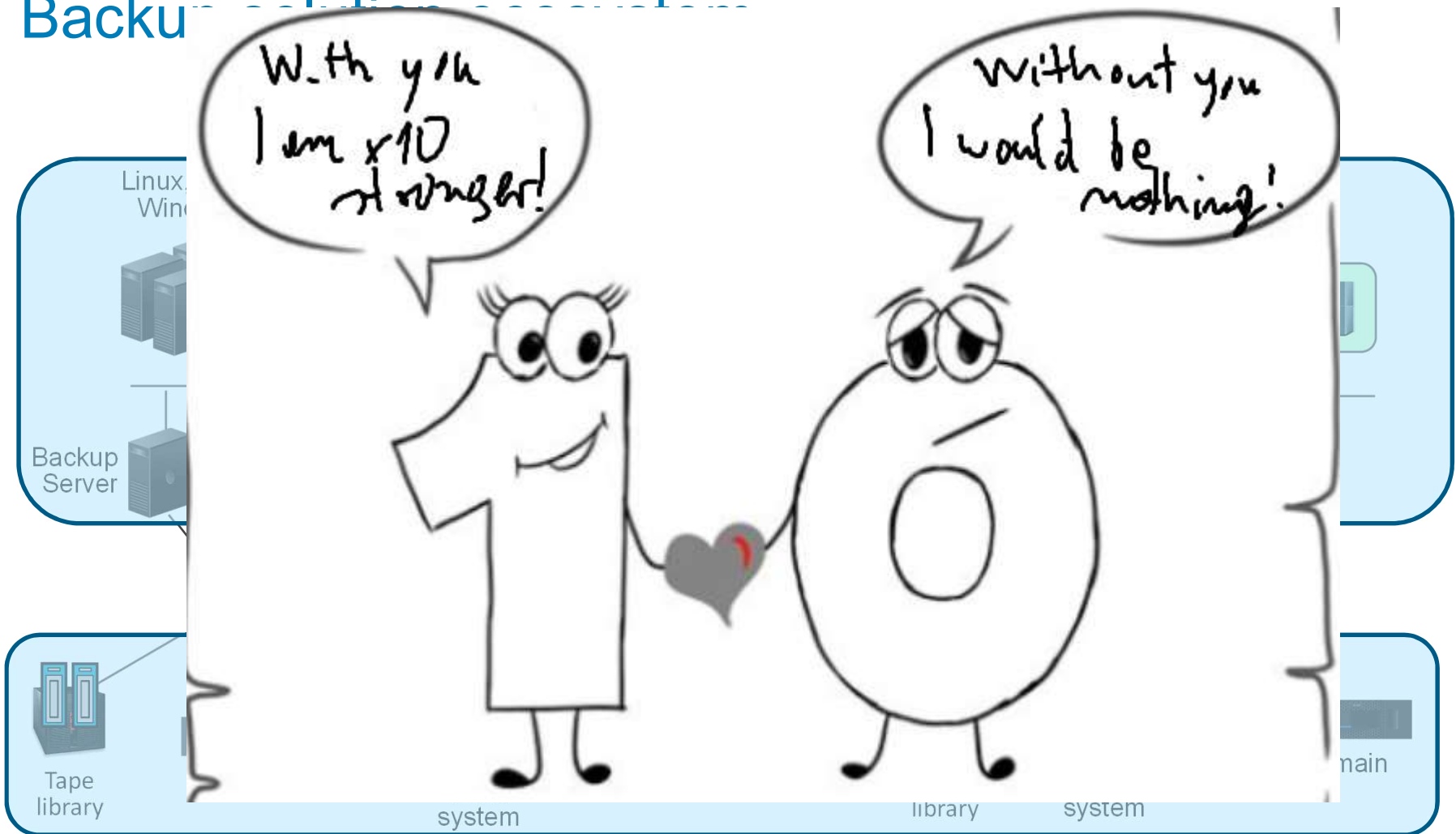
Site B



Backup solution ecosystem



Backup



DP4400 – One slide

**Backup Media
based on Data Domain**

**Backup software
based on Avamar**

Cloud Integration:

- tests in Cloud
- Cloud as DR

**Central console
Over 300 reports**

**GDPR
Finding any
phrase
in protected
documents**

DP4400:

- Ready to backup after power on
- Sized and equipped to have highest speed (factory designed)
- No risk approach

2U DP4400

Any environment:

- Virtualization
- Databases
- Servers
- Laptops
- Remote offices

**up to the full capacity
of DP4400 – all licenses
included**

Capacity on demand:

- from **8TB** net
- to **96 TB** net

**Extensions every 4TB/12TB
just by adding the license
20TB->36TB+ upgrade
requires hardware upgrade
(customer installable)**

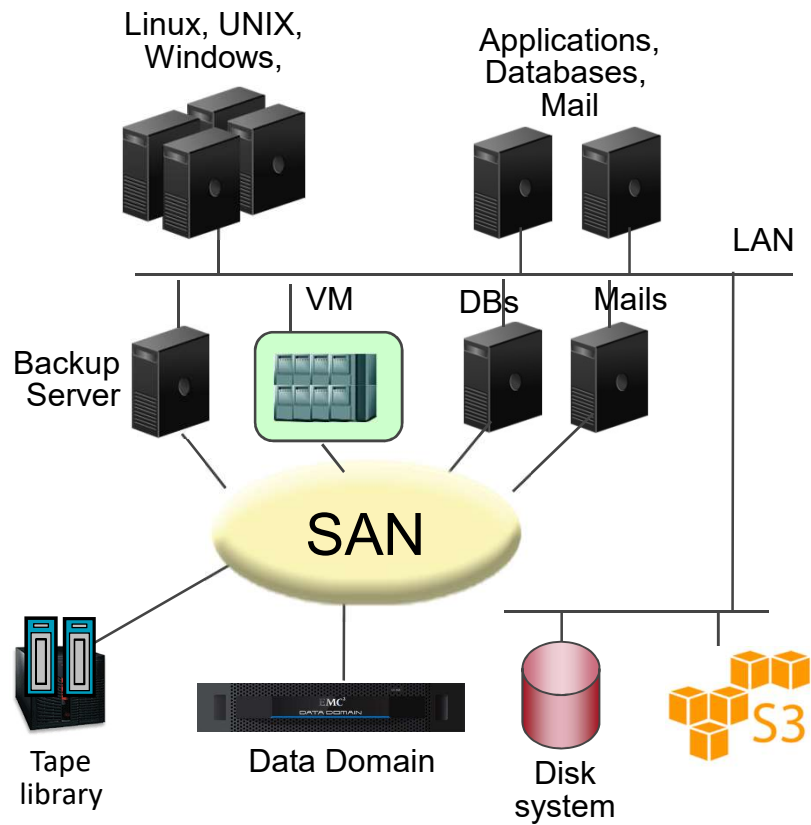
Unique market features

- Starting VMs from DP4400 with 1000 IOPS+ with recovery
- Ransomware protection
- Automated backup of new VMs
- Recovery by application owner
- ...

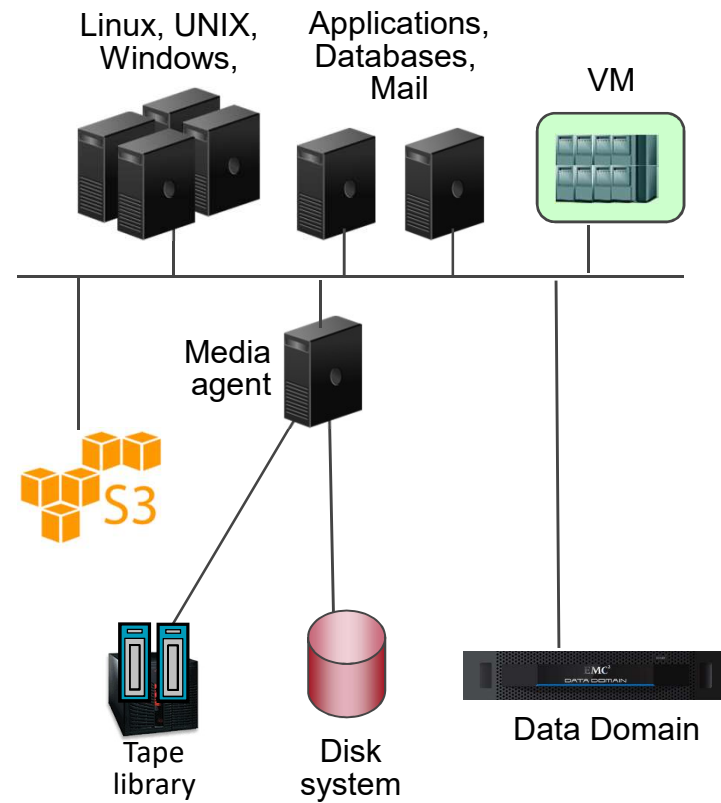


Backup solution ecosystem

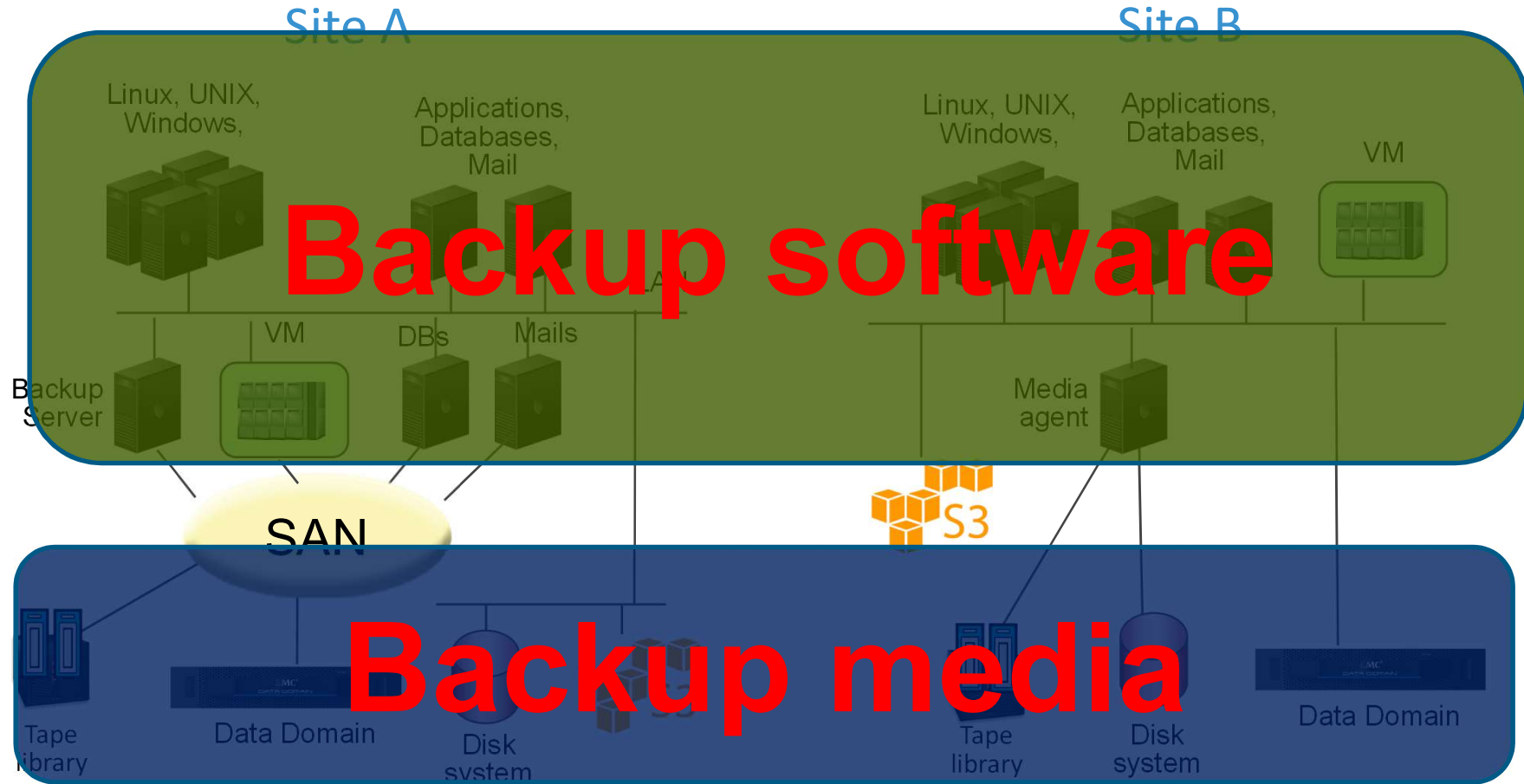
Site A



Site B



Backup solution ecosystem



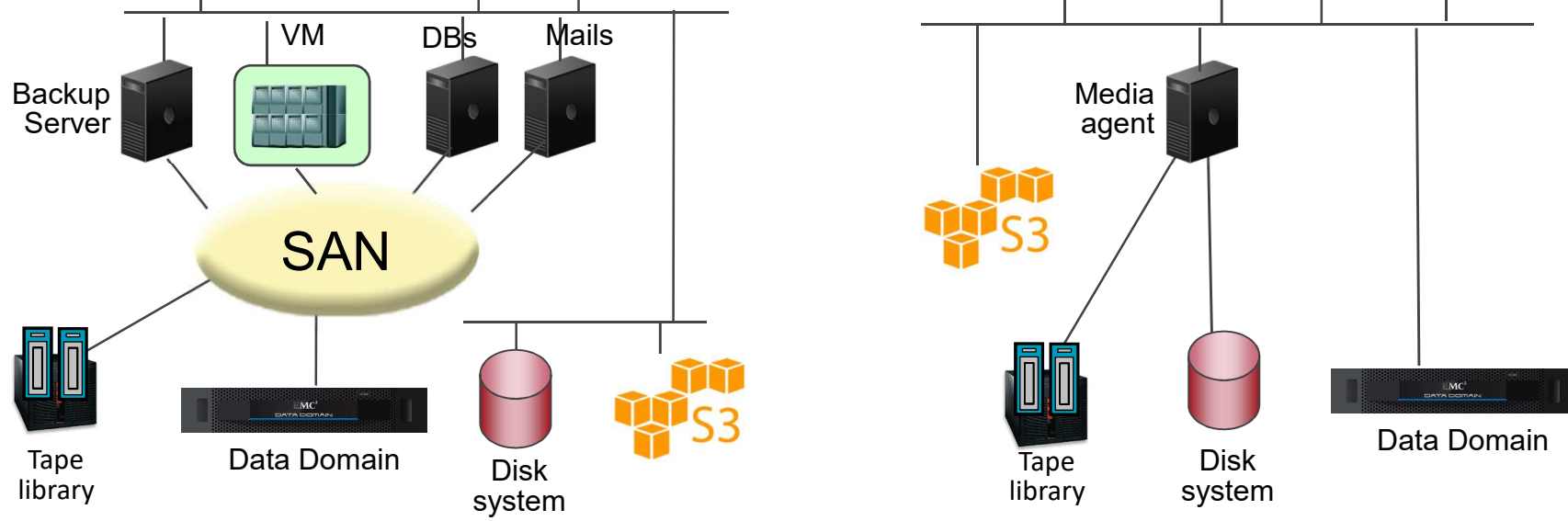
Backup solution ecosystem

Site A: Linux, UNIX, Windows, Applications, Databases, Mail

Site B: Linux, UNIX, Windows, Applications, Databases, Mail, VM

Let's assume we have decided for backup solution. So we have chosen our preferable:

- Vendor
- Solution



Backup solution ecosystem

Let's assume we have decided for backup solution. So we have chosen our preferable:

- Vendor
- Solution

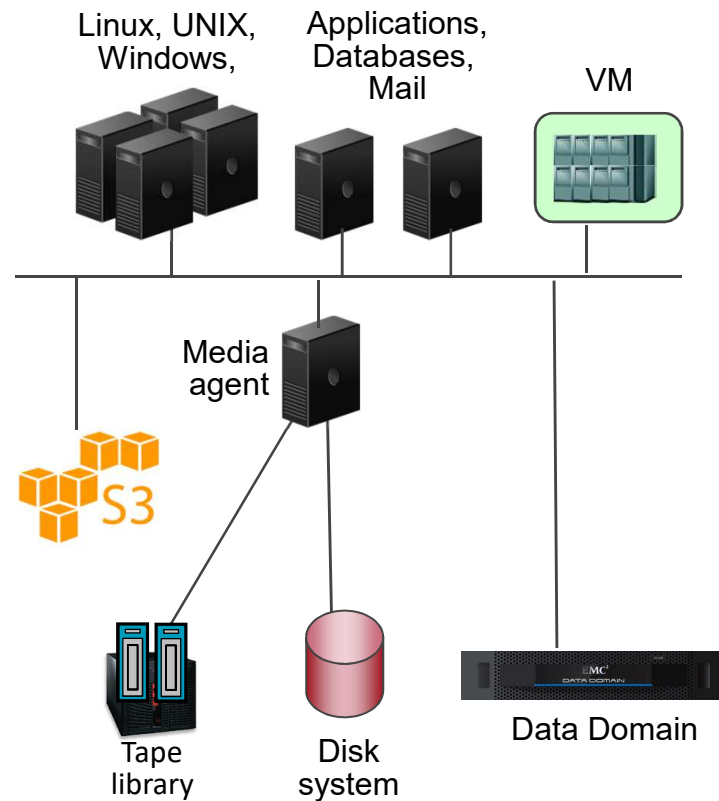
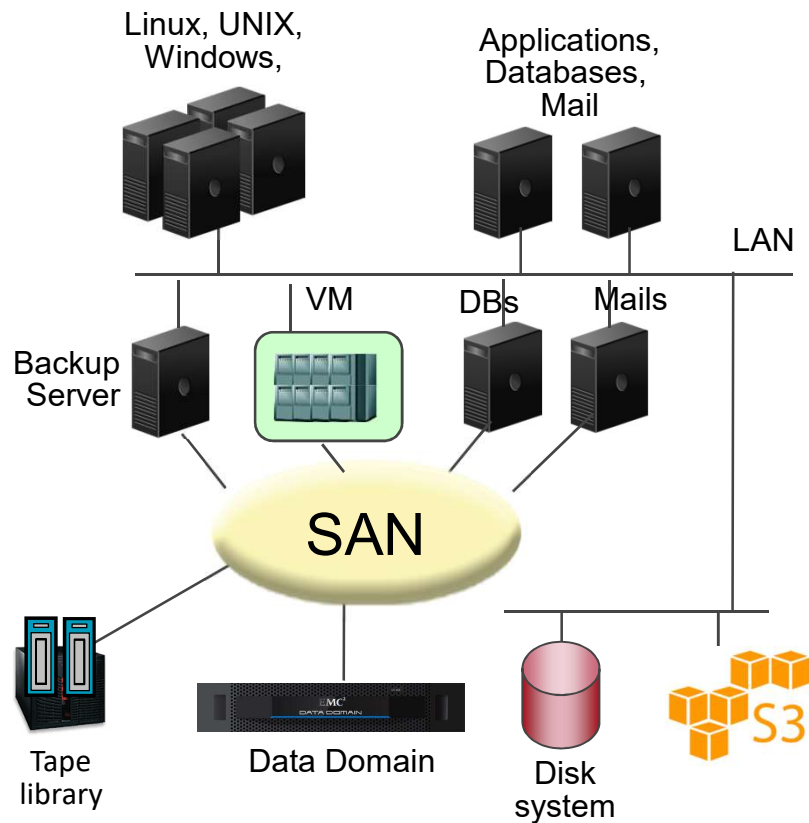


Backup solution ecosystem

Unfortunately, there is still ahead of us...

Site A

Site B

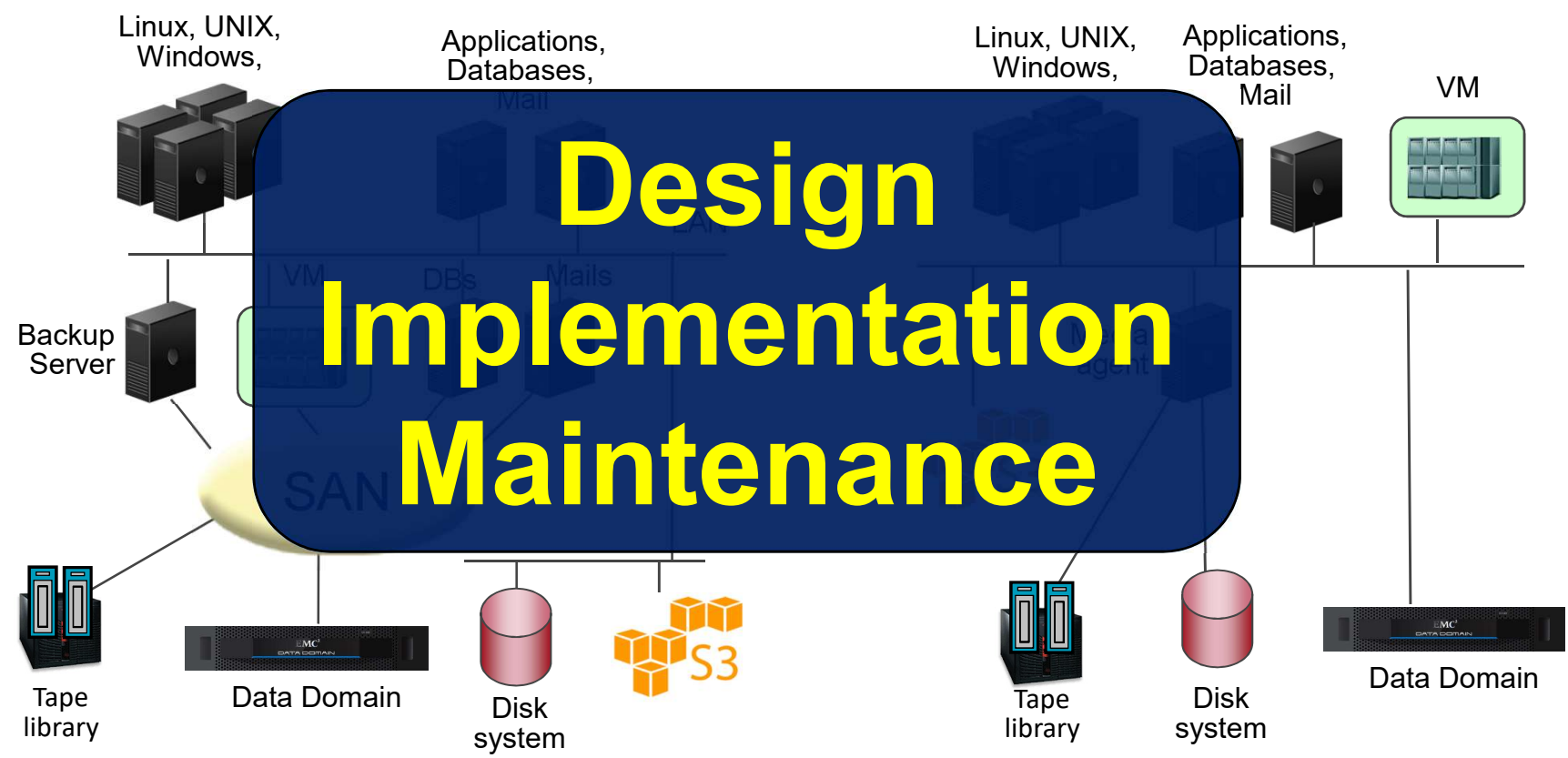


Backup solution ecosystem

Unfortunately, there is still ahead of us...

Site A

Site B



Backup solution ecosystem

When we

- Design
- Implement
- Maintain

backup solution, we have...



Backup solution ecosystem

When we

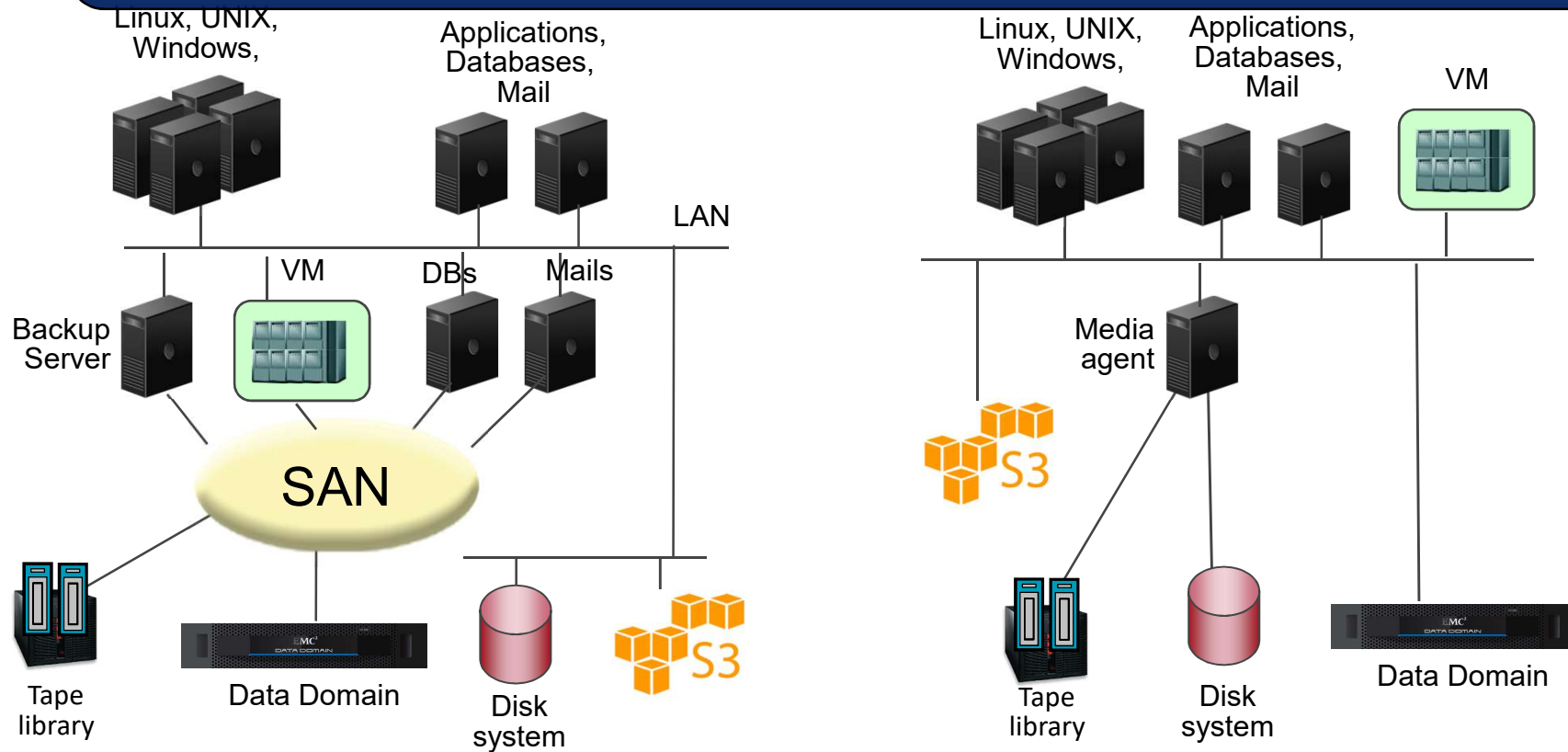
- **Design**
- **Implement**
- **Maintain**

backup solution, we have...

plenty to take care about

Backup solution ecosystem Design

What do we need to take care about?



Backup solution ecosystem Design

What do we need to take care about?

- We need to find out **Resources** for Backup Server

- Memory
- CPU
- Storage
- IOps

Backup Server

Tape library

Disk system

Tape library

Disk system

Data Domain



Backup solution ecosystem **Design**

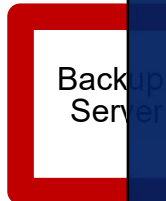
What do we need to take care about?

Choosing a backup server we need to decide

- **Best vendor** of server (if we choose physical backup server)
- **Operating System**
- **Licenses for components (databases, Linux, ...)**
- **Compatibility with current infrastructure (if backup components are Virtual Machines)**



Tape library



Backup Server

Backup solution ecosystem Design

What do we need to take care about?

Often there are many server / VMs required for Backup Solution (for example Media Servers, de-dup engines, ...)

- We need to define **all the previous items for each backup component**
- **Plus networking** between components
 - Connection
 - Ports
 - Throughput
 - Data Domain

Backup Server



Tape library

Disk system



Tape library



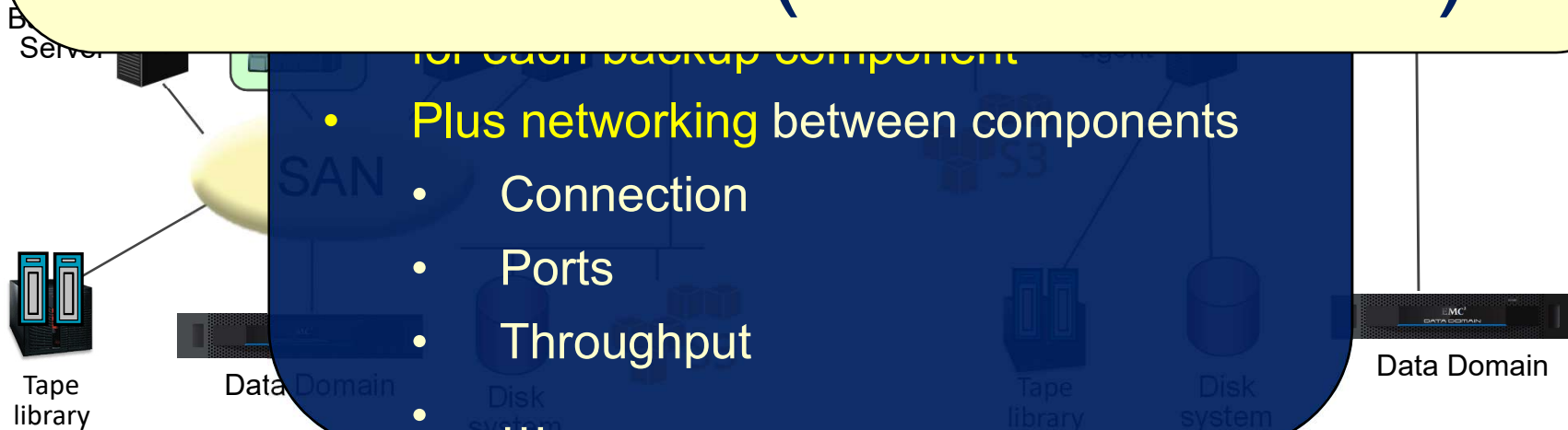
Disk system

Data Domain

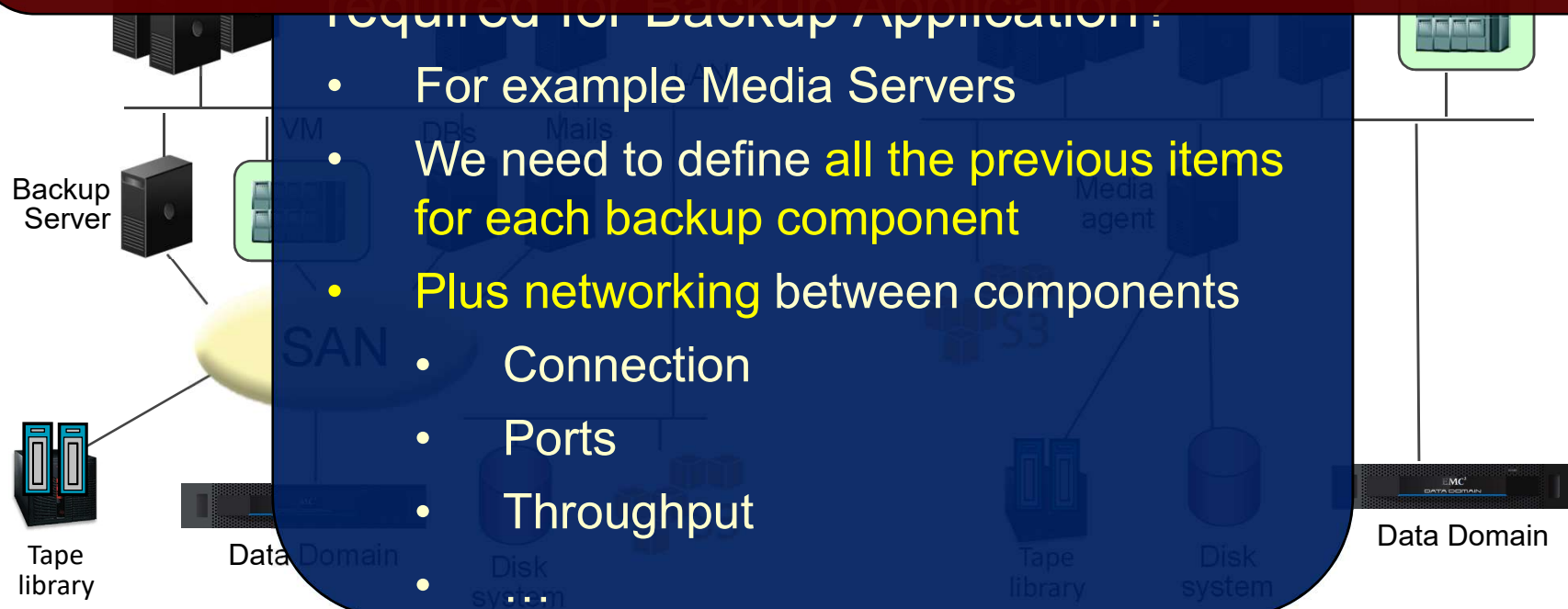
Network design (ports, throughput, delay, ...) is especially important in case of cloud media (remote media)

• Plus networking between components

- Connection
- Ports
- Throughput



We are never sure if partner calculated properly required number of Media Servers, required number of de-dup pools – if partner has thought about all components that are required for proper working of **our** backup solution.



We are never sure if partner calculated properly required number of Media Servers, required number of de-dup pools – if partner has thought about all components that are required for proper working of **our** backup solution.

Required for Backup Application:

- For example Media Servers
- We need to define **all the previous items**

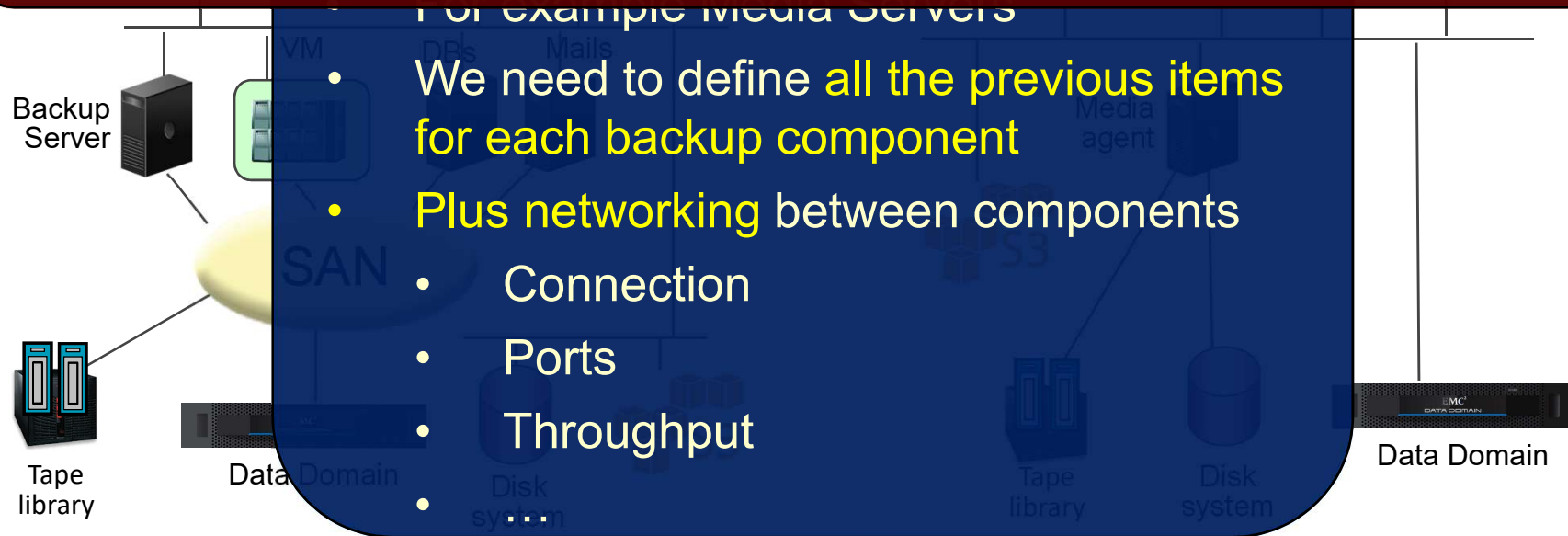
We are nether sure if partner told us the **valid minimum specification** (CPU, Memory, SSD, IOps, ...) regarding backup components (Media server, De-duplication engine).

