



IBM DESIGN 2019 MODERNIZE YOUR DATA PROTECTION ENVIRONMENT IN THE 21ST CENTURY

Ondřej Bláha, IBM Spectrum SDS family

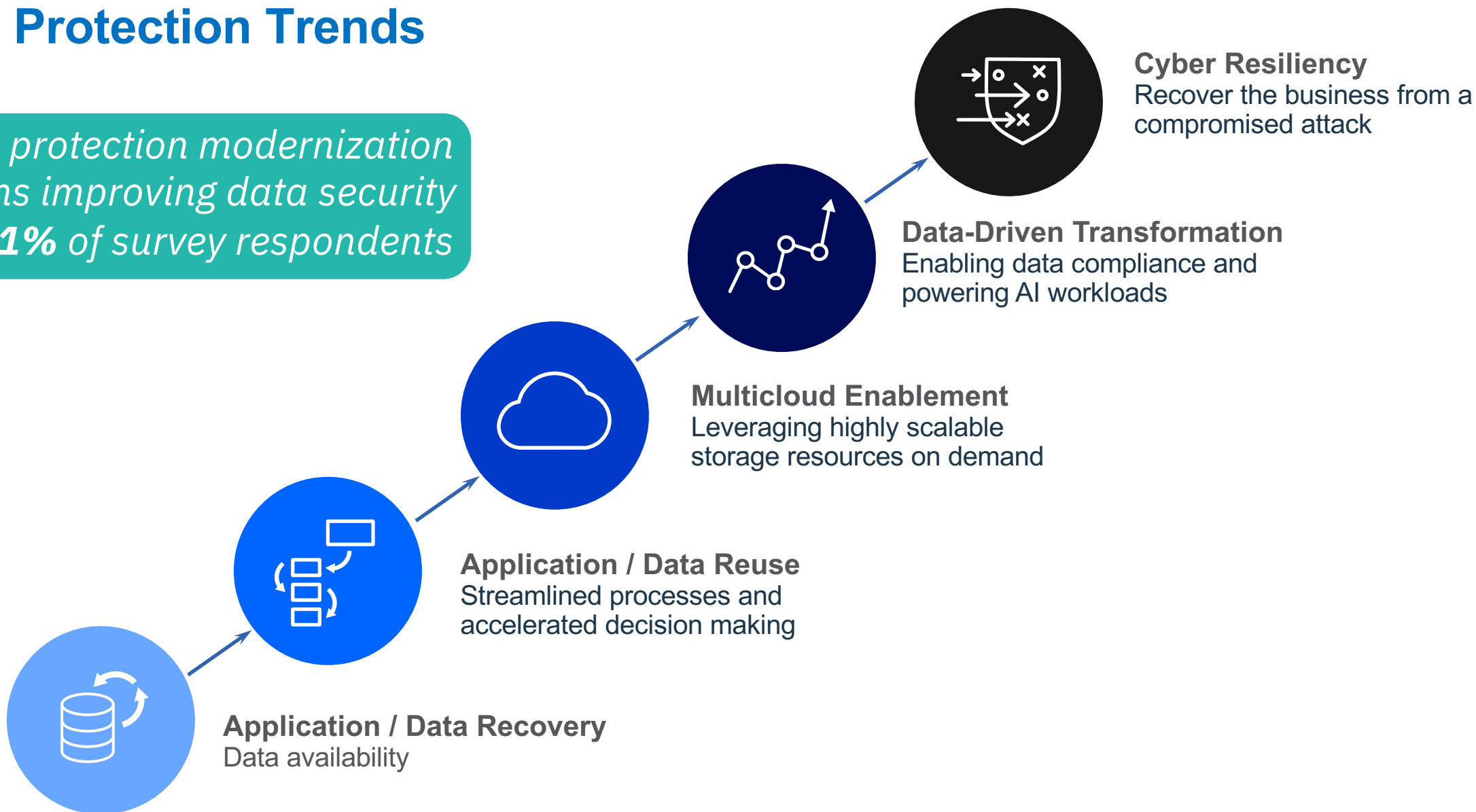
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Today



Data Protection Trends

*Data protection modernization means improving data security for **41%** of survey respondents*



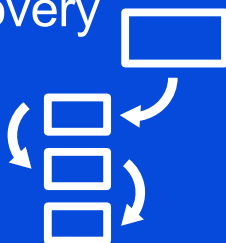
Organizations are facing significant **Data Protection** challenges

10x

growth in data 2016
to 2025

68%

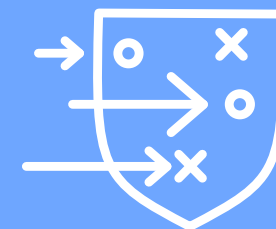
use data stored on
secondary storage
for more than
just recovery



73%

of large enterprises plan
to use public cloud
for backup, archive
and disaster recovery

- Odds of experiencing
a data breach over
the next two years?



1 in 3

Client expectations for a Modern Data Protection solution

3 out of 4 companies are modernizing

Data Protection modernization is among the **top-5** most critical IT priorities at **73%** of organizations

31% expect lower operational cost from Data Protection modernization

85% with self-service data reuse have improved app dev speed and code quality

Data Protection modernization means improving data security for **41%** of survey respondents

5

Key Reasons for Data Protection Modernization

Cost

- CapEx
- OpEx

Performance

- Shorter backup windows
- Instant recover

Hybrid Multicloud

- Office 365
- Containers
- Cloud Paks

Cyber Resiliency

- Workload patter anomaly detection
- Multi-factor authentication

Business Agility

- Data Reuse
- Governance / Compliance

1 Cost

Capital Expense – CapEx

- Newer technologies are lower cost
- Common Data Protection repository
- Storage efficiency
 - Incremental forever, compression, deduplication
 - Intelligent policy data management
- Flexible licensing models

Operational Expense – OpEx

- Deploy as VM or container
- Agentless
- Automation / orchestration
- RBAC / secure self-service
- RESTful API

Proactive Support



SOURCE Environment

Source Software Architecture

- Software source environment based on TSM 6.3.3
- Earliest software release date: Nov 2012
- 14 backup management servers managing 3 data centre locations
- Full and incremental backup methodology and policy enforced throughout the environment
- 17 active backup management server instances addressing a total of 9888 backup clients
- Active data retention policy varies from 7 days to over 7 years/decades
- Software agents in use include Exchange, Filesystem, Oracle, SQL, Structured, System and WAPL

Source Hardware Architecture

- Backup management platform based on IBM pSeries running AIX operating environment
- 64+ TS1120 physical tape drives
- Media in environment based on Disk and 3500-2
- 64 physical tape drives, 1070 virtual tape drives and 0 unknown
- Physical volumes inside a library: physical tapes 2014, virtual tapes 73250
- Total volumes inside a library: physical tapes 28914
- 46.47% occupancy on physical tape, 52.81% occupancy on virtual tape, 0.64% occupancy on disk
- Total usable disk storage pool capacity is 158 TB
- 4 configured libraries: 2 reported as physical, 2 reported as virtual
- Physical tape libraries in use: IBM TS1120
- Virtual tape libraries are EMC DataDomain
- 160 active backup policies
- Total tape volumes: physical 31 000, virtual 73 250, total 104 252

Source Client Environment

- Client operating system platforms reported are AIX, HP-UX, Linux, MacOS, Solaris, VMS and Windows
- Structured data types are Exchange, Oracle, SQL, and Structured
- Client environment reported as 66.80% unstructured data, 33.20% structured data
- Total client backup data occupancy is 516.66 TB
- 252.73 TB of data

Backup Cycle

Capacity Metrics

Top 20 clients by occupancy

Site backup volume by day

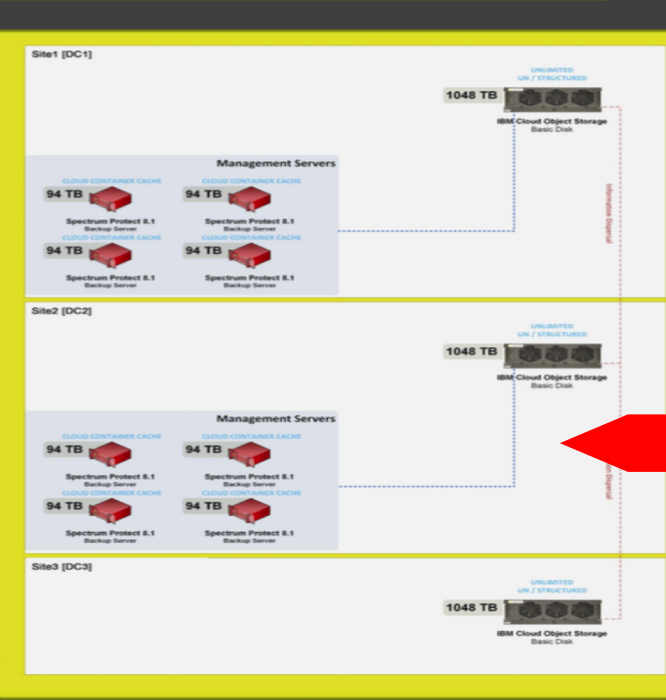
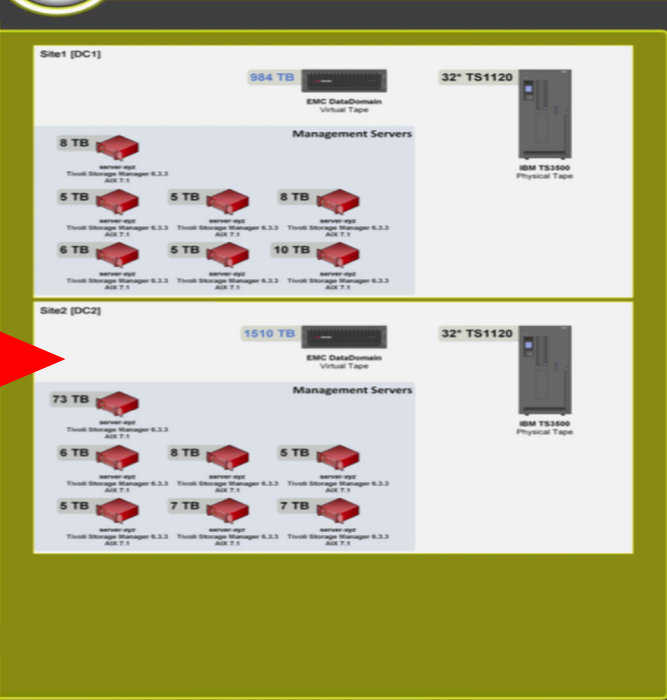
Site file count by day

