Moderniser votre infrastructure de sauvegarde avec IBM Cloud Object Storage et IBM Spectrum Scale

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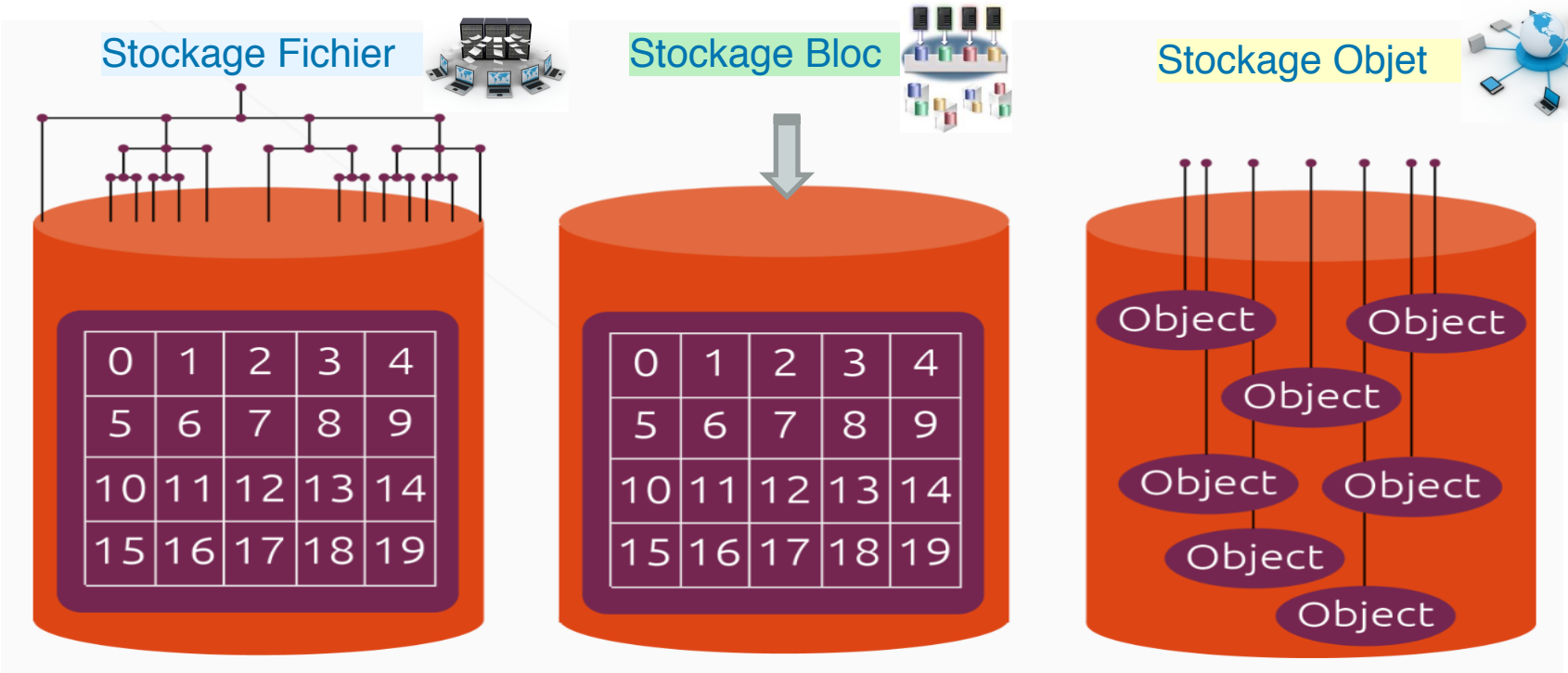
IBM Spectrum Protect, Spectrum Scale and Cloud Object Storage are all part of the Spectrum Storage Suite

Complete value to drive cost efficiency and total management

- **Simplify financial planning**
  - Straightforward per-TB pricing for the entire suite
  - Pricing related to storage capacity, regardless of storage use
  - Savings up to 40% compared with licensing offerings separately
- Support business **growth and changing requirements**
  - No software licensing hassle when migrating from one storage or data type to another
  - No unexpected charges when using new capabilities
- **Enable rapid testing** and deployment of new business solutions
  - No delay while necessary software is acquired
  - No-charge use of software for non-production use
- Improve productivity and reduce error
  - Consistent user interface across all offerings
- Simplify support with all SDS solutions from IBM