There is huge price pressure on the market...

Backup solution ecosystem **Design**

What do we need to take care about?

Providing worse infrastructure (VMs, servers) than backup solution requires leads to:



Backup solution ecosystem **Design**

What do we need to take care about?

Providing worse infrastructure (VMs, servers) than backup solution requires leads to:

- Poor performance
- Instability

- Business waiting for backup to finish
- Additional job hours for solving issues



Tape library



Data Domain

- Throughput

- Disk system



Tape library



Disk system



Data Domain

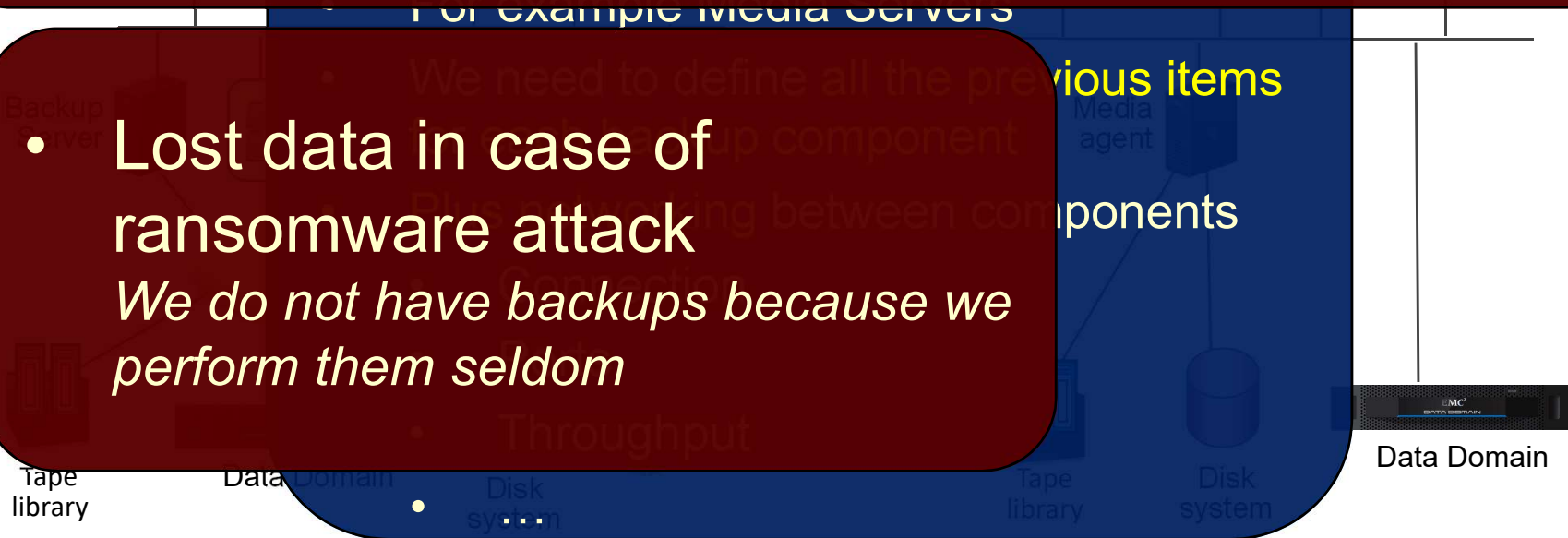
Backup solution ecosystem Design

What do we need to take care about?

Providing worse infrastructure (VMs, servers) than backup solution requires leads to:

- Lost data in case of ransomware attack

We do not have backups because we perform them seldom



Backup solution ecosystem **Design**

What do we need to take care about?

Especially there is dangerous situation, if de-duplication engine is built by our partner.

We need to be very watchful as poor resources for de-dup engine leads to further huge backup/recovery issues

- Performance
- Crashes
- Instability

Backup solution ecosystem

Design

What do we need to take care about?

Linux, UNIX,
Windows,

Applications,
Databases.

Linux, UNIX,
Windows,

Applications,
Databases,

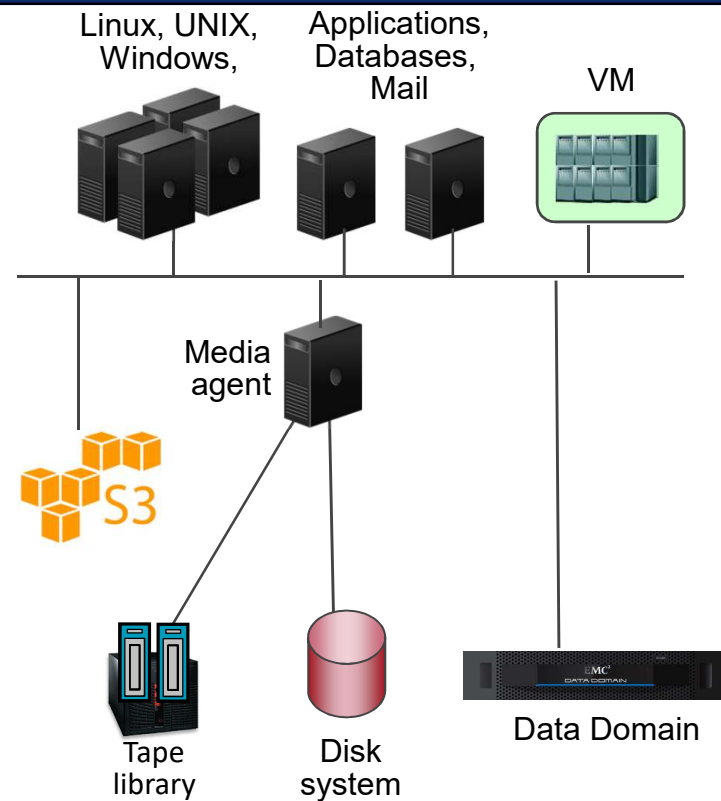
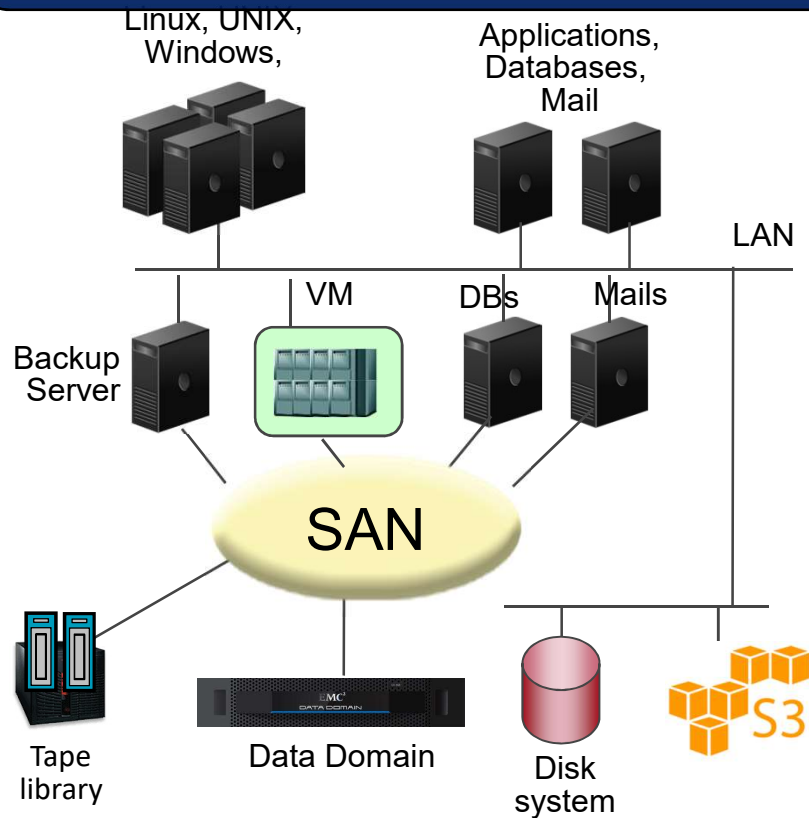
We have to spend huge time on design
(*to take care about what we get as final solution*)
but honestly this is 100% wasted time
– no value to our company / personally

library

system

Implementation

What do we need to implement backup infrastructure?



Implementation

What do we need to implement backup infrastructure?

We talk about implementation of:

- Backup server
- Media servers
- Tape library
- Disk backup media
- De-duplication media
- S3 backup media (on premise, at cloud)
- ...



Tape library



Data Domain



Disk system



Tape library



Disk system



Data Domain

Implementation

What do we need to implement backup infrastructure?

Linux, UNIX,
Windows,



Applications,
Databases,
Mail



Linux, UNIX,
Windows,



Applications,
Databases,
Mail



VM



We need to Provide partner (some person from the partner) chair because he needs to:

- Install the backup software
- Configure components

- Configure networking
- ...

Implementation

What do we need to implement backup infrastructure?

- Provide partner access to our Virtualization
Configure virtualization infrastructure for backup components (datastores, ResourcePools, networking...)

- Configure networking as all the backup components will have internal communication via our network

Implementation

What do we need to implement backup infrastructure?

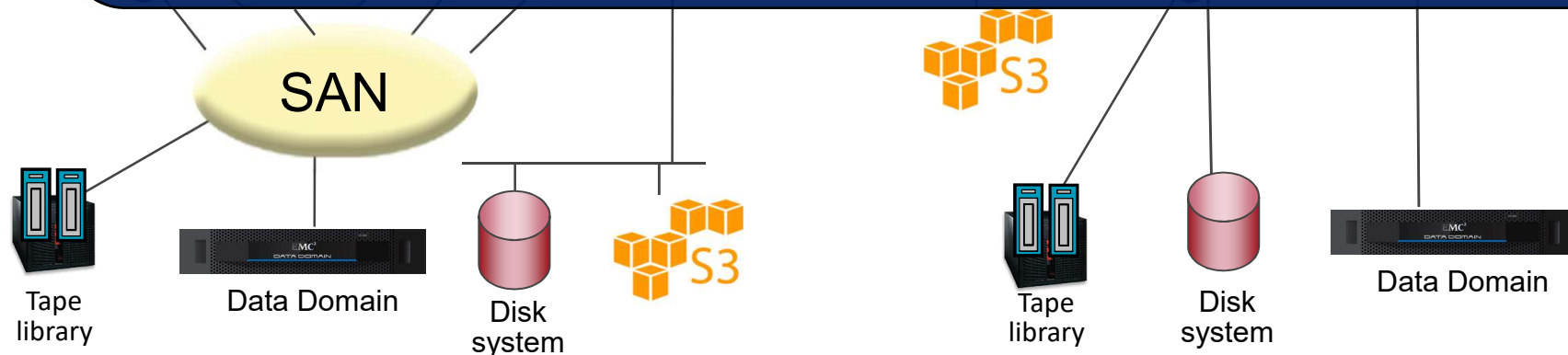
Linux, UNIX,
Windows

Applications,
Databases,
Mail

Linux, UNIX,
Windows

Applications,
Databases,
Mail

- We need to plan when OS guys / network guys / virtualization guys will be required to support the implementation of backup components



Implementation

What do we need to implement backup infrastructure?

And

- we shall be always awaked
- we shall always take care that implementation is performed properly – as the vendor requires



Tape library



Data Domain



Disk system



Tape library

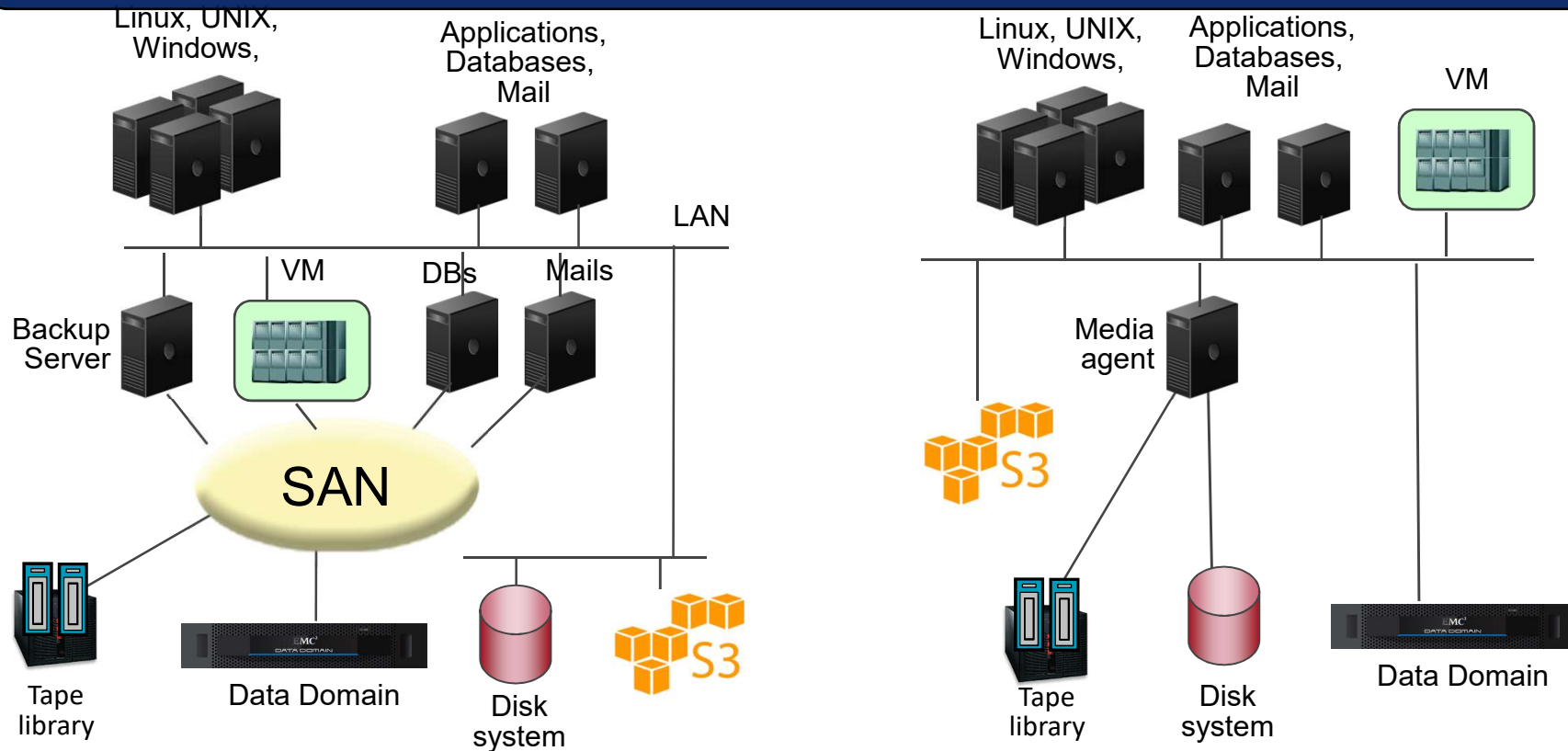


Disk system

Data Domain

Maintenance

What do we need to track during maintenance period?



Maintenance

What do we need to track during maintenance period?

We need to take care about compatibility between backup components and rest of infrastructure. This is especially important when we:

- Update the version of virtual environment
- Changing virtual environment
- Changing hardware platform
- Modifying network infrastructure

• ... Data Domain

Disk system

Tape library

Disk system

Data Domain



Tape library

If we modify any of the below we need to also take care / discuss / redesign backup components

We need to take care about compatibility between backup components and rest of infrastructure. This is especially important when we:

- Update the version of virtual environment
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• ... Data Domain

Disk system

Tape library

Disk system

Data Domain

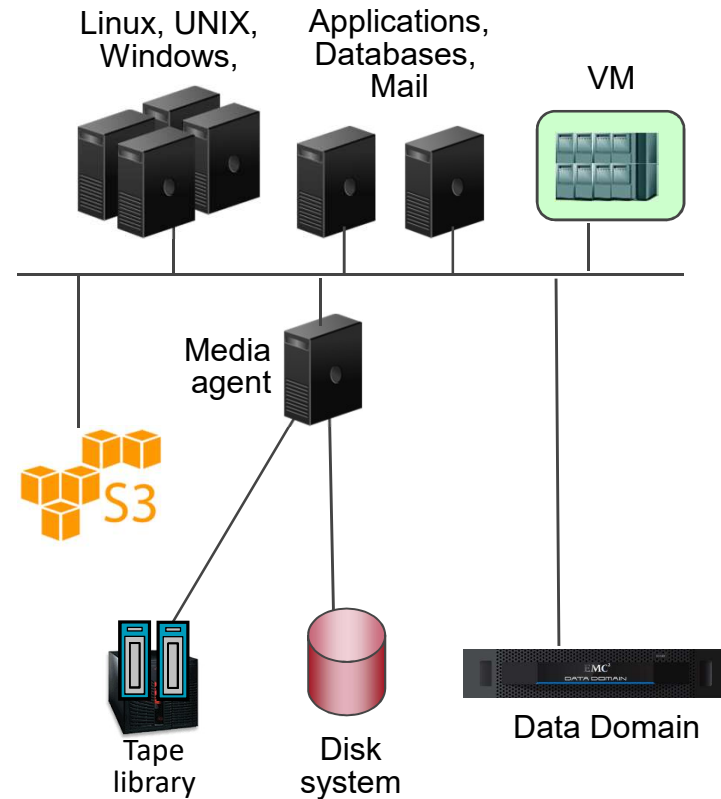
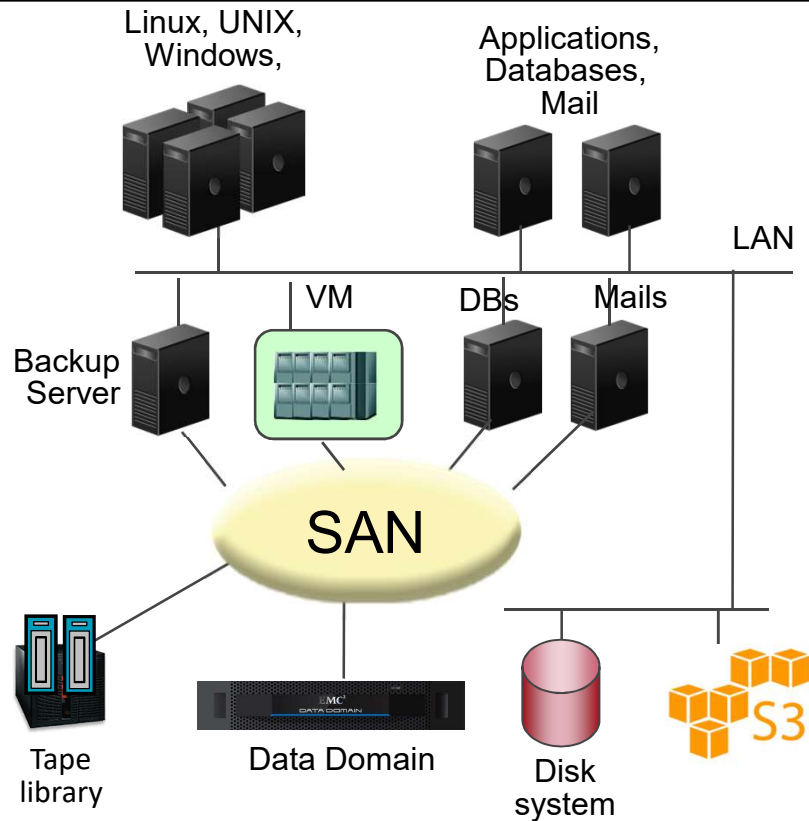
Backup Server



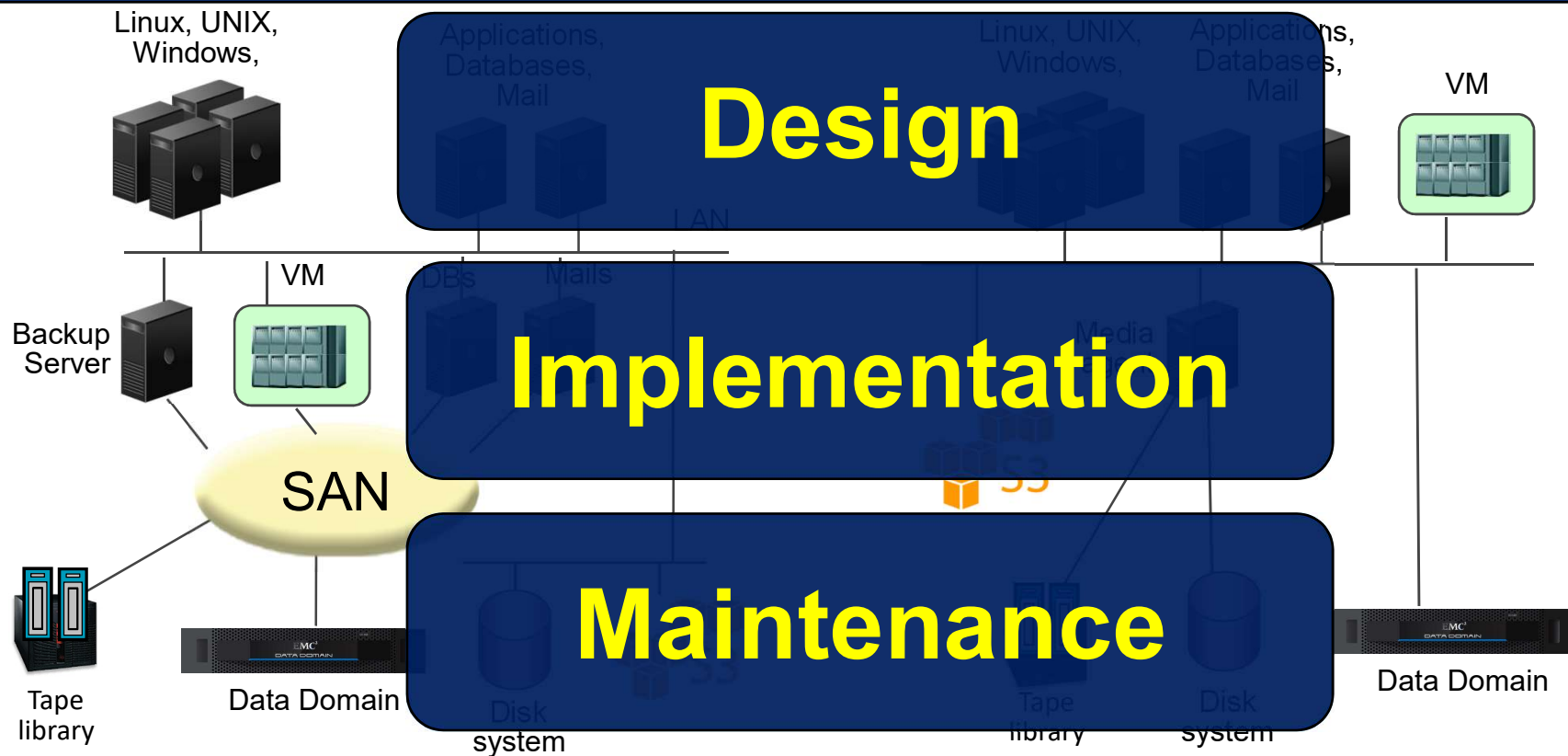
Tape library

Backup solution ecosystem

So backup solution requires from us:



So backup solution requires from us:



All this costs us

- Money
- Time
- People
- Resources



Tape library

Data Domain

Disk system

Tape library

Disk system

Data Domain

CS

All this costs us

Money

But provides no value for

- My company
- My staff
- Me personally

All this costs us

And RISKY . . .

- My company
- My staff
- Me personally

Avoid the Mad Scientist Project

Vendor Selection

- Hardware Platform(s)
- Backup Application
- Target Storage
- Central Management
- Catalogue and Search
- Analytics
- Reporting

Integration

- Resource Allocations
- Bandwidth and Bottlenecks
- Capacity Sizing
- Version Compatibility
- Network design
- Scalability
- Support Responsibility



Backup solution ecosystem

Site A

Site B

Linux, UNIX,
Windows,

Applications,
Databases,
Mail

Linux, UNIX,
Windows,

Applications,
Databases,
Mail

VM

Backup software

Is there another
approach?

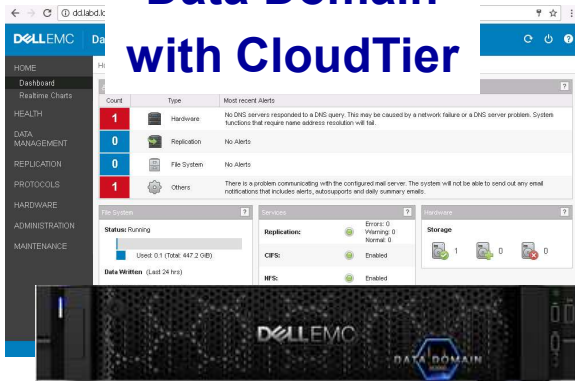
Back
Se

Tape
Library

System

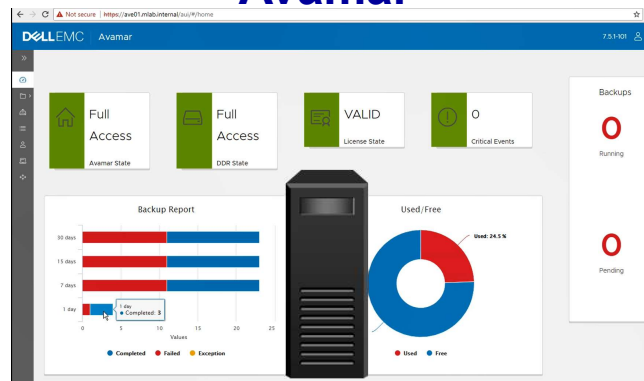
IDPA DP4400

Data Domain with CloudTier



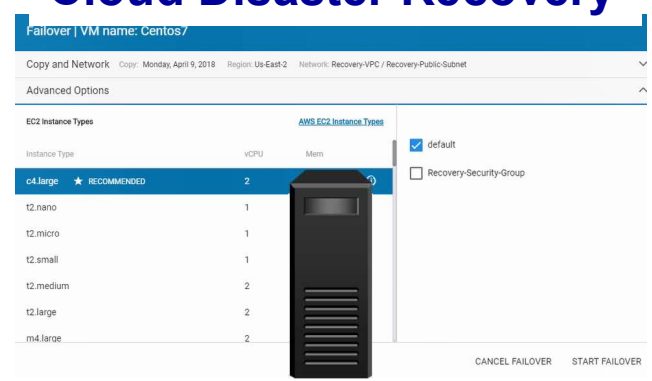
Top backup media on the market
Best de-dup, Ransomware protection,
Highest speed, Zero recovery time,
Cloud / S3 support

Avamar



Backup software
Simple, Huge fast, Auto backup new VMs,
DR, Backup all data: VMs, files, dbs,
laptops, ...

Cloud Disaster Recovery



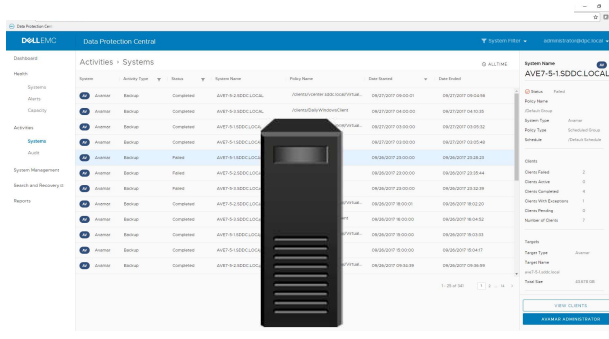
Cloud gateway
Automated migration VMs to AWS
Start VMs in AWS with FULL orchestrations

Search



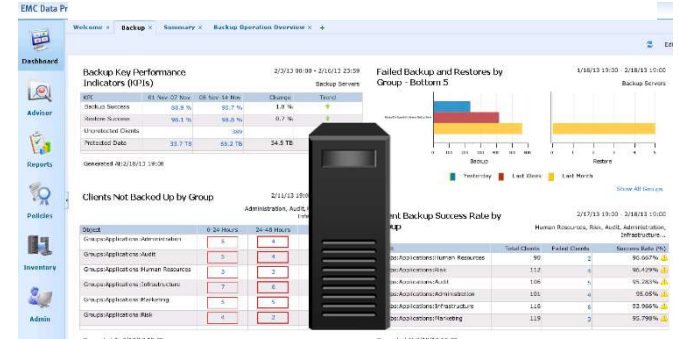
Immediate finding any phrase in backed up documents, GDPR

Data Protection Central



Single point of control

Data Protection Advisor



Reports, solving issues, ...

These are top backup/recovery solutions having plenty of unique features

- Ransomware protection
- Huge backup/recovery speed (100 – 1000VMs backed up per hour as FULL backup)
- Starting infrastructure from backup without recovery with 1000IOps+ performance

- Self backup infrastructure
New VMs are backed up automatically
- Restore data by application owner
- Smallest cost (replication, storage) by best global de-duplication

These are top backup/recovery solutions having plenty of unique features

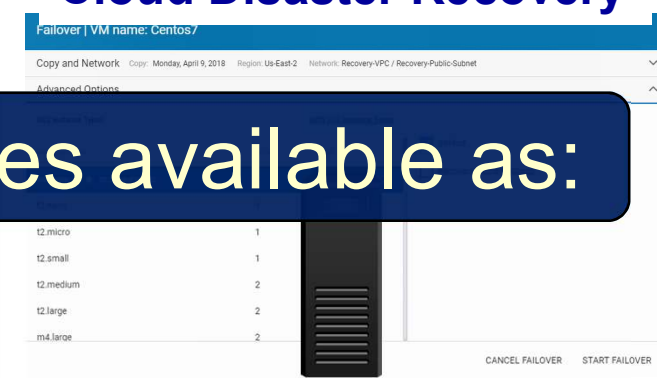
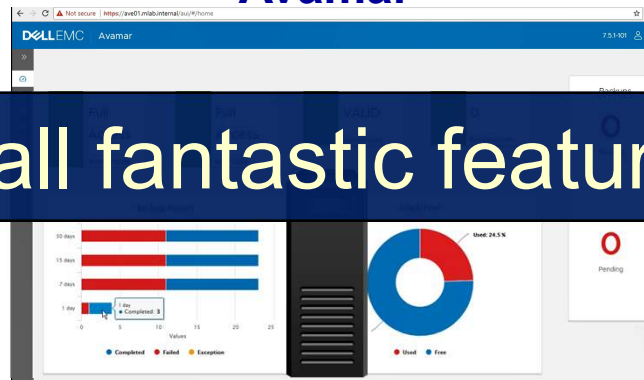
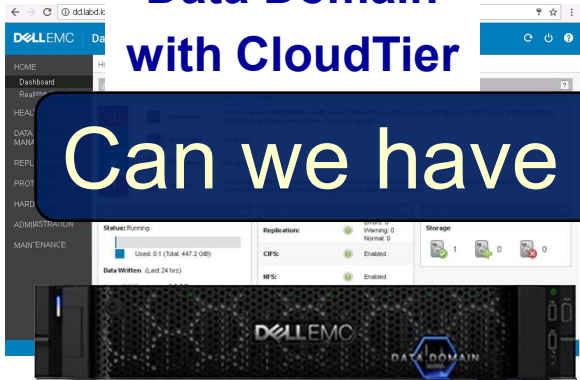
- 100% availability - No disturbance in the production during cleaning process
- No network requirement by source de-duplication
- Guarantee of coherent data

- Cloud as Disaster Recovery for on premise environment
- Find any phrase in backed up documents (GDPR)
- ...

Data Domain with CloudTier

Avamar

Cloud Disaster Recovery



Can we have all fantastic features available as:

Top backup media on the market
Best de-dup, Ransomware protection,
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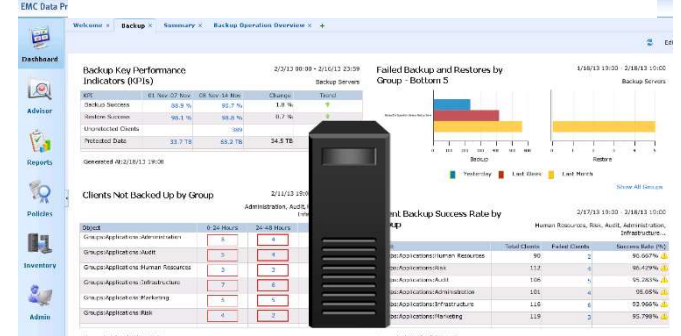
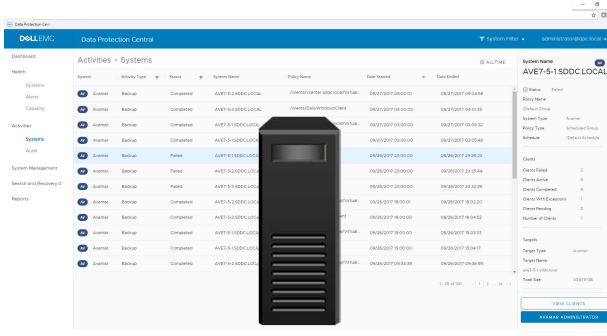
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Single point of control

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Data Domain with CloudTier

Avamar

Cloud Disaster Recovery

Can we have all fantastic features available as:

Single appliance

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Search

EMC Data Protection Search interface showing search results for 'project einstein'. The interface includes a search bar, a file type chart, and a list of search results.

Immediate finding any phrase in backed up documents, GDPR

Data Protection Central

EMC Data Protection Central interface showing a list of backup activities. The interface includes a dashboard with various metrics and a table of backup activities.

Single point of control

Data Protection Advisor

EMC Data Protection Advisor interface showing backup key performance indicators (KPIs) and failed backup and restores by group. The interface includes a dashboard with various charts and tables.

Reports, solving issues, ...

Data Domain with CloudTier

Avamar

Cloud Disaster Recovery

Can we have all fantastic features available as:

Single appliance

Ready to work after power on

Top backup media
Best de-dup, Ran...
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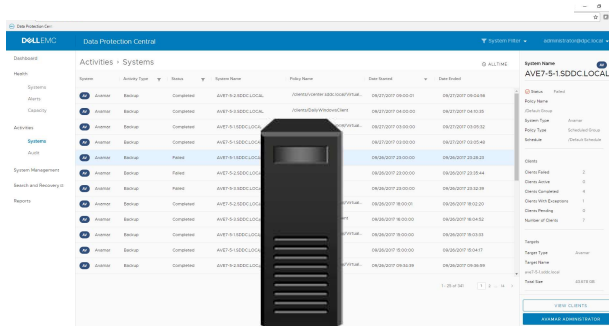
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Search



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Data Protection Central



Single point of control

Data Protection Advisor

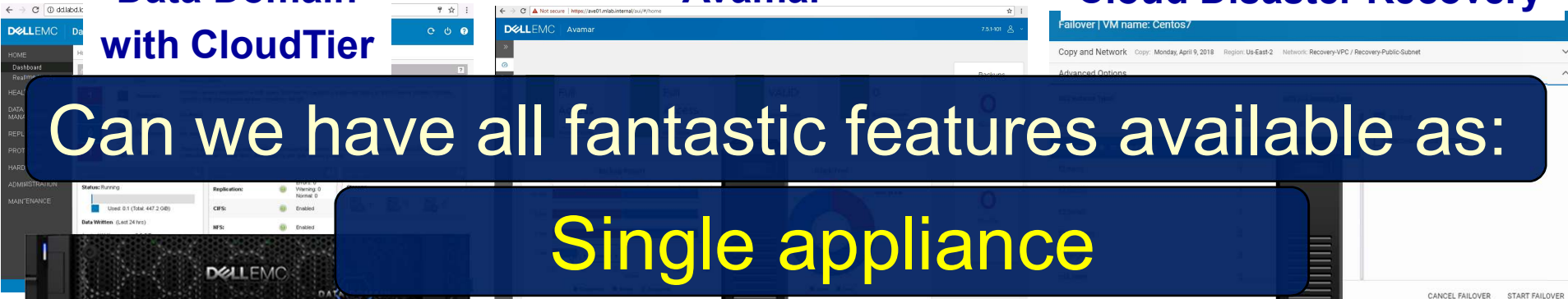


Reports, solving issues, ...