Butterfly AER Details

Document Name: Butterfly Analysis Engine

Author: Butterfly Analysis Engine v1r (version 6.2)

*Data Collection completed XX-XX-2017



TARGET Consolidated Environment

Target Software Architecture

- Spectrum Protect or Suite for Unified Recovery v8.1
- Spectrum Protect v8.1 to be used as the standard management server platform
- 36 month indicative primary storage pool is 3144 TB
- Consolidation of backup and recovery operations enables efficient data management
- Spectrum Protect next generation deduplication and compression of structured and unstructured data
- Improved database backup and recovery performance
- Spectrum Protect database scalability and server ingest performance maximises consolidation
- All structured and unstructured data resides in Spectrum Protect directory container pools

Target Hardware Architecture

- Spectrum Protect or backup management servers
- IBM Cloud Object Storage disk platform
- Consolidation & centralization of backup data
- Removal of media handling
- Storage pool consolidation improves effectiveness of deduplication

Transformation Benefits

- Commercial, technical and operational benefits of a unified, strategic backup and recovery platform
- Improved backup and recovery throughput and performance
- Increased efficiency of backup due to resource availability and reliability
- Capacity aligned with requirement including growth
- Daily ingest in 3 years: 235.62 TB unstructured and 140.57 TB structured to a ContainerDisk Storage pool

Architectural Changes

- Standardises on a high performance platform
- Consolidates server infrastructure
- Avoids ad-hoc unplanned spend
- Environment scaled to 36 months usage
- Increased use of tiering for backup data and associated deduplication benefits
- Spectrum Protect Cloud Container Caching improves network throughput performance
- Simplification of existing active backup and recovery operations
- Reduced network load and managed occupancy
- Spectrum Protect next gen inline deduplication and compression minimises backup data footprint

Operational Issues Resolved

Infrastructure Issues

- High percentage of failed backups
- Low number of scratch tapes in library may result in backup failures
- Uneven load between individual backup instances
- TSM v6.3 will be out of support from 30 Sep 2017
- Legacy tape hardware in use results in low data density, low throughput speeds and support issues
- Inefficient use of physical space due to media density
- Multiple client software versions increases environment complexity and support overhead

Operational Issues

- Client backup success rate is 94.56%
- Client connection failures compromising backup integrity
- Client recoverability compromised due to object access errors
- TSM database dumps indicate server in stability and/or database corruption
- Errors accessing tape drive/library resources causing backup and admin operation failures
- Read only media in library due to write errors
- TSM Server administration scripts failing
- Inefficient physical mount points due to configuration
- Backing up DB files using flat file method

Butterfly Migration Center™ Planning

Top 10 nodes by migration volume

Migration rate per platform against total platform occupancy

10 Year Occupancy Over Time

Data volume per platform eligible for migration

Butterfly Differential Business Case

Capacity

36 Month physical capacity

Backup Capacity and OpEx Forecast

and Total Costs Forecast (Cumulative)

Source Hardware Infrastructure

Category	INFRASTRUCTURE	VENDOR	TYPE	MODEL	QTY	QVA
Library	INFRASTRUCTURE	IBM	TS1120	Physical Tape	20	2.0
	Library	IBM	TS1120	Physical Tape	20	2.0
	Library	IBM	TS1120	Physical Tape	20	2.0
	Library	IBM	TS1120	Physical Tape	20	2.0
Scratch	Library	IBM	TS1120	Physical Tape	20	2.0
	Library	IBM	TS1120	Physical Tape	20	2.0
	Library	IBM	TS1120	Physical Tape	20	2.0
	Library	IBM	TS1120	Physical Tape	20	2.0

TOTAL COST OF OWNERSHIP 36 MONTHS

Category	INFRASTRUCTURE	SOURCE	COST	TARGET	COST
TAPE VOLUMES	10,812,481	0	0	0	0
TAPE SLOTS	37,729.76	0	0	0	0
LIBRARY	73,245	0	0	0	0
TAPE DRIVES	10,812,481	0	0	0	0
MASTER SERVER	14	0	0	0	0
MEDIA SERVER	0	0	0	0	0
VTU DESK TBs	10,743,432	0	0	0	0
TOTAL	0	13,476,015	0	3,796,514	0
INFRASTRUCTURE	0	10,682,481	79%	0	0
RESOURCE REQUIREMENTS	0	3,796,514	0	1,440,000	0
TOTAL SAVINGS	0	0	0	11,247,215	73%

TOTAL MEDIA COUNT 36 MONTHS

Management Summary

Up to 36 Months

Category	Value
TOTAL Capacity reduced by Long Term capacity reduced by Tape volume saving	4546 TB
KVA Saving	22923
Daily Backup volume is reduced by Network load reduced by FTE Reduction by Growth rate applied	107 KVA
	0%
	28%
	20%

Operational Issues

Operational Issues

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Butterfly Migration Center™ Planning

Top 10 nodes by migration volume

Migration rate per platform against total platform occupancy

10 Year Occupancy Over Time

Data volume per platform eligible for migration

Migration Planning

- Butterfly Migration Center automatic migration of long term data in the current environment
- Fully automated, secure migration of existing backup occupancy with retention of 7r=90 days
- Data migration into Spectrum Protect control
- Data volume in scope: 0.0 TB
- Migration Duration: 0 days
- Migration products required:

2

Performance

Recovery Time / Point Objectives

- Smaller backup windows (RPO)
- Near instant recoveries (RTO)
- Version data access (VRO)
- Geography data access (GRO)
- Self-service data access



Spectrum Protect data reduction techniques

Inline Deduplication is an integrated part of Spectrum Protect, *"no separate license required"*

SW Client compression

- Files compressed by client before transmission
- Conserves network bandwidth and server storage



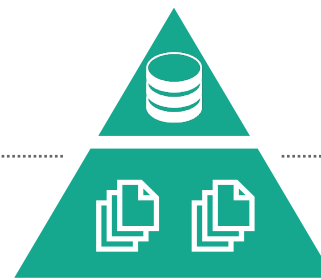
Client

Incremental forever

- After initial backup, file is not backed up again unless it changes
- Conserves network bandwidth and server storage



Server



Storage Hierarchy



SW Server Side Deduplication

- Duplicate data only stored once
- Out of band dedupe to disk pool
- In-line dedupe to directory or cloud pools

SW Server side compression

- Files compressed by server after in-line dedupe for containers
- Conserves network bandwidth when writing to cloud

Device compression

- Compression performed by storage hardware
- Conserves server storage

SW Client Side Deduplication

- Reduces network traffic by deduplication data before transfer
- Sends to server's dedupe pool

3

Hybrid Multicloud

Support for multiple clouds

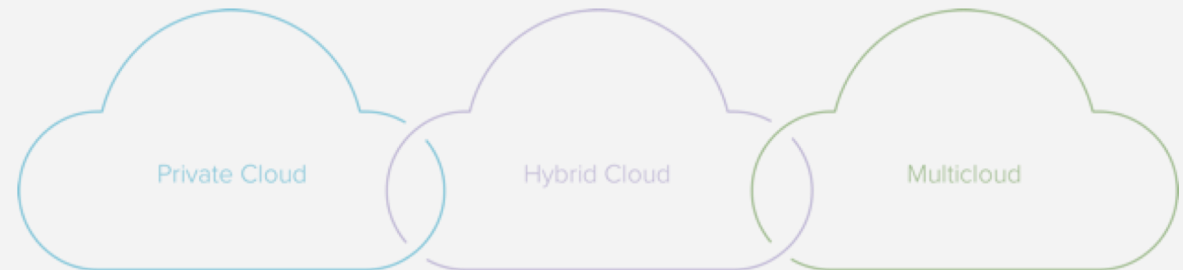
- IBM COS
- Amazon AWS
- MS Azure
- Google
- IaaS

Use Cases

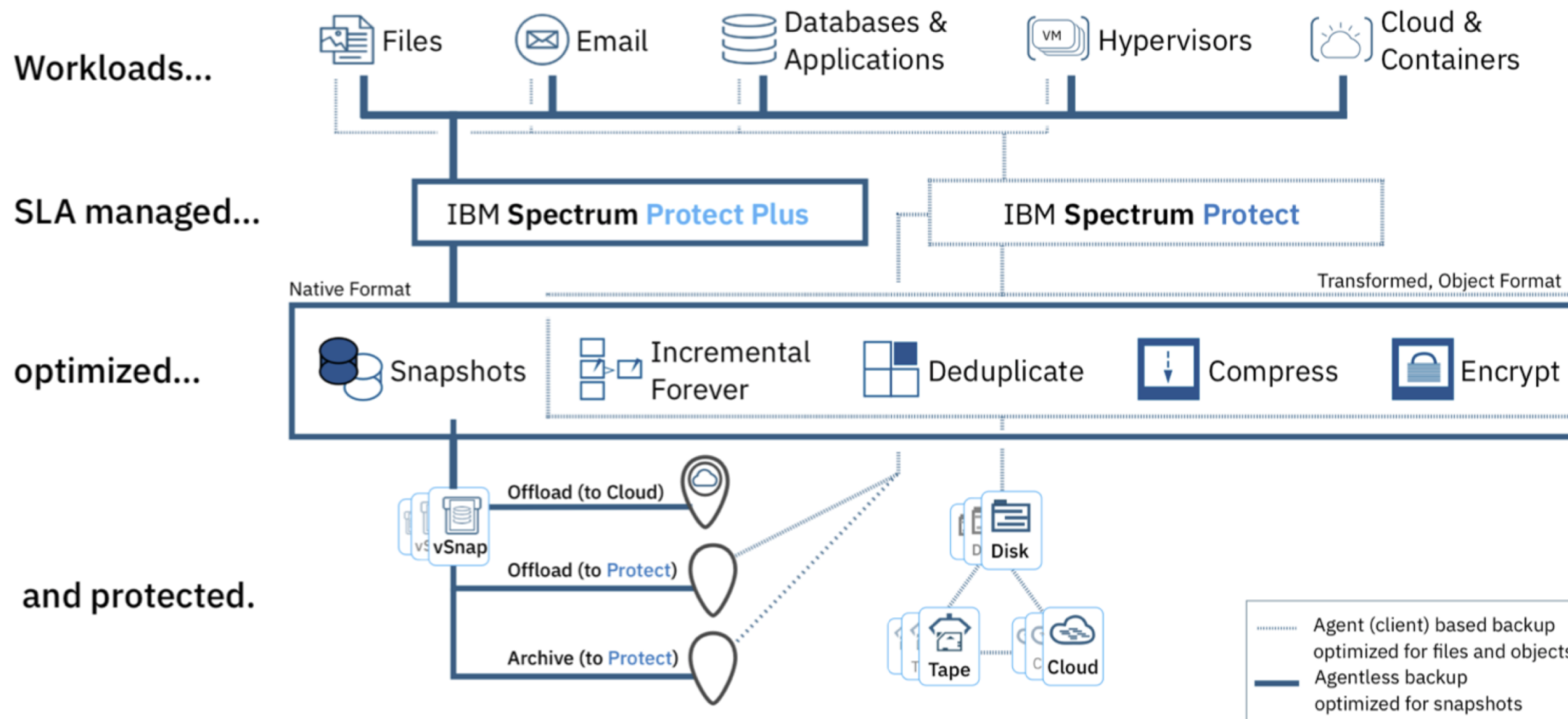
- Backup / Recovery
- DR
- Data reuse

RedHat OpenShift

- Containers
- IBM Cloud Paks



A vision of simple, secure, and efficient data management satisfying the business needs of data reuse, recovery, and long term-term retention