Différences entre les technologies de stockage

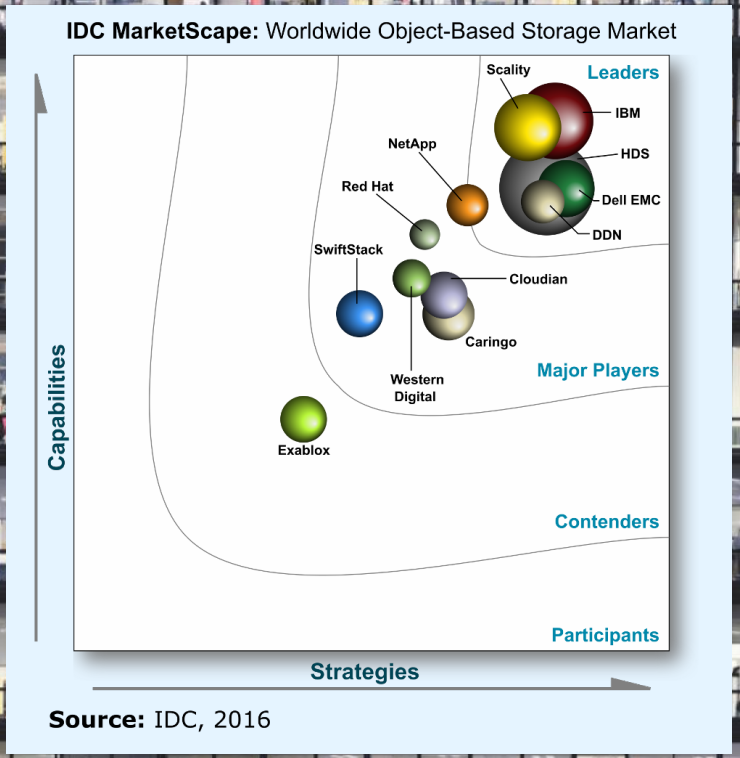


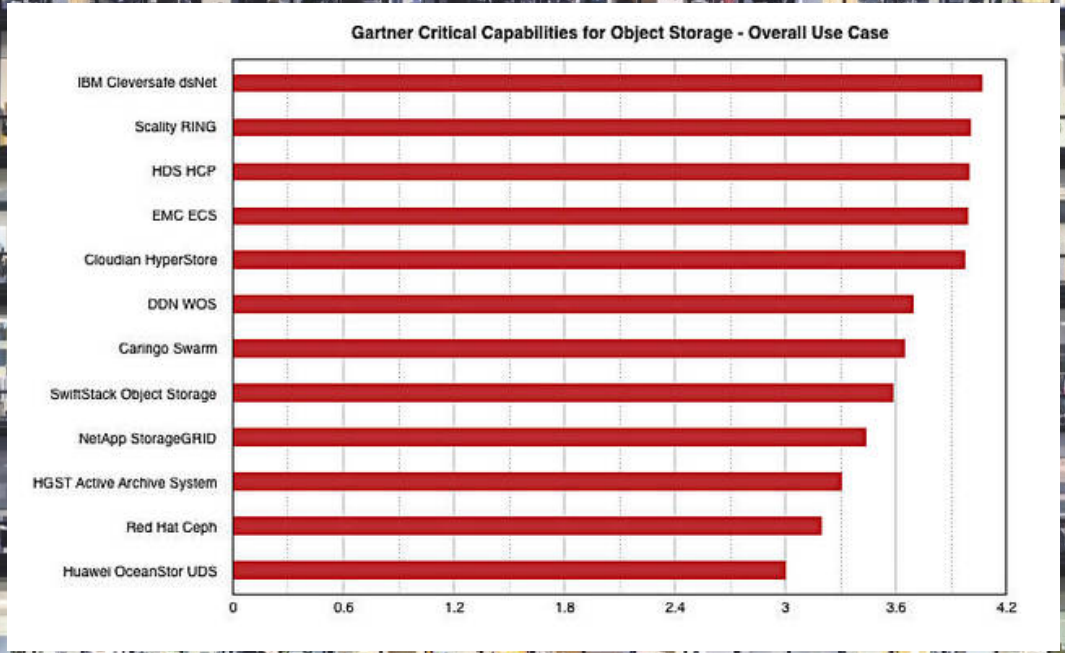
Fichier – Données non structurées en croissance, gérées par OS i.e. le **SYSTEME DE FICHIERS**

Bloc – Données traditionnelles structurées et gérées par OS i.e. **BASES DE DONNEES**

Objet – Données non structurées en plus forte croissance et gérées par les **APPLICATIONS**

IBM Cloud Object Storage





Un leadership reconnu

« MarketScape Object-Based Storage Market »
IDC, décembre 2016

« Critical Capabilities for Object Storage »
Gartner, Avril 2016

Historique cleversafe

Editeur de logiciel

- Fondé en 2004 à Chicago
- Délivre des produits depuis 2008

Stockage Objet “Software Defined”

- Plus de 100 personnes dédiées au développement du logiciel

Fonctionne sur base Standard x86

- Plates-formes certifiées pour offrir aux utilisateurs une expérience de catégorie “entreprise”, des performances prédictibles et le support associé

Etapes clés

Plus de +400 Brevets déposés

Leader du stockage Objet depuis 2014(1)

Plusieurs Exabytes en production

Acquis par IBM en 2015

Sources: IDC Object Storage Marketscape, 2014

IBM Cloud Object Storage dispose de toutes les forces et les différenciateurs dont nos utilisateurs ont besoin

Evolutivité – performances et/ou capacité extensibles à tout moment sans interruption du service ***(Limite théorique: 10,000PB)***

Sécurité - chiffrement des données au repos offrant une capacité de conformité de niveau “gouvernemental”. Un disque unique, un nœud ou un site ne contiennent pas suffisamment d’informations pour constituer une faille sécurité. La gestion des clés de chiffrement est intégrée (***zero-touch security***).

Disponibilité – pas d’arrêt de service pendant les mises à jour logicielles, matérielles, ainsi qu’en cas de perte de disque, de nœud, ou de site (***data reliability 15x9***).

Simplicité de gestion – ***No RAID*** - pas de schéma RAID ou de réplication à gérer. Gestion de plusieurs pétaoctets de données sur plusieurs site, avec moins de personnes.

Efficacité – moins de stockage brut implique moins de consommation électrique, de climatisation et d’espace au sol (TCO réduit) le tout sur du matériel de commodité

Modèle de déploiement: « on-premise », SDS, Hybrid and Public Cloud

IBM Cloud Object Storage SecureSlice technologie redéfini la sécurité et la disponibilité des données data.

Data

1

Encrypts data

AONT*

Encryption

Transforms, expands, slices data

2

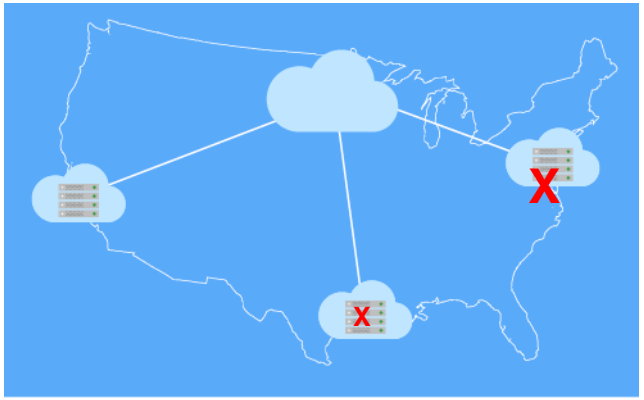
*All-Or-Nothing transform

SecureSlice technology ensures:

- Data is available, even in the face of a regional outage.
- Data is protected with no external key management required, even in the face of regional security breach.