Data Domain with CloudTier

Avamar

Cloud Disaster Recovery



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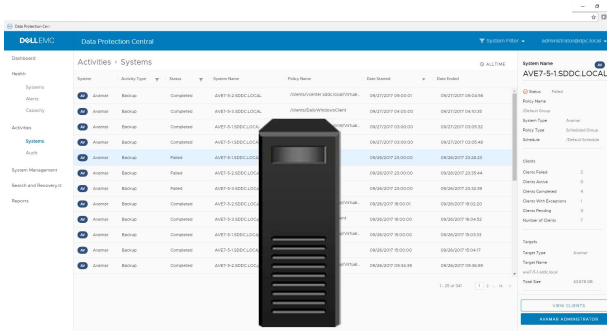
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With single, simple console to manage

Top backup media
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Highest speed, Ze



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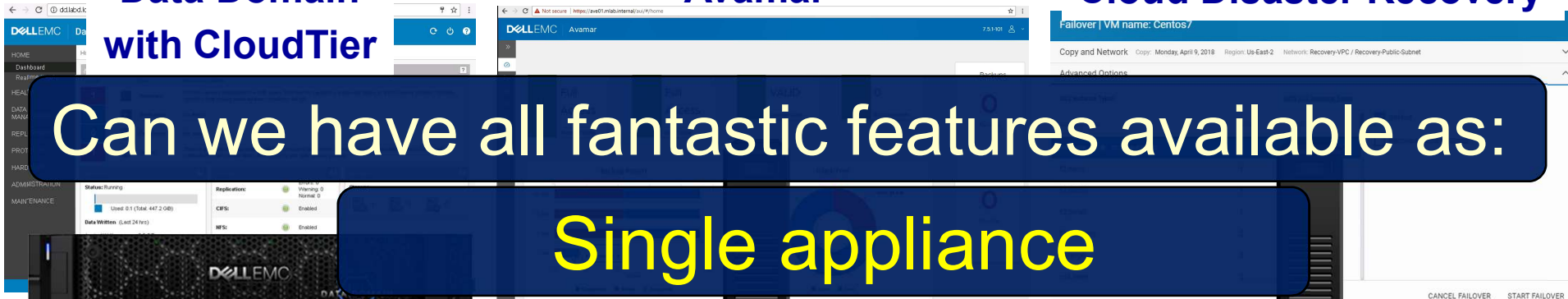


Reports, solving issues, ...

**Data Domain
with CloudTier**

Avamar

Cloud Disaster Recovery



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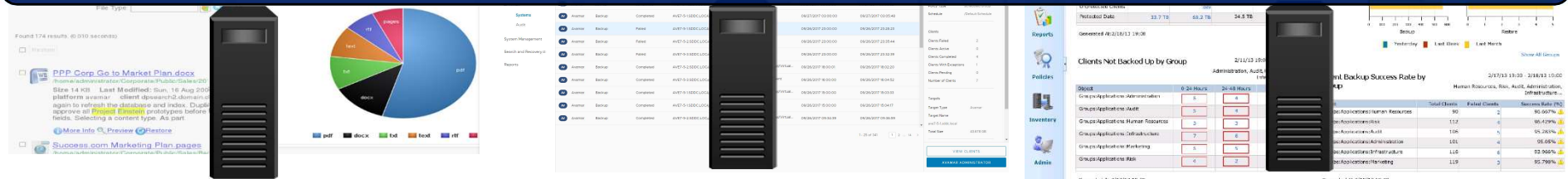
Single appliance

Ready to work after power on

With single, simple console to manage

As something that requires small space in the rack

**Top backup media on the planet
Best de-dup, Range of software protection
Highest speed, Zero recovery time**



Immediate finding any phrase in backed up documents, GDPR

Single point of control

Reports, solving issues, ...

**Data Domain
with CloudTier**

Avamar

Cloud Disaster Recovery

Can we have all fantastic features available as:

Single appliance

Ready to work after power on

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and...

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Reports, solving issues, ...



Data Domain
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Avamar

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Single appliance

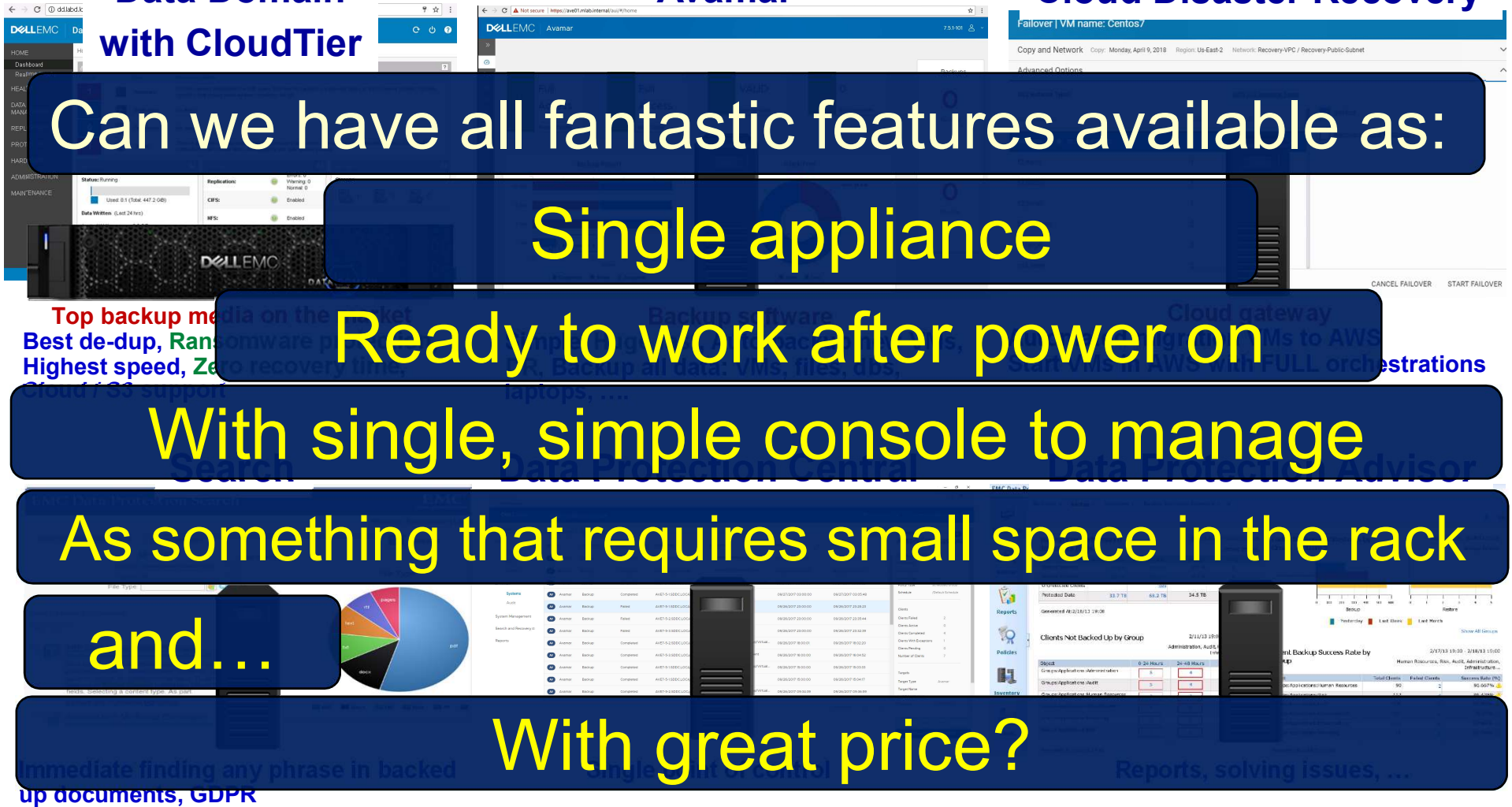
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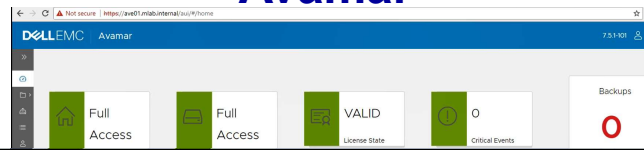
With great price?



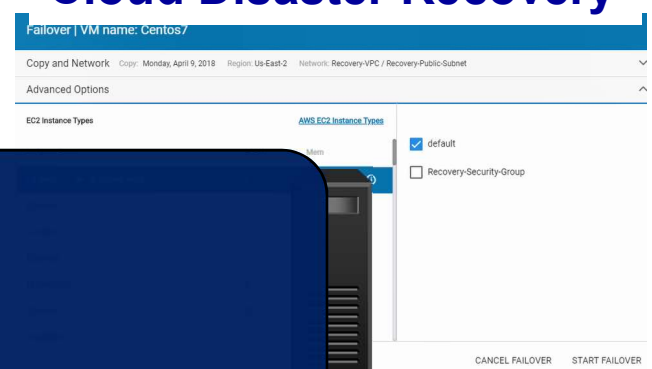
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Avamar



Cloud Disaster Recovery



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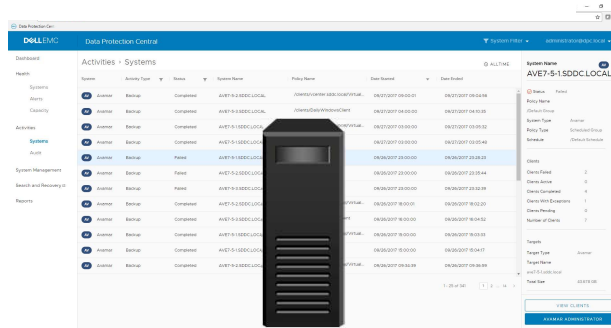
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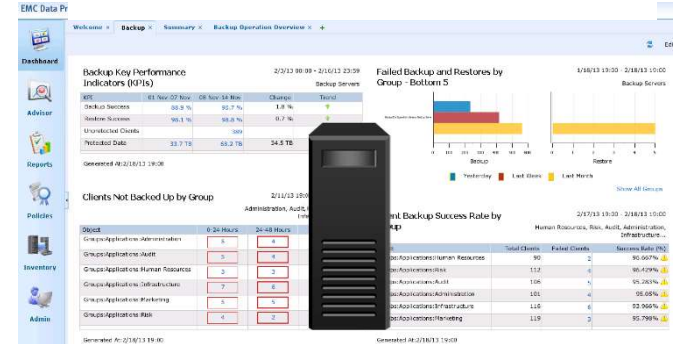
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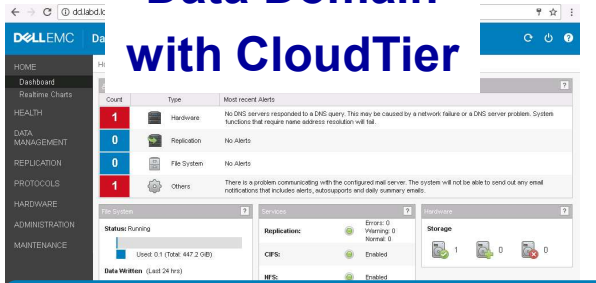
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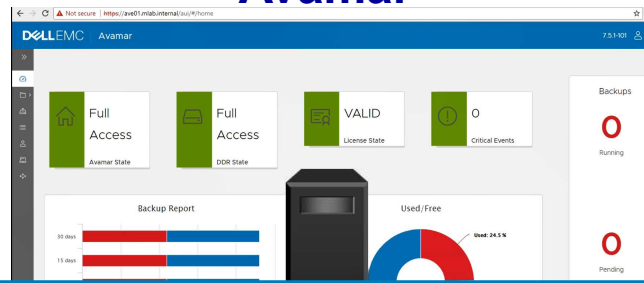


Reports, solving issues, ...

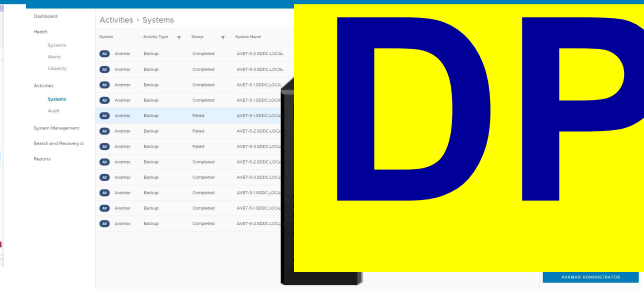
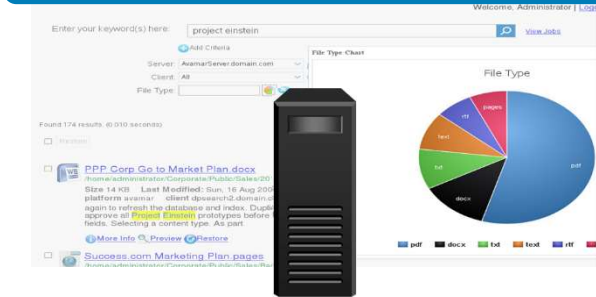
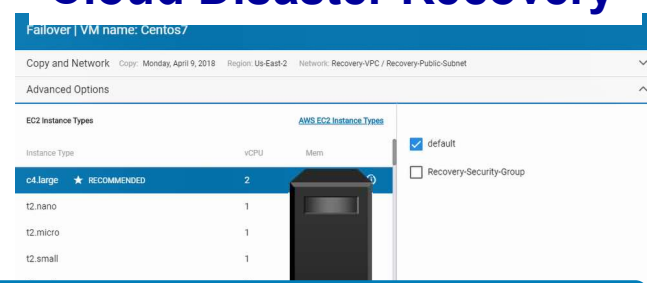
Data Domain with CloudTier



Avamar



Cloud Disaster Recovery



Immediate finding any phrase in backed up documents, GDPR

Single point of control

Reports, solving issues, ...

DP4400

Data Domain
with CloudTier

Avamar

Cloud
Disaster
Recovery



2U

Search

Data
Protection
Central

Data
Protection
Advisor

DP4400

Everything:

- Installed
- Having proper resources
- Configured
- Maximum speed

- Connected (proper network)
- Ready to power on
- Ready to work with **FULL POWER!**

DP4400

Everything:

- Installed

with **Single console**

- Configured
- Maximum speed

- Connected (proper

- Ready to work with
FULL POWER!

DP4400

We only need to

- Provide our IP addresses
- Define policies

• Installed

• Connected (proper

with **Single console**

- Configured
- Maximum speed

- Ready to work with
FULL POWER!

DP4400

And with better price than
buying separately!

2U



Search

**Data
Protection
Central**

**Data
Protection
Advisor**

DP4400

And with better price than
buying separately!

2U

Not even mention about
cost / problems
of implementation!



DP4400

Within the price we get:

- **Hardware** for backup components
- **Media**
- **Implementation**
- **Configuration**

or implementation!



ta
Protection
Advisor

DP4400 – ready to backup/recovery appliance



- Fully integrated appliance
- Search and reporting built in
- IDPA Stack, incl. System Manager
- Cloud Tier & Cloud DR Options
- All-inclusive appliance pricing
- Single Node: 2U (up to 96TB)

DP4400 – ready to backup/recovery appliance



Entry Level

- 8 TB – 24 TB Usable Capacity
- Available in 4TB increments

Full model

- 24 TB – 96 TB Usable Capacity
- Available in 12TB increments

Backup/recovery appliance

We can upgrade
from
Lower capacity (up to 24TB)
to
Large capacity (up to 96TB)



Entry Level

- 8 TB – 24 TB Usable Capacity
- Available in 4TB increments

Full model

- 24 TB – 96 TB Usable Capacity
- Available in 12TB increments

We can upgrade
from
Lower capacity (up to 24TB)
to
Large capacity (up to 96TB)

Upgrade can be
performed by
customer itself

Entry Level

- 8 TB – 24 TB Usable Capacity
- Available in 4TB increments

Full model

- 24 TB – 96 TB Usable Capacity
- Available in 12TB increments

DP4400 is **NO** risk
backup/recovery solution



Entry Level

- 8 TB – 24 TB Usable Capacity
- Available in 4TB increments

Full model

- 24 TB – 96 TB Usable Capacity
- Available in 12TB increments

DP4400 is **NO** risk backup/recovery solution

No risk that there will
be too few **resources**
for backup solution

- For backup server
- For de-duplication engine

Full model

- 24 TB – 96 TB Usable Capacity
- Available in 12TB increments

DP4400 is **NO** risk backup/recovery solution

No risk that there will be too few **resources for backup solution**

- For backup server
- For de-duplication engine

No risk that there will be too few licenses

We have all needed licenses to backup/restore any environment!

DP4400 is **NO** risk backup/recovery solution

No risk that solution
will be wrongly
implemented.

**Implementation is
performed by
the factory.**



Full model

- 24 TB – 96 TB Usable Capacity
- Available in 12TB increments

DP4400 capacities



DP4400 **Entry Level**
possible **capacities**



8TB
net

12TB
net

16TB
net

20TB
net

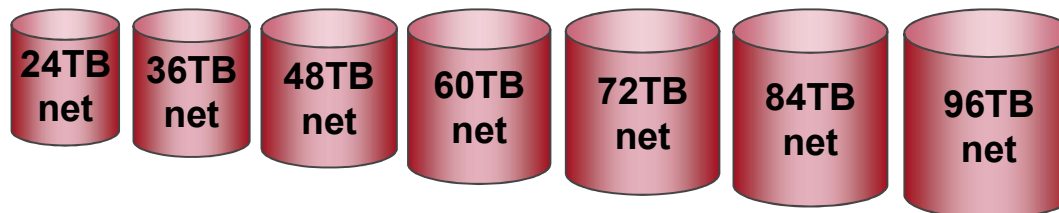
24TB
net

DP4400 **Entry Level**
possible **capacities**

DP4400 **Full Model**
possible **capacities**



DP4400 Full Model possible capacities





8TB
net

12TB
net

16TB
net

20TB
net

24TB
net



24TB
net

36TB
net

48TB
net

60TB
net

72TB
net

84TB
net

96TB
net



8TB
net

12TB
net

16TB
net

20TB
net

24TB
net



8TB
net

12TB
net

16TB
net

20TB
net

24TB
net

If we order DD4400 **8TB to 20TB (Entry Model)**
we get the capacity limited by license
(from **24TB net** available)



8TB
net

12TB
net

16TB
net

20TB
net

24TB
net

If we order DD4400 **8TB to 20TB (Entry Model)**
we get the capacity limited by license
(from **24TB net** available)

Every DP4400 bought as **Entry level** with any
capacity between **8TB to 20TB** has **the same**
hardware (memory, disks,...)



8TB
net

12TB
net

16TB
net

20TB
net

24TB
net

If we order DD4400 **8TB to 20TB (Entry Model)**

So in **Entry Level (bought up to 20TB net capacity)**
we can extend the capacity up to **24TB** just by
purchasing and **entering the license**

hardware (memory, disks,...)



8TB
net

12TB
net

16TB
net

20TB
net

24TB
net

From **8TB to 24TB** we can extend capacity by
4TB increments



8TB
net

12TB
net

16TB
net

20TB
net

24TB
net

From **8TB to 24TB** we can extend capacity by
4TB increments

This is just entering license



8TB
net

12TB
net

16TB
net

20TB
net

24TB
net

We can:

- Buy DP4400 **8TB** net and upgrade by purchasing / **entering license** to **12TB** net
- Buy DP4400 **12TB** net and upgrade by purchasing / **entering license** to **16TB** net
- Buy DP4400 **8TB** net and upgrade by **entering license** to **16TB** net and then upgrade to **20TB** net and than upgrade to **24TB** net



8TB
net

12TB
net

16TB
net

20TB
net

24TB
net

We can:

- Buy DP4400 **8TB** net and upgrade by purchasing / **entering license** to **12TB** net
- Buy DP4400 **12TB** net and

We can **any time increase capacity** of our DP4400 **ENTRY LEVEL** between 8TB and 24TB just by **entering the license**



24TB
net

36TB
net

48TB
net

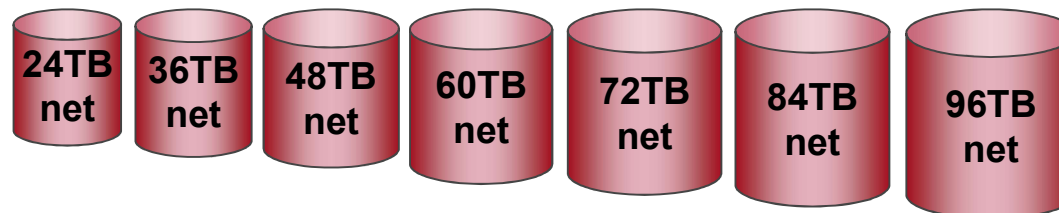
60TB
net

72TB
net

84TB
net

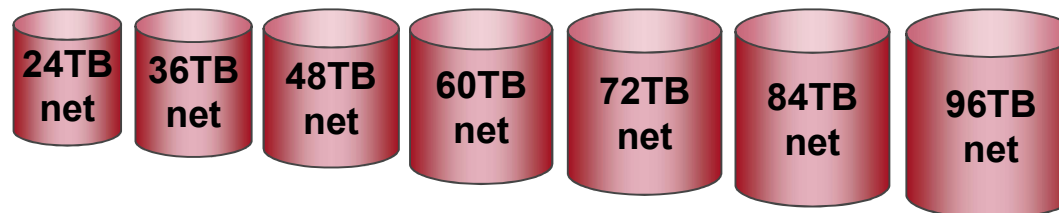
96TB
net

If we order DD4400 **24TB to 96TB (Full Model)**
we get the capacity limited by license
(from **96TB net** available)



If we order DD4400 **24TB to 96TB (Full Model)**
we get the capacity limited by license
(from **96TB net** available)

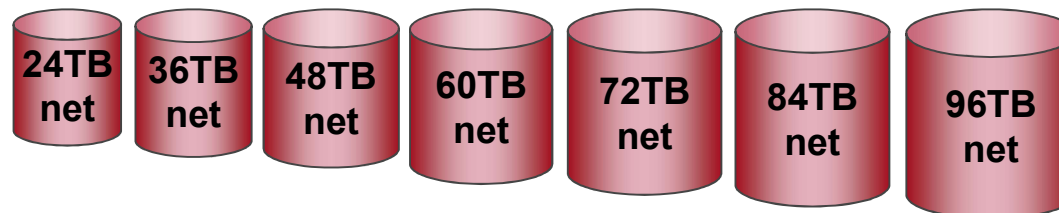
Every DP4400 bought as **Full model** with any
capacity between **24TB to 96TB** has **the same**
hardware (memory, disks,...)



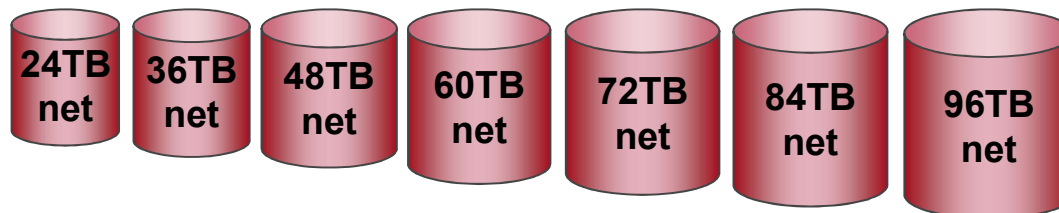
If we order DD4400 **24TB to 96TB (Full Model)**

So in **Full Model** (ordered as **24TB** net capacity or more) we can extend the capacity up to **96TB** just by purchasing and **entering the license**

hardware (memory, disks,...)

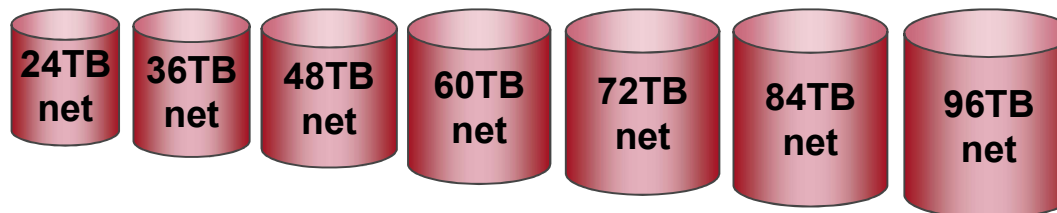


From **24TB to 96TB** we can extend capacity
by **12TB increments**



From **24TB to 96TB** we can extend capacity
by **12TB increments**

This is just entering license



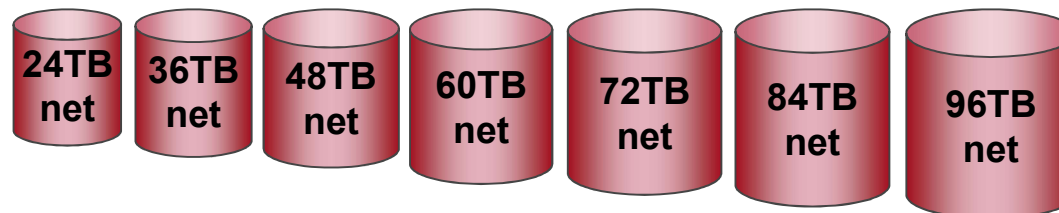
From **24TB to 96TB** we can extend capacity
by **12TB increments**

This is just entering license

Cost of
buying **DP4400 24TB net** and upgrading to **96TB net**
will be similar to
buying **DP4400 96TB net initially**

We can:

- Buy DP4400 **24TB** net and upgrade by purchasing / **entering license** to **60TB** net
- Buy DP4400 **36TB** net and upgrade by purchasing / **entering license** to **96TB** net
- Buy DP4400 **24TB** net and upgrade by **entering license** to **48TB** net and then upgrade to **72TB** net and then upgrade to **96TB** net



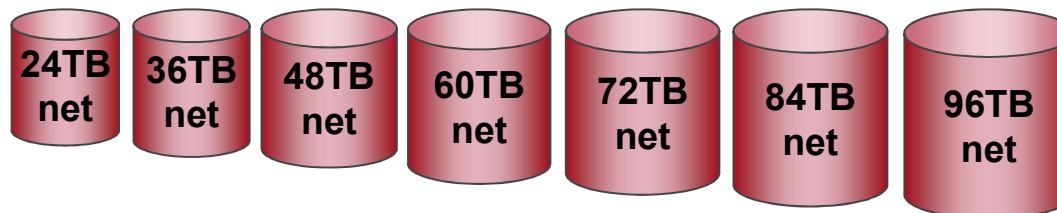
We can:

- Buy DP4400 **24TB** net and

We can **any time increase capacity** of our DP4400 **FULL MODEL** between 24TB and 96TB just by **entering the license**

upgrade by purchasing / **entering license** to **36TB** net

- Buy DP4400 **24TB** net and upgrade by **entering license** to **48TB** net and then upgrade to **72TB** net and than upgrade to **96TB** net





8TB
net

12TB
net

16TB
net

20TB
net

24TB
net



24TB
net

36TB
net

48TB
net

60TB
net

72TB
net

84TB
net

96TB
net



Entry level

Extension capacity between 8 and 24TB
is just by ordering/entering the license
Capacity on demand



8TB
net



12TB
net



16TB
net



20TB
net



24TB
net



Full model



24TB
net



36TB
net



48TB
net



60TB
net



72TB
net



84TB
net



96TB
net



Entry level

Extension capacity between 8 and 24TB
is just by ordering/entering the license

Capacity on demand

8TB
net

12TB
net

16TB
net

20TB
net

24TB
net



Full model

Extension capacity between 24 and 96TB
is just by ordering/entering the license

Capacity on demand

24TB
net

36TB
net

48TB
net

60TB
net

72TB
net

84TB
net

96TB
net

Entry level



8TB
net

12TB
net

16TB
net

20TB
net

24TB
net



Full model



24TB
net

36TB
net

48TB
net

60TB
net

72TB
net

84TB
net

96TB
net

We can also upgrade from DP4400 **Entry level** to DP4400 **Full model** by ordering

- hardware upgrade (self installable)
- and entering the license



8TB net

12TB net

16TB net

20TB net

24TB net



24TB net

36TB net

48TB net

60TB net

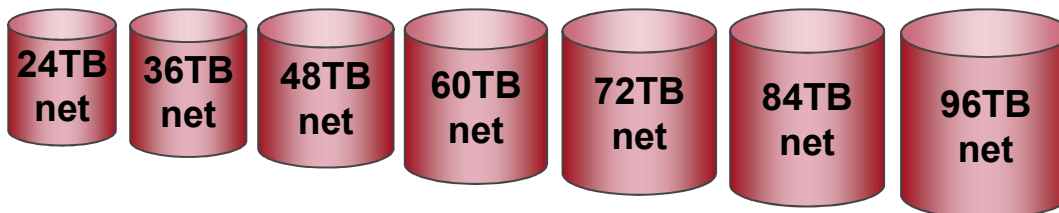
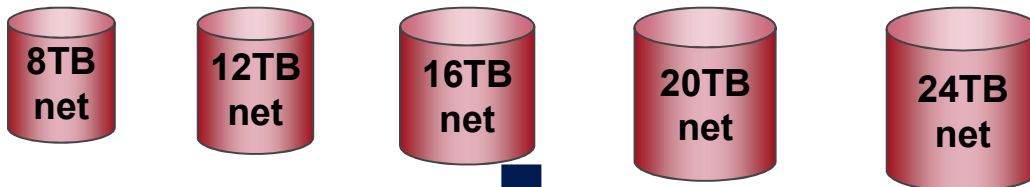
72TB net

84TB net

96TB net

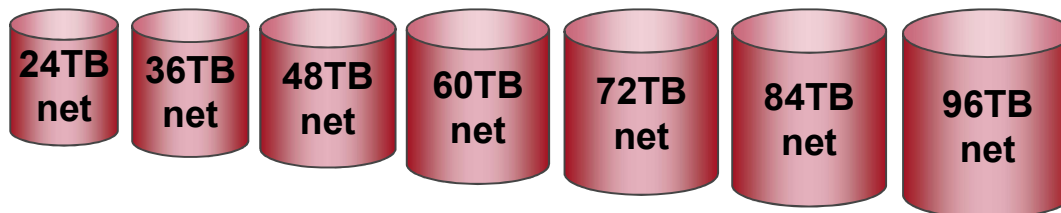
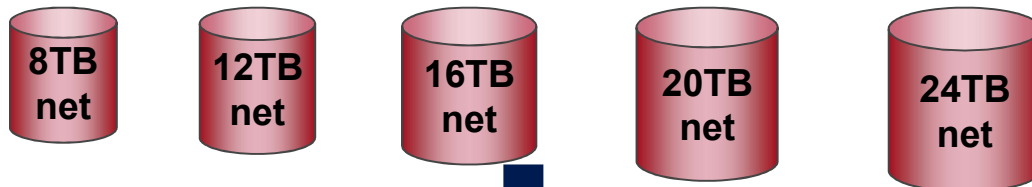
DP4400 **Entry level** has just 8 disk less than DP4400 **Full model**

By ordering hardware upgrade to **Full model** we will get just 8 drive that are self installable



For example
If we purchase
12TB DP4400
we can upgrade to
48TB DP4400
With upgrade we
will get **new license**
and **hardware**
upgrade kit from
Entry level model to
Full model

We can any time increase capacity of our DP4400 to any higher capacity



12TB DP4400

we can upgrade to

48TB DP4400

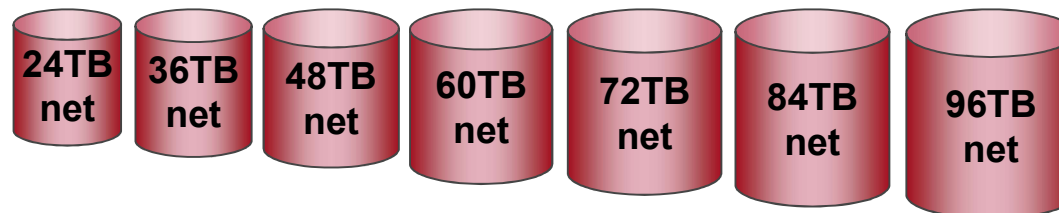
With upgrade we will get **new license** and **hardware**

upgrade kit from

Entry level model to

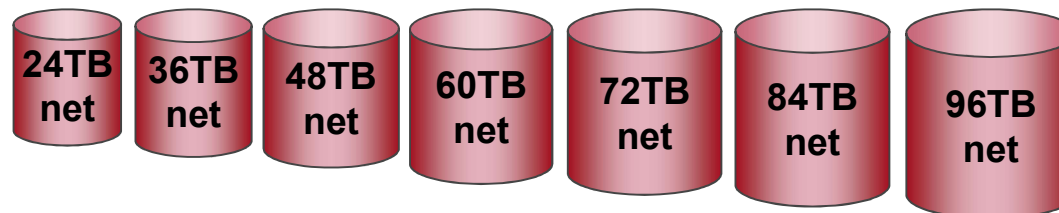
Full model

Anyhow if we order 24TB DP4400,
we will get the same hardware as
with **96TB net capacity**
limited by **license to 24TB net capacity**



Capacity summary

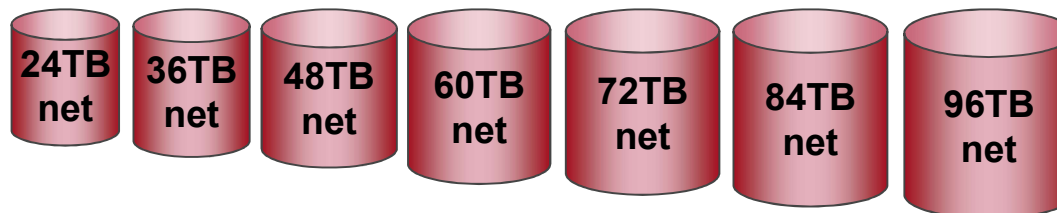
When purchase DP4400 we need to provide the **net capacity for de-duplicated backups**



When purchase DP4400 we need to provide the **net capacity for de-duplicated backups**

We can purchase any capacity from **8TB net to 96 TB net**

Full model



When purchase DP4400 we need to provide the **net capacity for de-duplicated backups**

We can purchase any capacity **from 8TB net to 96 TB net**

We can upgrade between purchase any capacity **from 8TB net to 96 TB net**



Price per TB is constant
between different capacity versions

8TB
net

12TB
net

16TB
net

20TB
net

24TB
net



24TB
net

36TB
net

48TB
net

60TB
net

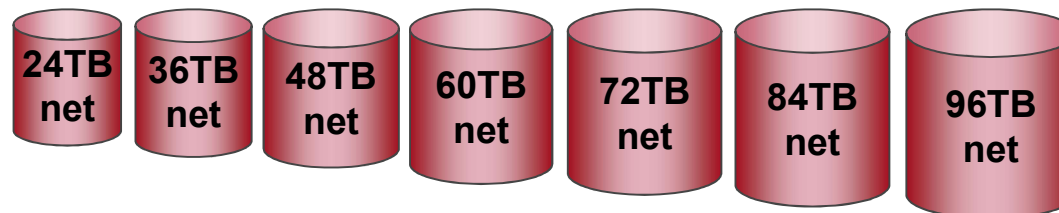
72TB
net

84TB
net

96TB
net

Price per TB is constant
between different capacity versions

We can any time increase capacity of our
DP4400 to any higher capacity



How big DP4400
do I need?

I want to backup my environment
using DP4400

How big DP4400 do I need?

Data Domain (that is inside DD4400)
has best market de-duplication:

- Smallest block (4K – 12K)
- Global de-duplication
- The fastest engine
- Source de-duplication



Thus DP4400 requires 2-3 less

- space
- bandwidth for replication

than most of the market solutions

Speed by great de-duplication - avoiding disk IOs

Backup: x

```
sysadmin@ddt# fileysys show compression /data/coll/crm_dev
Total files: 9; bytes/storage used: 2.5
Original Bytes: 51,607,939
Globally Compressed: 25,339,596
Locally Compressed: 20,243,166
Meta-data: 108,828
sysadmin@ddt# █
```

Backup: x+1

```
sysadmin@ddt#
sysadmin@ddt# fileysys show compression /data/coll/crm_dev
Total files: 18; bytes/storage used: 5.0
Original Bytes: 103,215,794
Globally Compressed: 25,646,595
Locally Compressed: 20,551,028
Meta-data: 111,888
sysadmin@ddt# █
```

We backed up 50MB
with 0,3MB disk IOs

Mail from the customer

I have to praise myself because yesterday **we started DDVE tests and the results are spectacular.**

(<http://gurago.com/>)

Mail from the customer

After First Backup (just after 1 backup):

On a sample of 80 virtual machines (mixed Windows and Linux), we achieved

- **De-duplication of 94%**
- **9TB VMWare occupies 0,6TB on Data Domain**
- **Backup time decreased by half comparing to current solution (just 1st backup).**
 - **Further backups are huge faster**

Mail from the customer

**Effect better than on
Data Domain
workshop!**

PoC Feedback

Environment

- 300GB SAP/Oracle

POC results

- Backup speed to Data Domain: **5TB/h**
- Backup time: 4 minutes
- De-duplication after 4 backups: **1:15**

Rule of thumb

I want to purchase DP4400 **12TB**
How big environment can I backup?