4

Cyber Resiliency

Secure to the core

- Malware / ransomware detection
- Workload pattern anomalies
- Multi-factor / dual authorization
- End-to-end encryption

Cyber resilient storage

- True air-gap to tape
- Immutable storage, WORM
 - On-prem
 - In the cloud

AI infused Data Protection

- Resiliency Orchestrator
- Spectrum Discover
- Storage Insights

Cyber Resiliency and Recovery Starts with Your Primary Storage

Recovery Attempt 1

Recover primary data snapshots using Spectrum CDM

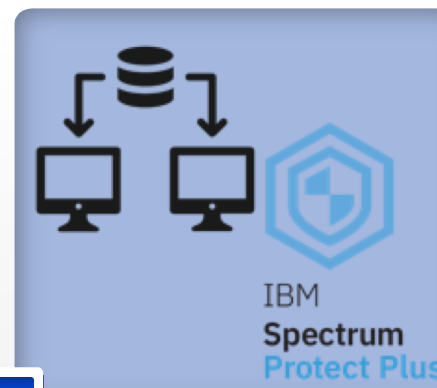
- On-line
- Global catalogue
- Instant recovery
- Test

RTO < 1 min / test

1



2



Recovery Attempt 2

Recover backup data snapshots using Spectrum Protect Plus

- vSnap (disk)
- Global catalogue
- Instant recovery
- Test

RTO < 5 min / test

Recovery Attempt 3

Recover backup data snapshots / streams using Spectrum Protect / Plus

- Disk
- Immutable storage
- Test

RTO > X Hrs / test

3



4



Recovery Attempt 4

Recover backup data streams using Spectrum Protect Protect

- Tape with true air-gap
- Test

RTO > XX Hrs / test

5

Business Agility

Copy data management

- Data reuse
- RBAC / self-service
- Data mobility
 - Multiple locations – on-prem / cloud

Data about the data

- Metadata management
- Data detection / e-discovery
- Storage optimization

Proactive data management

- Heterogeneous protection management
- Capacity planning
- Performance measuring

Instant Recovery & Data Reuse



Instant Data Recovery

Data snapshots stored in native format
Instant recovery from multiple recovery points

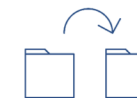
- Recover rapidly from snapshot copies
- Suitable for all recovery use cases
- Multiple recovery points for all VMs
- No waiting for streaming restores
- Application consistent backup, recovery, cloning



Snapshots



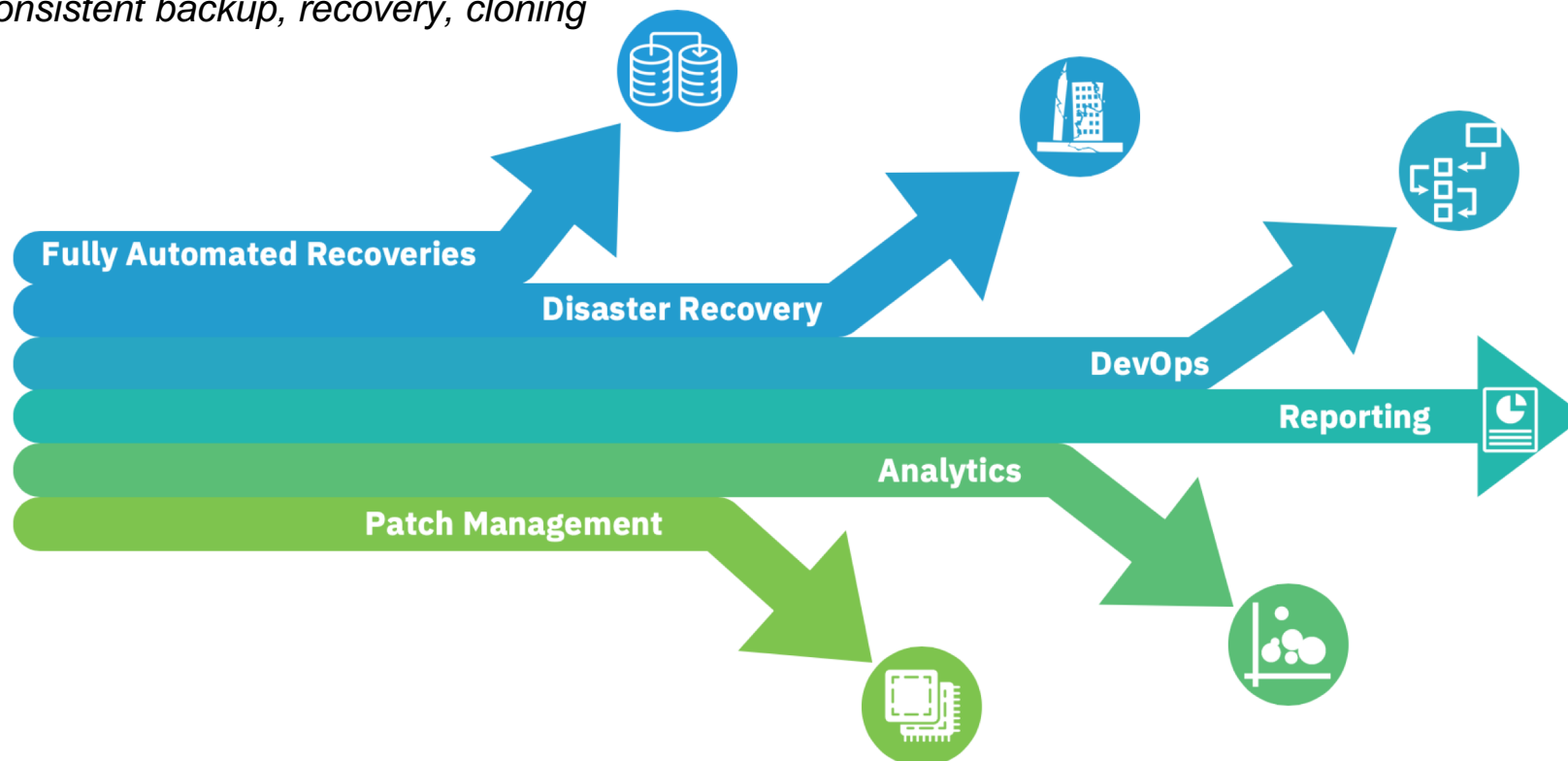
Rapid Recovery



Clone Access



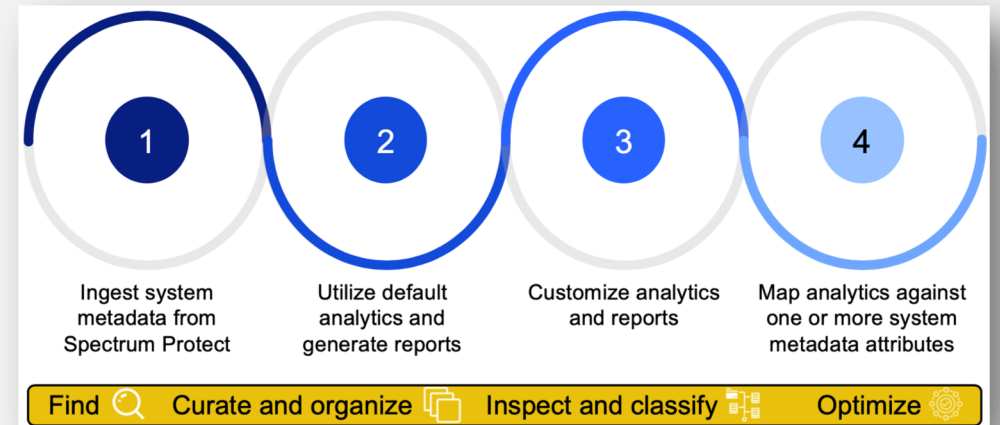
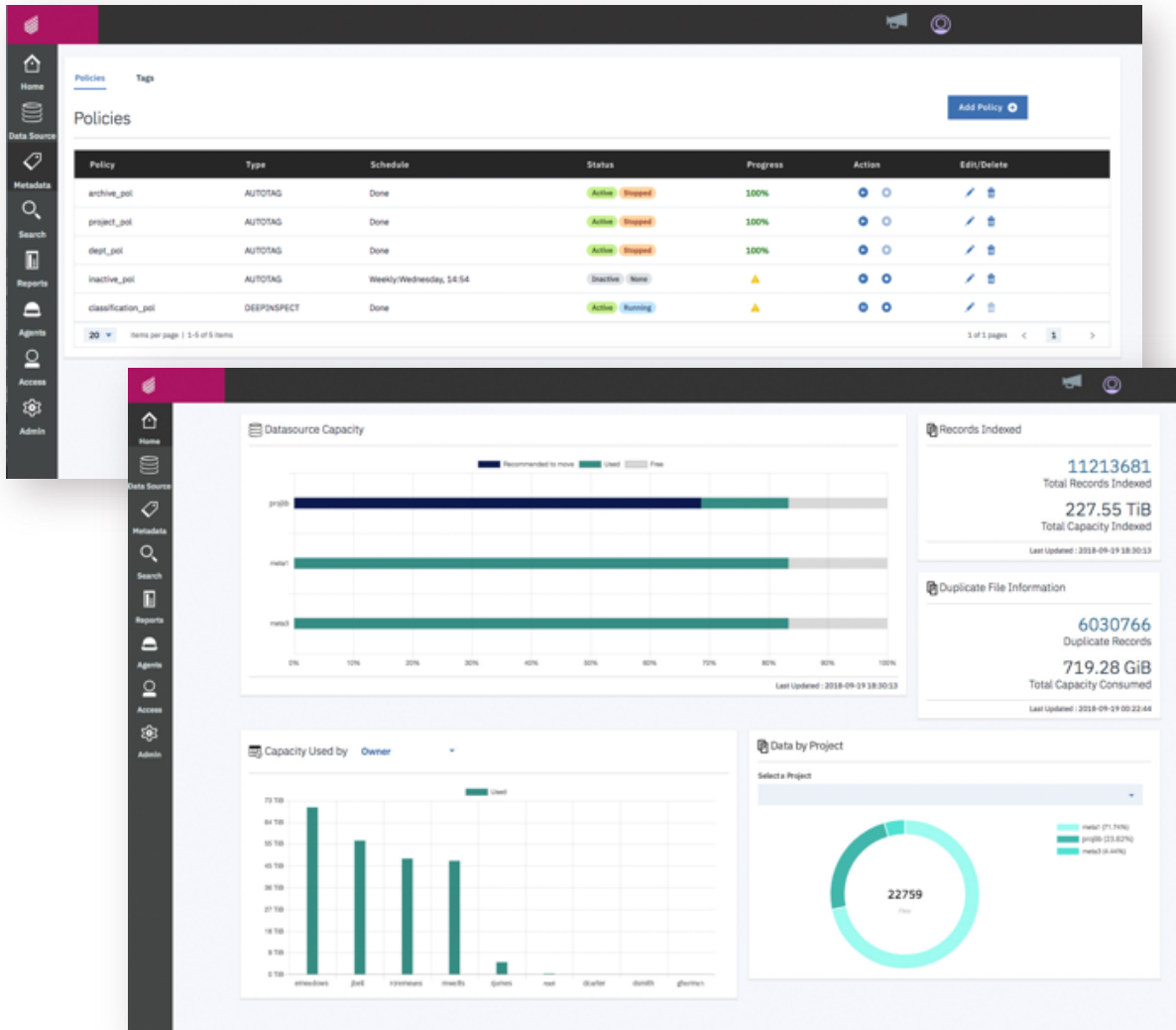
Application Consistent