3

Disperses slices of data across regions



4

Retrieves data with a subset of the slices.

Data

Decrypts data

6

AONT*

Decryption

Decodes data

5

1,7 expansion factor

Plate-forme logicielle IBM Cloud Object Storage (Software Defined)

Manager

- Gestion des défauts
- Etablissement de rapports
- Approvisionnement
- Surveillance des Performances
- Configuration du stockage

Accesser®

- Découpage des données
- Dispersion des données
- Récupération des données
- Indépendant de la localisation

Slicestor®

- Stockage des données réparties (“slices”)
- Site unique ou multi-site
- Prix basé sur la capacité
- Reconstruction des données réparties

Plates-formes standard de l’industrie supportées par IBM Cloud Object Storage

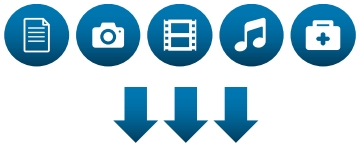
cisco · Hewlett Packard Enterprise · SUPERMICRO · IBM Bluemix · Seagate · Lenovo · IBM

Software Defined & Hardware Aware

Qualifié pour des performances prédictibles
Mise en production plus rapide
Choix de technologie disque (HDD)
Point unique de gestion du HW & du SW

Différents modes d'accès

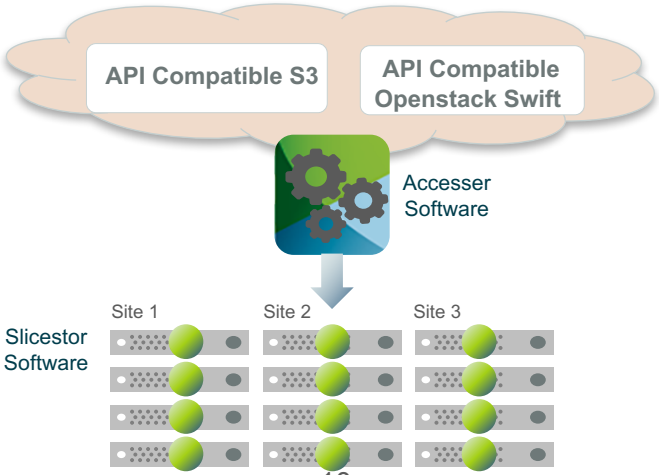
Données



NAS (CIFS/NFS)	GED / Documents	Sauvegarde/Archive	Diverses aplications
ctera, panzura, NASUNI, AVERE	FileNet, IBM ECM, Microsoft SharePoint	IBM Spectrum Protect, VERITAS, QSTAR TECHNOLOGIES, COMMVAULT, z/OS, iSeries, DS8000, IBM Spectrum Virtualize, SVC	IBM Spectrum Scale, aspera an IBM company, ctera, CloudBerry Lab, SME

Basé sur des partenaires

Divers partenaires IBM Cloud Object Storage offrent d'autres modes d'accès (NAS, GED, applications, stockage, etc…)



Accès direct aux API

Le logiciel des Accessers présente 3 API REST pour l'accès aux objets.

Flexible deployment options across one, two or more sites

Single site most cost effective

Site A

Two site traditional mirroring

Site A

Site B

Geo-dispersed multiple sites and most deployed by customers

Site A

Site B

Site C

Any one or more sites can be located in IBM Cloud

IBM Cloud Object Storage – *CD Mode* *(GA dec. 2017)*

Standard mode of slice dispersal:

More devices required

Concentrated dispersal mode:

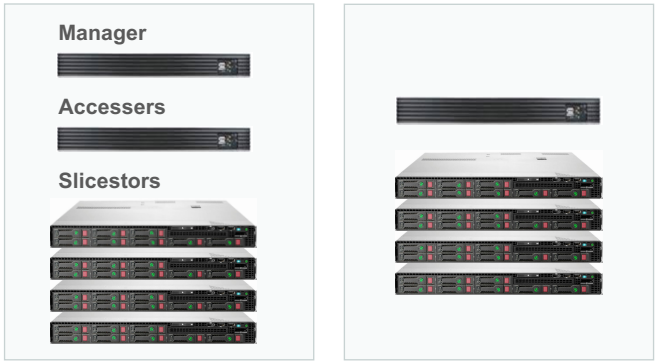
Multiple slices per Slicestor server,
but at least two disks per slice

Smaller configurations with less devices

Three site minimum system @ 72TB

Three site solution with concentrated dispersal mode

Current three site minimum system



Site A

Site B

Site C

288 TB useable

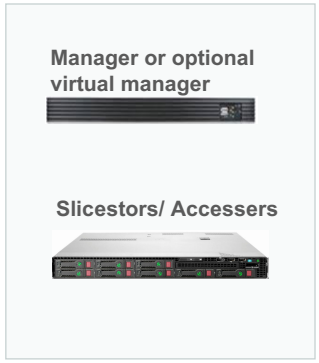
Lower entry cost

75%+ reduction
in resources

30% reduction
in per GB price

Gain storage efficiency

Using CD mode



Site A

Site B

Site C

72 TB useable

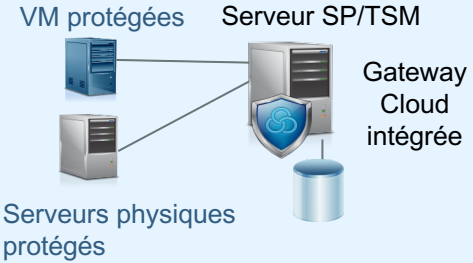
Note: 1, 2, 3 or more sites are all supported