DP4400 **12TB net**

can protect environment from

- 13TB (1 month retention)
- to
- 5TB (5 years retention)

Analogically



DP4400 **24TB net**

can protect environment from

- 25TB (1 month retention)
- to
- 10TB (5 years retention)

Analogically



DP4400 **96TB net**

can protect environment from

- 100TB (1 month retention)
- to
- 40TB (5 years retention)

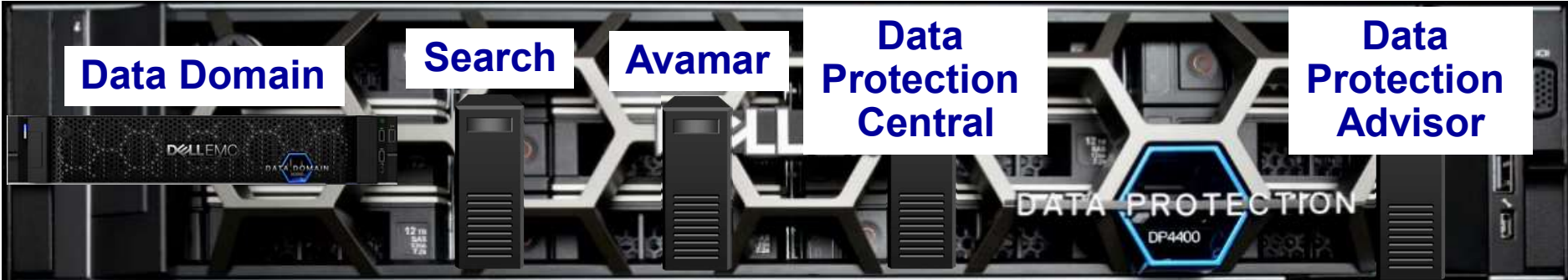


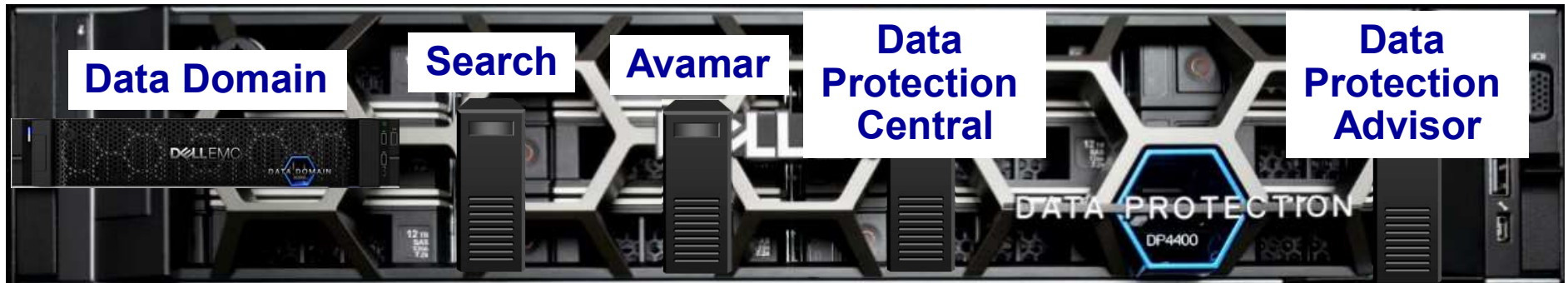
These are rules of thumb

Check with Dell EMC sizer required space for your environment

DP4400 licensing

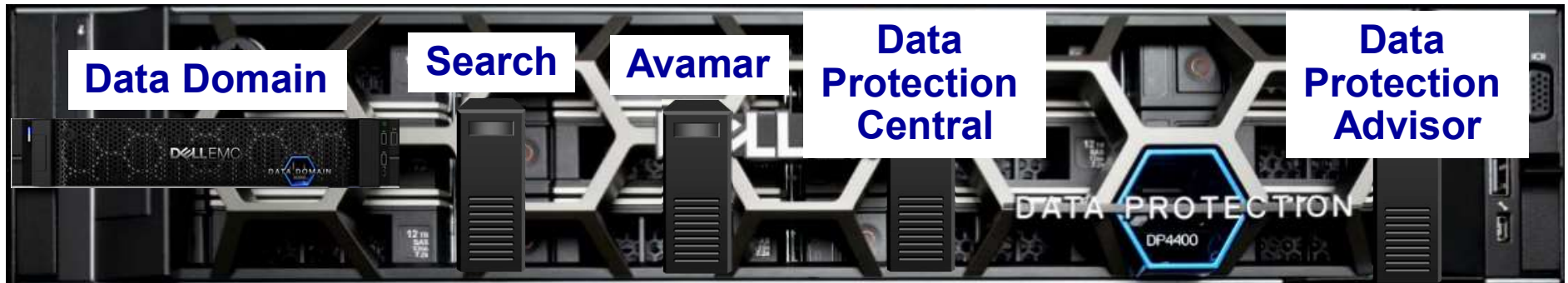
DP4400





DP 4400 has built in all required licenses for:

- Avamar
- Boost for Applications
- Data Domain
- Search
- DP Central
- DP Advisor



DP 4400 has built in all required licenses for:

- Avamar
- Boost for Applications
- Data Domain
- Search
- DP Central
- DP Advisor

Backup software

Backup hardware

Single console

RODO / Reports



We have all the features of the solutions

We can protect any environment
without any limitation:

- Processors / cores / ...
- TBs
- Type of data (databases, VMs, laptops, ...)
up to full capacity of DP4400

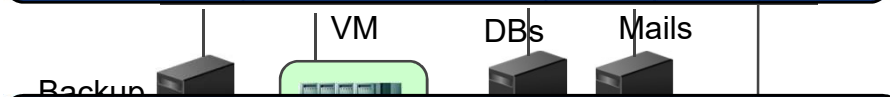
So DP4400 can protect environment having

Site A

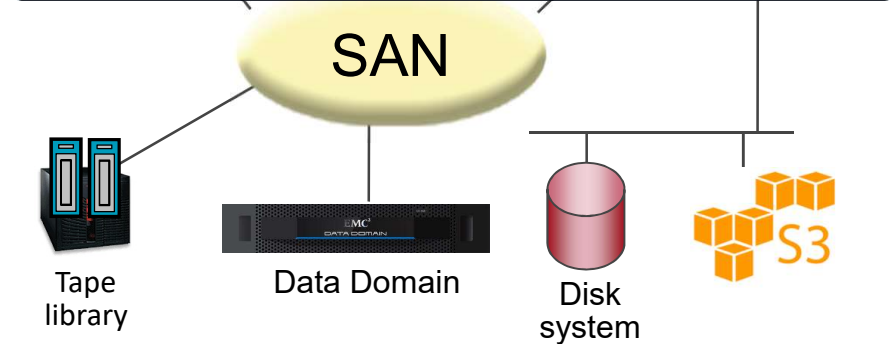
1 physical processor or 100 processors



1 physical server or 50 physical servers



1 TB data to protect or 100TB data to protect



Site B

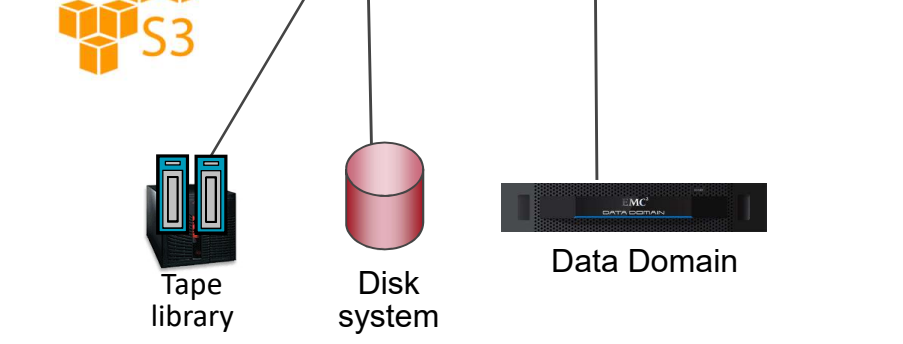
1 remote office or 100 remote offices



1 laptop or 1000 laptops



1 Virtual Machine or 1000 Virtual Machines



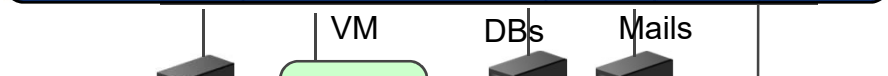
So DP4400 can protect environment having

Site A

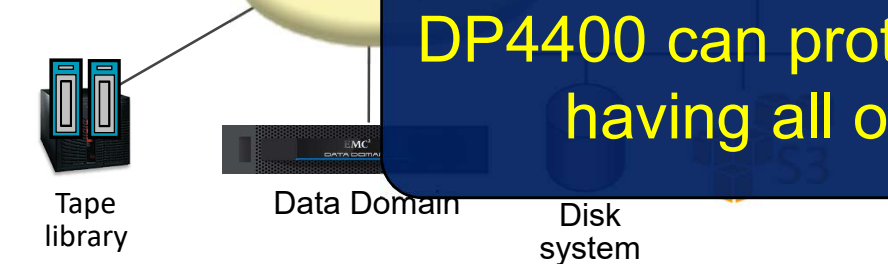
1 physical processor or 100 processors



1 physical server or 50 physical servers



1 TB data to protect or 100TB data to protect



Site B

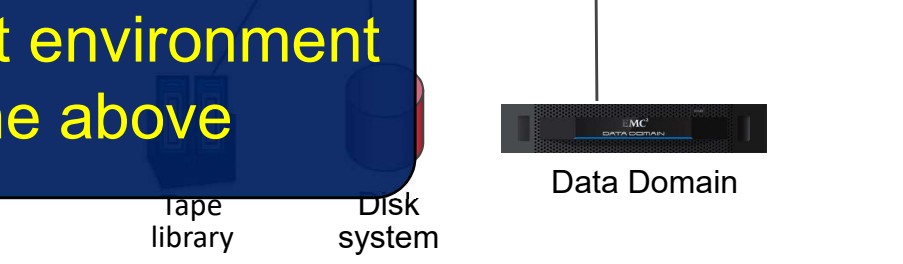
1 remote office or 100 remote offices



1 laptop or 1000 laptops



1 Virtual Machine or 1000 Virtual Machines



DP4400 can protect environment having all of the above

So DP4400 can protect environment having

Site A

Site B

1 physical processor or 100 processors

1 remote office or 100 remote offices

Mail

Mail

VM

We do not care because DP4400 has all the license, all the proper resources to protect any environment up DP4400 full capacity

1 physical server or 50 physical servers

1 laptop or 1000 laptops

1 TB data to protect or 100TB data to protect

1 Virtual Machine or 1000 Virtual Machines

DP4400 can protect environment having all of the above



Tape library



Data Domain

Disk system

Tape library

Disk system



Data Domain

DP4400 has all licenses that allows this appliance to backup any environment up to the full capacity we have in DP4400 device

The only thing that we purchase is DP4400 with proper capacity

All possible licenses there are already within DP4400

library

DISK
system

library

DISK
system



We have all the features of the solutions

We can protect any supported environments
without any limitation:

- Processors / cores / ...
- TBs
- Type of data (databases, VMs, laptops, ...)
up to full capacity of DP4400

A server rack with various components labeled. The labels are: Data Domain, Search, Avamar, Data Protection Central, and Data Protection Advisor.

Data Domain

Search

Avamar

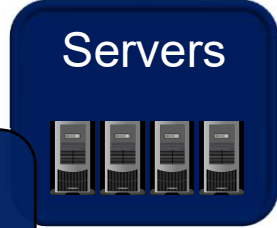
Data
Protection
Central

Data
Protection
Advisor

We can backup
whatever we want
up to the available capacity
in our DP4400



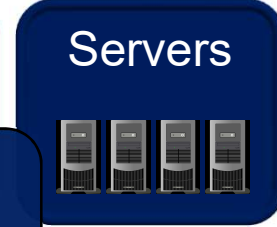
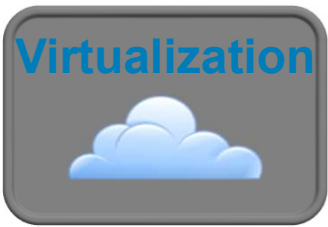
DP4400



Unlimited environment



DP4400



Unlimited environment

- Unlimited
- Virtual Machines
 - Databases
 - Laptops
 - Remote offices
 - NAS
 - Standalone servers





Client direct (no Media Servers)

Protected machines sends backups (source de-dup)
directly to DP4400 appliance

D

The DP4400 backup engine is based on

Avamar

So thanks to **Avamar engine**, DP4400 gives us
all the features we have talked so far:

- Source de-duplication
- Client direct
- Always FULL backups
- Reading only changed data
- Central calendar
- ...

Backup to DP4400
directly from application
by application owner

What if
MSSQL / Oracle / Exchange / SAP / ... admin
would like to **backup its database itself?**

What if
MSSQL / Oracle / Exchange / SAP / ... admin
would like to **backup its database itself?**

Can he?

What if
MSSQL / Oracle / Exchange / SAP / ... admin
would like to **backup its database itself?**

Can he?

- Can application admin have
- Direct backup to DP4400
 - Source- deduplication
- directly from his application?

What if
MSSQL / Oracle / Exchange / SAP / ... admin
would like to **backup its database itself?**

Can he?

YES! YES! YES!

- Direct backup to DLT-1100
- Source- deduplication
directly from his application?

Having DP4400 we can use

Boost for Applications

up to the

full DP4400 capacity

with no additional cost!

Boost for Applications allows
MSSQL / Oracle / SAP / ...
admins to backup their
application using native database
tools with source de-duplication

Boost for Applications allows

Let's have a closer look at
Boost for Applications

app
tool with source de-duplication

Direct backup from
databases / applications to
Data Domain engine built in
within DP4400

Databases

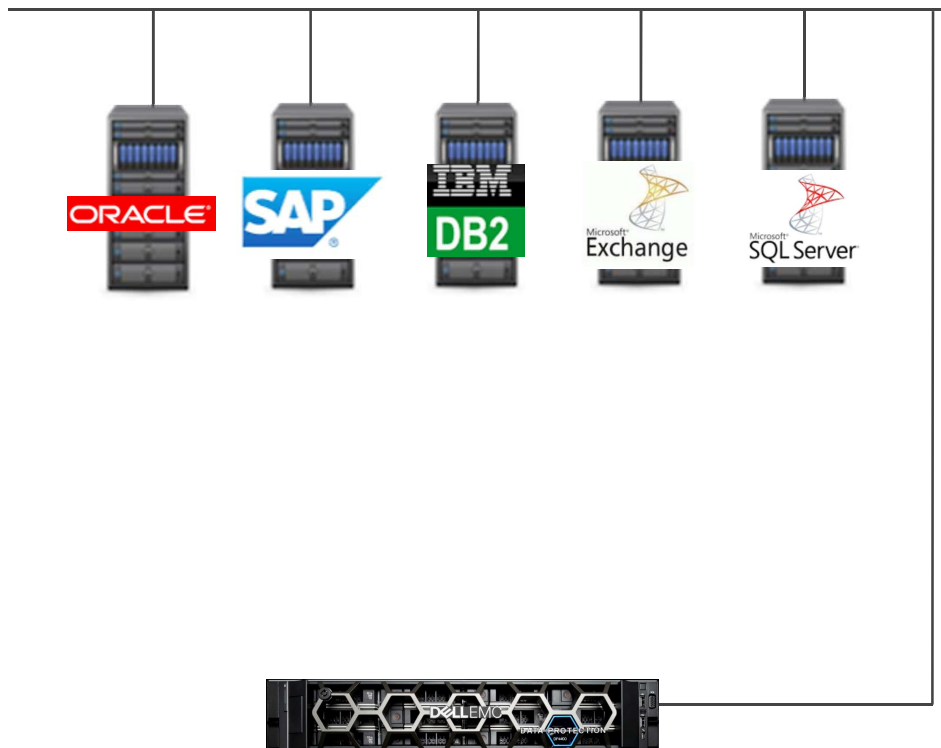


Applications



DP4400

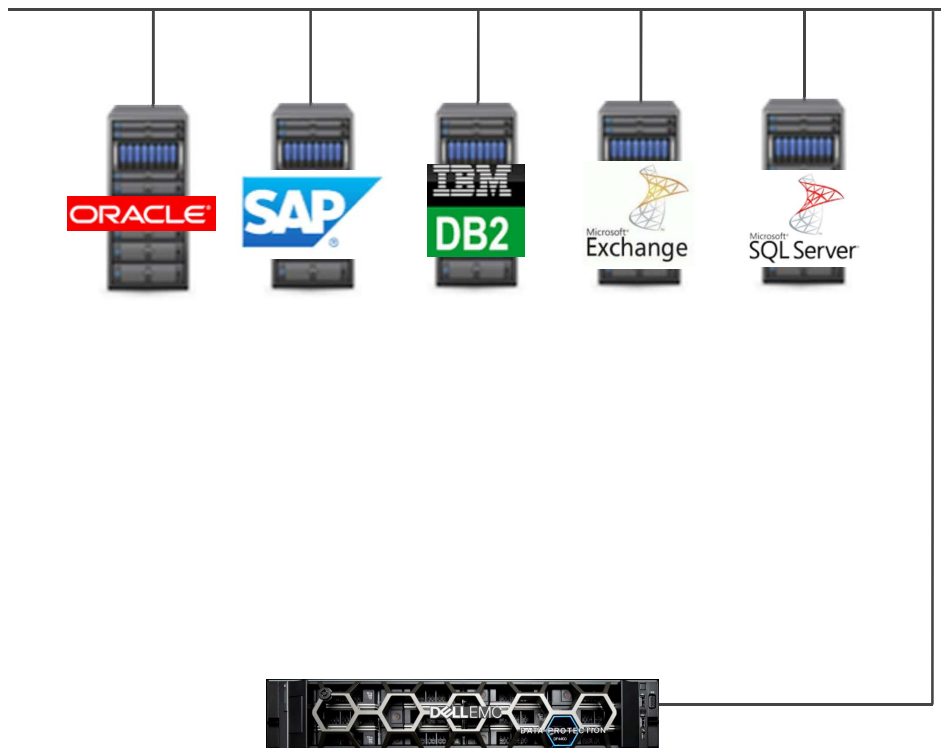
Boost for Applications



DP4400
Data Domain engine

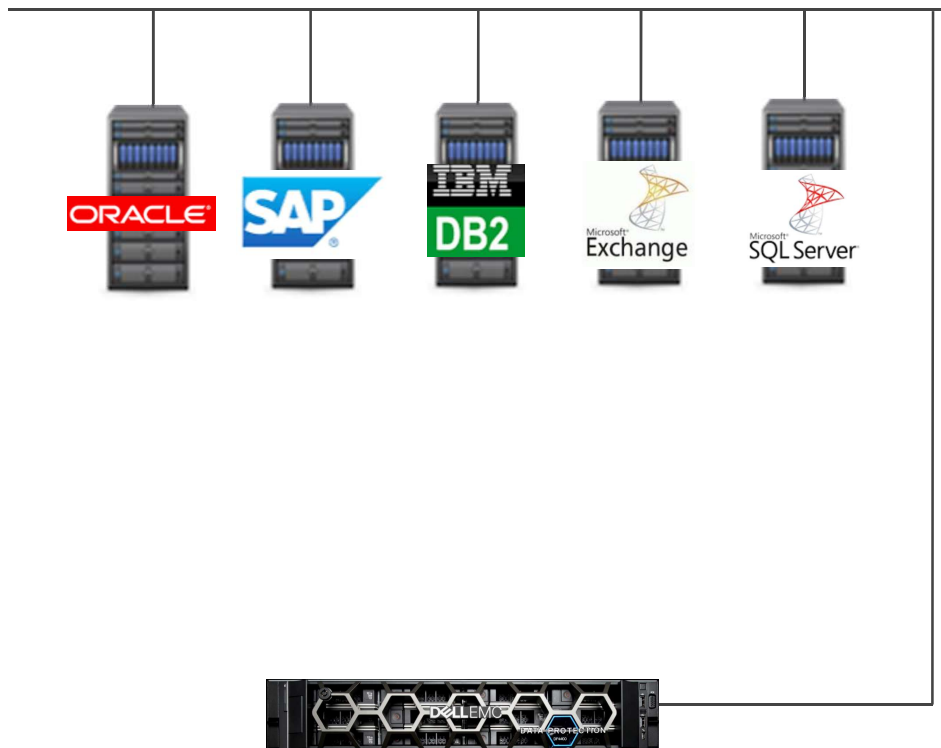
Let's imagine we have some applications/databases:

- MSSQL
- Oracle
- SAP
- Exchange
- Hadoop
- Greenplum



DP4400
Data Domain engine

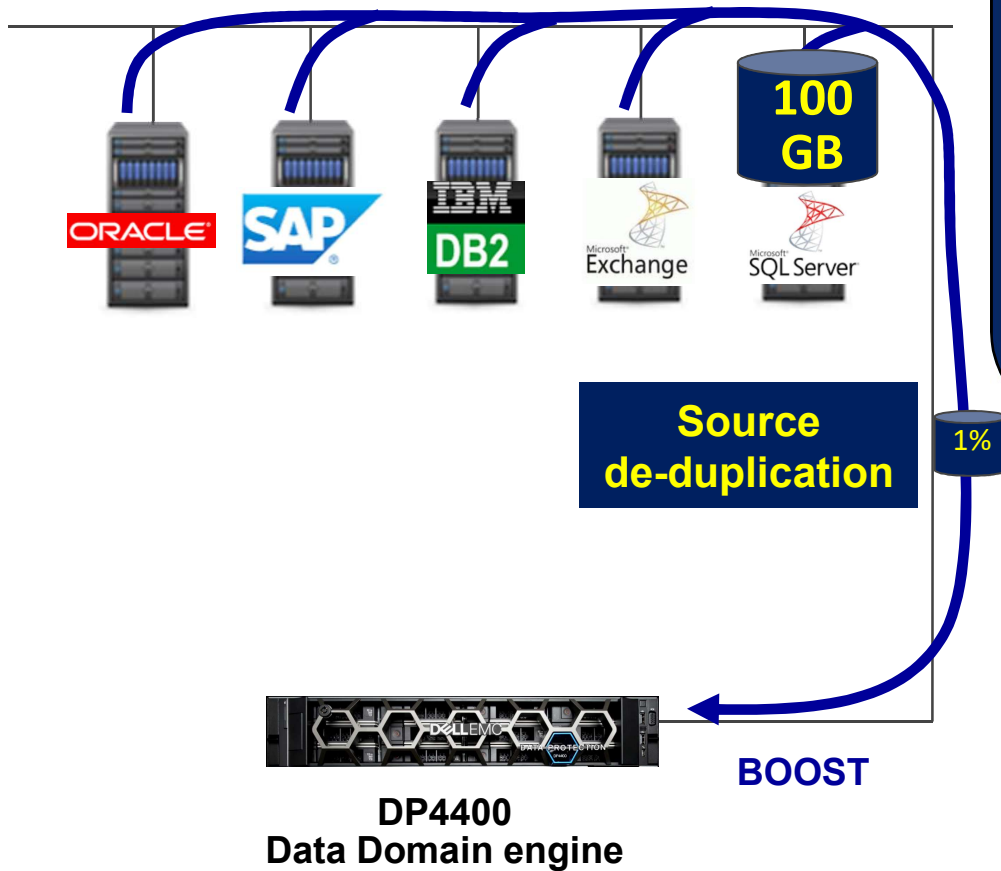
MSSQL / Oracle / SAP /
DB2 / ... admins prefer to
backup and restore their
application themselves



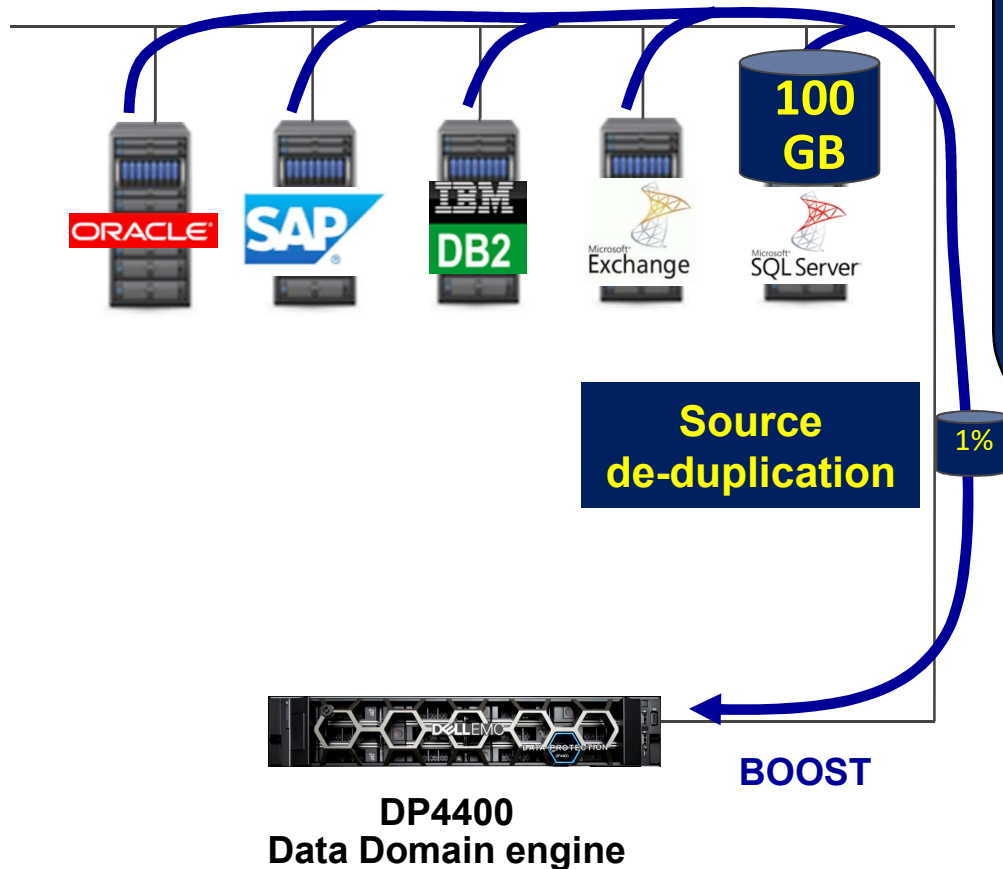
DP4400
Data Domain engine

MSSQL / Oracle / SAP / DB2 / ... admins prefer to backup and restore their application themselves

They want to backup their application using native MSSQL / Oracle / SAP / ... tools instead of Avamar or any other backup software

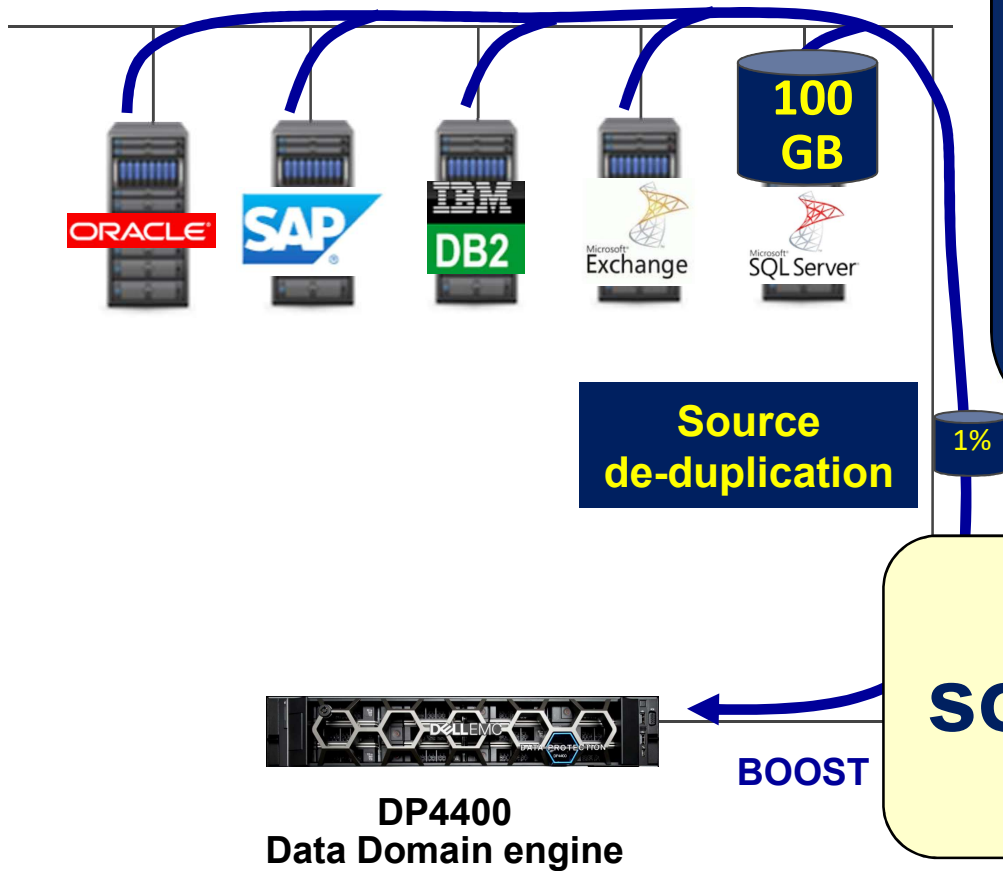


We can backup those application directly to Data Domain engine (*within DP4400*) with source de-duplication using standard application tools



We can backup those application directly to Data Domain engine (*within DP4400*) with source de-duplication using standard application tools

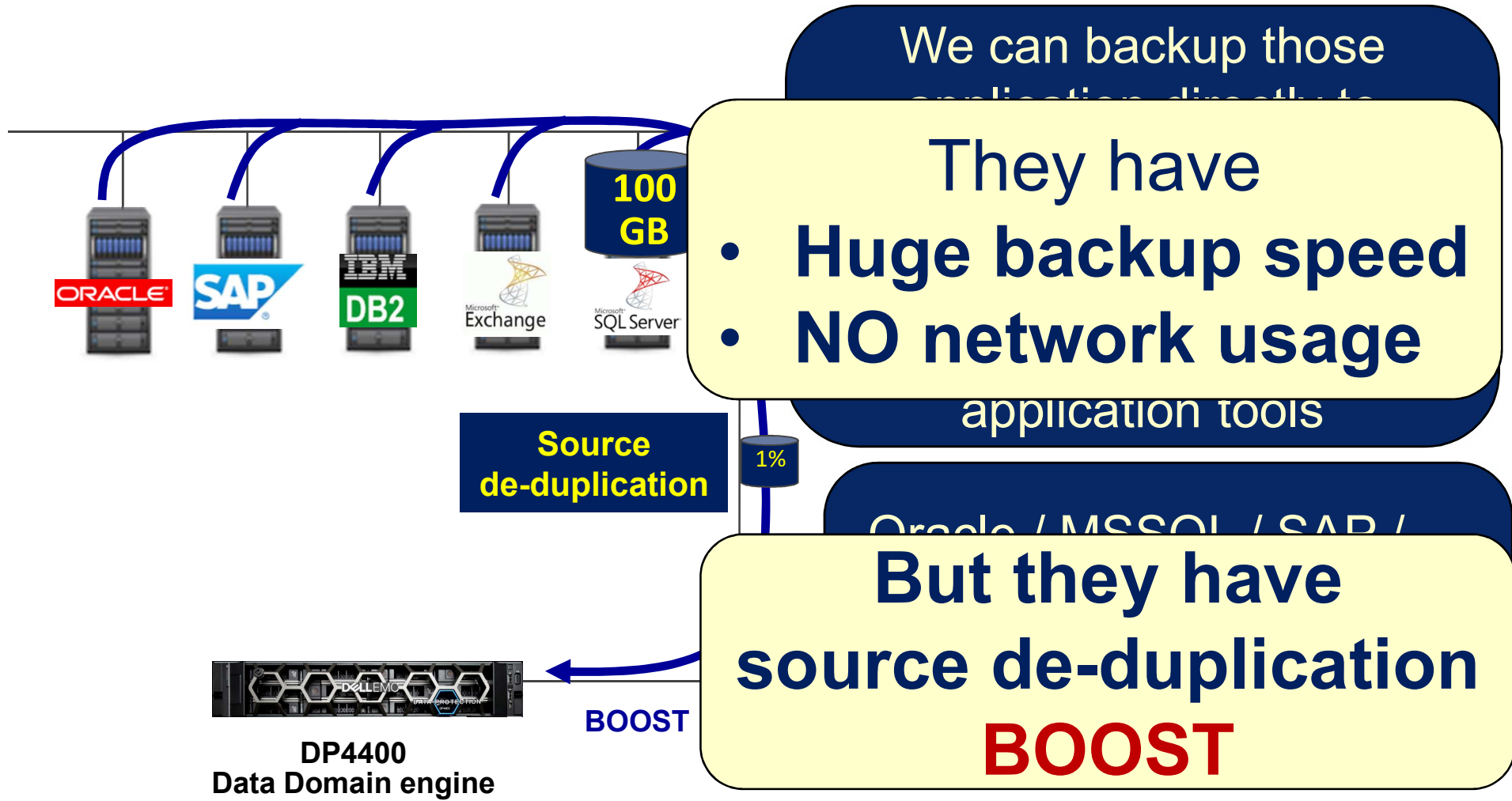
Oracle / MSSQL / SAP / ... admin uses its native tools to backup those applications to DD/DP4400.