Data Insight for Optimization, Governance and Analytics

- Automate cataloging of unstructured data by capturing metadata as it is created
- Enable comprehensive insight by combining system metadata with custom tags to increase storage admin and data consumer productivity
- Leverage extensibility using the API, custom tags and policy-based workflows to orchestrate content inspection and activate data in AI, ML and analytics workflows



IBM Modern Data Protection Portfolio / Spectrum family

Data Creation



Traditional Apps



Hypervisors



Scale-out Apps



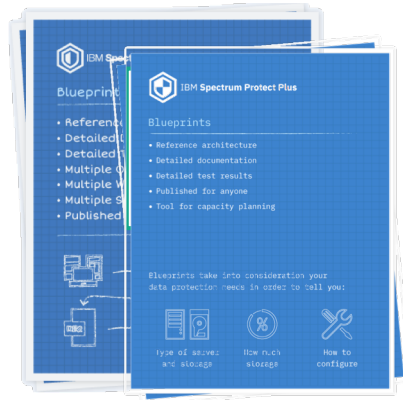
Storage Systems



Containers



IaaS, PaaS, SaaS



IBM
Storage
Insights



IBM
Spectrum
Discover



IBM
Spectrum
Protect Plus



IBM
Spectrum
Protect



IBM
Spectrum
CDM



Multicloud



IBM Tape



IBM
Spectrum
Archive

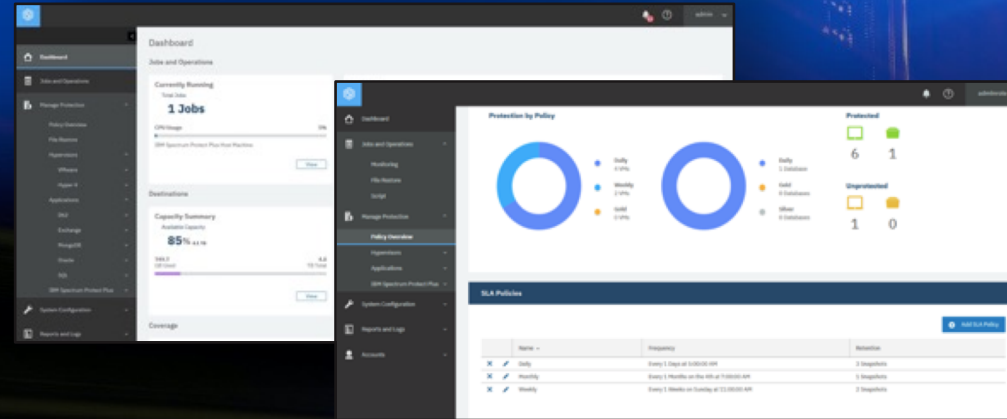


IBM Cloud
Object
Storage



IBM
Spectrum
Scale

IBM Modern Data Protection Advantage



- **Virtual appliance and an agentless architecture** enable fast deployment and easy maintenance
- **Broad workload support** unifies data backup, recovery, replication for physical file systems, VMs, databases, Office 365, SAP HANA, and containers
- **End-to-end policies** automate data lifecycle management, including operational data recovery, data replication, and data retention
- **Global search** reduces data recovery time, since a single search can locate data across multiple VM hosts and hypervisors
- **Space-efficient snapshots, compression, and deduplication** combine to deliver exceptional storage efficiency
- **Flexible data retention** with native support for both on-premises and cloud-based object storage and tape storage
- **Intelligent data security** provides ransomware detection, the ability to lock down data on object storage using write-once-read-many (WORM) technology, and the ability to air-gap data on physical tape
- **Software-defined approach** avoids lock-in to vendor-specific Data Protection appliances



QUESTIONS???

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Today





THANK YOU



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BACKUP SLIDES – ADDITIONAL REVIEW (IBM MDP 2020)

Ondřej Bláha, IBM Spectrum SDS family

IBM Techsale for Europe CEE+R region
IBM L2 Expert certified WW
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Today



The Spectrum Protect Family - Today



IBM
Spectrum
Protect

- **IBM Spectrum Protect** is IBM's enterprise-scale and proven platform for data protection. IBM Spectrum Protect is a leader in Gartner's Magic Quadrant.



IBM
Spectrum
Protect Plus

- **IBM Spectrum Protect Plus** is IBM's strategic platform for modern data protection and data reuse. It just won the Bronze medal in Storage magazine and SearchStorage's 2018 Product of the Year.



IBM
Spectrum
CDM

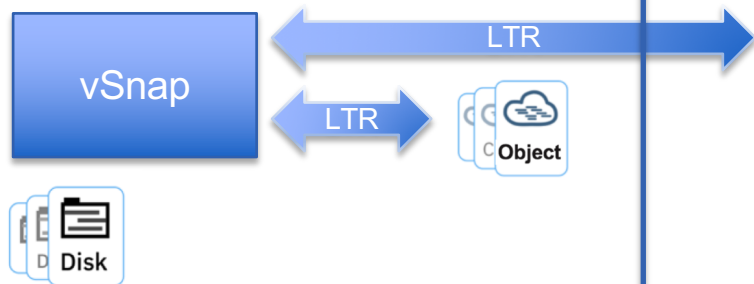
- **IBM Spectrum Copy Data Management (CDM) and IBM Spectrum Protect Snapshot** are IBM's products to manage hardware snapshots for data protection and data reuse.

The Spectrum Protect Family - Today



IBM
**Spectrum
Protect Plus**

- VMware
- Hyper-V
- Db2
- Oracle
- SQL
- Exchange
- MongoDB



- ✓ Agentless
- ✓ Single pane of glass
- ✓ Operational recovery
- ✓ Data reuse
- ✓ Long-term data retention
- ✓ Disaster recovery



IBM
**Spectrum
Protect**

- VMware
- Hyper-V
- Db2
- Oracle
- SQL
- SAP Db2/Oracle
- SAP HANA
- File-level
- Exchange
- Domino
- HSM
- Filers (NDMP)
- Scale (GPFS)



- ✓ Operational recovery
- ✓ Long-term data retention
- ✓ Disaster recovery
- ✓ Manage hardware snapshots



IBM
**Spectrum
CDM**

- VMware
- Oracle
- SQL
- EPIC (Cache)
- SAP HANA



- ✓ Manage hardware snapshots
- ✓ Data reuse

Spectrum Protect, Protect Plus & CDM

Remember:

- **Report back losses to the Spectrum Storage Competitive Team**
- **Report back tactics and attack points of competitors**

If we know what competitors are saying, we can compete against them far more effectively – an objection answered straight away is better than one answered after referring back to the competitive team.

- **If you need assistance from the competitive team ask early, use Slack and/or direct email to get in touch**

Slack: [https://ibm-systems-storage.slack.com/](https://ibm-systems-storage.slack.com/#protect-help)
#protect-help, #protectplus-help, #cdm-help

Email: <mailto:fraser.macintosh@uk.ibm.com>

Another good IBM resource for planned design changes is the official SLACK channels, please join.

<https://help-invite.ibm.com/sp>

<https://help-invite.ibm.com/spp>

<i>Product Name</i>	<i>New Name</i>
Tivoli Storage Manager	IBM Spectrum Protect
Tivoli Storage Manager Extended Edition	IBM Spectrum Protect Extended Edition
Tivoli Storage Manager for Virtual Environments	IBM Spectrum Protect for Virtual Environments
Tivoli Storage Manager for Databases	IBM Spectrum Protect for Databases
Tivoli Storage Manager for Mail	IBM Spectrum Protect for Mail
Tivoli Storage Manager for Enterprise Resource Planning	IBM Spectrum Protect for Enterprise Resource Planning
Tivoli Storage Manager for Storage Area Networks	IBM Spectrum Protect for SAN
Tivoli Storage Manager for Space Management	IBM Spectrum Protect for Space Management
Tivoli Storage Manager Suite for Unified Recovery	IBM Spectrum Protect Suite
Tivoli Storage Manager Suite for Unified Recovery Entry	IBM Spectrum Protect Suite Entry
Tivoli Storage Manager Suite for Unified Recovery - Front End	IBM Spectrum Protect Suite – Front End
Tivoli Storage Manager Suite for Unified Recovery Entry - Front End	IBM Spectrum Protect Suite Entry – Front End
Tivoli Storage Manager Suite for Unified Recovery – Archive Option	IBM Spectrum Protect Suite – Archive Option
Tivoli Storage Manager Suite for Unified Recovery – ProtecTIER Option	IBM Spectrum Protect Suite – ProtecTIER Option
Tivoli Storage Manager Entry	IBM Spectrum Protect Entry
Tivoli Storage Manager Fastback for Workstations	IBM Spectrum Protect for Workstations
Tivoli Storage Manager Fastback for Workstations-Starter Edition	IBM Spectrum Protect for Workstations – Starter Edition
Tivoli Storage Manager HSM for Windows	IBM Spectrum Protect HSM for Windows
Tivoli Storage FlashCopy Manager	IBM Spectrum Protect Snapshot
IBM System Storage Archive Manager	IBM Spectrum Protect for Data Retention

What is protected

On Premises

Physical / Virtual

Cloud
(public, private, hybrid)

"IBM Spectrum Protect allows us to keep pace with and manage data growth seamlessly and in ways we've never been able to before."