Many ways to use IBM Cloud Object Storage

Backup	Archive	Enterprise collaboration	Storage as a service	Content repository
Backup target	**Archive data**	**Secure sharing**	**Provide a service**	**Live content data**
IBM Spectrum Protect	IBM Spectrum Scale	CTERA	Cloud service	IBM Spectrum Scale
CTERA	Apache Spark	IBM ECM	Service Provider cloud	CTERA
RMAN	Apache Hadoop	SME	Analytics service	Apache Spark
Commvault	Analytics		Video production	Apache Hadoop
NetBackup	Avere		Video surveillance	Analytics
Actifio	Tiger Bridge Connector		Picture data service	IBM FileNet
Rubrik	StorReduce			SME
				Panzura
				Avere
				Nasuni

IBM solutions and partner enabled solutions

Depuis Spectrum Protect/TSM 7.1.3 : sauvegarde directe vers le Cloud



Spectrum Protect "On-Premises"

- Sauvegarde/restauration locale classique
- Sauvegarde de certaines données vers le cloud (support intégré)

Données de sauvegarde

Stockage Objet "on-premises" ou dans le cloud

- Tire bénéfice des faibles coûts de stockage objet
- Copies "sur site" ou "hors site"

7.1.6 – Hybrid cloud : cache disque local pour les données allant vers les cloud containers (déduplication/compression intégrées)

8.1 – Améliorations Cloud : "multipart upload" 100 MB, conversion "tape-to-cloud", Operation Center

8.1.3 – Améliorations Cloud : "Tier-to-Cloud", **migration des données** les plus anciennes d'un espace disque vers COS

>> €/TB lower for data stored in IBM Cloud Object Storage - Applies to IBM Spectrum Protect Suite (Back end) only

Cas d'usage Spectrum Protect

Cas d'usage #1: IBM Spectrum Protect stocke une copie primaire de données dans un système Cloud Object Storage

Contexte :

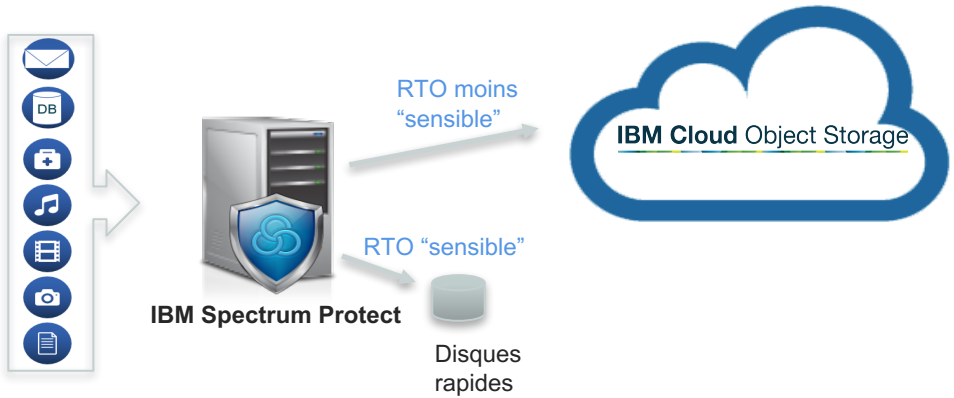
- L'administrateur des sauvegardes est responsable de la protection des données. Il lui est demandé de protéger un volume croissant de données avec un budget en décroissance.

Solution

- L'administration des sauvegardes utilise IBM Spectrum Protect pour stocker une copie primaire des données de sauvegarde pour des travaux moins sensibles au RTO dans COS.

Bénéfice

- IBM Spectrum Protect, integré avec COS réduit fortement les coûts et accroit l'évolutivité de l'infrastructure de protection de données.



Cas d'usage Spectrum Protect

Cas d'usage #2: IBM Spectrum Protect stocke une copie secondaire de sauvegarde dans COS sur un site de PRA

Contexte

- L'administrateur des sauvegardes est responsable de la protection des données. Il a besoin d'une **copie secondaire** de ses données sauvegardées stockées **hors site** pour des besoins de reprise d'activité. Il a besoin que la copie secondaire soit optimisée financièrement pour respecter un budget limité.

Solution

- L'administrateur des sauvegardes utilise la réplication IBM Spectrum Protect basée sur des politiques pour stocker une **copie secondaire** de ses données de sauvegarde dans COS sur le **site de PRA**.