We can backup those application directly to Data Domain engine (within DP4400) with source de-duplication using standard application tools

Oracle / MSSQL / SAP /

But they have source de-duplication BOOST



We can backup those

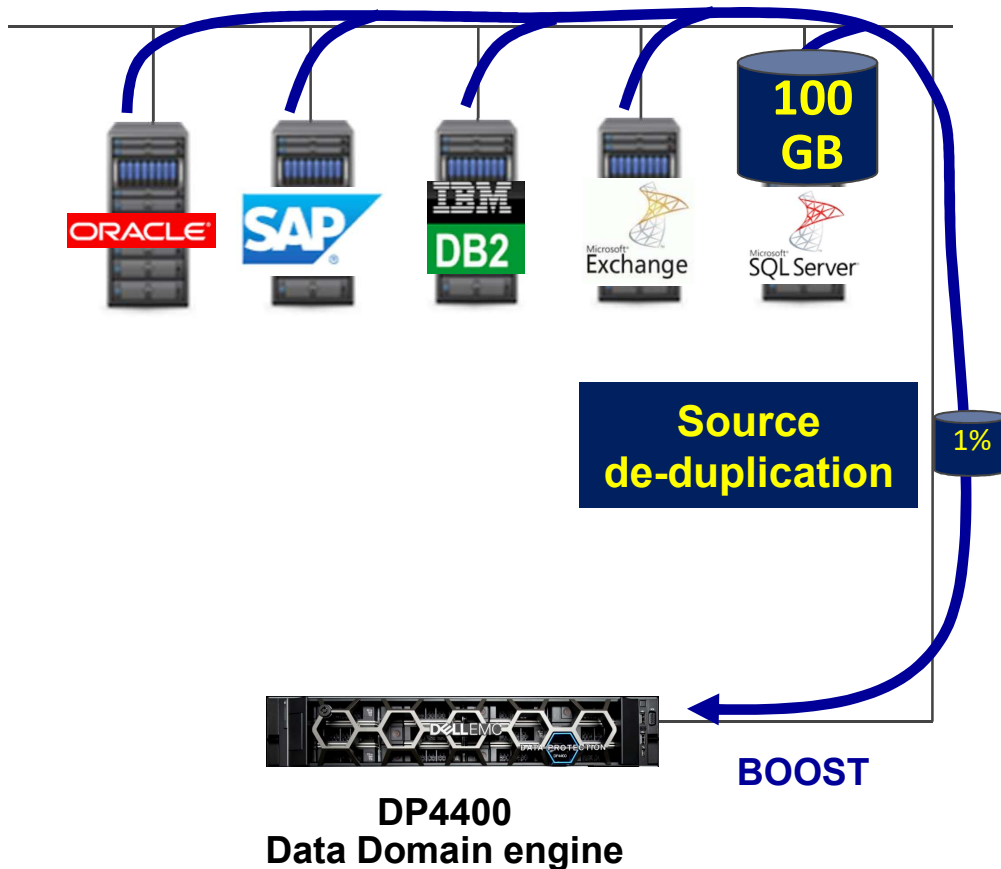
The functionality that allows
db/app admins
to **backup themselves**
their dbs/apps with **source de-duplication**
is called

BOOST For Application

DP4400
Data Domain engine

BOOST

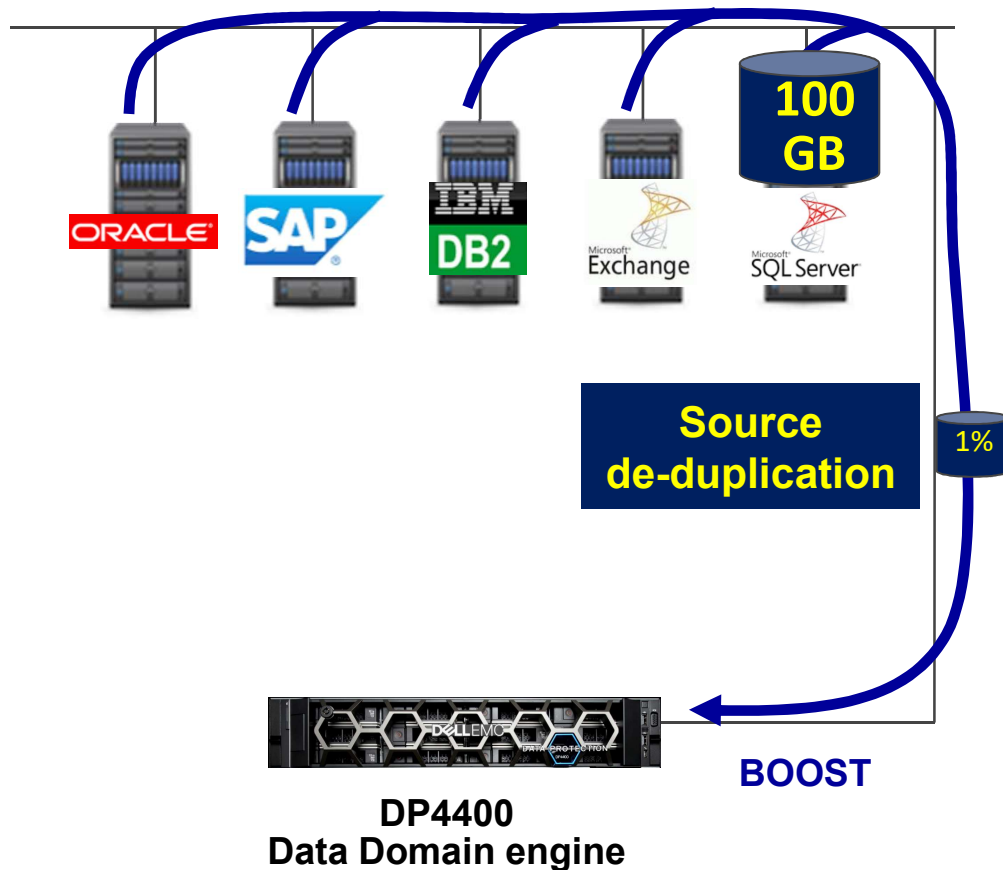
BOOST



With

Boost for Applications

- Backup is performed by application admin (Oracle / MSSQL / SAP / ... admin)
- From protected machine to DD/DP4400 goes only new small chunks, not existing on DD/DP4400
(we have *source de-duplication = BOOST*)



Using
Boost for Applications
(source-deduplication)
we achieve:

- **No network usage** during backup
- Huge **fast backup**
- **Ownership** of backup/restore by **backup administrator**

Boost for Applications

is functionality that we can enjoy at

- Data Domain
- DP4400

de-duplication



DP4400
Data Domain engine

BOOST

- Huge **fast backup**
- **Ownership** of backup/restore by **backup administrator**

Having DP4400 we can use
Boost for Application
for the **whole capacity**
of our **DP4400**

OR

**Source
de-duplication**

1%



**DP4400
Data Domain engine**

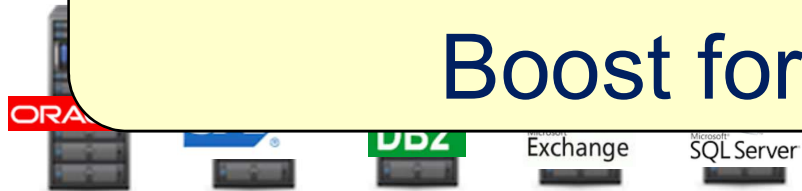
BOOST

- during backup
- Huge **fast backup**
 - **Ownership** of backup/restore by **backup administrator**

**Having DP4400 we can use
Boost for Application
for the whole capacity
of our DP4400**

**Technically, we can backup MSSQL,
Oracle, SAP just from those
application directly to Data Domain
engine which is built within DP4400**

We do not need any additional licenses or hardware to use Boost for Applications



Source de-duplication

1%



DP4400
Data Domain engine

BOOST

- **No network usage** during backup
- Huge **fast backup**
- **Ownership** of backup/restore by **backup administrator**

We do not need any additional licenses or hardware to use Boost for Applications

DP4400 has all required licenses and components to use Boost for Applications up to the full capacity of DP4400

DP4400
Data Domain engine

ORA

DB2

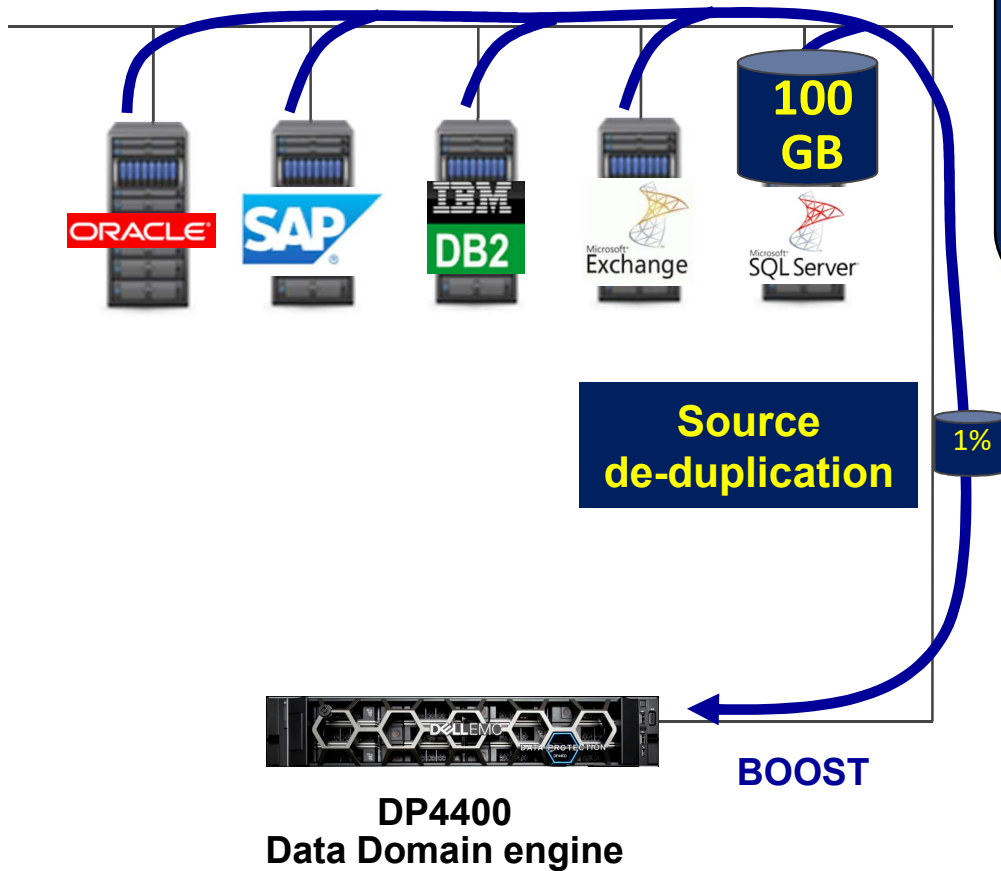
Exchange

Microsoft SQL Server

ns
h)

New technologies

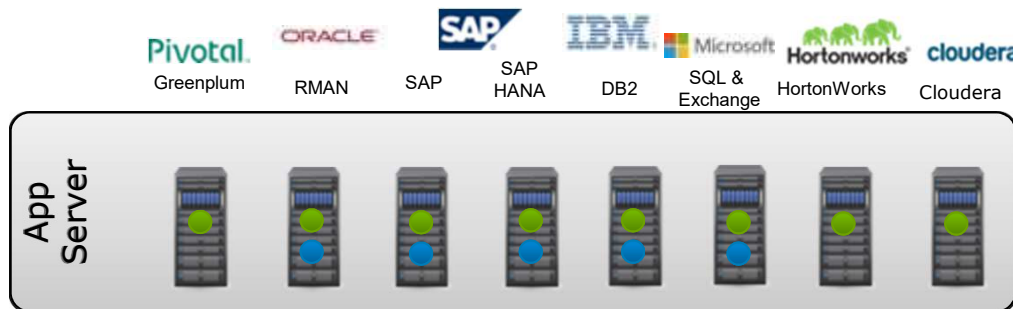
Backup administrator



What applications can backup directly to DP4400 with control of application admin?

Any of the below **application** can be backed up to **DP4400 using Boost:**

- Directly to Data Domain
- With source de-duplication



What if I have different application?

What if I have different application?

What if I have

- MySQL?
- Mongo?
- PostgreSQL?
- ...

What if I have different application?

What if I have

- MySQL?
- Mongo?
- PostgreSQL?
- ...

Can I have source de-duplication?
Can I have backup by admin owner
to my DP4400?

What if I have different application?

What if I have

- MySQL?
- Mongo?

YES! YES! YES!

Can I have source de-duplication?

Can I have backup by admin owner
to my DP4400?

What if I have different application?

What if I have

- MySQL?

It is called
BoostFS

Can I have source de-duplication?

Can I have backup by admin owner
to my DP4400?

On Windows you can create a special disk
(for example M:\)

On Windows you can create a special disk
(for example M:\)

Everyone who will write to
this **special disk M:**, in reality will **write to
DP4400 with source de-duplication**

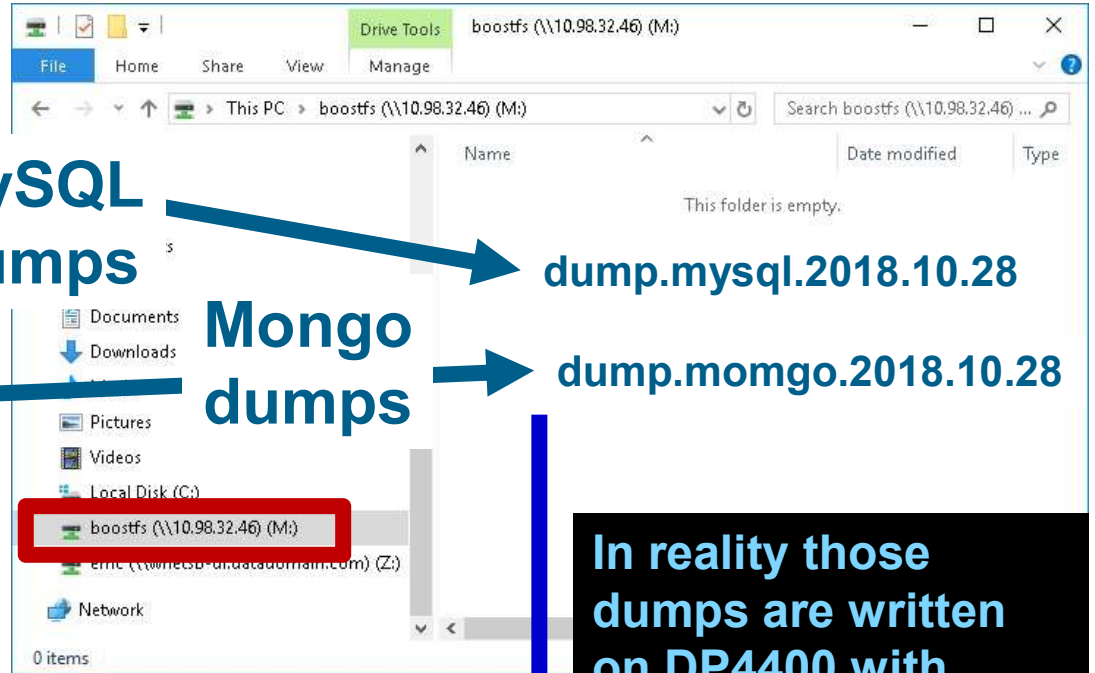


**MySQL
dumps**

**Mongo
dumps**

dump.mysql.2018.10.28

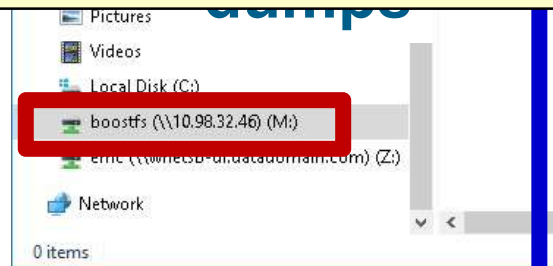
dump.mongodb.2018.10.28



**In reality those
dumps are written
on DP4400 with
source de-
duplication**

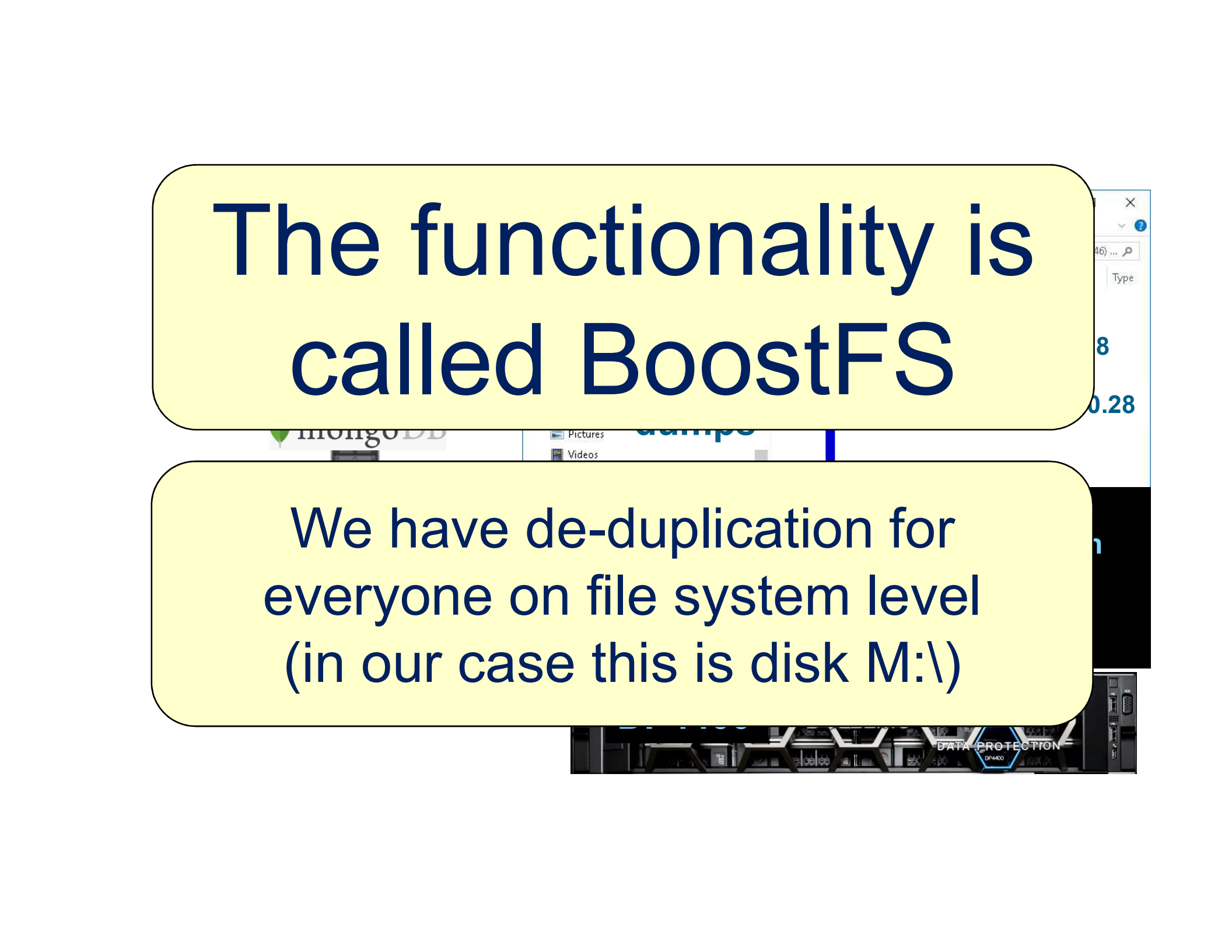


The functionality is called BoostFS



In reality those dumps are written on DP4400 with source de-duplication





The functionality is called BoostFS

We have de-duplication for everyone on file system level (in our case this is disk M:\)

BoostFS is available for

BoostFS is available for

Windows

BoostFS is available for

Windows

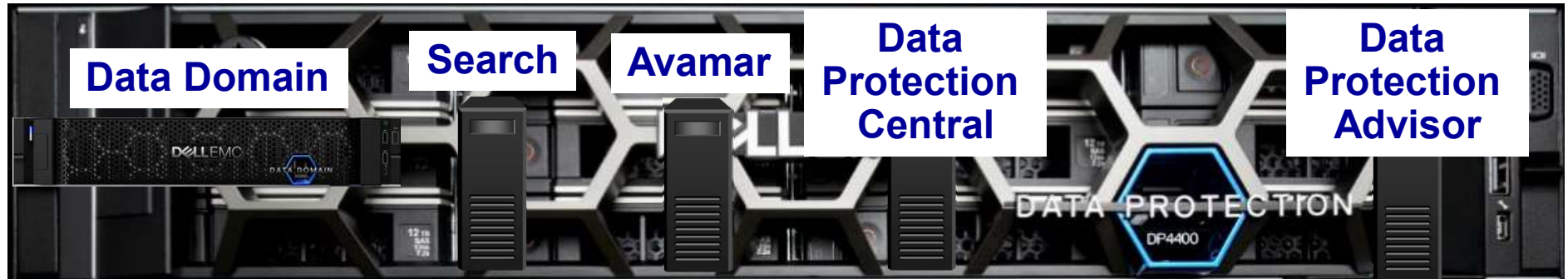
Linux

DP4400



Having DP4400 we can use **BoostFS** Windows or Linux up the **full capacity of DP4400**

DP4400



Having DP4400 we can use **BoostFS** Windows or Linux up the **full capacity of DP4400**

All licenses included!

Data Protection **Previous** License Models

Data Protection Suite Enterprise Edition

What's Included:

- Avamar
- NetWorker
- DD Boost for Enterprise Apps
- Storage Direct
- HyperVisor Direct
- BoostFS
- eCDM
- ItemPoint
- RecoverPoint for VMs
- Data Protection Advisor
- CloudBoost
- Search
- Data Protection Central
- SourceOne for email, file and Sharepoint
- AppSync

Data Protection Suite For Backup

What's Included:

- Avamar
- NetWorker
- DD Boost for Enterprise Apps
- Storage Direct
- HyperVisor Direct
- BoostFS
- eCDM
- ItemPoint
- Data Protection Advisor
- CloudBoost
- Search
- Data Protection Central

Data Protection Suite For VMware

What's Included:

- Avamar
- NetWorker
- 2x Avamar VE 2TB
- 15 RP4VM/Socket
- ItemPoint
- Data Protection Advisor
- CloudBoost
- Search
- Data Protection Central

Data Protection Suite For Applications

What's Included:

- DD Boost for Enterprise Apps
- Storage Direct
- HyperVisor Direct
- BoostFS
- eCDM
- ItemPoint
- Data Protection Advisor

Data Protection Suite Commercial DDVE Bundle

What's Included:

- Avamar
- DDVE 2TB/Socket
- 2x Avamar VE 2TB
- 15 RP4VM/Socket
- ItemPoint
- Data Protection Advisor
- Search
- Data Protection Central
- Limit of 50 Sockets

Data Protection Suite For Archive

What's Included:

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

IDPA DP5300 – DP8800

What's Included:

- Avamar
- DD Boost for Enterprise Apps
- BoostFS
- ItemPoint
- Data Protection Advisor
- Search
- Data Protection Central
- Cloud Tier (capable but not included, excludes DP5300)
- CDRA (capable but not included)
- RP4VM (capable but not included)

IDPA DP4400

What's Included:

- Avamar
- DD Boost for Enterprise Apps
- BoostFS
- ItemPoint
- Data Protection Advisor
- Search
- Data Protection Central
- Cloud Tier (5TB – expandable)
- CDRA (5TB – expandable)
- RP4VM (5 Instances- expandable)

RP4VM

- Licensed per VM
- Licensed per socket

DDVE

- Licensed Per usable capacity

DP4400 licensing

IDPA
DP5300 – DP8800

What's Included:

- Avamar
- DD Boost for Enterprise Apps
- BoostFS
- ItemPoint
- Data Protection Advisor
- Search
- Data Protection Central
- Cloud Tier (capable but not included, excludes DP5300)
- CDRA (capable but not included)
- RP4VM (capable but not included)

IDPA
DP4400

What's Included:

- Avamar
- DD Boost for Enterprise Apps
- BoostFS
- ItemPoint
- Data Protection Advisor
- Search
- Data Protection Central
- Cloud Tier (5TB – expandable)
- CDRA (5TB – expandable)
- RP4VM (5 Instances- expandable)

IDPA
DP5300 – DP8800

What's Included:

- Avamar
- DD Boost for Enterprise Apps
- BoostFS
- ItemPoint
- Data Protection Advisor
- Search
- Data Protection Central
- Cloud Tier (capable but not included, excludes DP5300)

IDPA
DP4400

What's Included:

- Avamar
- DD Boost for Enterprise Apps
- BoostFS
- ItemPoint
- Data Protection Advisor
- Search
- Data Protection Central
- Cloud Tier (5TB – expandable)
- CDPA (5TB – expandable)

We have those licenses up to the full capacity of DP4400

New Licensing software

Name @ July Launch	PowerProtect	Data Protection Suite	DPS For Backup	DPS For Enterprise	DPS For VMWare
PowerProtect Data Manager	✓	✓	N/A but Ecdm	N/A but Ecdm	Not Included
PowerProtect Cloud Disaster Recovery	✓	✓	Not Included	Not Included	Not Included
PowerProtect VM Replication	✓	✓	Not Included	N/A but Recover Point	✓
PowerProtect Cyber Recovery	✓	✓	Not Included	Not Included	Not Included
PowerProtect Storage Direct	✓	✓	✓	N/A but Protect Point	Not Included
NetWorker	Not Included	✓	✓	✓	✓ (Limited)
Avamar	Not Included	✓	✓	✓	✓ (Limited)
Data Protection Central	Not Included	✓	✓	✓	✓
Data Protection Advisor	Not Included	✓	✓	✓	✓
DP Search	Not Included	✓	✓	✓	✓
Boost FS	Not Included	✓	✓	✓	Not Included
Cloudboost	Not Included	✓	✓	✓	✓
Sourceone	Not Included	Not Included	Not Included	✓	Not Included
Licensing	\$/FETB/Socket Perpetual & Subscription	\$/FETB/Socket Perpetual & Subscription	\$/FETB/Perpetual & Subscription	\$/FETB/Perpetual & Subscription	

Not shown is Cloud Snapshot Manager (CSM), a SaaS based product; CSM 25 instance trial with each order

DP4400

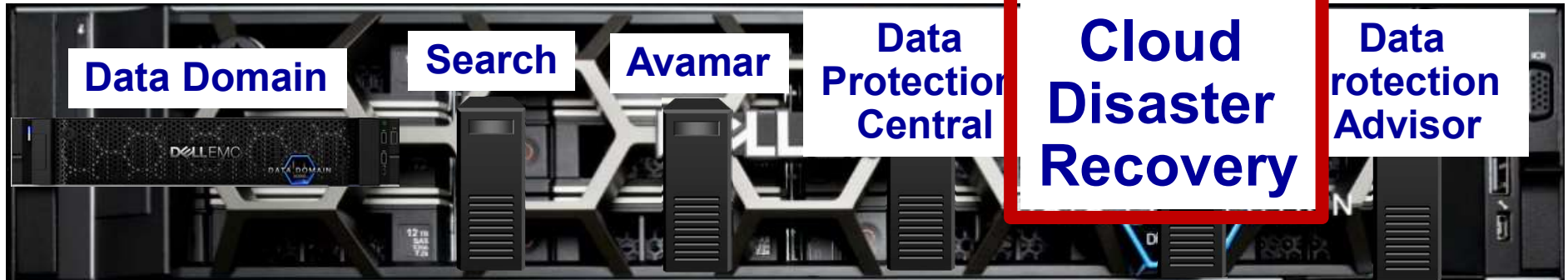
and

Cloud Disaster Recovery

Starting my environment
in the Cloud

Cloud Disaster Recovery

DP4400 Cloud Disaster Recovery



DP4400 Cloud Disaster Recovery



IDPA 4400 has option to use AWS as Disaster Recovery for our site

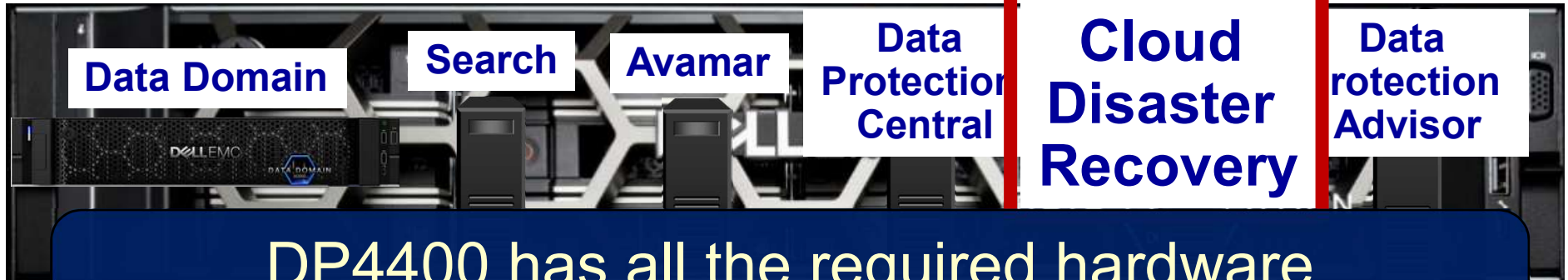
DP4400 Cloud Disaster Recovery



IDPA 4400 has option to use AWS as Disaster Recovery for our site

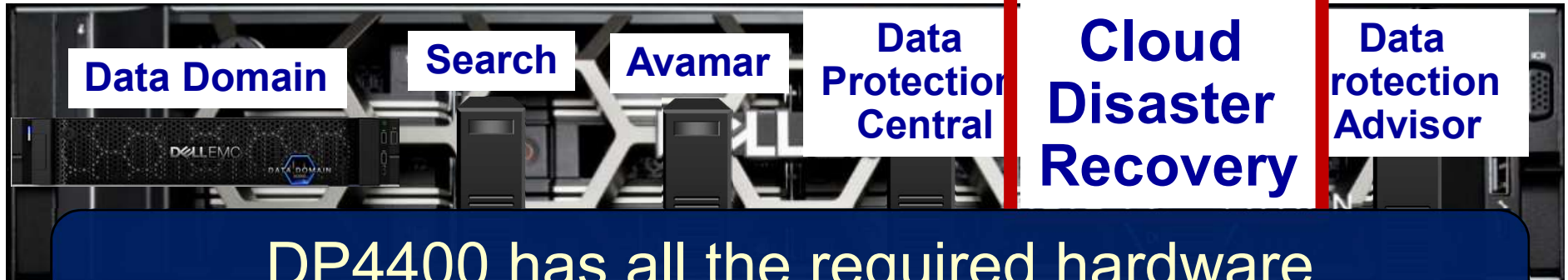
The feature is cold Cloud Disaster Recovery

DP4400 Cloud Disaster Recovery



DP4400 has all the required hardware
for Cloud Disaster Recovery

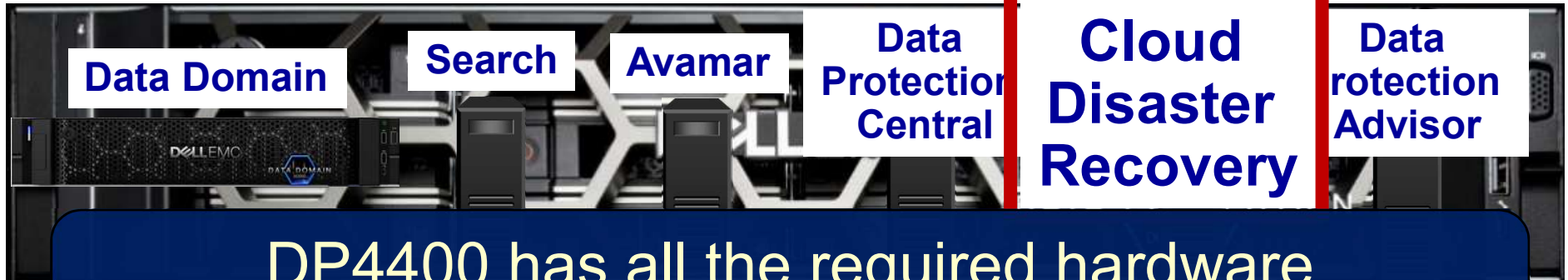
DP4400 Cloud Disaster Recovery



DP4400 has all the required hardware
for Cloud Disaster Recovery

DP4400 has license to use 5TB of AWS space
for Disaster Recovery purposes.

DP4400 Cloud Disaster Recovery



DP4400 has all the required hardware for Cloud Disaster Recovery

DP4400 has license to use 5TB of AWS space for Disaster Recovery purposes.

If we need more space in AWS – we need to buy additional Cloud Disaster Recovery license

Data Domain Cloud Disaster Recovery - Overview

DP4400



- * Disaster Recovery to AWS S3

- * Failback from AWS

- * Run EC2 on Demand in AWS

- * Rapid Recovery (VM waits on EC2 to start)

- * Disaster Recovery Plans

- * Integrated with on-prem Avamar and Data Domain

- * Avamar UI

- * Cloud DR with minimal cloud resources

Data Domain Cloud Disaster Recovery - Overview

DP4400



DP4400 has all required hardware / configuration for DD CDR

S3

*** Failback from AWS**

(VM waits on EC2 to start)
*** Disaster Recovery Plans**

*** Avamar UI**
*** Cloud DR with minimal cloud resources**

Data Domain Cloud Disaster Recovery - Overview

DP4400



DP4400 has all required hardware / configuration for DD CDR

Any DP4400 comes with **5TB license (AWS used space) for DD CDR**

Data Domain Cloud Disaster Recovery - Overview

DP4400



If we want to use more than 5TB of AWS as Disaster Recovery space, we need to purchase additional DD CDR license

AWS

*** Disaster Recovery Plans**

minimal cloud resources

Data Domain Cloud Disaster Recovery – more info

<https://youtu.be/Gn8tLA9Ib2I>



Long Term Retention on S3 storage **Cloud Tier**

DP4400
and
CloudTier

DP4400 Cloud Tier



Data Domain that is inside DD4400 can move old backups to cheap S3 storage to reduce cost of data protection

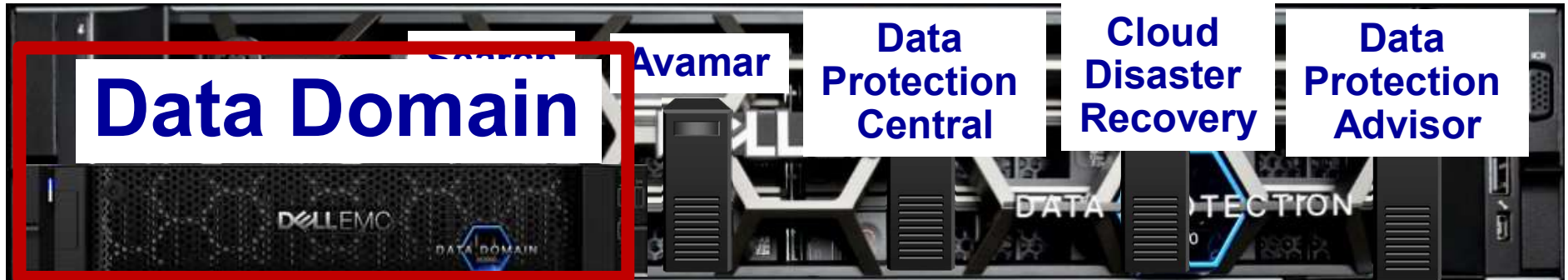
DP4400 Cloud Tier



Data Domain that is inside DD4400 can move old backups to cheap S3 storage to reduce cost of data protection

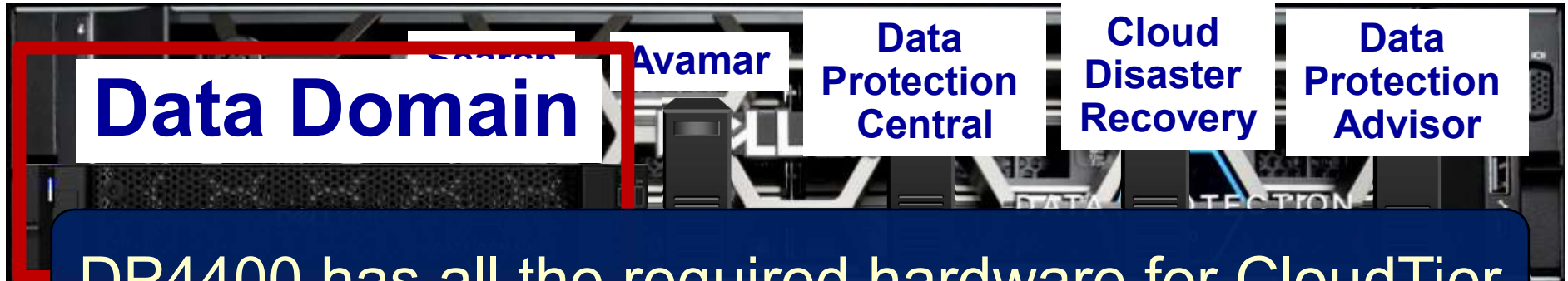
The feature is cold CloudTier

DP4400 Cloud Tier



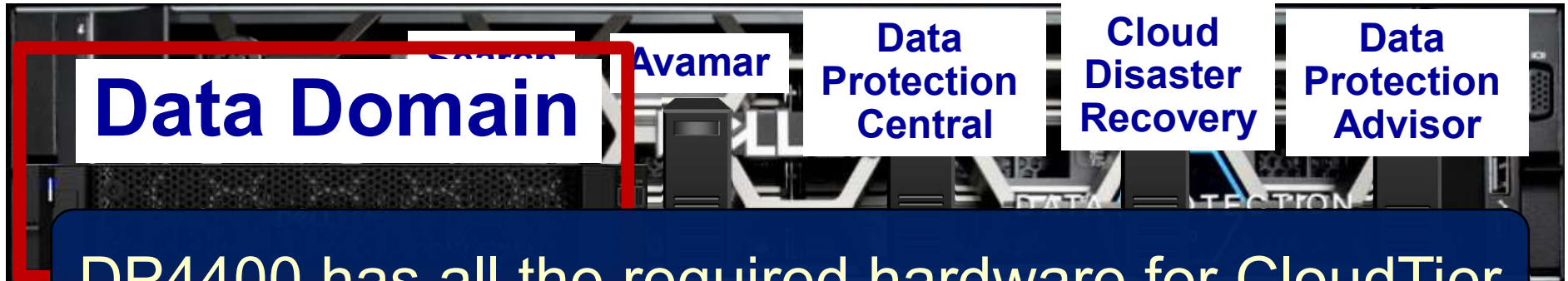
Data Domain CloudTier can move old backups to local S3 storage (ECS) or to S3 in the public Cloud (AWS / Azure / ...)