Piedmont Healthcare

How data is protected and managed

Data Services

- Deep Application Integration
- Backup / recovery
- Archive / retrieve
- Disaster Recovery
- Cloning
- Self Service Recovery
- Service Level Management

Data Lifecycle Management

- Policy automation
- Placement / movement (D2D, D2C, D2T, D2D2T, D2D2C)
- Retention
- HW/SW Replication
- Online DR
- Business Process Collections

Data Efficiency, Scalability and Security

- Deduplication everywhere
- Compression
- Incremental forever
- Snapshot mgmt
- Encryption
- WAN Optimization

How its delivered

- **Traditional SW license**
- OR
- **Backup as a service via IBM Resiliency Services or IBM Business Partners**

Where data is stored

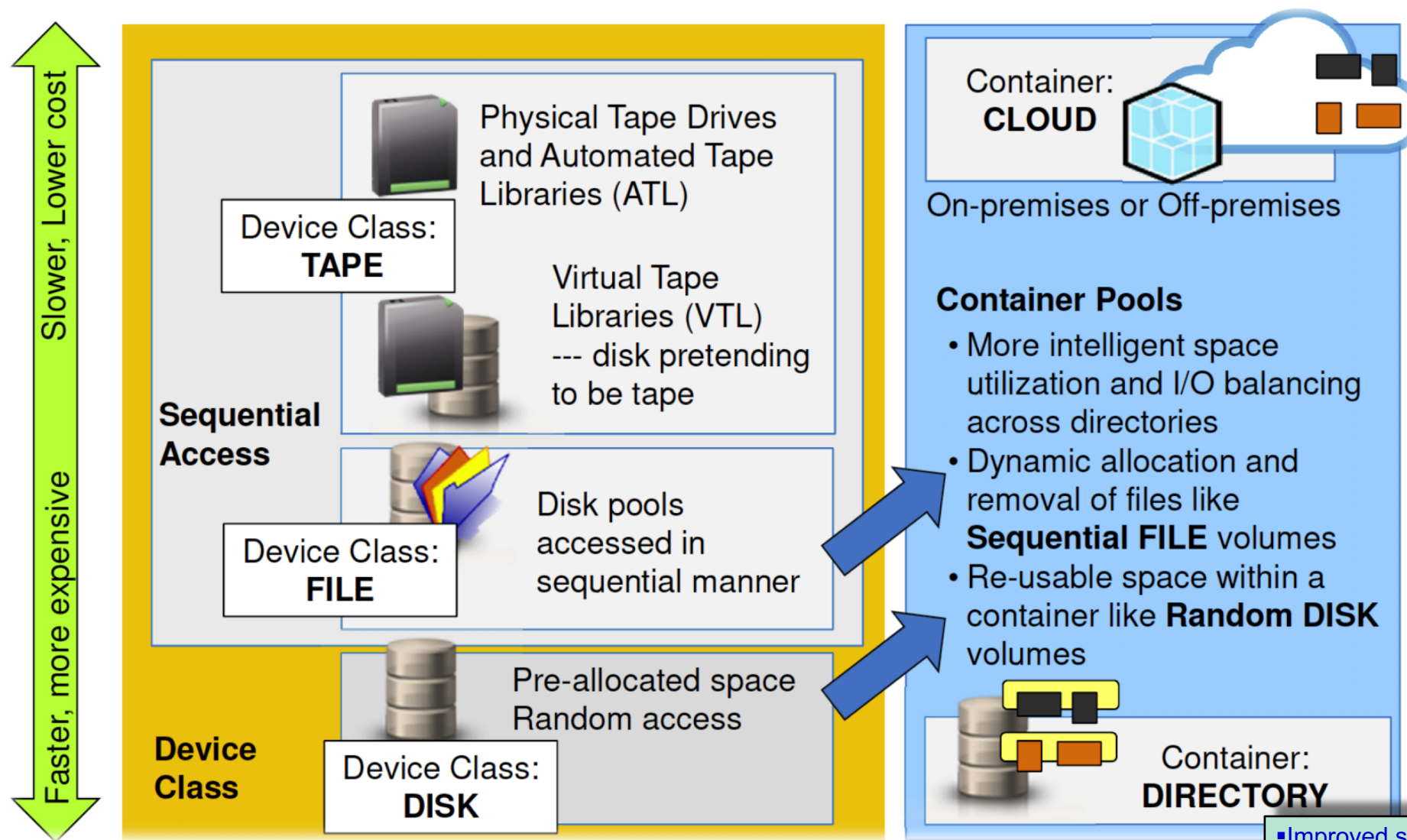
Heterogeneous storage

Cloud Storage



IBM
**Spectrum
Protect**

Container-based „inline deduplication“ pool Gen2 *(from v7.1.3, Q3 2015)*



- Improved scalability and performance
- Simplified administration
- Eliminate need for gateway

IBM Spectrum Protect Deduplication (development from 2009, Gen1 from TSM r6.1x -> Gen2 from SP 7.1.3, 2015)

Differentiated hybrid data protection capabilities

inline SW deduplication Gen2

Breakthrough cost and performance improvements for scalability and efficiency of software defined deduplication, increased ingestion rates, and increased capacity

- Up to 10x improvement in capacity per Spectrum Protect server
- Up to 100 TB daily ingest and replicate
- 1 PB stored, 4 PB protected per server

	Previous Deduplication	7.1.3 Deduplication
Server side dedupe	Post process	Inline
Client side dedupe	Yes	Yes
Max dedupe storage pool size	100 TB	1 PB
Managed data	400 TB	4 PB
Reclamation process required	Yes	No

- ✓ Up to **53%** reduction in backup infrastructure costs¹
- ✓ **No charge** software-defined deduplication delivers the performance of DD4500 without the cost and complexity
- ✓ **One** Spectrum Protect server does the work of **up to 15** CommVault servers/media agents
- ✓ **One** Spectrum Protect server does the work of **up to 5** NetBackup backup/media servers
- ✓ Designed for hybrid **cloud**

Spectrum Protect Operations Center *(from v6.1.3, Q2 2014)*

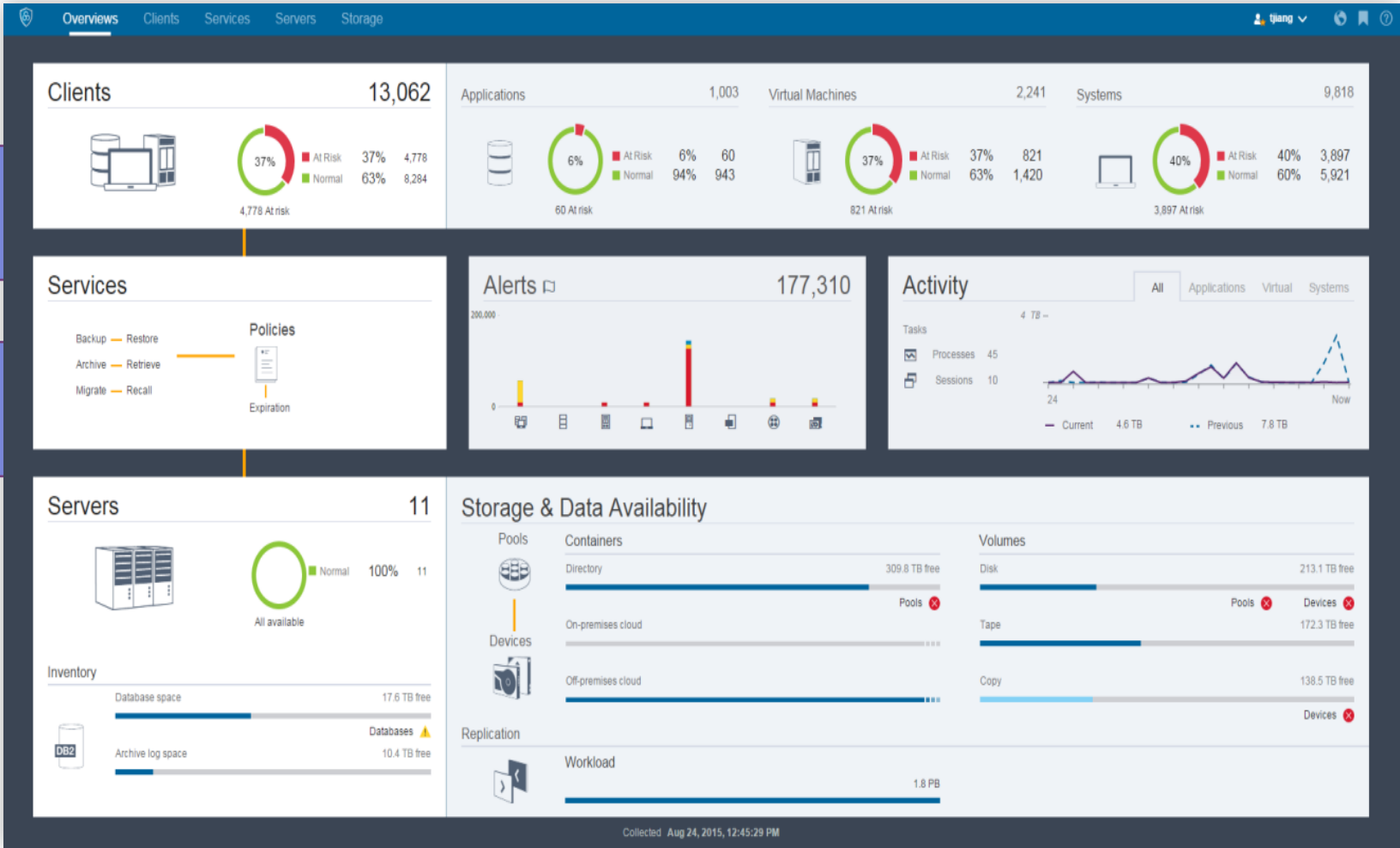
Now, anyone can be a backup expert

Is anything breaking or broken?