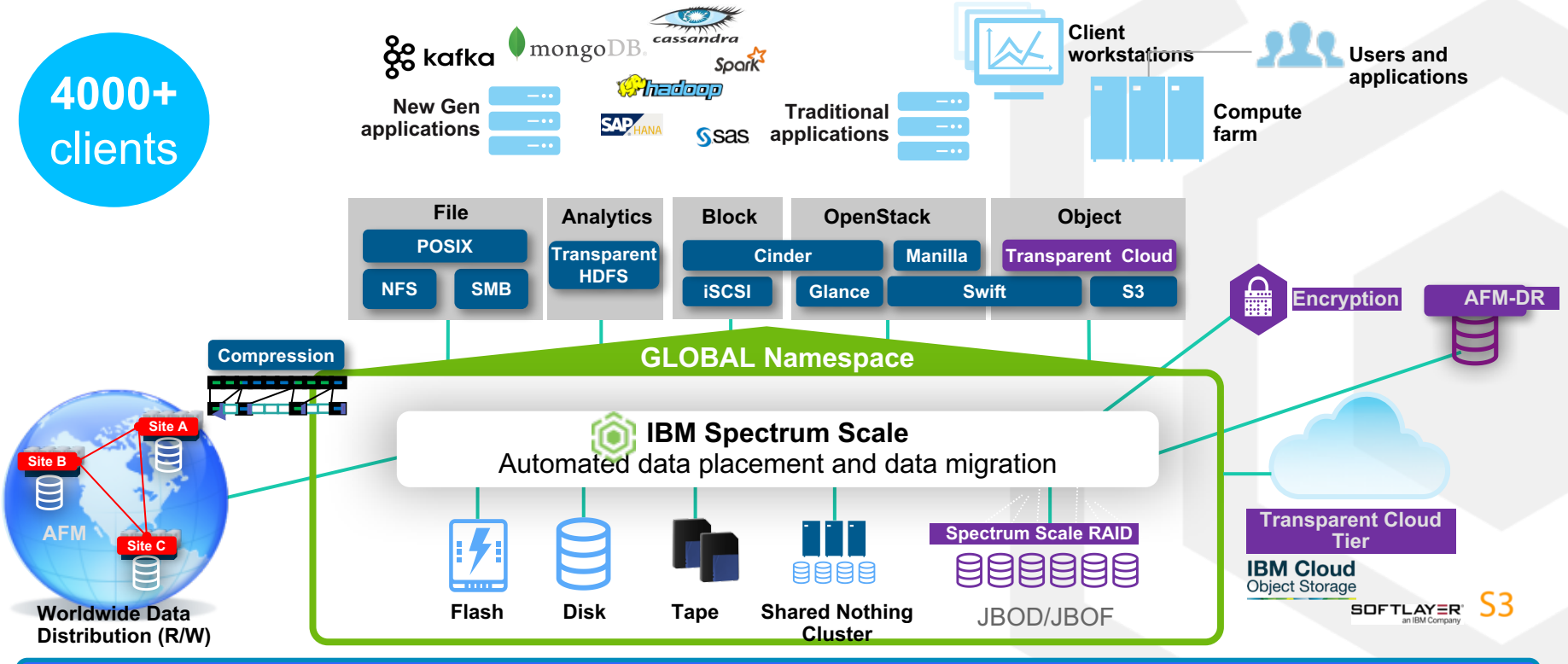
Bénéfice

- L'intégration d'IBM Spectrum Protect avec COS offre une capacité de **copie secondaire** de données de sauvegarde stockée **hors site**, à un coût réduit.

IBM Spectrum Scale

IBM Spectrum Scale

Unleash new data economics on a global scale



Consolidate all your unstructured data storage on Spectrum Scale with unlimited and painless scaling of capacity and performance

IBM Spectrum Scale benefits

Remove data-related bottlenecks

- Demonstrated 400 GB/s throughput, building to 2.5TB/s
- Local caching for Read and Write

Enable global collaboration

- Data Lake serving HDFS, files & object across sites
- Multi-cluster configurations; Sync & Async replication

Optimize cost and performance

- Up to 90% cost savings & 6x flash acceleration
- Transparently tier to Cloud

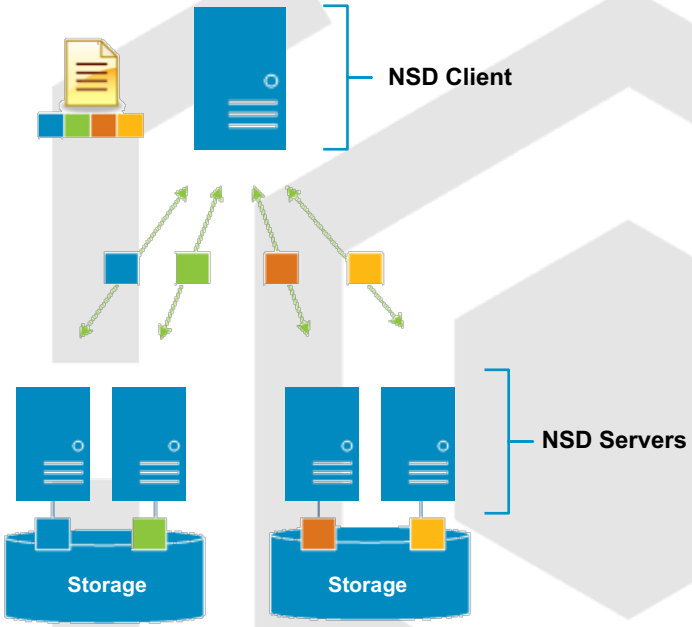
Ensure data availability, integrity and security

- End-to-end checksum, Spectrum Scale RAID, NIST/FIPS certification
- Compression, Encryption, Audit Logging

IBM Spectrum Scale parallel architecture

Eliminate hot spots

- All NSD servers export to all clients in active-active mode
- Spectrum Scale stripes files across NSD servers and NSDs in units of file-system block-size
- File-system load spread evenly
- Easy to scale file-system capacity and performance while keeping the architecture balanced



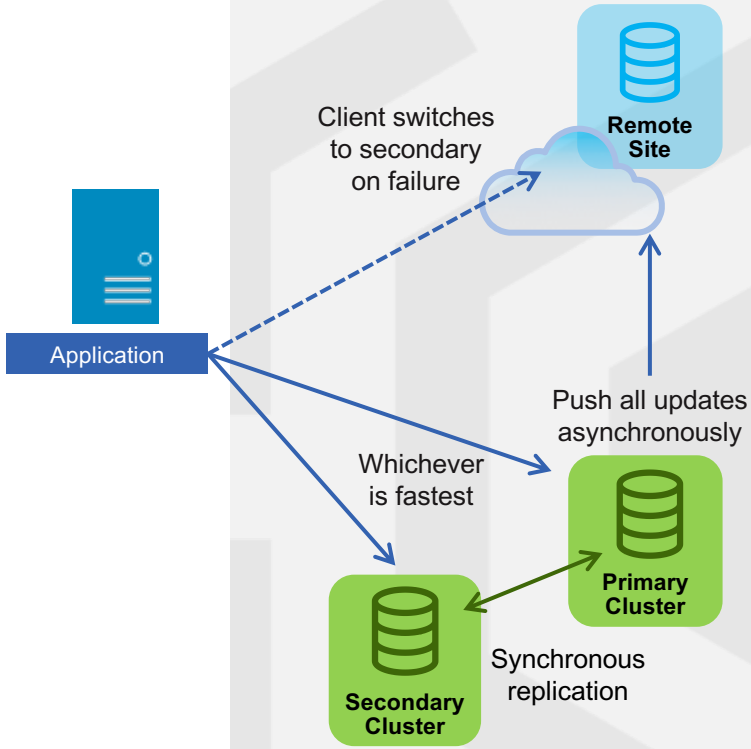
NSD Client does real-time parallel I/O
to all the NSD servers and storage volumes/NSDs