DP4400 Cloud Tier



DP4400 has all the required hardware for CloudTier

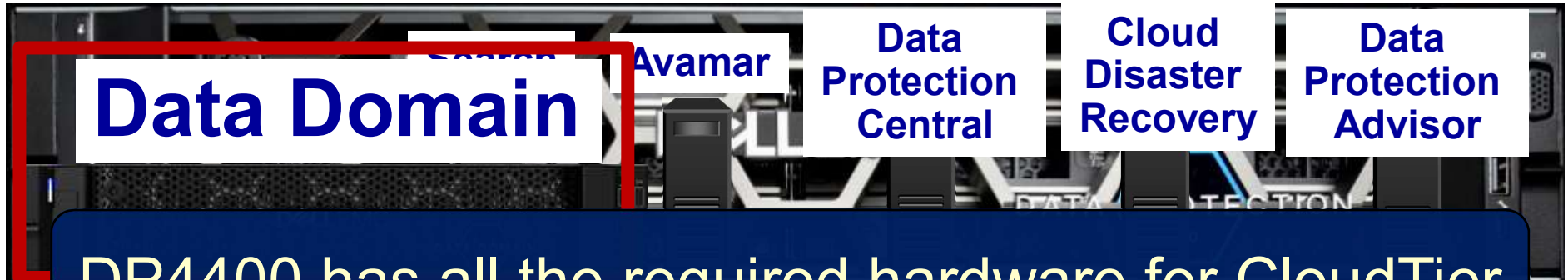
DP4400 Cloud Tier



DP4400 has all the required hardware for CloudTier

DP4400 has license to use 5TB of any S3 storage to store old backups

DP4400 Cloud Tier

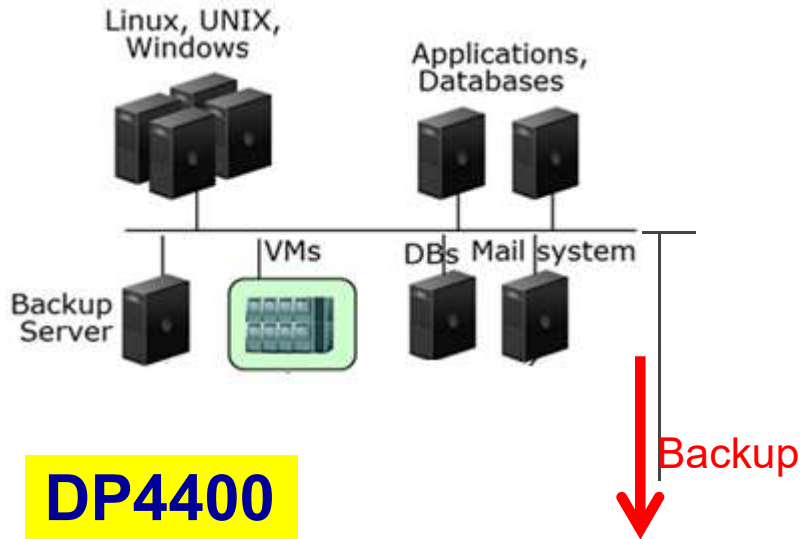


DP4400 has all the required hardware for CloudTier

DP4400 has license to use 5TB of any S3 storage to store old backups

If we need more space in S3 – we need to buy additional CloudTier license

Data Domain CloudTier Extending DP4400 with S3 storage



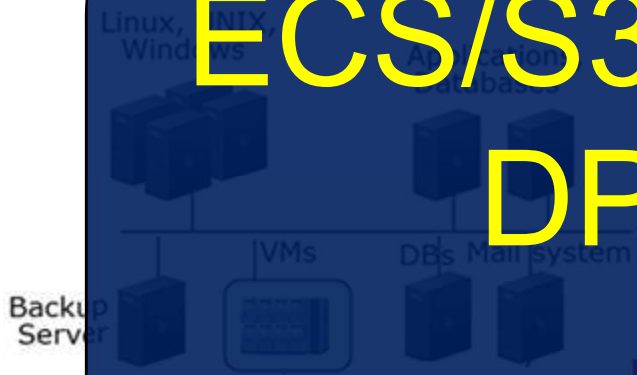
- Retention
1-3 months
- Performance / functionalities
 - Cost effective

Old backups are moved to S3 storage in de-duplicated format just by DP4400



Data Domain CloudTier
Extending DP4400 with S3 storage

ECS/S3 storage extends DP4400 space



S3 is NOT as fast as DP4400
but we keep there (automatically)
only very old backups

- Performance / functionalities
- Cost effective

just by DP4400

Retention
5 years / 10 years / ...

virtustream

AWS


S3

CloudTier

Full automation with Disaster Recovery

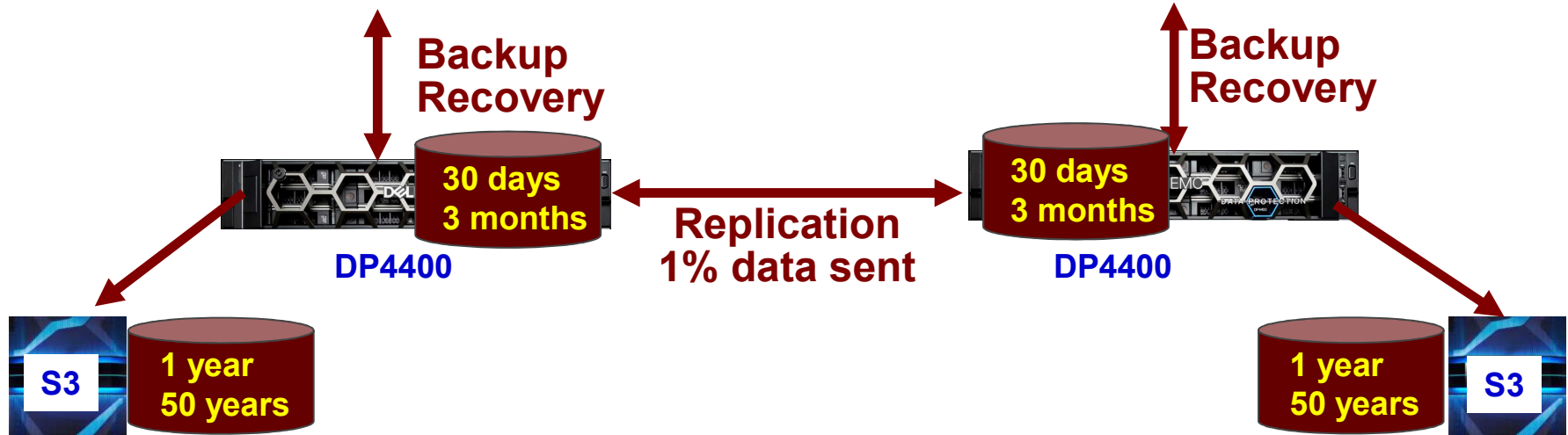
SITE A

IT Infrastructure
Servers, Virtualization

A green rounded rectangle containing the text "IT Infrastructure Servers, Virtualization" in yellow and white. To the right are icons of two server racks and a server blade.

SITE B

IT Infrastructure
Servers, Virtualization

A green rounded rectangle containing the text "IT Infrastructure Servers, Virtualization" in yellow and white. To the right are icons of two server racks and a server blade.

CloudTier

Full automation with Disaster Recovery

- ECS/S3 storage extends DP4400 space (for old backups)
- No undeduplicatiton / de-duplication again
- Minimal load of DP4400
- Backend process
- The same best Data Domain de-duplication algorithm
- Very cost efficiency



Simple

Maintenance-less

Any infrastructure

Cost effective

- Full automation
- Maintenance-free
- Cost effective

- Any retention
- Simple
- Flexible - for any environment

Cost of Long Term Retention

ECS system vs. tape library

Estimation of backup size through defined number of years (in long term retention)

Data that are backed up [TB]	Number of backups that monthly exported to long term retention media	Number of months	How many years do we keep backups?	Amount of data stored in long term retention in the specified years [TB]
80	1	12	5	4 800

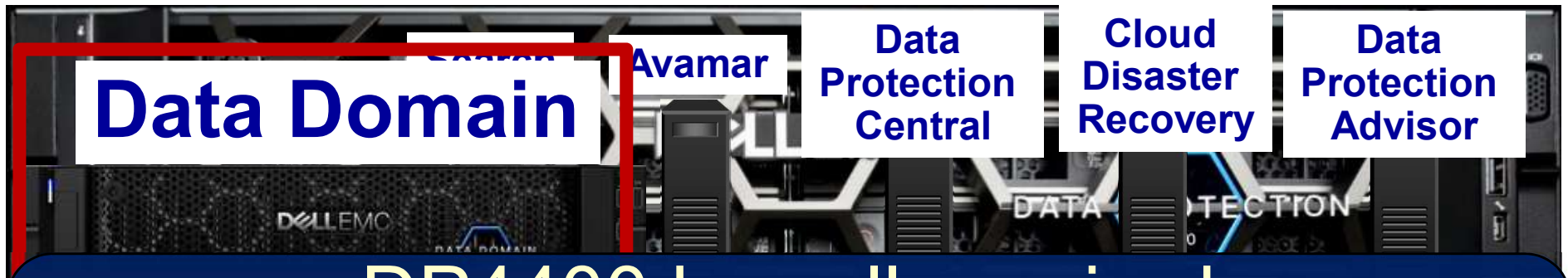
Estimation of ECS size to keep all backups in Long Term Retention

Amount of data stored in long term retention in the specified years [TB]	De-duplication ratio at CloudBoost gateway [x:1]	Required ECS space (net) [TB]	Cost of ECS per TB net [Euro]	Cost of ECS space (List Price) required to store backups through defined number of years [Euro]
4 800	20	240	76	182 400

Estimation of tape library size to keep all backups in Long Term Retention

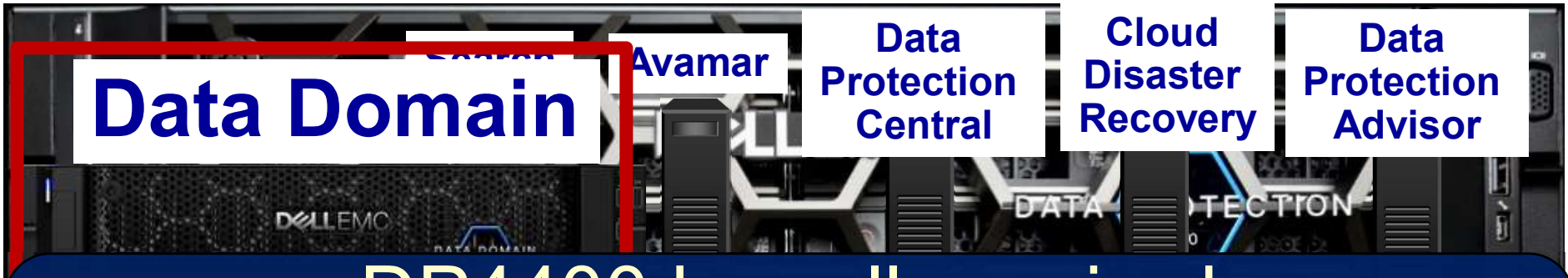
Amount of data stored in long term retention in the specified years [TB]	Capacity of LTO-6 tape [TB]	Tape compression ratio [x:1]	Capacity of LTO tape after compression [TB]	Required number of tapes to store all backups in required long term retention	Cost List Price of tape library (1100 slots, 8 LTO-6 drives) [Euro]	Cost List Price of 1100 tapes [Euro]	Total List Price cost of tape library system (tape library + tapes) [Euro]
4 800	2,5	2	5	960	324 000	44 000	368 000

DP4400 Cloud Tier



DP4400 has all required hardware / configuration for DD CloudTier

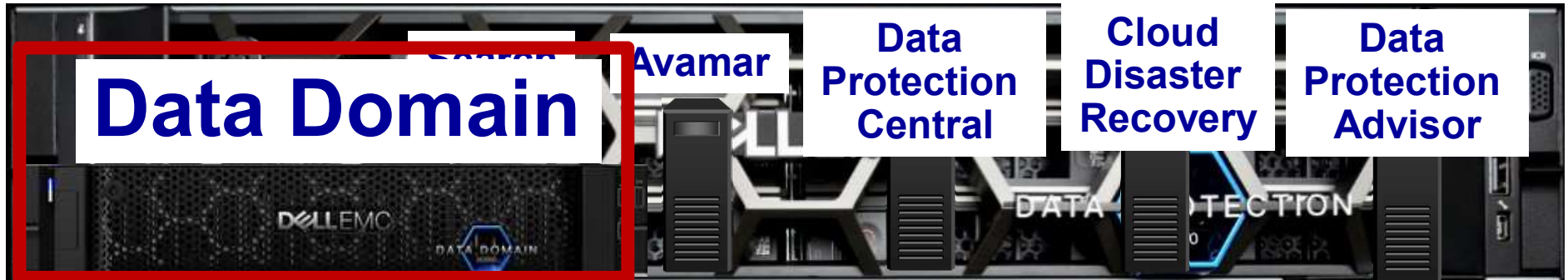
DP4400 Cloud Tier



DP4400 has all required hardware / configuration for DD CloudTier

DP4400 comes with 5TB license of DD CloudTier

DP4400 Cloud Tier



If we want to use more than 5TB of S3 storage, we need to purchase additional DD CloudTier license

DP4400 and **RecoverPoint for Virtual Machines**

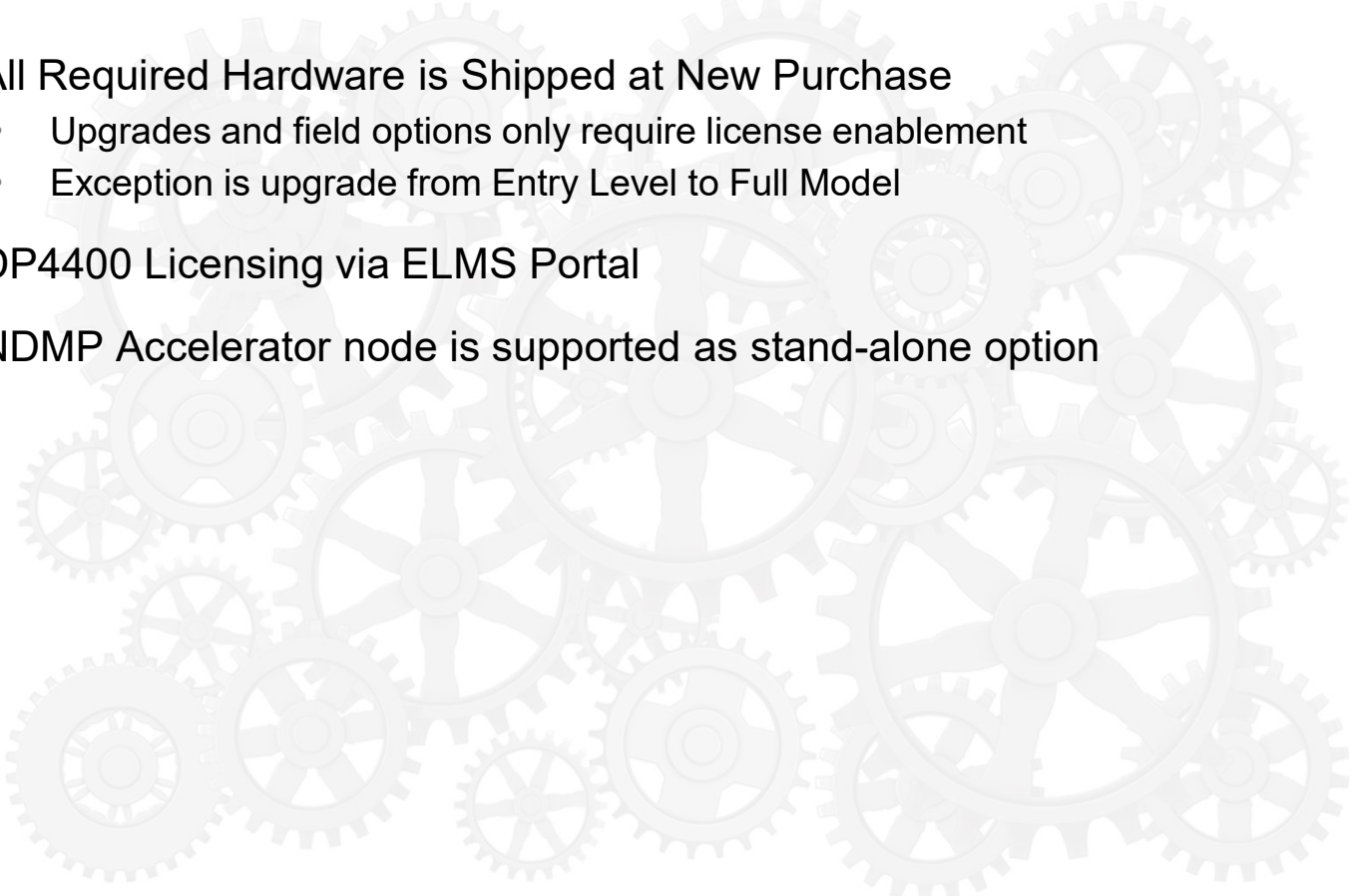
Every DP4400 has also free
5 RecoverPoint for Virtual Machine
licenses

DP4400 options summary

DP4400 Configuration Details

- Available in 12TB Increments as **Full Model**
 - 24TB, 36TB, 48TB, 60TB, 72TB, 84TB, 96TB
- Available in 4TB Increments as **Entry Model**
 - 24TB, 36TB, 48TB, 60TB, 72TB, 84TB, 96TB
- Capacity:
 - Any capacity point can be ordered from the factory
 - Can be upgraded to any supported capacity point in the field
- Cloud Tier and Cloud DR are Purchased Options
 - Factory shipped or field upgradable

DP4400 Configuration Details

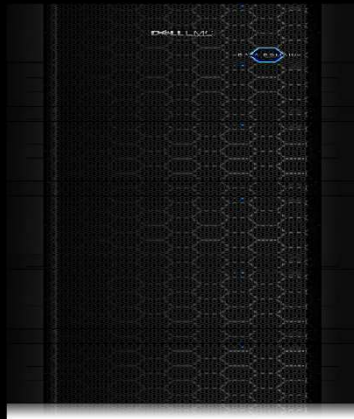
- All Required Hardware is Shipped at New Purchase
 - Upgrades and field options only require license enablement
 - Exception is upgrade from Entry Level to Full Model
 - DP4400 Licensing via ELMS Portal
 - NDMP Accelerator node is supported as stand-alone option
- 

IDPA family

Data Protection Portfolio



PROTECTION AND RECOVERY TO CLOUD



**PROTECTION
STORAGE**



**PROTECTION
SOFTWARE**



**PROTECTION
APPLIANCE**

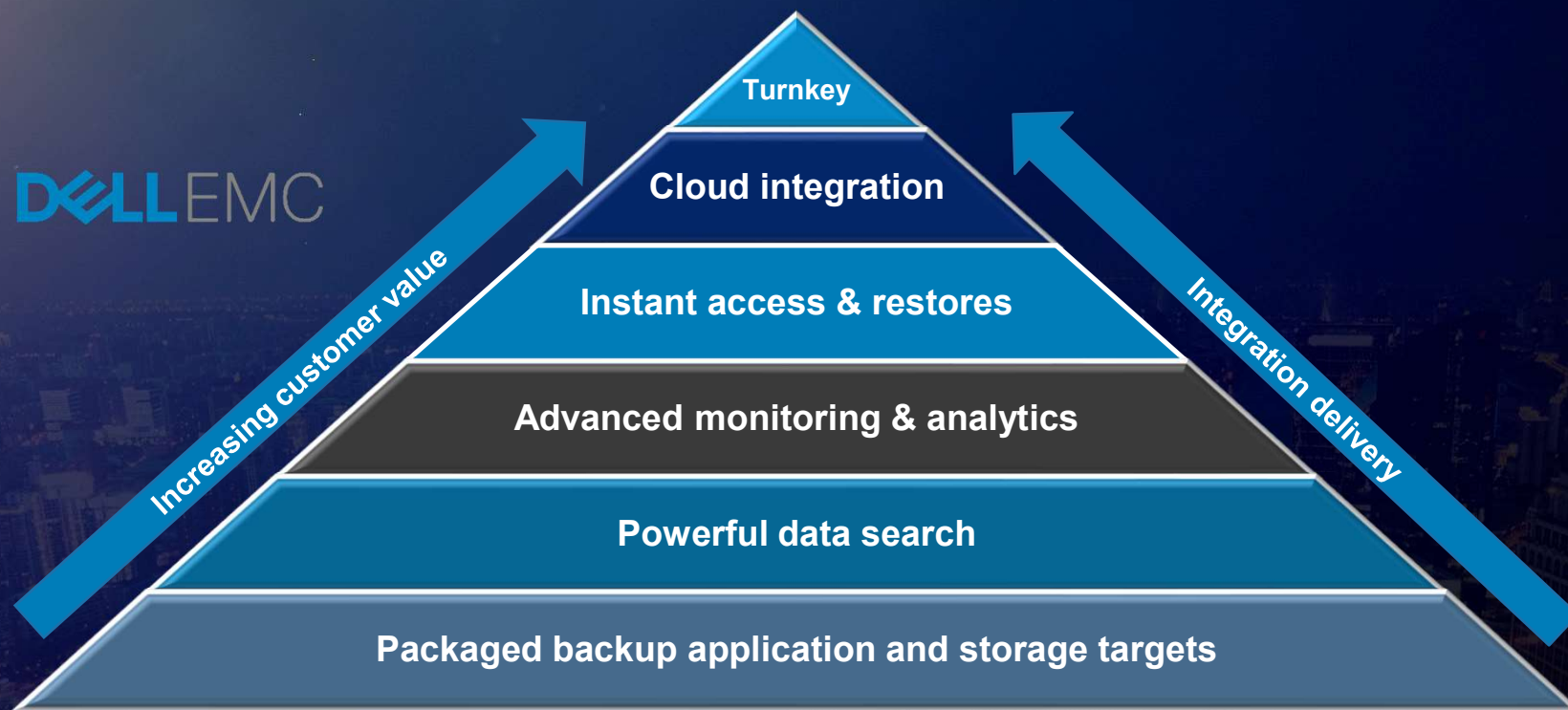
BEST OF BREED



INTEGRATED

Data protection lifecycle – Fully converged

DELL EMC



IDPA Product Portfolio

	SMALL ENTERPRISE	MIDSIZE ENTERPRISE		LARGE ENTERPRISE	
	DP4400	DP5300	DP5800	DP8300	DP8800
BACKUP INGEST	4-6 TB/hr	24 TB/hr	32 TB/hr	41 TB/hr	68 TB/hr
LOGICAL CAPACITY	240 TB to 4.8PB ¹ 720 TB to 14.4 PB ²	340 TB to 6.5 PB ¹	1.4 to 14.4 PB ¹ 4.2 to 43.2 PB ²	1.9 to 36 PB ¹ 5.7 to 108 PB ²	6.2 to 50 PB ¹ 18.6 to 150 PB ²
USABLE CAPACITY	8 to 96 TBu ¹ 24 to 288 TBu ²	34 to 130 TBu ¹	96 to 288 TBu ¹ Up to 864 TBu ²	192 to 720TBu ¹ Up to 2.16 PBu ²	624 TBu to 1 PBu ¹ Up to 3 PBu ²

¹ Total capacity on active tier only

² Total capacity with cloud tiering add-on for long-term retention



IDPA DP4400

Networking

DP4400 Network



SFP (optical) and RJ45 (copper) available
for all capacities, 8TB – 96TB

DP4400 Network



SFP (optical) and RJ45 (copper) available for all capacities, 8TB – 96TB

Both optical and copper auto-negotiate 1/10Gb

DP4400 Network



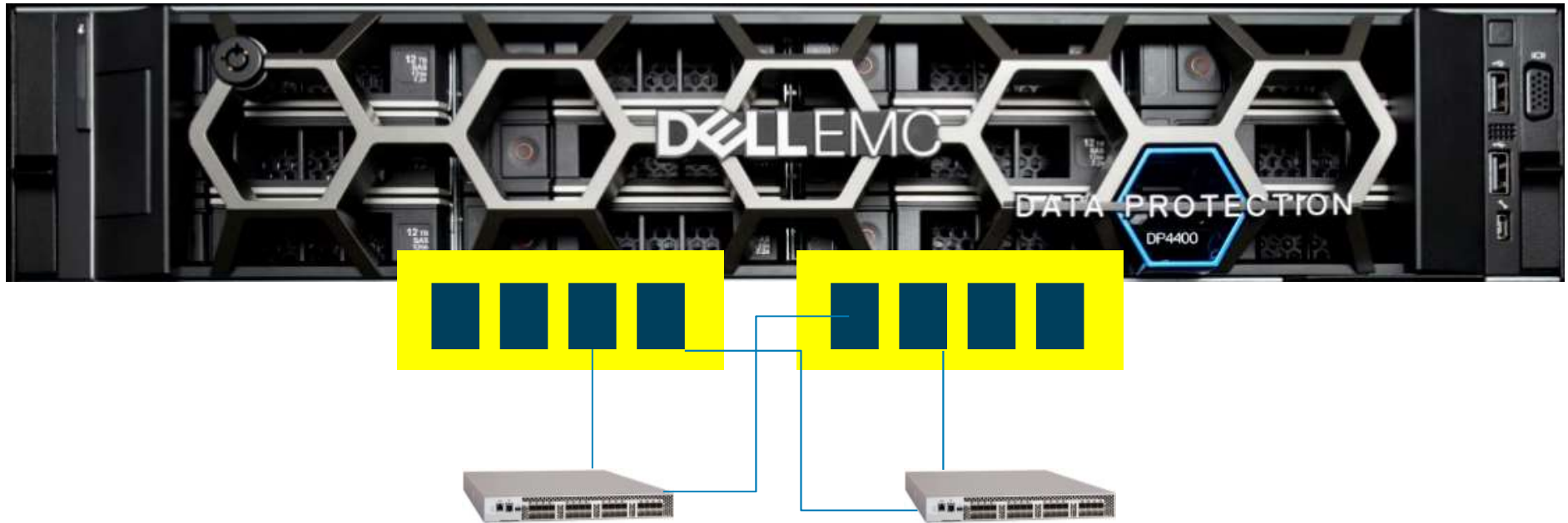
Each of 2 card has 4 ports

DP4400 Network



2 cards 10Gb SFP+ optical

DP4400 Network



Network connections
2 ports in each of the card is used

IDPA DP4400

NDMP option



DP4400 has great feature of backup NAS devices (Isilon, Unity, NFS, ZFS)

Huge FAST

With almost no usage of network

No load of NAS device

The architecture is very simple



Protected NAS storage
(Unity, Isilon, NetApp, ZFS)



NDMP Accelerator
(physical or VM)



DP4400

The architecture is very simple

DP4400 reads only new files from NAS storage and send to NDMP accelerator



Protected NAS storage
(Unity, Isilon, NetApp, ZFS)



NDMP Accelerator
(physical or VM)



DP4400

The architecture is very simple

This is very fast and load of NAS device process because we read very few data (only new ones)

DP4400 reads only new files from NAS storage and send to NDMP accelerator



Protected NAS storage
(Unity, Isilon, NetApp, ZFS)

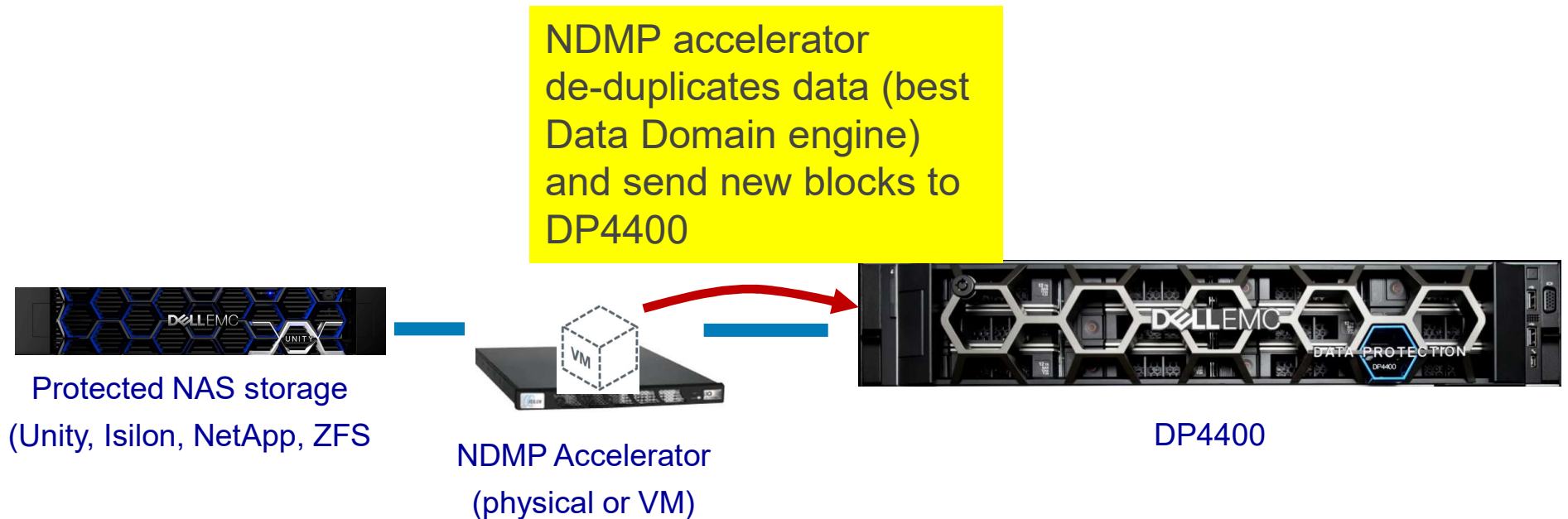


NDMP Accelerator
(physical or VM)



DP4400

The architecture is very simple



The architecture is very simple

On DP4440 we have full backup (though we have read delta).



Protected NAS storage
(Unity, Isilon, NetApp, ZFS)



NDMP Accelerator
(physical or VM)



DP4440

The architecture is very simple

Huge fast
No load of NAS
Always FULL BACKUP



Protected NAS storage
(Unity, Isilon, NetApp, ZFS)



NDMP Accelerator
(physical or VM)



DP4400

Here are results of one of my customers

Avamar Administrator - Activity (/)

Actions Tools Navigation Help

Activity Monitor | Activity Summary | Activity Report | Replication Report

Filtered by
 Status: All Statuses Group: All Groups Client: All Clients
 Type: All Types Plug-in: All Plugins Domain: All Domains
 Source: All Sources Container: All Containers

Session									
Status	Error Code	Start Time (CEST)	Elapsed	End Time (CEST)	Type	Server	Progress Bytes	New Bytes	Client
✓	Completed	2015-08-16 22:00	00h:56m:09s	2015-08-16 22:58	Scheduled Backup	DD - dd670	6,2 TB	<0.05%	nasvnx01
✓	Completed	2015-08-15 22:00	00h:34m:15s	2015-08-15 22:34	Scheduled Backup	DD - dd670	6,2 TB	<0.05%	nasvnx01

Full backup size
(protected data that we
can restore)

Increased data
on medium
(data sent from accelerator to
medium)

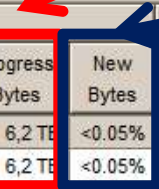
Avamar Administrator - Activity (/)

Actions Tools Navigation Help

Activity Monitor | Activity Summary | Activity Report | Replication Report

Filtered by
 Status: All Statuses Group: All Groups Client: All Clients
 Type: All Types Plug-in: All Plugins Domain: All Domains
 Source: All Sources Container: All Containers

Session									
Status	Error Code	Start Time (CEST)	Elapsed	End Time (CEST)	Type	Server	Progress Bytes	New Bytes	Client
✓	Completed	2015-08-07 13:27	00h:59m:23s	2015-08-07 14:26	On-Demand Backup	DD - dd670.poc.local	6,2 TB	<0.05%	



Avamar Administrator - Activity (/)

Actions Tools Navigation Help

Activity Monitor | Activity Summary | Activity Report | Replication Report

Filtered by
 Status: All Statuses Group: All Groups Client: All Clients
 Type: All Types Plug-in: All Plugins Domain: All Domains

```

Info <5156>: Backup #3 timestamp 2015-08-07 12:26:34, 20,118,434 files, 20,807 directories, 6,380 GB (3 files, 2,000 KB, 0.00% new)
Info <7539>: Label "Group-1438946844716#1" none backup backup type: synthetic full
Info <6083>: Backed-up 6,380 GB in 59.01 minutes: 6,486 GB/hour (20,454,440 files/hour)
Info <5587>: Updating cache files in /usr/local/avamar/var/nas
Info <5069>: - Writing cache file "/usr/local/avamar/var/nas /root_vdm_28_FS_POC_BACKUP_RESTORE_p_cache.dat"
Info <5546>: Cache update complete /usr/local/avamar/var/nas /root_vdm_28_FS_POC_BACKUP_RESTORE_p_cache.dat (48.0 MiB of 618 MiB max)
Info <7883>: Finished at 2015-08-07 12:26:34 UTC, Elapsed time: 0000h:59m:00s
Info <8468>: Sending wrapup message to parent
Info <5314>: Command completed (exit code 0: success)
  
```

Full backup size
(protected data that we
can restore)

Increased data
to medium

to

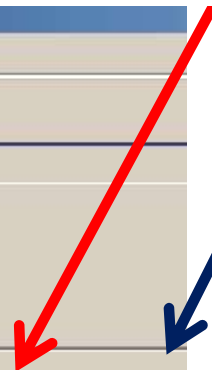
Avamar Administrator - Activity (/)

Actions Tools Navigation Help

Activity Monitor | Activity Summary | Activity Report | Replication Report

Filtered by
 Status: All Statuses Group: All Groups Client: All Clients
 Type: All Types Plug-in: All Plugins Domain: All Domains
 Source: All Sources Container: All Containers

Session								
Status	Error Code	Start Time (CEST)	Elapsed	End Time (CEST)	Type	Server	Progress Bytes	New Bytes
<input checked="" type="checkbox"/>	Completed	2015-08-07 13:27	00h:59m:23s	2015-08-07 14:26	On-Demand Backup	DD - dd670.poc.local	6,2 TB	<0.05%



Avamar Administrator - Activity (/)

Actions Tools Navigation Help

Activity Monitor | Activity Summary | Activity Report | Replication Report

Filtered by
 Status: All Statuses Group: All Groups Client: All Clients
 Type: All Types Plug-in: All Plugins Domain: All Domains
 Source: All Sources Container: All Containers

Status	Error Code	Start Time (CEST)	Elapsed	
Completed		2015-08-16 22:00	00h:56m:09s	2015-08-16 22:00
Completed		2015-08-15 22:00	00h:34m:15s	2015-08-15 22:00

**20 mln of files
6TB of NAS**

Full backup size
(protected data that we can restore)

Increased data on medium
(data sent from accelerator to medium)

Avamar Administrator - Activity (/)

Actions Tools Navigation Help

Activity Monitor | Activity Summary | Activity Report

Filtered by
 Status: All Statuses Group: All Groups Client: All Clients
 Type: All Types Plug-in: All Plugins Domain: All Domains
 Source: All Sources Container: All Containers

Status	Error Code	Start Time (CEST)	Elapsed	(CEST)	Type	Server	Bytes	Bytes
Completed		2015-08-07 13:27	00h:59m:23s	2015-08-07 14:26	On-Demand Backup	DD - dd670.poc.local	6,2 TB	<0.05%

FULL BACKUP in 1h!