Is my data protected?

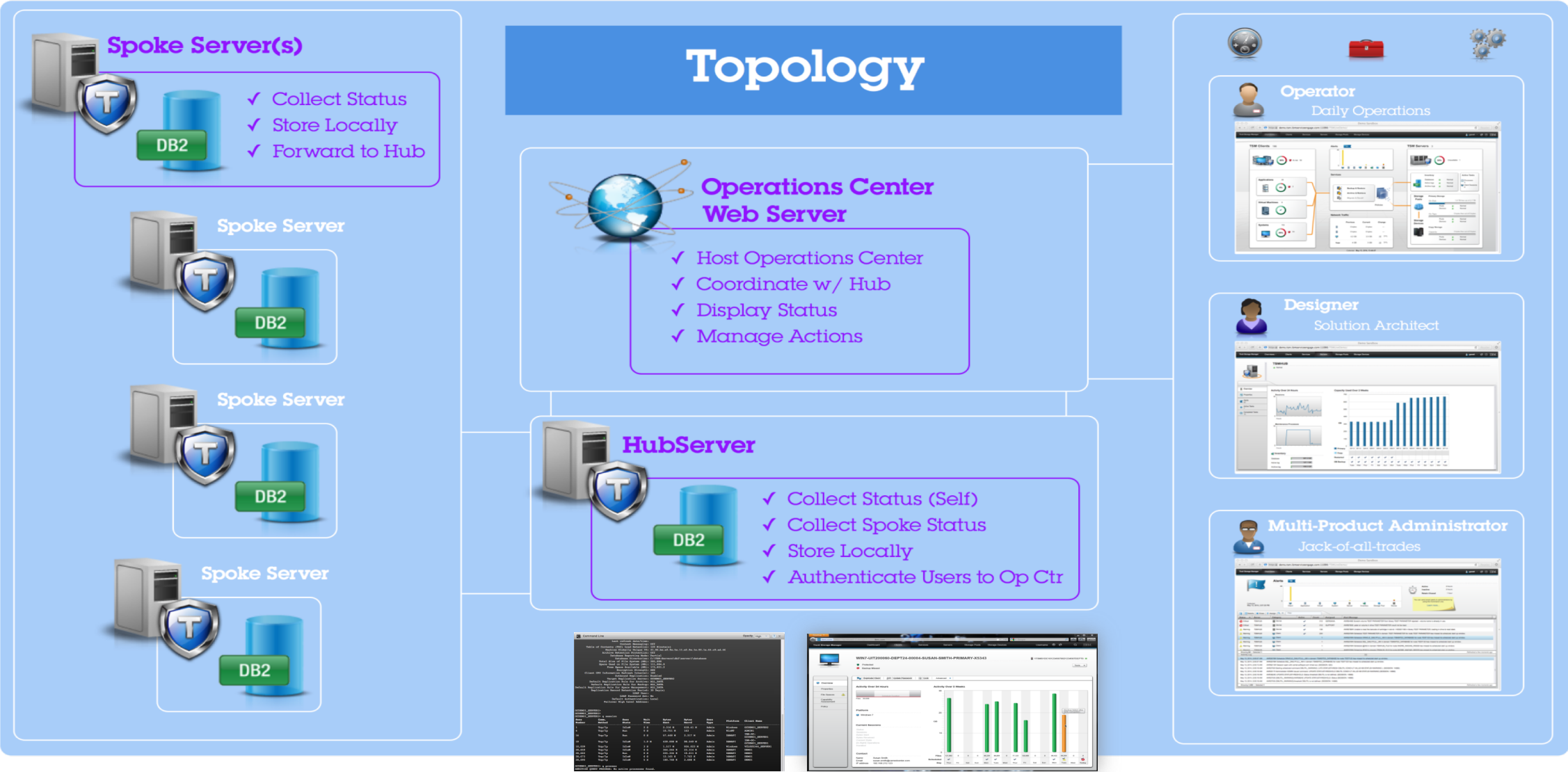
Are my backup servers healthy?

Do I have capacity?



Spectrum Protect Operations Center *(from v6.1.3, Q2 2014)*

Topology Overview

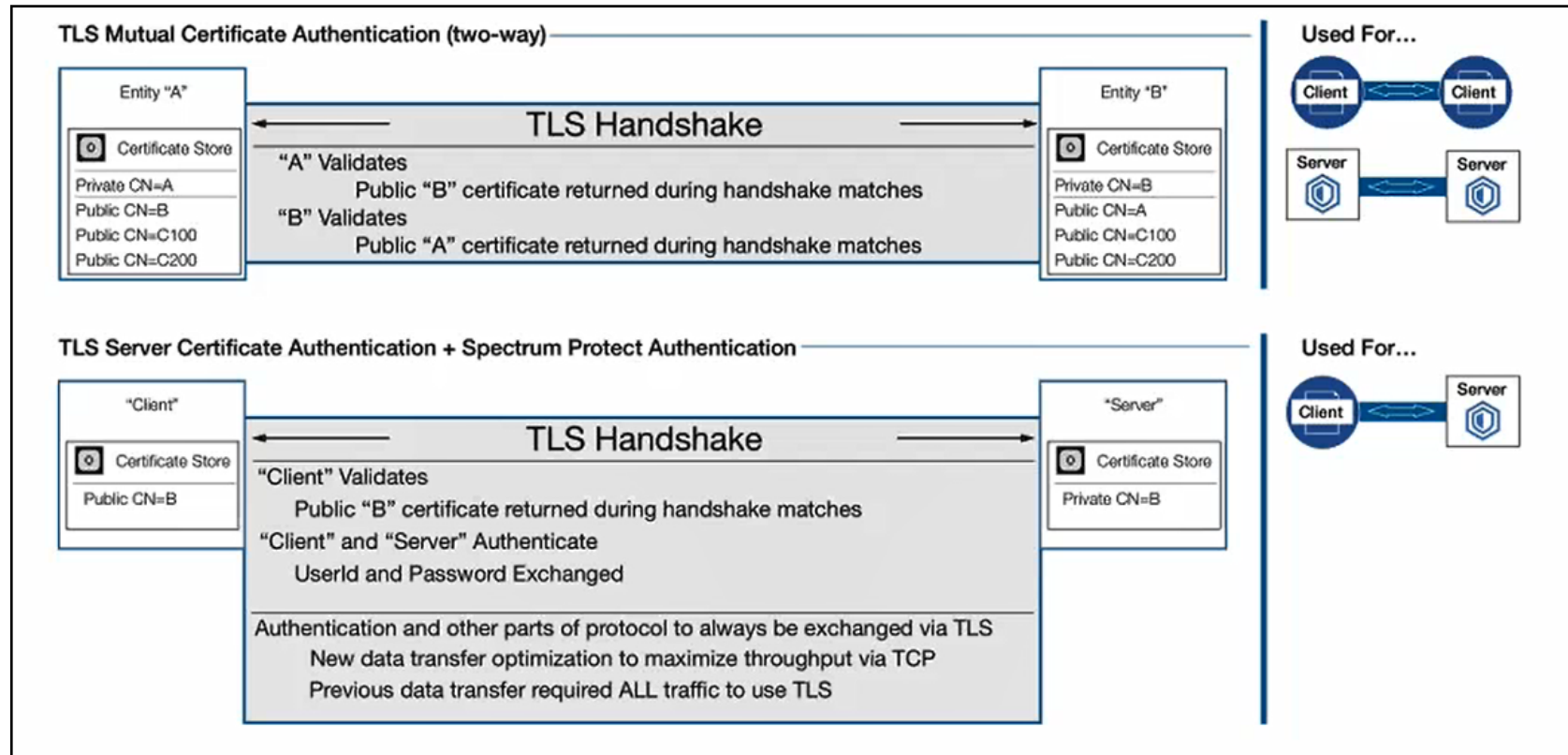


Server, OC, Client – TLS 1.2 Default for Communication *(from v8.1.2. 2016)*

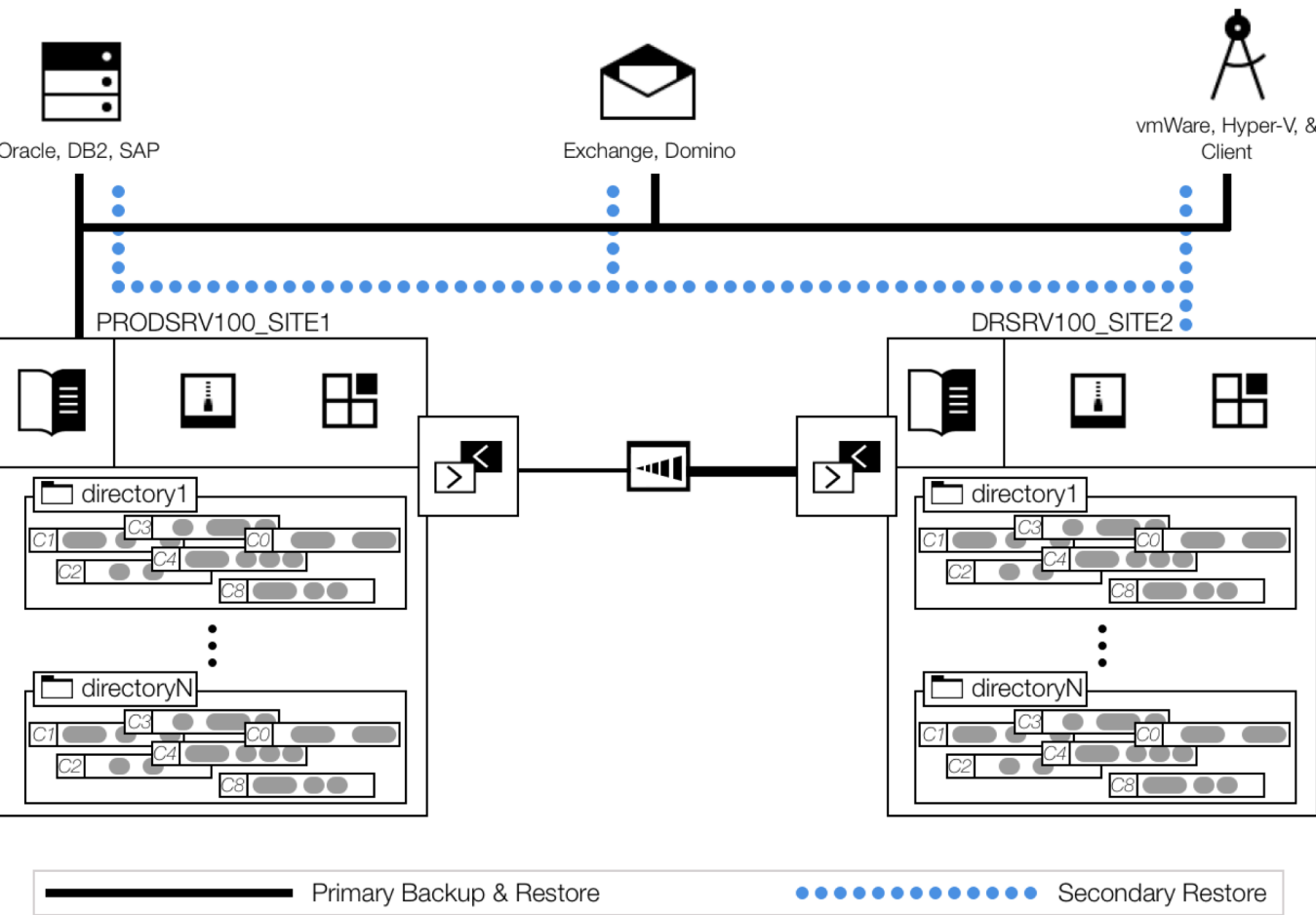
Previously: SSL was optional, certificates manually installed and server must be restarted