IBM Spectrum Scale deployment options

Remote Mount
- Single copy of data
- Use caching to speed local access

Synchronous replication
- Active/Active data access
- Simultaneous write is sensitive to network latency
- Read from fastest source
- DR with automatic failover and seamless file-system recovery

Asynchronous replication
- Active/Passive data access
- Write now, copy later across network
- Write to Active, Read from fastest
- Any storage target, including cloud



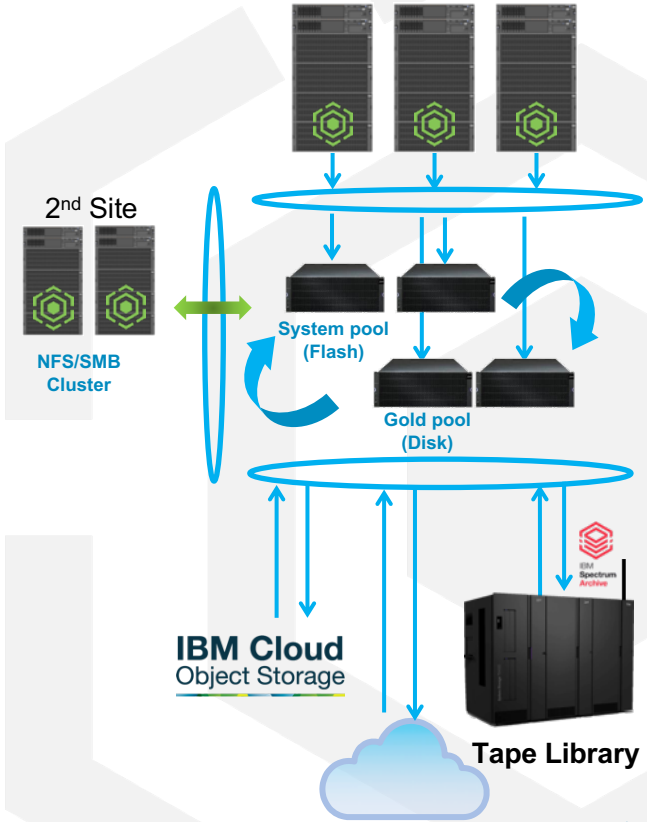
IBM Spectrum Scale data tiering and migration

Analyze and Archive In-Place

- Enterprise HPC with Flash for performance
- Network Shared Disk for modular scaling
- Tier data based upon policy, users actions or workflow
- Lower economics with tape, object, or cloud

- Data always available to end-users
  - Auto-migrate to higher tiers
  - Full data, not stubs
  - Global namespace extends across physical storage and multiple sites

- General High capacity tiered NAS with fast data ingest/retention/share and long term retention
- **Deployed today in multiple clients**



IBM Spectrum Scale GUI

Reduce administration overhead

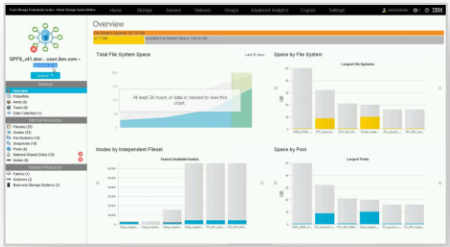
- Graphical User Interface for common tasks

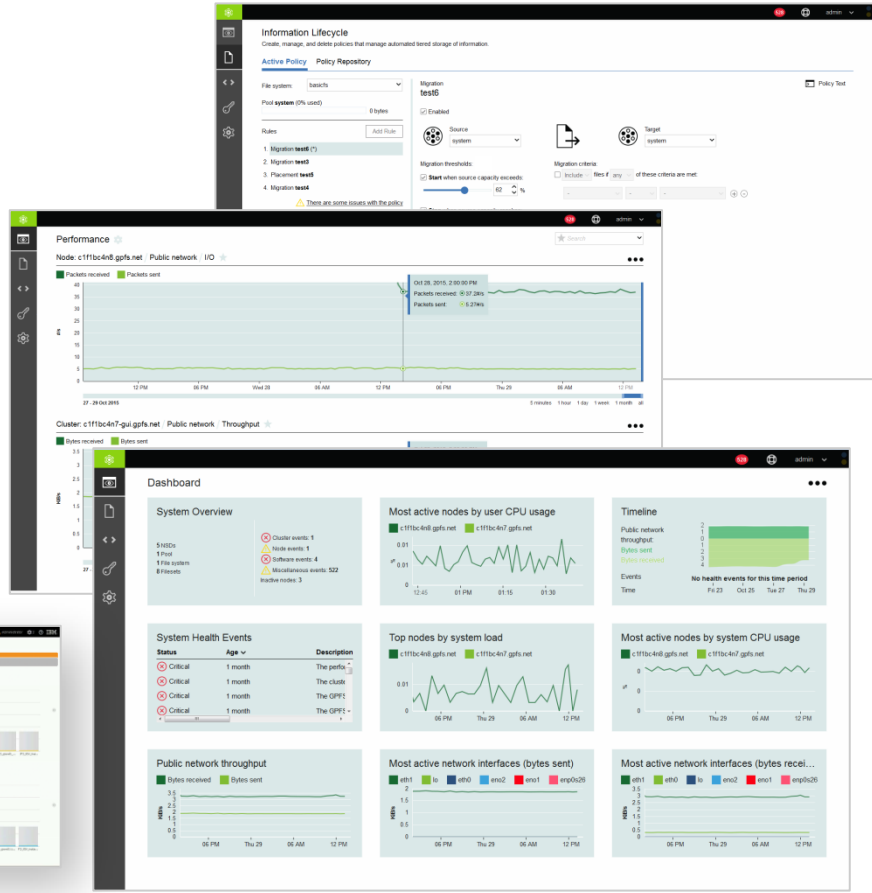
Facilitate adoption

- Based on IBM Storage Framework

Enable management across multiple sites

- Integrate with IBM Spectrum Control





IBM Spectrum Scale deployment options

Three different options:

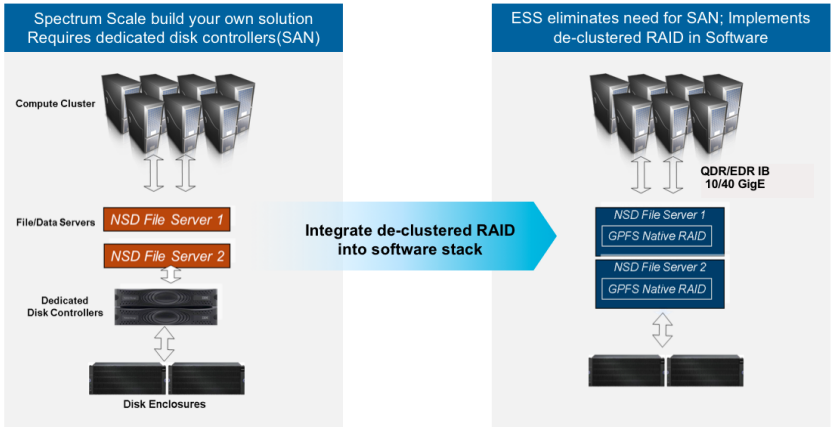
1. Build the solution yourself on your own hardware
2. Purchase a pre-built and pre-configured, ready to deploy integrated appliance
3. Or, go with a cloud based solution – Scale running on IBM Softlayer or other cloud

	Integrated solution	Build your own
Pros	• Minimize risk of unsupported hardware, software, drivers etc. • Server CPU, RAM, I/O and memory bandwidth optimized for the storage in the building block • Quick to deploy and grow the cluster • 7 pre-sized models to choose from	• Flexibility in choosing the hardware configuration • Freedom to pick preferred hardware vendor
Cons	• Fixed configurations • Fixed server and JBOD choice	• Requires back-end block storage • Involves risk of unsupported hardware, software, drivers in the solution stack

IBM Elastic Storage Server (ESS)

An integrated Spectrum Scale building block

- IBM Spectrum Scale software, IBM Power servers and IBM Storage enclosures pre-integrated for faster time to value
- Proprietary software RAID technology to reduce disk rebuild times by up to 7x, and maintain data integrity from disk surface to client
- Complete, ready-to-roll solution including installation services and 3-year warranty
- Available with both high performance (JBOF) and high capacity (JBOD) storage enclosures



1. **Eliminates need for SAN and disk controllers**
2. **Higher storage resiliency & faster disk rebuilds**
   - minutes vs hours/days
3. **End-to-end data integrity**

IBM Elastic Storage Server second generation models

IBM Spectrum Storage

Spectrum Scale

IBM Power8 Linux Server

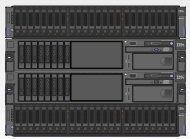
"Twin Tailed" JBOD and JBOF enclosures

Speed

Model GS1S
24 SSD

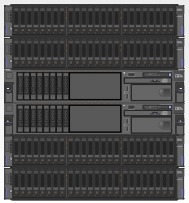
14 GB/s

Model GS2S
48 SSD



26 GB/s

Model GS4S
96 SSD



40 GB/s

Capacity

Model GL2S
2 Enclosures, 14U
166 NL-SAS, 2 SSD

12 GB/s

Model GL4S:
4 Enclosures, 24U
334 NL-SAS, 2 SSD

24 GB/s

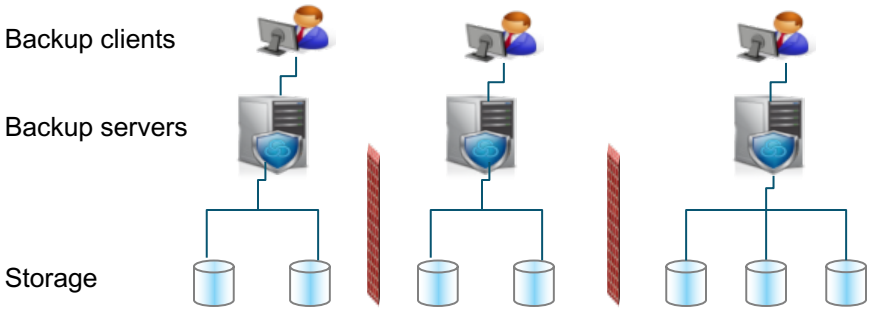
Model GL6S:
6 Enclosures, 34U
502 NL-SAS, 2 SSD

36 GB/s

Using IBM Spectrum Storage for Data Protection

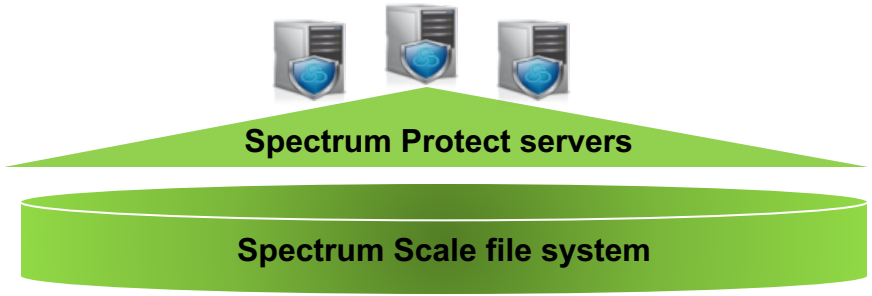
Backup/Restore without Spectrum Storage

- Each backup server has its own dedicated file system
- Expensive appliances handle data deduplication
- Storage islands sprawl with underutilized capacity
- Performance bottlenecks may impact apps and users
- System administration is complex