DP4400

DP4400 has all licenses and hardware
to backup NAS devices

We only need to buy

- Hardware version of NDMP Accelerator
- or
- Implement NDMP Accelerator as VM (take care about requirements)

The power off

IDPA DP4400

Single console

Browser: Data Protection Central x | Not secure | https://10.7.81.92/#/Dashboards | administrator@dpc.local

DELL EMC Data Protection Central

administrator@dpc.local

Dashboard

Exception Dashboard

ADD DASHBOARD | EDIT | DELETE | FULL SCREEN

Backup Activities

Group: Arizona +9

System Activity | Backup

3 Failed | 0 Completed With Exceptions

Capacity

Group: New York +5

Capacity | Summary

10.92 % Capacity Utilized | 0 Systems Crossed Capacity Threshold

Capacity | Top 3 Highest Utilized Systems

ave7-5-2.sddc.local	44.46% Used 31.23 GB of 56.23 GB Available
ave7-5-3.sddc.local	42.15% Used 32.53 GB of 56.23 GB Available
ave7-5-1.sddc.local	33.08% Used 37.63 GB of 56.23 GB Available

Health

Group: Arizona +12

Health | Unhealthy Systems

2 Unhealthy | 0 Not Reporting

Alerts

Alerts | Summary

1 | 2

Replication Activities

System Activity | Replication

0 | 0

ALL AVAILABLE

General view

ALL AVAILABLE

- Dashboard
- Health
 - Systems
 - Alerts
 - Capacity
- Activities
 - Systems**
 - Audit
- System Management
- Search and Recovery
- Reports

Activities > Systems ALLTIME

System	Activity Type	Status	System Name	Policy Name	Date Started	Date Ended
AV Avamar	Backup	Completed	AVE7-5-2.SDDC.LOCAL	/clients/vcenter.sddc.local/Virtual...	09/27/2017 09:00:01	09/27/2017 09:04:56
AV Avamar	Backup	Completed	AVE7-5-3.SDDC.LOCAL	/clients/DailyWindowsClient	09/27/2017 04:00:00	09/27/2017 04:10:35
AV Avamar	Backup	Completed	AVE7-5-1.SDDC.LOCAL	/clients/vcenter.sddc.local/Virtual...	09/27/2017 03:00:00	09/27/2017 03:05:32
AV Avamar	Backup	Completed	AVE7-5-1.SDDC.LOCAL	/clients/WindowsGroup	09/27/2017 03:00:00	09/27/2017 03:05:48
AV Avamar	Backup	Failed	AVE7-5-1.SDDC.LOCAL	/Default Group	09/26/2017 23:00:00	09/26/2017 23:28:23
AV Avamar	Backup	Failed	AVE7-5-2.SDDC.LOCAL	/Default Group	09/26/2017 23:00:00	09/26/2017 23:35:44
AV Avamar	Backup	Failed	AVE7-5-3.SDDC.LOCAL	/Default Group	09/26/2017 23:00:00	09/26/2017 23:32:39
AV Avamar	Backup	Completed	AVE7-5-2.SDDC.LOCAL	/clients/vcenter.sddc.local/Virtual...	09/26/2017 18:00:01	09/26/2017 18:02:20
AV Avamar	Backup	Completed	AVE7-5-3.SDDC.LOCAL	/clients/DailyWindowsClient	09/26/2017 16:00:00	09/26/2017 16:04:52
AV Avamar	Backup	Completed	AVE7-5-1.SDDC.LOCAL	/clients/vcenter.sddc.local/Virtual...	09/26/2017 15:00:00	09/26/2017 15:03:33
AV Avamar	Backup	Completed	AVE7-5-1.SDDC.LOCAL	/clients/WindowsGroup	09/26/2017 15:00:00	09/26/2017 15:04:17
AV Avamar	Backup	Completed	AVE7-5-2.SDDC.LOCAL	/clients/vcenter.sddc.local/Virtual...	09/26/2017 09:34:39	09/26/2017 09:36:59

System Name AVE7-5-1.SDDC.LOCAL AV

Status Failed

Policy Name /Default Group

System Type Avamar

Policy Type Scheduled Group

Schedule /Default Schedule

Clients

- Clients Failed 2
- Clients Active 0
- Clients Completed 4
- Clients With Exceptions 1
- Clients Pending 0
- Number of Clients 7

Targets

Target Type Avamar

Target Name ave7-5-1.sddc.local

Backup info

Data Protection Central Passport 2 Not secure https://10.7.81.92/#/monitor/Capacity

DELL EMC Data Protection Central System Filter administrator@dpc.local

Dashboard Health Health > Capacity System Name ddve

System	System Name	Utilization	Usage	Available	Total Capacity
AV Avamar	AVE7-5-1	33.08%	18.60 GB	37.63 GB	56.23 GB
AV Avamar	AVE7-5-2	44.46%	25.00 GB	31.23 GB	56.23 GB
AV Avamar	AVE7-5-3	42.15%	23.70 GB	32.53 GB	56.23 GB
DD Data Domain	ddve	5.12%	29.21 GB	541.49 GB	570.69 GB

1 - 4 of 4

System Name ddve
Health summary
 Last update 09/27/2017 11:15:25
Capacity
 Total Capacity 570.69 GB
 Usage 29.21 GB (5.12 %)
 Available 541.49 GB
MTrees
 /data/coll/avamar-1493417614
 Usage 266.4 GB
 Status Read Write
 /data/coll/avamar-1493418561
 Usage 0 GB
 Status Read Write
 /data/coll/avamar-1493419207
 Usage 30 GB
 Status Read Write

Media info

- Dashboard
- Health
 - Systems
 - Alerts
 - Capacity
- Activities
 - Systems
 - Audit
- System Management
- Search and Recovery
- Reports

System Name: AVE7-5-1.SDDC.LOCAL Domain Filters

Policies Retentions Schedules Datasets

+ ADD EDIT DELETE BACKUP NOW REFRESH

Domain	Name	Enabled	Encryption Type	Client Count	Schedule	Retention	Dataset
/	Default Group	true	HIGH	7	Default Schedule	Default Retention	Default Dataset
/	Default Proxy Group	false	HIGH	3	Default Schedule	Default Retention	Default Dataset
/clients	WindowsGroup	true	HIGH	2	Daily	WeeklyRetention	WindowsLocal
/clients/vcenter.sddc.local	Default Virtual Machine Gr...	false	HIGH	2	Default Schedule	Default Retention	VMware Image Dataset
/clients/vcenter.sddc.local/Virtual...	VMBackups-ave7-5-1	true	HIGH	2	Daily	WeeklyRetention	VMware Image Dataset

Policies

DELLEMC Data Protection Central administrator@dpcc.local

System Name: AVE7-5-1.SDDC.LOCAL

Domain Filters

REFRESH

Edit Policy

- 1 Information
- 2 Clients (Optional)
- 3 Proxies (Optional)

Information

Name * VMBackups-ave7-5-1

Domain /clients/vcenter.sddc.local/VirtualMachines

Enabled

Dataset * /VMware Image Dataset

Schedule * /clients/Daily

Retention * /clients/WeeklyRetention

1 - 3 of 3

Editing policies

Browser window: Data Protection Central | Not secure | https://10.7.81.92/#/manage/ViewClients:elementalId=5995cecff8635510bc72f156

Navigation: administrator@dpc.local

AVE7-5-3

View Clients

Client Name	Domain	Last Backup	OS Type	Client Version
dp-search	/clients	09/26/2017 11:04 PM	Linux	7.4.100-242
winclient5.sddc.local	/clients	09/27/2017 4:05 PM	Windows 7 Enterprise Edition Service Pack 1	7.5.100-155
winclient6.sddc.local	/clients	09/27/2017 4:05 PM	Windows 7 Enterprise Edition Service Pack 1	7.5.100-155
avamar-1493418561	/MC_SYSTEM			
ave7-5-3.sddc.local	/MC_SYSTEM		Linux	7.5.100-155

1 - 5 of 5

Client Name winclient6.sddc.local AV

System Type

Domain /clients

Activated 09/27/2017 10:06 AM

Last Backup 09/27/2017 4:05 PM

Last Check-in 09/27/2017 4:00 PM

Last Contact 09/03/2017 3:11 PM

OS Type Windows 7 Enterprise Edition Service Pack 1

Client Version 7.5.100-155

Protected By

DailyWindowsClient
Default Group

Description

winclient6.sddc.local

[BACKUPS](#)

View of proceed environment

Report Card

Last Week: 9/25/17 14:41 - 10/2/17 14:41
EMC Avamar

Node	25 Sep	26 Sep	27 Sep	28 Sep	29 Sep	30 Sep	1 Oct
ave7-5-1.sddc.local	Red	Red	Red	Red	Red	Red	Red
ave7-5-2.sddc.local	Red	Red	Red	Red	Red	Red	Red
ave7-5-3.sddc.local	Red	Red	Red	Red	Red	Red	Red
dp-search	Green	Green	Green	Green	Green	Green	Green
mq-0001	Green	Green	Green	Red	Green	Green	Green
mq-0002	Green	Green	Green	Red	Green	Green	Green
mq-0003	Green	Green	Green	Green	Green	Green	Green
mq-0004	Green	Green	Green	Green	Green	Green	Green
vcenter.sddc.local	Red	Red	Red	Red	Red	Red	Red
winclient1.sddc.local	Green	Green	Green	Green	Green	Green	Green
winclient2.sddc.local	Green	Green	Green	Green	Green	Green	Green
winclient3.sddc.local	Green	Green	Green	Green	Green	Green	Green
winclient4.sddc.local	Green	Green	Green	Green	Green	Green	Green
winclient5.sddc.local	Green	Green	Green	Green	Green	Green	Green
winclient6.sddc.local	Green	Green	Green	Green	Green	Green	Green

Reports

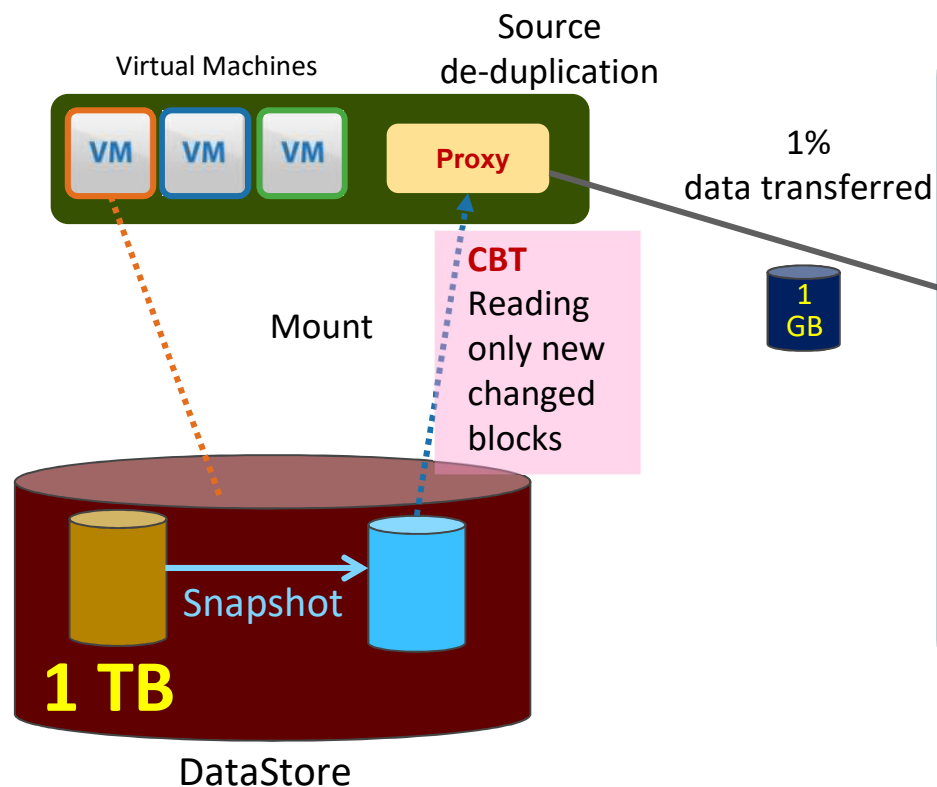
hotel receipt Search

Add | Remove Filters View Jobs
Active: Index

Filters	
<input checked="" type="checkbox"/> Index	Choose...
<input type="checkbox"/> Platform	▼ All
<input type="checkbox"/> Server	▼ All
<input type="checkbox"/> Client	▼ All
<input type="checkbox"/> File Type	Use a comma (',') to separate file types
<input type="checkbox"/> File Name	▼ Contains Type here
<input type="checkbox"/> Size (in KB)	Min: Max:
<input type="checkbox"/> Last Modification Date	Start: yyyy-MM-dd End: yyyy-MM-dd
<input type="checkbox"/> Backup Date	Start: yyyy-MM-dd End: yyyy-MM-dd
<input type="checkbox"/> Location	Type location here
<input type="checkbox"/> Unindexable Content	▼ All

Finding any phrase in backed up documents (GDPR)

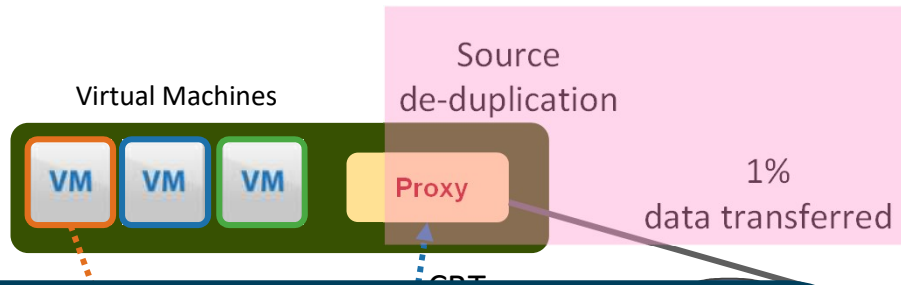
DP4400 – Minimal disk read



Reading only
changed data

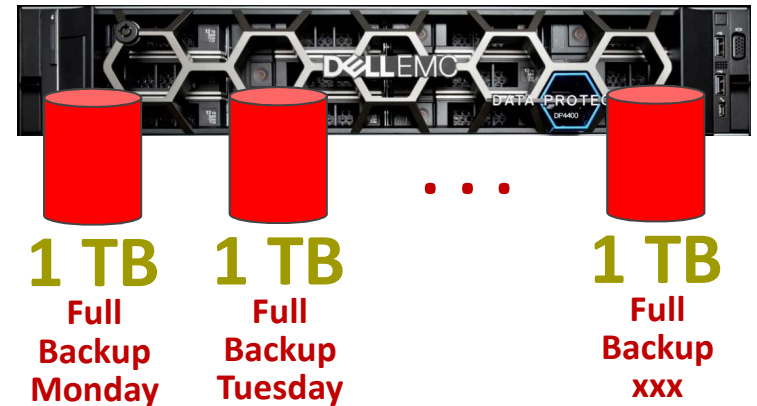
- No load of disk system
- No load of VMware environment
- Fast backups

DP4400 – Source de-duplication - the smallest block

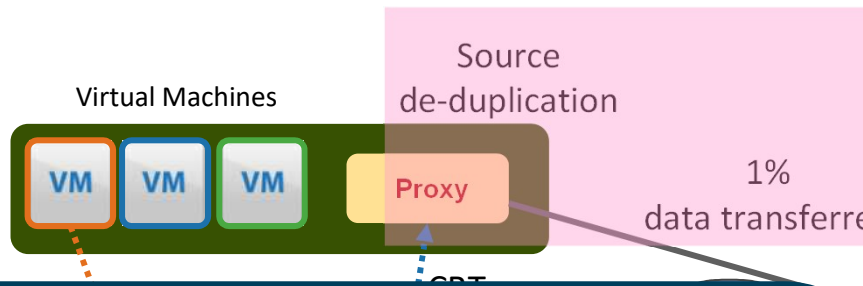


Source de-duplication

- The smallest variable block (4K – 12K)
- Minimal data transfer over the network



DP4400 – Source de-duplication - the smallest block

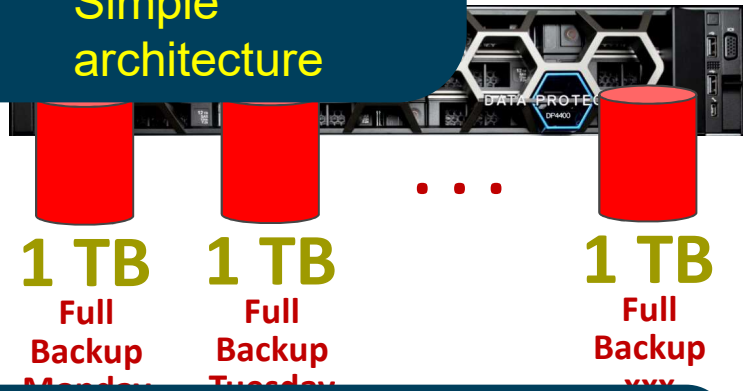


Client Direct

- No additional Media Servers
- Simple architecture

Source de-duplication

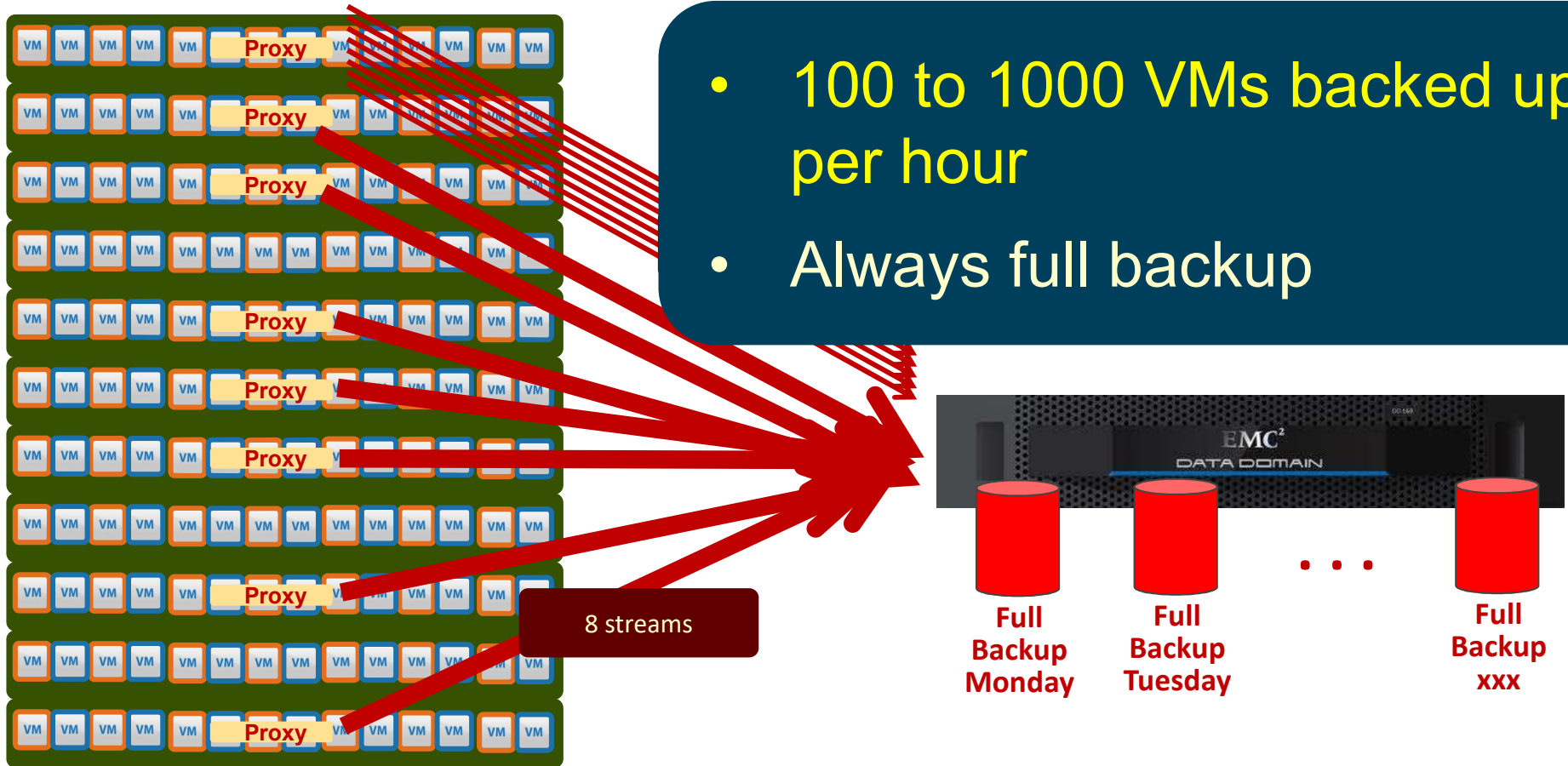
- Minimal cost of network
- Minimal storage required
- Minimal pipe for replication



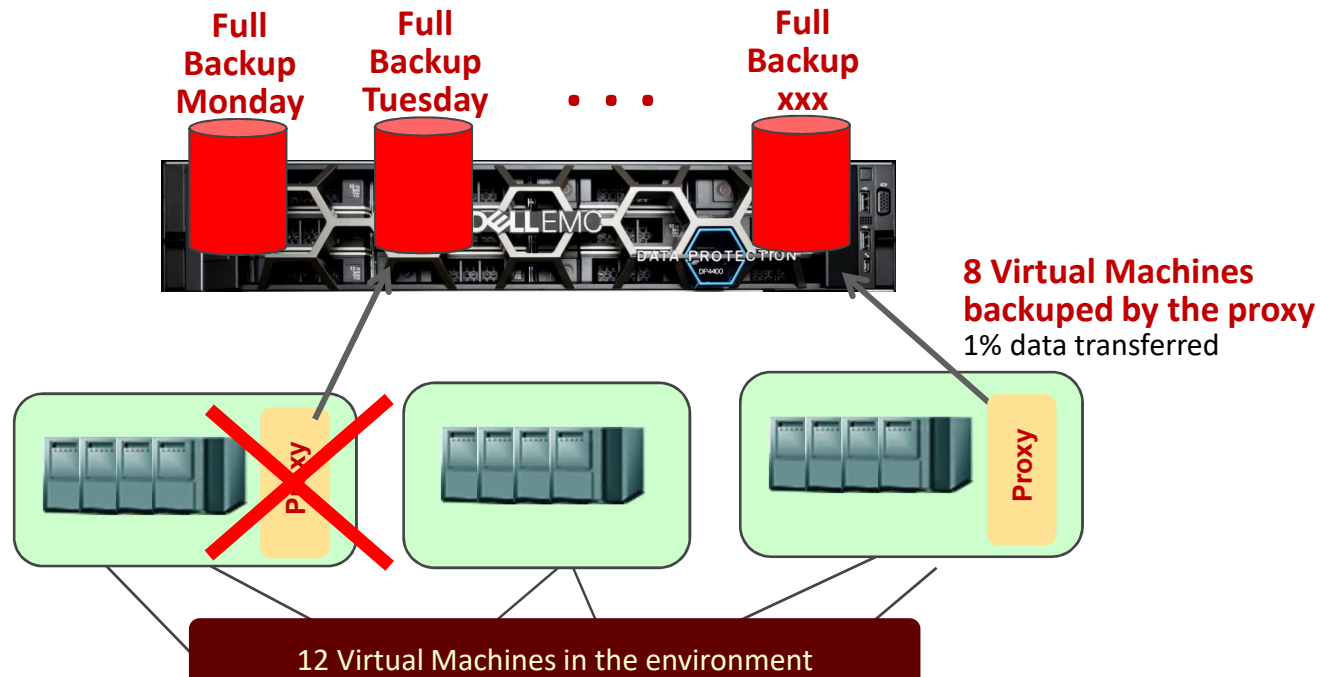
- Cost effective
- Simple management
- Fast

DP4400 - huge performance

- 100 to 1000 VMs backed up per hour
- Always full backup



DP4400 VMware – Load balancing



DP4400 automatically provides load balancing among all available proxy Virtual Machines

DP4400 VMware – **Flexible / automated**

- DP4400 automatically chooses best / fastest proxy for backup / restore
- We can add / remove proxies any time -> DP4400 will adjust its behavior immediately for the new environment
- Adding proxy is 0 time process
 - Clicking the button in DP4400
 - Avamar deploys proxy DP4400

DP4400 VMware Backup

Self-backup infrastructure

Video describing
self-backup infrastructure:

<https://youtu.be/iIXs1CzqSil>

Full presentation about self-backup infrastructure:

<https://inside.emc.com/docs/DOC-169258>

DP4400 Dynamic Policies



- Backup admin defines the policies for newly created Virtual Machines
- Newly created Virtual Machines are automatically assigned to policies
- Deleted Virtual Machines are no longer backed up, but we can still restore them
- VMware environment self backups
- Higher SLA / full automation

Self-backed up environment

DP4400 Dynamic Policies

- Examples of Avamar policies:
 - Backup **every 1h** all Virtual Machines that have in the name phrase **SQL or Oracle** and keep them for a **week**
 - Backup **once per day** all Virtual Machines that have in the name phrase **App** and keep them for a **month**
 - Backup **once per day all other Virtual Machines** and keep them for a **week**

Self-backed up environment

DP4400 Dynamic Policies

- Exa

-

-

-

-

-

-

Or we can define any other rule

se

est

for

Self-backed up environment

DP4400 Dynamic Policies

- After implementing policies, VMware and Backup
 - Backup administrators
 - VMware administratordon't have to perform any additional tasks!!!
- All Virtual Machines are backed up automatically

Self-backed up environment

DP4400 Dynamic Policies

- Every Virtual Machine will be backed-up
 - If it was created a moment ago or a year ago
 - If it was created locally or at remote locations
 - If it was created by person A or person B
- Whatever happens, we have backup of all VMs!

Self-backed up environment

DP4400 Dynamic Policies

- If Virtual Machine is deleted
 - Virtual Machines is no longer backed-up (VM does not exist)
 - › Automatically removed from backup policies
 - We can still recover the Virtual Machine

Self-backed up environment

DP4400 Dynamic Policies

- If Vi

—

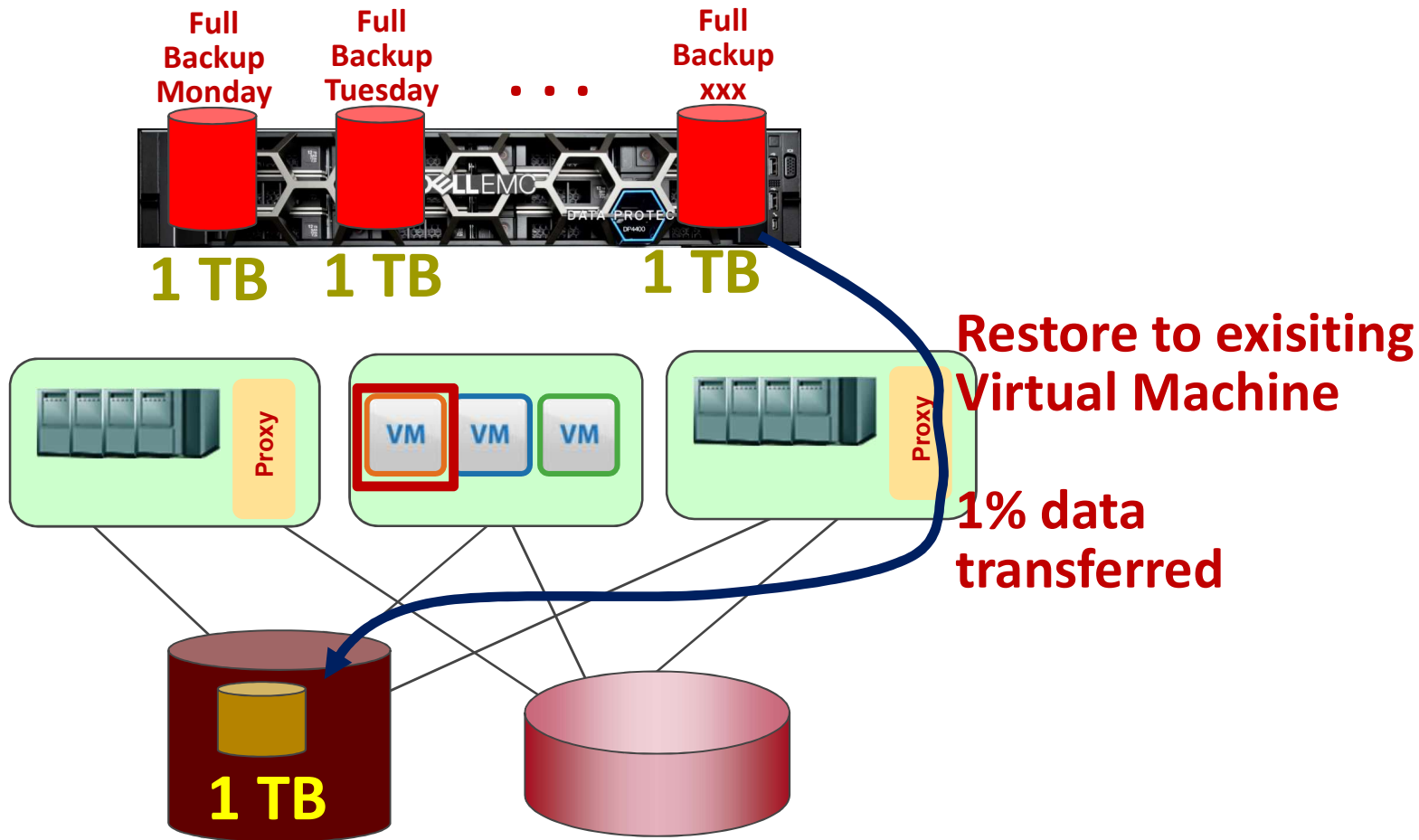
—

100% SLA!!!

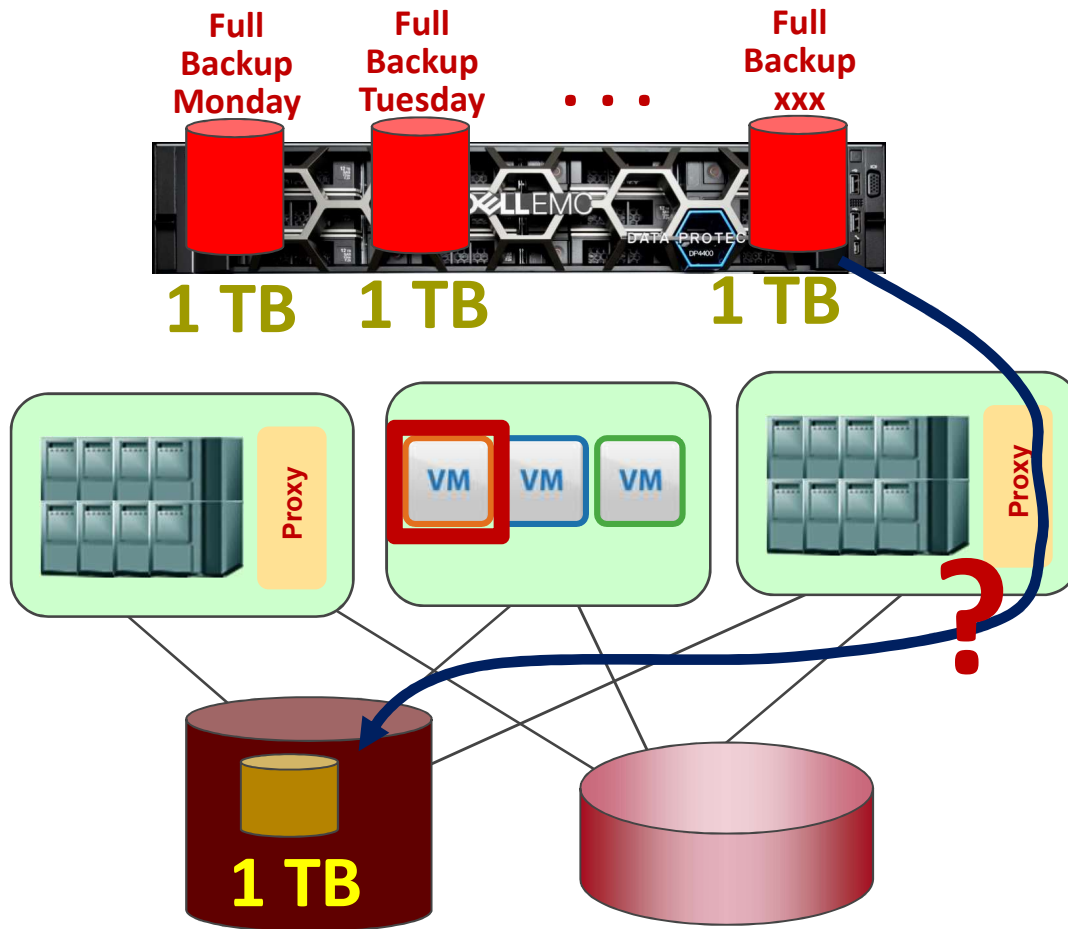
DP4400 VMware Backup

Restore option

DP4400 VMware – Immediate repairing



DP4400 VMware – Backup as production!



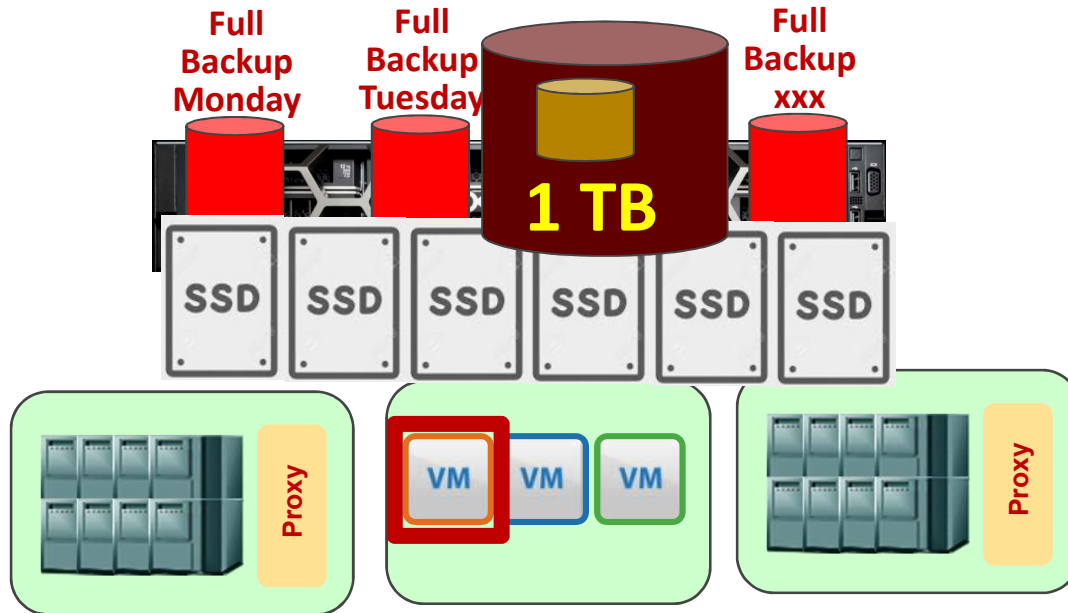
We need to immediately access any of some Virtual Machines backed-up on Data Domain

- Tests
- Disaster Recovery

Do we need to restore?

- Time
- Resources (disk / network)

DP4400 VMware – Backup as production!



We can start our Virtual Machines directly from DP4400 with 1000 IOps

DP4400 VMware

Single file restore

- Recovery without vCenter
- Recovery between vCenter
- Single file recovery from VMware image backup
 - VMware / NetWorker admin
 - Owner of Virtual Machine
- Searching files in the VMware image backup

DP4400 VMware **Single file restore**

- Recovery of single file
- Recovery by application owner via browser GUI
- Recovery from protected machine
- Automated testing of backupped VMs
- ...

Laptop backup capabilities

Laptops / PCs

DP4400 for backup/recovery laptops

- Laptop can be anywhere
 - GSM
 - WiFi
 - Local
- Almost no data transferred during the backup
 - even 0,01% (0,0001 of backup data) sent during the backup

Laptops / PCs

DP4400 for backup/recovery laptops

avamar72a Avamar Administrator - Activity (/)

Actions Tools VMware Navigation Help

Activity Monitor | Activity Summary | Activity Report | Replication Report

Status Type Source Group Plug-in Client Domain Container DD

All Statuses All Types All Sources All Groups All Plugins All Clients All Domains All Containers All Systems

Session							
Status	...	Start Time (C...	Elapsed	Server	Progress Bytes	New Bytes	Client
<input checked="" type="checkbox"/> Completed		2015-12-22 12:31	00h:03m:26s	DD - 10.64.123.58	71,4 GB	<0.05%	posaolkowdl4c.corp.emc.com

Laptops / PCs

DP4400 for backup/recovery laptops

The screenshot displays the Avamar Administrator interface. On the left, the 'Activity Monitor' tab is active, showing a table of backup activities. The table has columns for Status, Type, Source, and Group. A single entry is visible: 'Completed' status, '2015-' as the source, and a dropdown menu for the group.

Status	Type	Source	Gr
Completed		2015-	

The main window is titled 'Backup Statistics' and shows a detailed view of a backup. The 'Details' tab is selected, displaying a table of properties and their values. The 'bytes_modified_sent' property is highlighted with a red box.

Property	Value
backup_label	GDD_Laptop-1450783877306
backup_number	11
bytes_excluded	0
bytes_modified	166011
bytes_modified_not_sent	0
bytes_modified_sent	166011
bytes_new	166011
bytes_overhead	48072
bytes_scanned	76642541527
bytes_skipped	0
cid	ad1d013fb94ccb78a8eda9d13d71b2c46d5ed851
client_name	posaolkowdl4c.corp.emc.com
client_os	Windows 7 Enterprise Edition Service Pack 1 64-bit
client_ver	7.2.101-31
completed_date	2015-12-22
completed_time	11:34:45.309
completed_ts	2015-12-22 11:34:45.309

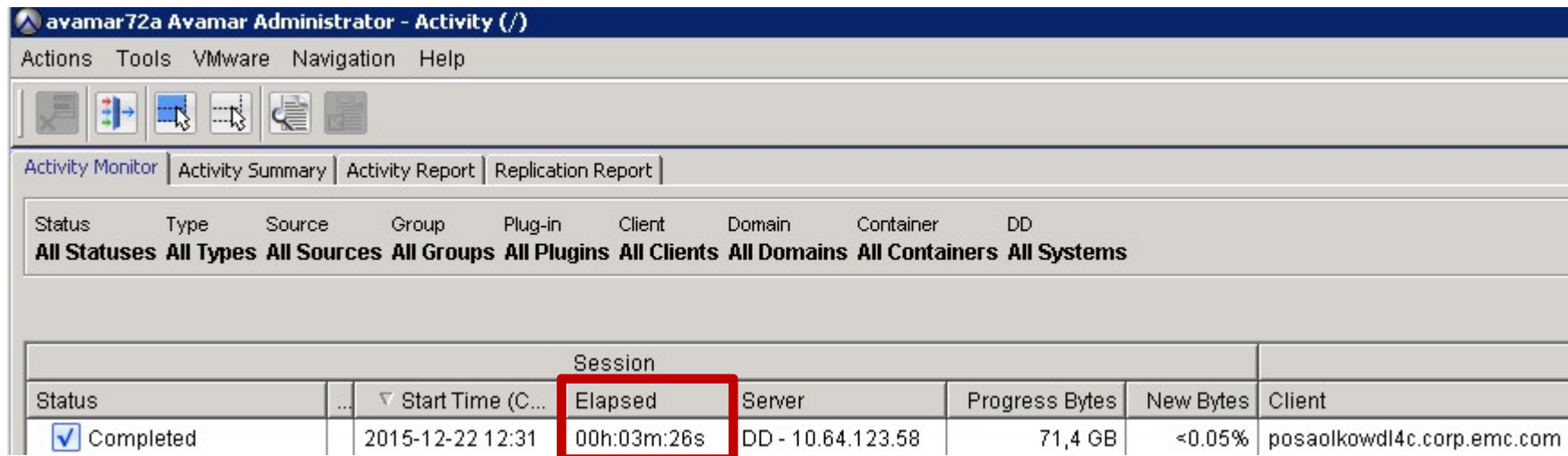
At the bottom of the 'Backup Statistics' window, there are two buttons: 'Export...' and 'Close'.