8.1.2+: Improved security protocol encrypts all communication between server, admins, OC, clients & SA

- Simplifies configuration and assists in automatic use of SSL TLS1.2
- Ensures all required certificates are exchanged including CA-signed certificates
- Certificate Authority (CA) signed certificates are supported



IBM Spectrum Protect - intelligent data protection leveraging hybrid cloud



- Deduplicate**
Maximize storage efficiency by storing only what is necessary
Reduce network bandwidth when necessary by sending less data
- Compress**
Maximize storage efficiency by compressing the stored data
Reduce network bandwidth when necessary by compressing the data
- Catalog (DB)**
Space efficient database design optimized for deduplication
Highly scalable server capable of protecting many PB of data (pre-dedup)
- Container Storage Pool**
In-line synchronous deduplication
Foundation for “store to disk” (D2D) and “store to cloud” (D2C) solutions
Compatible with prior deduplication capable clients
Introduced in 7.1.3
Chunk level repair from replicated target using PROTECT STGPOOL
- Replication**
Space efficient database design optimized for deduplication
Up to 100 TB / day (pre-dedup)
Clients aware of primary and secondary servers
Client automatic restore from secondary server
- WAN Acceleration**
WAN acceleration using Aspera
Mitigate latency and packet loss
Server to Server Replication
xLinux (7.1.6), Windows (Target 7.1.7)

Benefits of Upgrading to the current version of Spectrum Protect r8.1

IBM improved „Return on Investment“ in TSM R8.1x

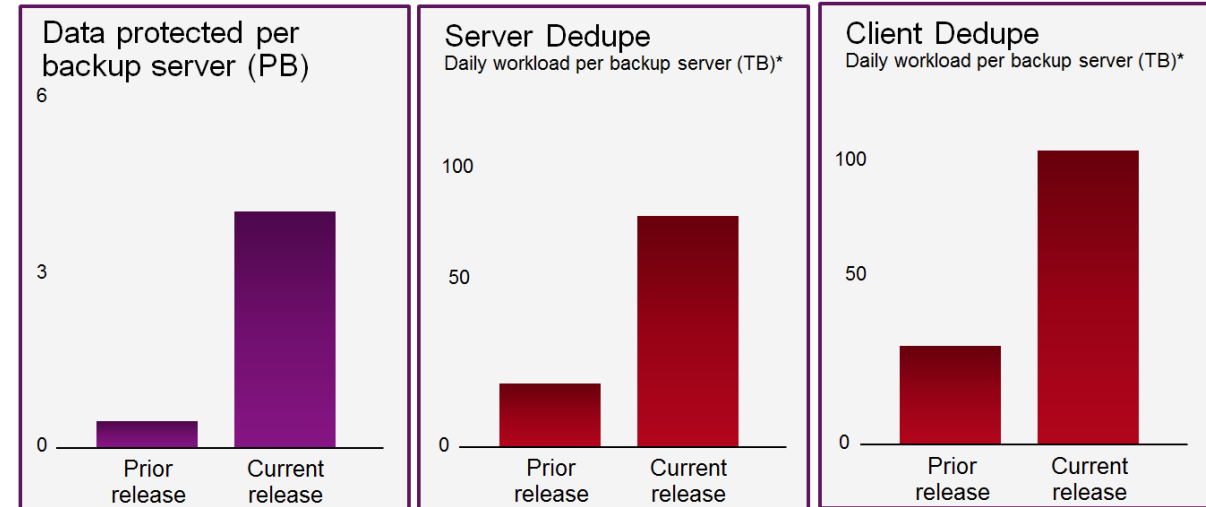
- Scalability increased by 800% from TSM R5/6
 - Support up to 6 Billion data objects per TSM Server
- Built-in Data Deduplication and Compression – **no extra charge**
 - Source and target deduplication
 - Combines with progressive incremental backup to reduce data by 95% or more
- Simplify Administration
 - Automated client software updates across all platforms
 - New reporting and monitoring across the family with custom report creation
- Improve service levels and availability
 - New client data/metadata replication for warm standby disaster recovery
 - Faster backups and restores reduces downtime
 - Cloud WAN replication optimization

Improved Performance and Reliability

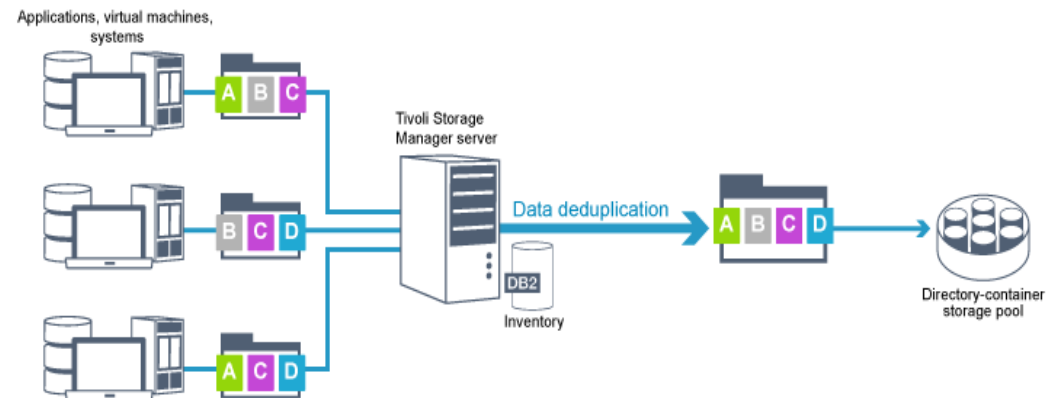
- DB2 database ‘under the covers’
- Eliminates most database administration

Enterprise scalability, delivered entirely in software

Are you paying extra for deduplication today?



* IBM internal tests. Includes ingest, deduplication, replication and maintenance



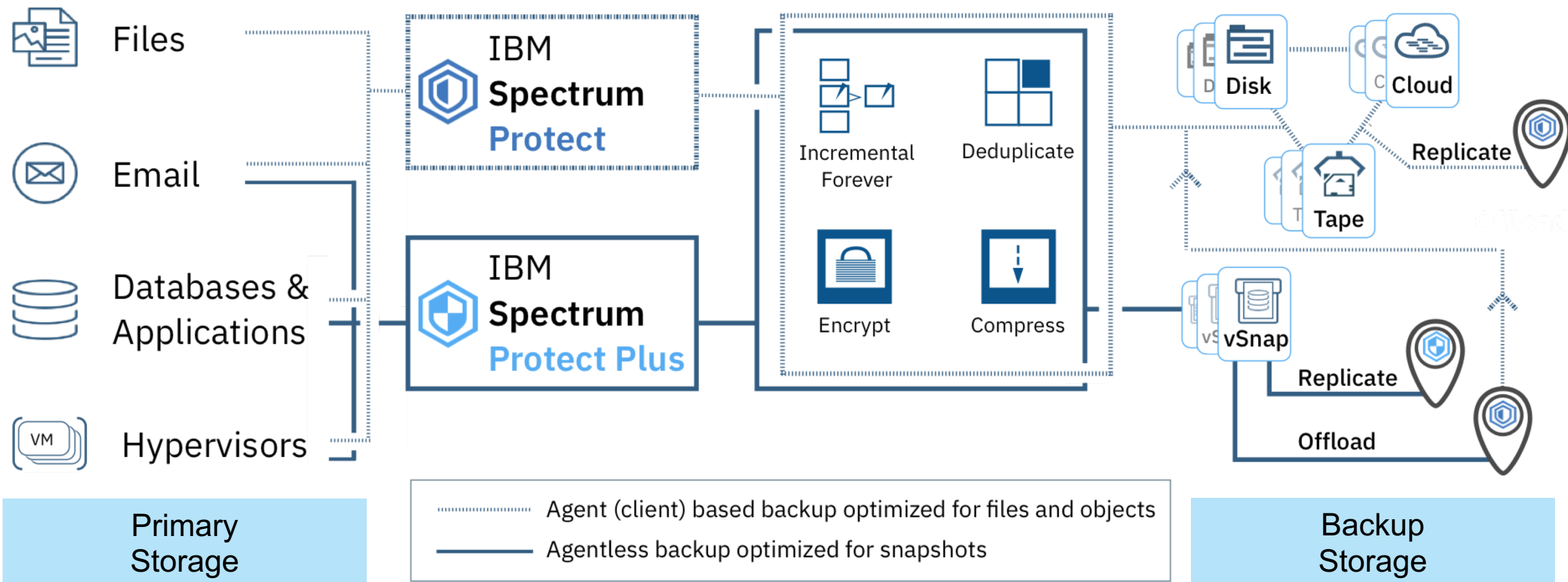
IBM Spectrum Protect - Intelligent Data Protection and Data Re-use

Workloads...

