

IBM Client Center Montpellier - France

IBM Spectrum Protect & Spectrum Protect Plus

Technical overview
with live Demonstration

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IBM Spectrum Storage Family

IBM's software defined storage family

<p>Family of Storage Management and Optimization Software</p>			<p>IBM Spectrum Control</p>	<p>Analytics-driven hybrid cloud data management to reduce costs by up to 73%</p>
<p>Any Storage</p>			<p>IBM Spectrum Protect</p>	<p>Optimized hybrid cloud data protection to reduce backup costs by up to 53 percent</p>
<p>FlashSystem</p>			<p>IBM Spectrum Archive</p>	<p>Fast data retention that reduces TCO for active archive data by up to 90%</p>
<p>Private, Public or Hybrid Cloud</p>			<p>IBM Spectrum Virtualize</p>	<p>Virtualization of mixed block environments stores up to 5x more data</p>
			<p>IBM Spectrum Accelerate</p>	<p>Enterprise block storage for hybrid cloud deployed in minutes instead of months</p>
			<p>IBM Spectrum Scale</p>	<p>High-performance, highly scalable hybrid cloud storage for unstructured data</p>

<http://www.smartercomputingblog.com/smarter-storage/what-is-software-defined-storage-economics/>



Spectrum Protect Family of Products

Spectrum Protect Server Products

Spectrum Protect Suite

- *Capacity priced bundle of Spectrum Protect and popular agents*
- *Entry option for smaller facilities*

Spectrum Protect

- *Scalable backups with unified recovery*
- *Deduplication (source and target)*
- *Spectrum Protect Operations Center GUI*

Spectrum Protect Extended Edition (Basic plus..)

- *Disaster Recovery Management*
- *Node replication*
- *Backup via NDMP for NAS*
- *Large Tape Library support*

Spectrum Protect for Storage Area Networks (SAN)

Frontsafe Cloud Portal (reseller)

- *Multi-tenancy*
- *Invoicing*

Rocket Servergraph Progeessional (reseller)

- *Reporting and monitoring for multi-vendor backup software and VTL environments*

Application Protection

- Spectrum Protect for Mail
- Spectrum Protect for Databases
- Spectrum Protect for Enterprise Resource Planning
- Spectrum Protect for Virtual Environments
- Spectrum Protect Plus
- DocAve Backup and Restore for SharePoint (reseller)

Snapshot Management

- Spectrum Protect for Snapshots
- **IBM Copy Data Management**
- Rocket Device Adapter Pack for IBM Spectrum Protect Snapshot, includes adapters for EMC, Hitachi, HP, and NetApp Clust

Space Management, Archiving

- Spectrum Protect for Space Management
- Spectrum Protect HSM for Windows
- System Storage Archive Manager

Desktop / Laptop

- Spectrum Protect for Workstations

Bare Machine Recovery

- System Backup and Recovery (AIX)
- Cristie Bare Machine Recovery (reseller)
- Cristie TBMR (reseller)

z/OS

- Spectrum Protect for z/OS Media
- Spectrum Protect EE for z/OS Media

Spectrum Protect's Architecture

Spectrum Protect **Server**

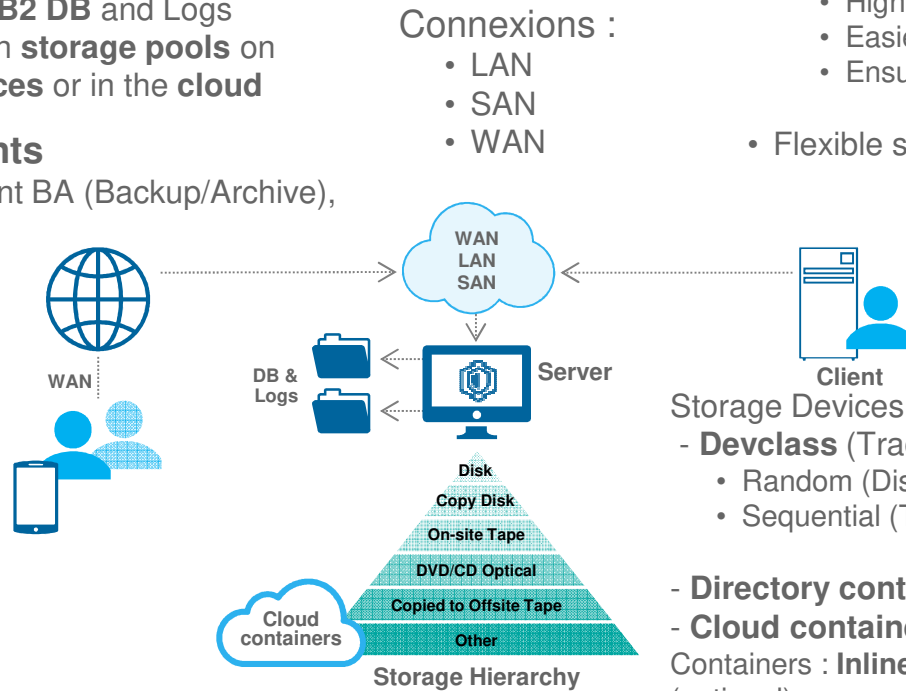
- Spectrum Protect server code
- Meta data stored in **DB2 DB** and Logs
- Physical data stored in **storage pools** on various **storage devices** or in the **cloud**

Spectrum Protect **Clients**

- Spectrum Protect client BA (Backup/Archive),
- HSM (File migration)
- API (Application)

Communication :

- LAN (TCP/IP)
- SAN (FC)
 - LFB - Lan Free Backup
- NDMP - Network Data Management Protocol