On the right side of the screenshot, there is a partial view of another window or panel showing the 'Client' field with the value 'posaolkowdl4c.corp.emc.com'.

Laptops / PCs

DP4400 for backup/recovery laptops

- Immediate backup
 - 1 – 20 minutes to finish the laptop backup



The screenshot shows the Avamar Administrator interface. The title bar reads "avamar72a Avamar Administrator - Activity (/)". Below the title bar is a menu bar with "Actions", "Tools", "VMware", "Navigation", and "Help". A toolbar contains several icons. Below the toolbar are tabs for "Activity Monitor", "Activity Summary", "Activity Report", and "Replication Report". The main area displays a table with columns: Status, Type, Source, Group, Plug-in, Client, Domain, Container, and DD. The table is filtered to show "All Statuses", "All Types", "All Sources", "All Groups", "All Plugins", "All Clients", "All Domains", "All Containers", and "All Systems". A sub-table titled "Session" is visible, with columns: Status, Start Time (C...), Elapsed, Server, Progress Bytes, New Bytes, and Client. The "Elapsed" column value "00h:03m:26s" is highlighted with a red box.

Status	Type	Source	Group	Plug-in	Client	Domain	Container	DD
<input checked="" type="checkbox"/> Completed								

Status	Start Time (C...)	Elapsed	Server	Progress Bytes	New Bytes	Client
<input checked="" type="checkbox"/>	2015-12-22 12:31	00h:03m:26s	DD - 10.64.123.58	71,4 GB	<0.05%	posaolkowdl4c.corp.emc.com

Laptops / PCs

DP4400 for backup/recovery laptops

- No load of protected laptop/PCS
 - No (minimal) reading data from laptop during backup

Laptops / PCs

DP4400 for backup/recovery laptops

- Immediate restore

avamar.labd.local Avamar Administrator - Activity (/)

Actions Tools VMware Navigation Help

Activity Monitor Activity Summary Activity Report Replication Report DR Activity Monitor

Status	Type	Source	Group	Plug-in	Client	Domain	Container	DD
All Statuses	All Types	All Sources	All Groups	All Plugins	All Clients	All Domains	All Containers	All Systems

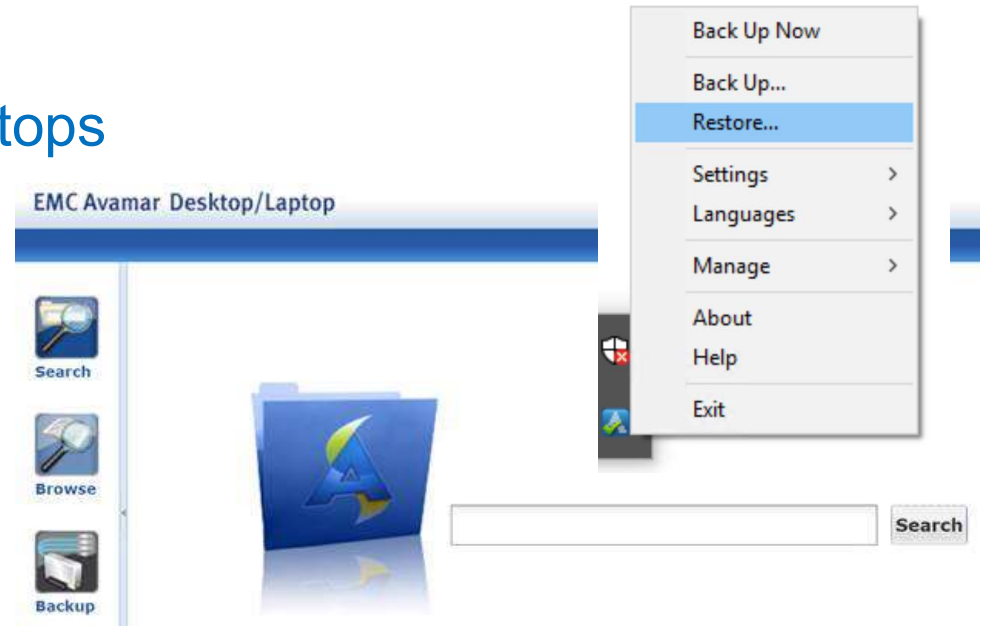
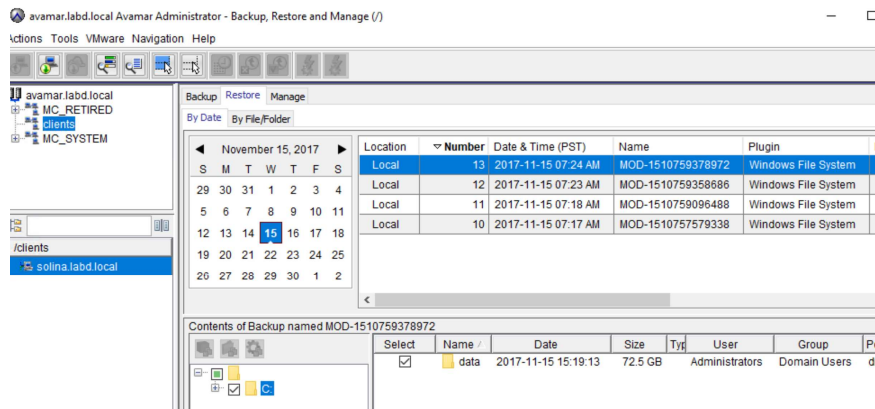
Session									
Status	Error Code	Start Time (PST)	Elapsed	End Time (PST)	Type	Server	Progress Bytes	New Bytes	Client
<input checked="" type="checkbox"/> Completed		2017-11-15 07:25	00h:00m:17s	🕒 2017-11-15 07:25	Restore	DD - dda.labd.local	72.5 GB	<0.05%	solina.labd.local

Laptops / PCs

DP4400 for backup/recovery laptops

- Restore by:

Avamar admin

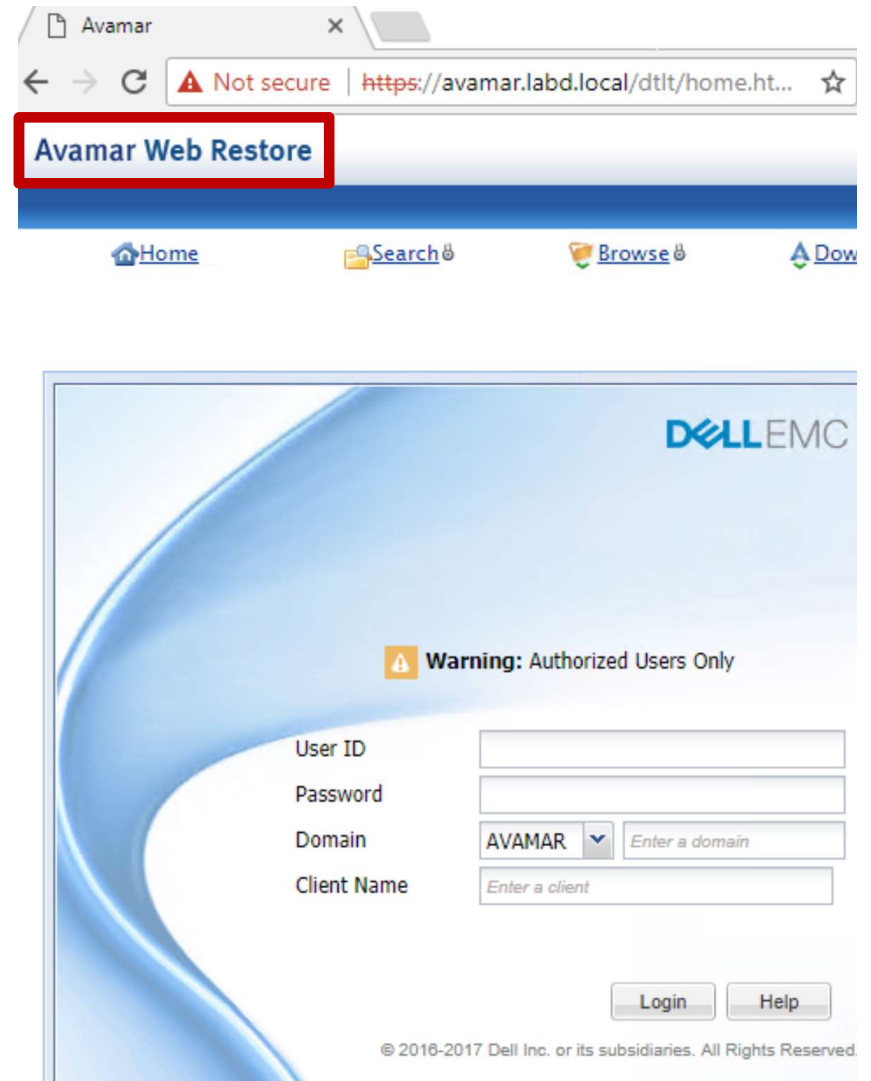


User

Laptops / PCs

DP4400 for backup/recovery laptops

- Access to data from any device
 - Mobile
 - Laptop



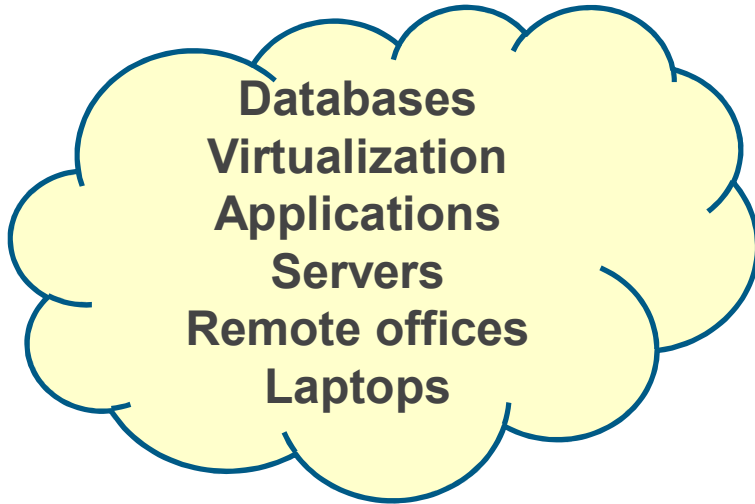
Laptops / PCs

DP4400 for backup/recovery laptops

- All backups are full!

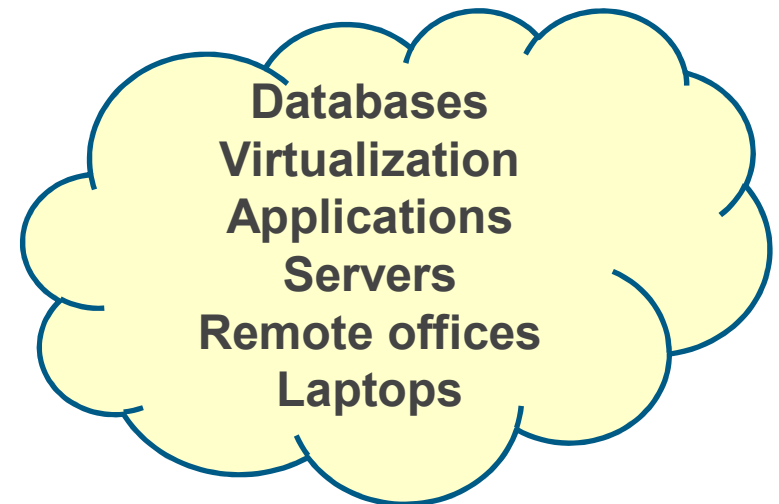
Disaster Recovery

Site A



DP4400

Site B



DP4400



Disaster Recovery
Transfer 1%
Recovery 100% of data

Site A

Databases

Site B

Databases

We replicate between DP4400 appliances
in 2 sites 1% data

but

we can restore 100% data

Backup
Restore

Backup
Restore



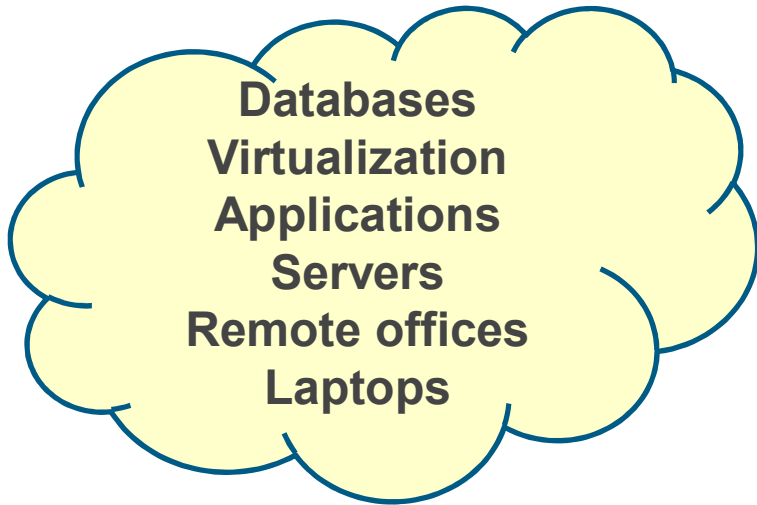
DP4400



DP4400

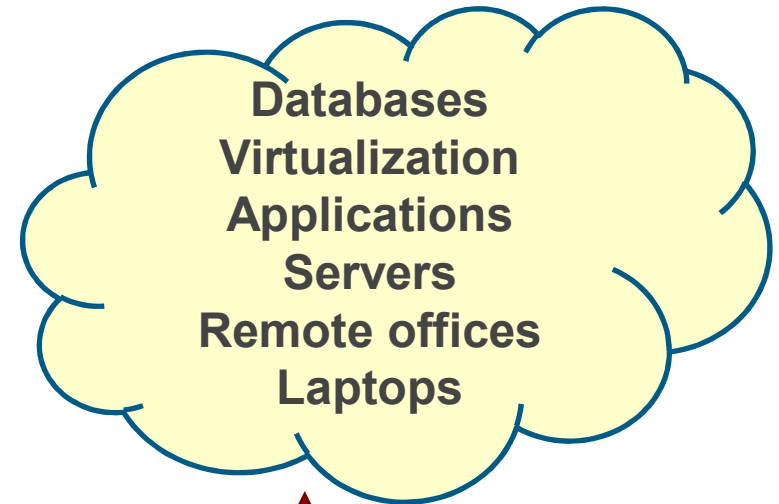
Disaster Recovery
Transfer 1%
Recovery 100% of data

Site A



DP4400

Site B



Avamar (Physical or Virtual)
with Data Domain (Physical or Virtual)

Disaster Recovery
Transfer 1%
Recovery 100% of data



Site A

Site B

We replicate between DP4400 appliance in one location
and
Avamar and Data Domain in another location

Laptops

Remote Sites
Laptops

Backup
Restore

Backup
Restore

Disaster Recovery
Transfer 1%
Recovery 100% of data



DP4400



Avamar (Physical or Virtual)
with Data Domain (Physical or Virtual)

Site A

Site B

We replicate between DP4400 appliance in one location
and
Avamar and Data Domain in another location

Avamar can be Virtual or Physical
Data Domain can be Virtual or Physical



DP4400

Recovery 100% of data

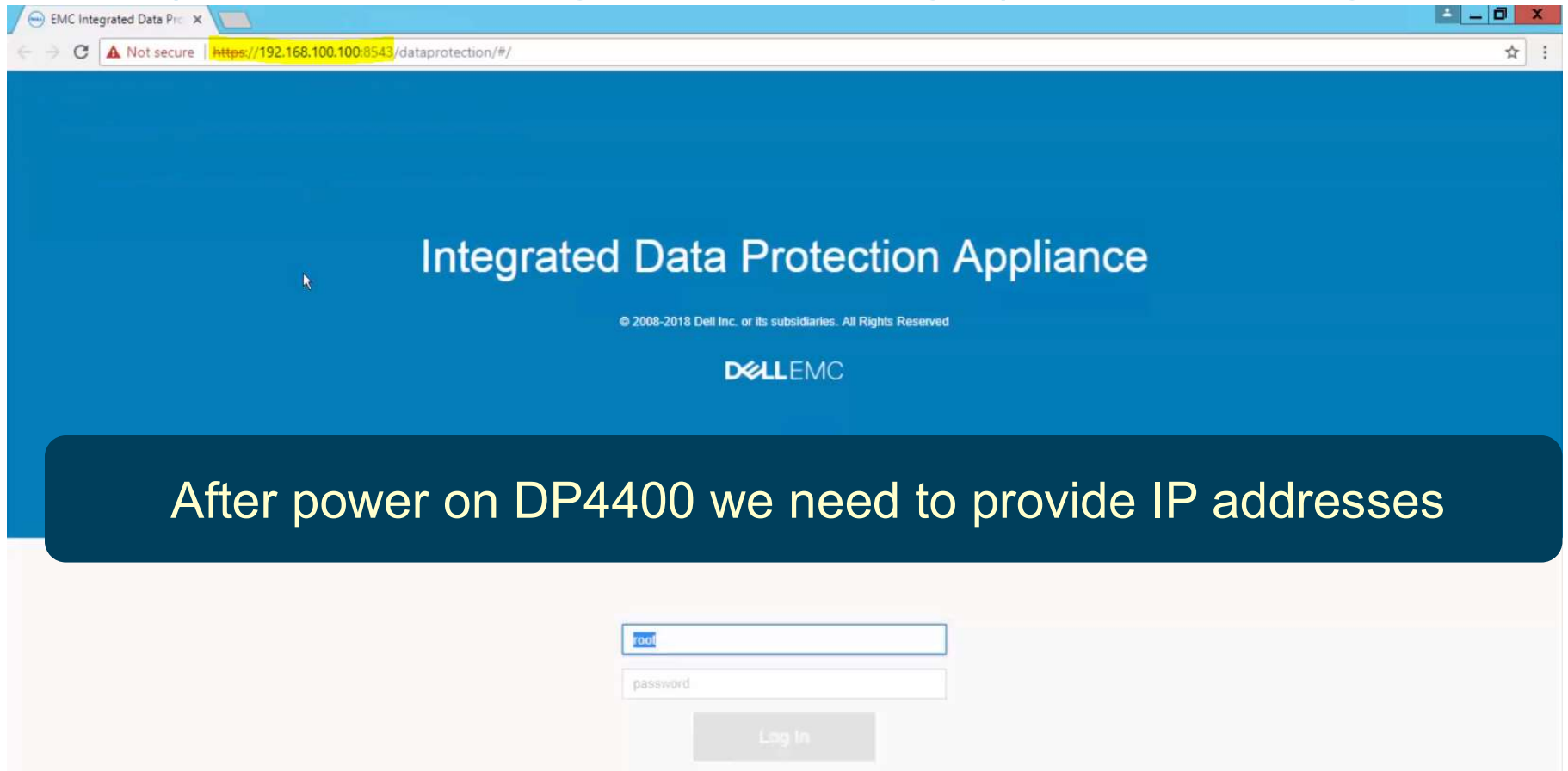


Avamar (Physical or Virtual)

IDPA DP4400

Initial configuration

ACM (Appliance Configuration Manager) - Initial Configuration



EMC Integrated Data Protection Appliance

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DELL EMC

After power on DP4400 we need to provide IP addresses







root

password

Log In

DP4400 Configuration

DP4400 Configuration

Welcome	Welcome to Integrated Data Protection Appliance configuration		
License	Protection Storage  DDVE 3.1	Backup Server  Avamar 7.5.1	IDPA System Manager  IDPA System Manager 18.1
General settings	Reporting and Analytics  Data Protection Advisor 6.5	Search  Search 18.0	Cloud Disaster Recovery  <input type="checkbox"/> Cloud Disaster Recovery 17.4
Customer information	<input type="checkbox"/> I have read the pre-requisites for Integrated Data Protection Appliance configuration		
vCenter			
Protection Storage			
Backup Server			
IDPA System Manager			
Reporting and Analytics			
Search			
Summary			
	<input type="button" value="Previous"/> <input type="button" value="Next"/> <input type="button" value="Submit"/>		

Add licenses

DP4400 Configuration

Welcome	<h3>License</h3> <div><p>Protection Storage</p><p>Protection Storage license: <input type="text" value="xxx_DDVE_xxx.lic"/> Browse</p></div> <div><p>Backup Server</p><p>Avamar Server license: <input type="text" value="AVMR_xxx.lic"/> Browse</p></div> <div><p>Reporting and Analytics</p><p>Reporting and Analytics license: <input type="text" value="DPA_xxx.lic"/> Browse</p></div> <div><p>We need to provide license</p></div>
License	
General settings	
Customer information	
vCenter	
Protection Storage	
Backup Server	
IDPA System Manager	
Reporting and Analytics	
Search	
Summary	

[Previous](#) [Next](#) [Submit](#)

Deployment using IP address range

Welcome

License

General settings

Customer information

vCenter

Protection Storage

Backup Server

IDPA System Manager

Reporting and Analytics

Search

Summary

General settings

Serial Number: DUMMYPSENT4400

Time zone: (UTC+05:30) Chennai, Kolkata

SNMP server: 10.241.189.1

Network Settings

IP address range (10) : 10.241.189.133 - 142

Subnet mask: 255.255.255.0

Primary DNS server: 10.254.66.23

Domain name: iss.emc.com

Provide range to allocate IP address to Integrated Data Protection Appliance components.

IP Range Allocation	Description
+0	VMware vCenter IP address
+1	Protection Storage Management IP address
+2	Data network Backup IP 1 address
+3	Data network Backup IP 2 address
+4	Avamar Server IP address
+5	Avamar Image Proxy IP address
+6	IDPA Server IP address
+7	Reporting and Analytics Application server IP address
+8	Reporting and Analytics Datastore server IP address
+9	Search Index Master Node IP address

Previous Next Submit

ACM Dashboard – CDRA continued...

Configure Cloud Disaster Recovery from the ACM dashboard

Cloud Disaster Recovery Configuration

Cloud Disaster Recover Add On IP address:

ACM Dashboard – Customer LDAP Configuration

LDAP settings ✕

Query password criteria: Minimum 9 to 20 characters, contains at least a lower case alphabet, upper case alphabet, digit and any of special character (- hyphen, _ underscore, . dot).

Domain name criteria: Alphanumeric characters and special characters (- hyphen, _ underscore, . dot, = equal, , comma).

Query username criteria: Alphanumeric characters and special characters (- hyphen, _ underscore, . dot, = equal, , comma, @ at).

LDAP type:	<input type="text" value="AD"/>	Secure LDAP:	<input type="checkbox"/>
Server hostname:	<input type="text" value="10.63.62.75"/> *	Domain name:	<input type="text" value="dc=vdp,dc=emc,dc=com"/> *
Query username:	<input type="text" value="demo@vdp.emc.com"/> *	Query password:	<input type="password" value="....."/> *
Admin group name:	<input type="text" value="dp_admin"/>	Port number:	<input type="text" value="389"/> *

We can integrate with our AD

Pricing

Primary

* Solution Name

IDPA 4400 24TB

* Type of Configuration

New Solution

Upgrade to existing Solution

* Installation Country

Poland

* Platforms Offered for Selected Installation Country

DP4400

DP5300

DP5800

DP8300

DP8800

Primary

* Solution Name

IDPA 4400 24TB

* Type of Configuration

New Solution

Upgrade to existing Solution

* Installation Country

Poland

* Platforms Offered for Selected Installation Country

DP4400

DP5300

DP5800

DP8300

DP8800

* Select Backend Storage Capacity

Add Data Domain Cloud Tier Storage

 Yes No

- 24
- 36
- 48
- 60
- 72
- 84
- 96

Options

Network Interface Options		
Model	Description	Item Quantity
DPXCVR-10GBE-4400	TRANSCEIVER 10GBE SFP+ DP4400 300M	4
DPCBL-LC-OM4-10ME	10 M LC TO LC CABLE KIT	4
DPCBL-TWX10GB-7M	CABLE TWINAX DP4400 7 METER	0 - 8
DPCBL-TWX10GB-5M	CABLE TWINAX DP4400 5 METER	0 - 8

DPCBL-TWX10GB-3M	CABLE TWINAX DP4400 3 METER	0 - 8
DPCBL-TWX10GB-2M	CABLE TWINAX DP4400 2 METER	0 - 8
DPCBL-TWX10GB-1M	CABLE TWINAX DP4400 1 METER	0 - 8

Add NDMP Accelerator Node

0 - 1

Cloud DR

Include 5TB's of Data Domain Cloud DR to your order?

Yes No

The initial purchase of the DP4400 allows 5TB of Data Domain Cloud DR licenses to be included at no charge. Maintenance does apply. This enablement is NOT available after the initial purchase.

To add more than 5TB of Data Domain Cloud DR to your order, please see below.

Data Domain Cloud DR

Yes No

Software Fulfillment

Software Fulfillment Method

SW Electronic SW Electronic and Physical

Additional materials

Article / video about DP4400

- Video:
<https://youtu.be/tChSjT4Orcg>
- Article with this presentation as pdf:
<http://backuprecoveryguy.blogspot.com/2018/08/dp4400-backuprecovery-appliance-and.html>

DP4400



DP4400 provides all

- <http://backuprecoveryguy.blogspot.com/2018/08/dp4400-backuprecovery-appliance-and.html>

Data Domain with CloudTier
Top backup media on the market
Best de-dup, Ransomware protection,
Highest speed, Zero recovery time,
Cloud / S3 support

Avamar
Backup software
Simple, Huge fast, Auto backup new VMs,
DR, Backup all data: VMs, files, dbs,
laptops,

Cloud Disaster Recovery
Cloud gateway
Automated migration VMs to AWS
Start VMs in AWS with FULL orchestrations

Search
Immediate finding any phrase in backed
up documents, GDPR

Data Protection Central
Single point of control

Data Protection Advisor
Reports, solving issues, ...

dp4400-

What about desing / implementation / maintance of DP4400?

DP4400 is 2U appliance that comes to us:

- Installed
- Configured
- All components are properly tuned

Artykuły / filmy dotyczące DP4400 po polsku

- Krótki film dotyczący DP4400:
<https://youtu.be/AwtAHAkDyyo>
- Artykuł dotyczącego tego filmu:
<https://backuprecoveryman.pl/dp4400-wlacz-i-backupuj/>
- Pełny film opisujący DP4400:
<https://youtu.be/cBlw1hYaT9Q>
- Artykuł z odnośnikami do poszczególnych fragmentów filmu
<https://backuprecoveryman.pl/dp4400/>
- Całość materiałów dotyczących DP4400 po polsku:
<https://backuprecoveryman.pl/przegląd-materialow-po-polsku-dotyczacych-backupu-odtworzenia-archiwizacji/>

PoC materials

- Avamar Proof of Concept self customer/partner guide:
 - <https://inside.emc.com/docs/DOC-169258>
- Data Domain Proof of Concept self customer/partner guide:
 - <https://inside.dell.com/docs/DOC-229736>

-

Materiały opisujące Avamar / Data Domain (PoC)

- Jak zainstalować i skonfigurować Avamara / Data Domain:
- <https://backuprecoveryman.pl/pobierz>

Customer story



PLAY VIDEO

IDPA DP4400 – CUSTOMER QUOTES

“The IDPA DP4400 is a great product because it’s **all in one**. It’s highly scalable so you know that you’ve got great expansion capabilities. Because it’s Dell EMC, it’s ready to go and I can trust that I don’t have to do a lot of research and vetting to make sure it’s going to work for me. **That’s peace of mind.**”

Brian Linden
IT Director
Melanson Heath

“The IDPA DP4400 provides a single dashboard for data protection; **significantly reducing deployment time** while increasing overall value and efficiency for our customers.”

Seife Teklu
Senior Solutions Architect
Arrow Electronics

“Installation for IDPA DP4400 is **easy**. Within two hours we were off and running. I don’t have to be Lou Ferrigno to rack a 2U. **It goes in quick**. It plugs in and is ready to backup loads. **It just works!**”

John Sharp
IT Manager
The Vollrath Company

DELL EMC

Use Case Benefits

“One Stop Full Solution”

EMEA Telco Customer

Server, Storage and Data Protection win with Industry Leading Technology

Customers get to purchase Best Of Breed solutions

1 Vendor Strategy pays off for customer in operational excellence, Business Outcomes And Cost To Protect

DataBase & Applications

Energy & Financial customer

Best in its class Data Protection that performs (in this real case) 20x faster:

Oracle from 29 hours reduced to 1h 40 minutes!!!

Weekly full of whole customer environment from 1+ week reduced to less than 8 hours

European Central Bank Regulations from NON Compliant to fully Compliant

DellEMC met all Compliances, Certifications, SLAs & SLOs.

Cyber Recovery Functionality

Global Personal Care Company

Suffered a serious ransomware attack (Petya)

During the attack every Windows Client went down (not only in the HQ, but worldwide!)

The customer was able to recover only thanks to the Dell EMC Data Protection that they are using!

“Our dedupe rate is 84:1. Once you see that dedupe & compression, it’s hard to go anywhere else.”

Summary

DP4400

3,300
Units sold

90%
FY20 Y/Y revenue growth

DELL EMC DATA PROTECTION

Simplicity is a Converged Solution

Backup servers
& storage



Days

2U and 10x¹ faster
Easy to deploy & upgrade



Hours

Backup software



Search & analytics¹




System management



Cloud
DR + LTR



24TB–96TB → + 192TB with 
without additional HW

NVMe
flash



Densest 2U appliance—up to 20% more capacity²

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

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

DELL EMC DATA PROTECTION

Simplicity is Easy Management Modern UI



Dashboards



Exception resolutions



Policy management



Reporting



DELLEMC

DELL EMC DATA PROTECTION

Power is Built For VMware

Comprehensive Data Protection Integration with
vmware



vSphere
Web Client



vSphere
vCenter



vCloud
Director



vRealize
Log Insight



vRealize
Operations
Manager



vRealize
Automation

Protect up to 5x more VMs in 2U¹ • Simple, cost effective to scale to more VMs • Faster backups and recoveries

¹Based on Dell internal testing and comparing against Rubrik's published performance data in 2U, February 2018

The promise of IT Transformation



Less costly tech refreshes and risky data migrations



Accelerate path to hybrid cloud



Easier, less costly to monitor, sustain, and support



Operational efficiencies managing data protection silos



Shorter installation and deployment timelines



Avoid bottlenecks and hot spots.

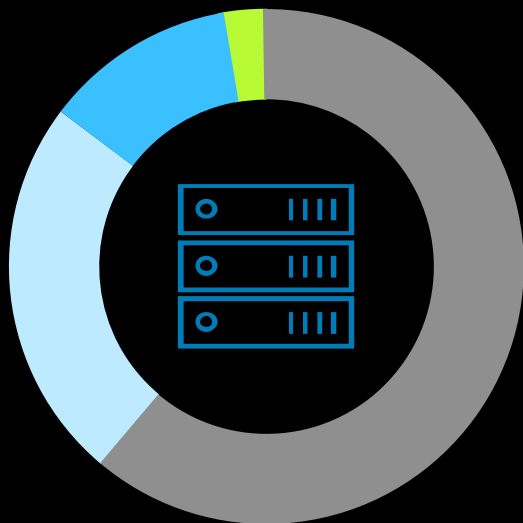
CI and HCI can make this a reality

Cloud-like Agility

Enable ITaaS on-prem

Do you believe hyperconverged infrastructure technology has made your IT organization more agile?

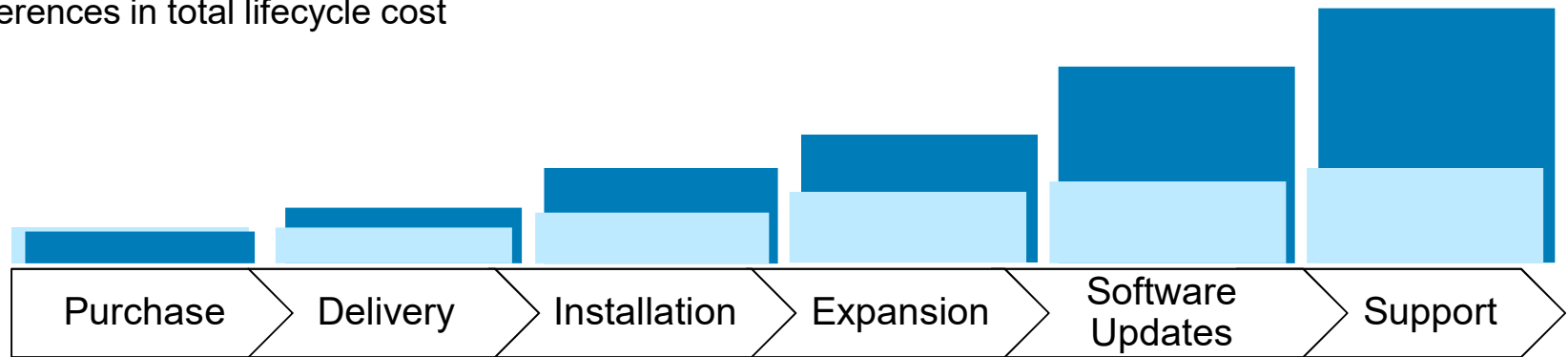
“A whopping **87%** of IT managers already using HCI agree that it makes IT more agile, with 25% strongly agreeing.”



- 62% ■ Yes, it has made us somewhat more agile
- 25% ■ Yes, it has made us significantly more agile
- 11% ■ No, it has not made us any more agile
- 2% ■ Don't know

A build experience is different than a “buy” experience

Significant differences in total lifecycle cost



	Purchase	Delivery	Installation	Expansion	Software Updates	Support
Traditional AV/DD	Selection of hardware and software from range of available models and bundles	Customer receives hardware and software separately	Customer reads manuals and self installs or multi-day PS engagement	Manual validation at order. Compatibility check not performed until install. Software Compliance Unknown	Manual validation of environment and versions. Components are upgraded either by customer or via CS/PS engagement	Separate Hardware and Software support. Some parts replacement may require customer involvement.
IDPA	Valid configurations available to order	Software is loaded at factory ready to deploy	Automated setup and network validation including DPA and DP Search	Compatibility and Compliance assured, quick expansion with simple upgrade	Notice of upgrades and/or hot fixes. Components are upgraded in a controlled release cycle	Single Support for all components, remote support and automated parts replacement

IDPA DP4400 Value Proposition

- DD market leadership and enterprise class DP architecture for mid-market customers
- Simple plug-and-play with 'all-in' integrated software with intuitive management/reporting
- Easy and quick install and set-up (wizard); simple/easy in-place storage scale-up (license)
- Highly/efficient global dedupe with large effective data storage reach/capacity
- High effective throughput; lower resource utilization and overhead
- Uncompromised data integrity (DIA) and efficient file system
- BOOST/DDBEA for accelerated performance and SISL
- Compact/dense 2U chassis (24 – 96TB usable) with latest Dell server technology
- Great price point(s) and low TCO; even lower operational 'cost to serve' savings!
- Cloud Tier (5TB) included in price – *plus*, Customer Satisfaction & Dedupe Guarantee!

Backup Media based on Data Domain

Backup software
based on Avamar

Cloud Integration:

- tests in Cloud
- Cloud as DR

Central console
Over 300 reports

GDPR
Finding any
phrase
in protected
documents

DP4400:

- Ready to backup after power on
- Sized and equipped to have highest speed (factory designed)
- No risk approach

2U DP4400

Any environment:

- Virtualization
- Databases
- Servers
- Laptops
- Remote offices

up to the full capacity
of DP4400 – all licenses
included

Capacity on demand:

- from **8TB** net
- to **96 TB** net

Extensions every 4TB/12TB
just by adding the license
20TB->24TB upgrade requires
hardware upgrade (customer
installable)

Unique market features

- Starting VMs from DP4400 with 1000 IOPS+ with recovery
- Ransomware protection
- Automated backup of new VMs
- Recovery by application owner
- ...



Questions...



DP4400 and... start your backup!

Daniel.Olkowski@dell.com