SLA managed...

optimized...

protected



IBM Spectrum Protect Plus – Introduced in November 2017



IBM
Spectrum
Protect Plus

**Easy to Deploy
and Manage**



Immediate ROI

Intuitive User Interface



Lowest RTO/RPO

Proactive Backup Catalog



Hypervisors, DBs, and Apps

**Instant Recovery
Data Access**



Broad coverage

Software Defined



Software-defined

Self-service – RBAC



Archive, DR

**Automation
Orchestration**



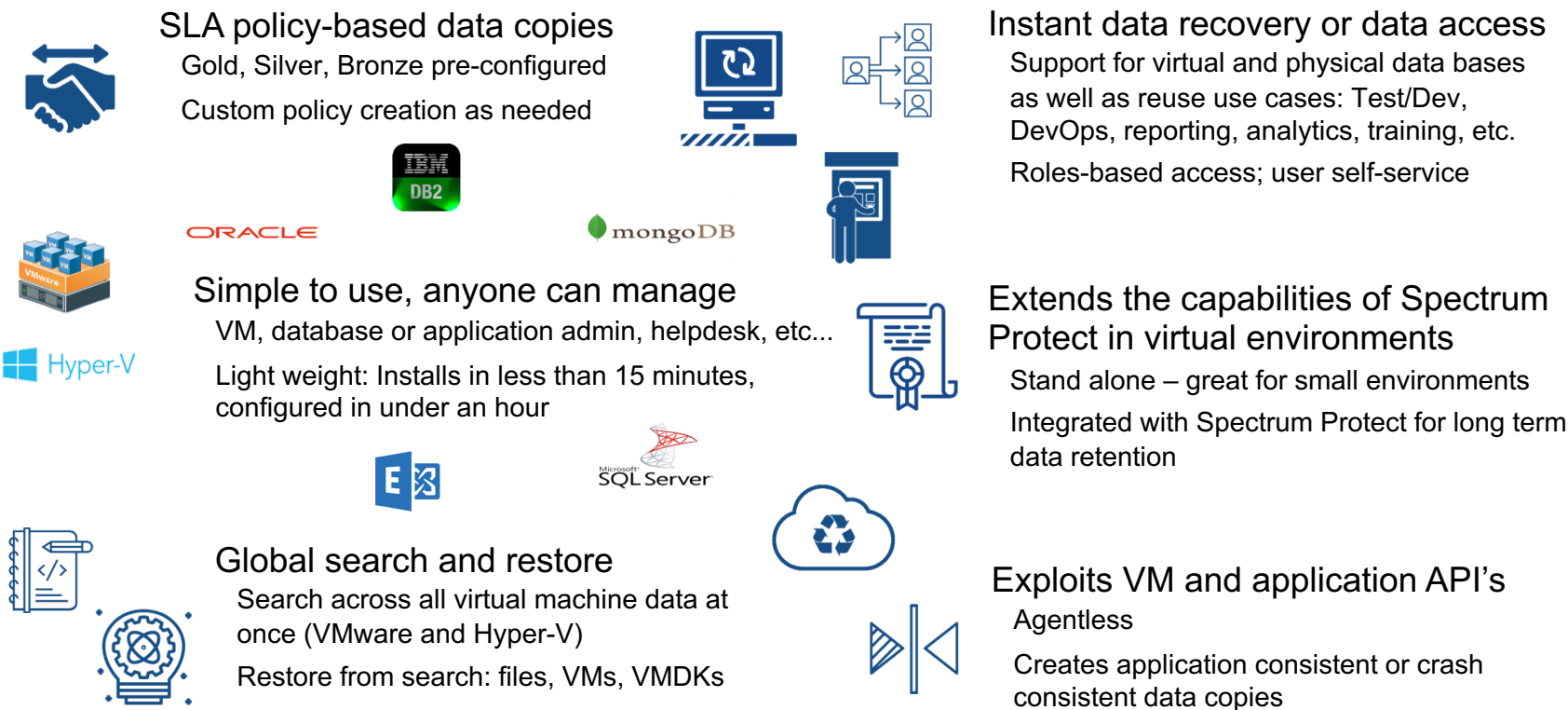
DevOps, Dev-Test

RESTful APIs



Lower OPEX, more reliable

6 Key Spectrum Protect Plus Attributes



Nov 2019

IBM Spectrum Protect Plus 10.1.5	IBM Spectrum Protect 8.1.9
✓ Container backup, recovery and retention for Kubernetes	✓ Retention Sets – Deletion Hold
✓ Office 365 – Exchange Online / OneDrive	✓ Dual Authorization for Admin commands
✓ VMware Cloud on AWS	✓ Spectrum Discover Integration
✓ and more ...	✓ HSM Windows RST API
	✓ and more ...

Spectrum Protect Plus 10.1.x Interactive Live Demo

<https://spp.tsm.ibm.serviceengage.com/demo/>

Spectrum Protect 10.1.x 30-day trial download

<https://www.ibm.com/cz-en/marketplace/ibm-spectrum-protect-plus>

Spectrum Protect Plus All Requirements Doc

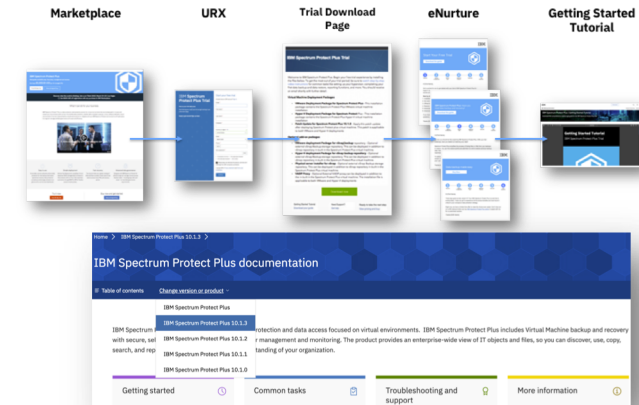
<https://www.ibm.com/support/pages/ibm-spectrum-protect%E2%84%A2-plus-all-requirements-doc>

Spectrum Protect PLUS blueprint and Dedup DISK sizer

<https://www.youtube.com/watch?v=1tTrRpPTz7g>

Spectrum Protect Plus DEMO & Webcasts

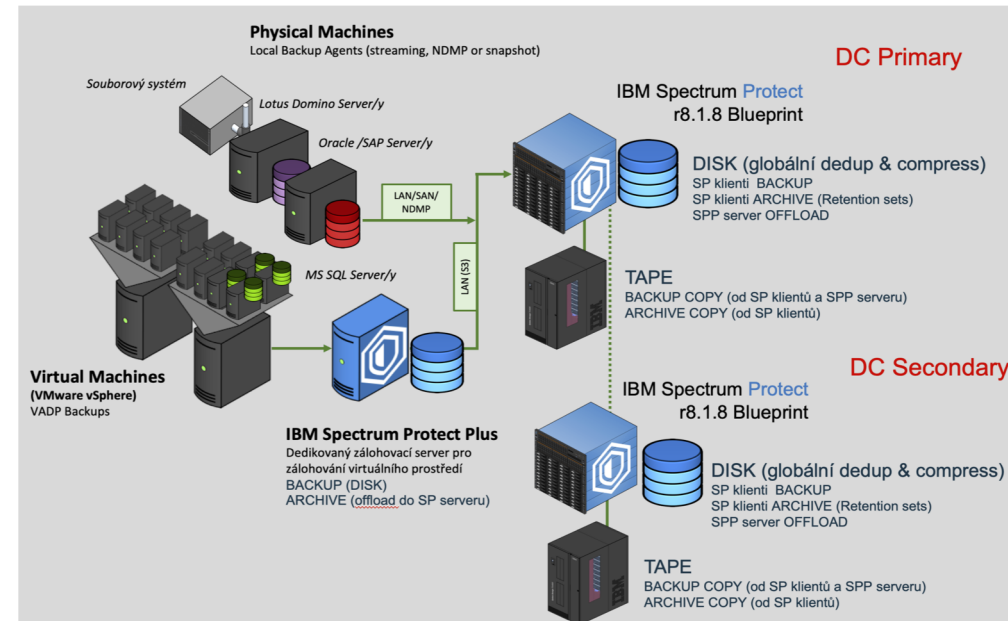
<https://www.youtube.com/user/TSMevangelist/playlists>



IBM
Spectrum
Protect Plus

Spectrum Protect Plus is licensed **per 10 pack of Managed Virtual Servers (VMs)** when protecting virtual machines (all functions for VMs and Applications included).

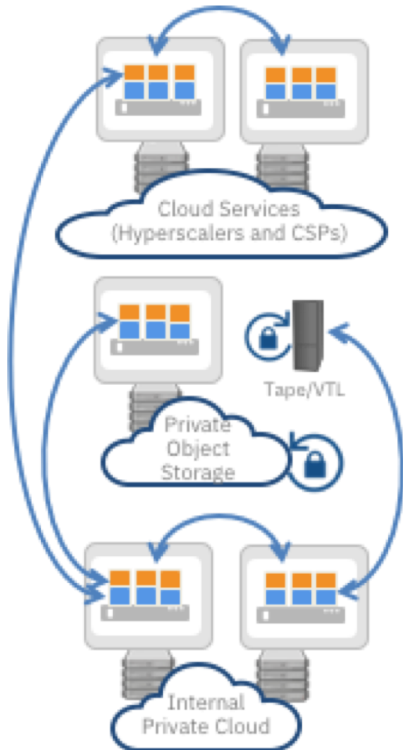
Spectrum Protect Plus is licensed **“per source/protected databases TB” ONLY** when protecting applications such as MS SQL & Exchange, Oracle DB2 and MongoDB **on physical machines**.



Modern Data Protection

“IBM: Best positioned to help organizations modernize data protection over next 12-24 months”

2019 ESG Research



IBM Spectrum Protect Suite

Industry's most robust support matrix

- Single vendor simplicity
- Physical virtual, application, and container environments

Cost-effective data retention

- Data reduction technologies including deduplication

Instant VM recovery and Secondary data re-use

- Role Based access for self service

Proactive Global Catalog

- Global search / restore

Supports a robust Cyber Resiliency strategy

- Flexible, multi-target: Disk, Tape, COS, or Public Cloud

Most scalable and flexible data protection solution

- Easy to use: agentless backup, role-based access

Flexible licensing models

- Cloud, Monthly, and on-premises options

IBM Advantage

Lower Storage Costs

Require 70% less storage capacity for backups (typical)

CapEx/OpEx Savings

63% average reduction in overall data protection costs

Scalable Solution

Billions of objects per server

Higher Performance

100TB/day per server

Exceed SLAs

75% Faster Backup,
Restore 2.5 TB VM in < 3 mins

Cyber Attack Preparation

Ransomware Detection