Spectrum Protect with Spectrum Scale

- Deduplicate data with Spectrum Protect software
- Scale capacity and performance transparently to apps and users, under a single file system and global namespace
- Build your backup infrastructure using commodity building blocks
- Central administration of all storage through common interface
- Leverage file tiering capabilities in storage pools



Case study: Displacing EMC at European car manufacturer

Client environment and requirements

- Client running old Spectrum Protect solution:
  - 5 Spectrum Protect servers
  - Backend storage on EMC arrays (1.5 PB total)
- Multiple problem areas including general restore time and backup window (48h).
  - Performance of backend storage diagnosed as bottleneck for whole solution.
- No deduplication of data.
- No mechanism to protect and centralize backups across all client sites.
- Client expecting backup data volume to grow 25% per year.
- Commvault, EMC and IBM contenders for the new solution.

European car manufacturer case study

Sales approach and solution design

- Delivering new hardware for the Spectrum Protect servers:
  - Consolidating the 5 backup servers down to 2 servers for the primary backup pool.
  - Adding SSD drives in the servers to store the Spectrum Protect database.
  - Implementing node-replication of tier-1 data to a 3rd server with separate storage pool.

- Replacing EMC backend storage with IBM Elastic Storage Server(GL6 & GL2)
  - Single file system shared between the 2 primary Spectrum Protect servers.

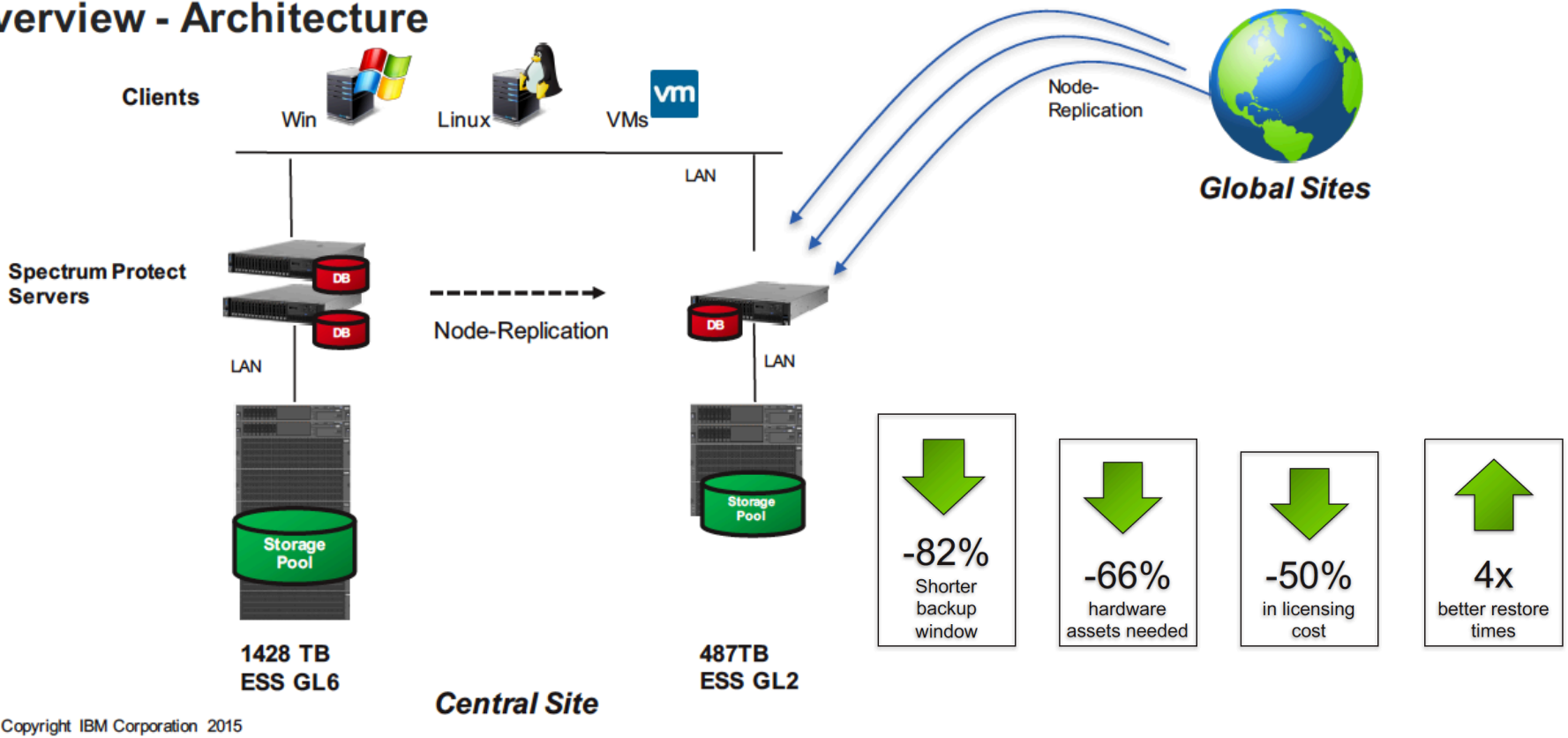
- Replacing the SAN with Brocade 10 GbE switches.

- Upgrading Spectrum Protect to latest version & Implementing deduplication on both Spectrum Protect servers.

- Consulting, project management and migration through IBM Business Partners.

European car manufacturer case study

Overview - Architecture



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