Benefits of Spectrum Protect's Architecture

- Power and scalability of DB2
 - Robust, Scalable, Available
 - High Performance
 - Easier to Manager
 - Ensures Data Integrity
- Flexible storage hierarchy

Storage Devices grouped in **Storage Pools**

- **Devclass** (Traditional storage) :
 - Random (Disks)
 - Sequential (Tapes, Virtual tapes, Disks)
 - **Directory container** (local)
 - **Cloud container** (Objects)
- Containers : **Inline deduplication + LZ4 compression** (optional)

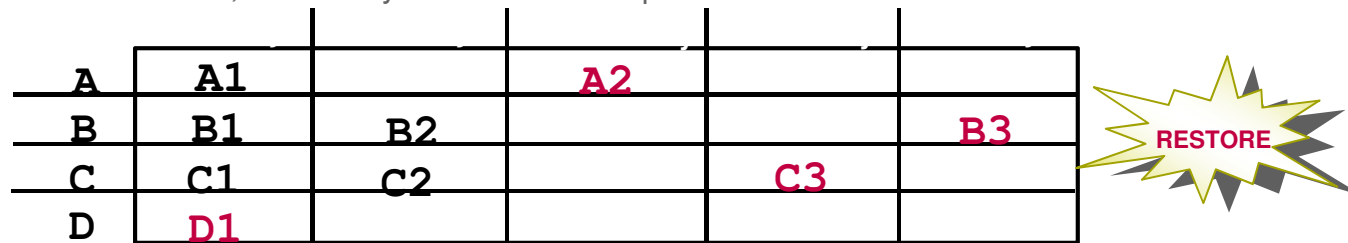
Spectrum Protect – Progressive Incremental Backup

Progressive Incremental Backup

- Often called “**Incremental Forever**”
- Only New or changed files are backed up
- No redundant or wasted full backups
- Data tracked at file level, Accurately restore files to a point in time

Benefits

- Requires less storage space, less network bandwidth and less time
- **Shorter backup windows**
- **Faster accurate restore**



Spectrum Protect – Backup

Data Protection

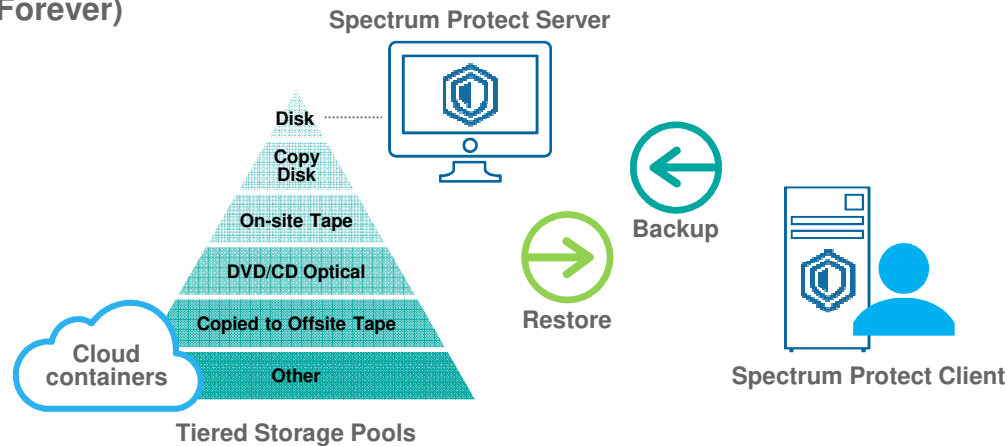
- Multiple versions kept
- **Policy managed**
- System assisted restore
- Automated scheduling

Types of Backup

- **Progressive incremental (Incremental Forever)**
- Volume level
- Bare metal

Benefits of Spectrum Protect's Backups

- Automatically recover files or fs quickly
- Automated off-site copy creation
- Set policies to optimize backup granularity
- Store backups in tiered storage
- Single point of control



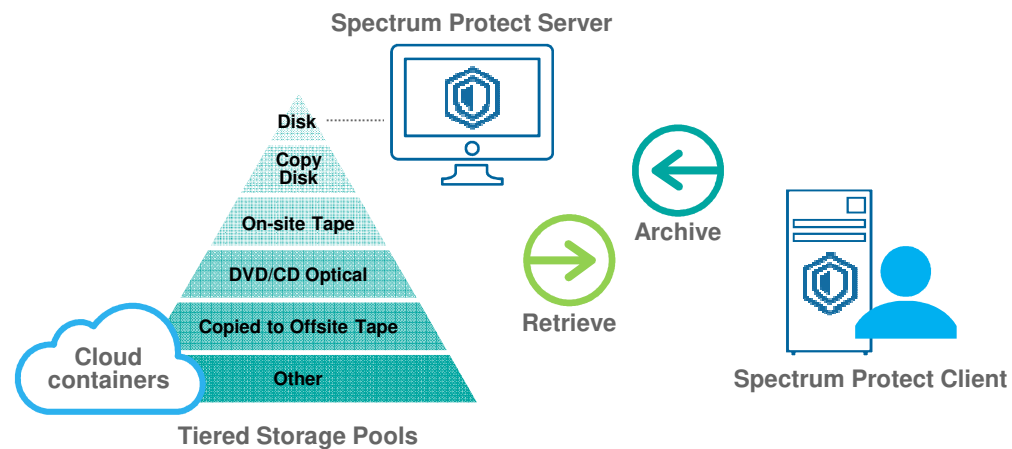
Spectrum Protect – Archive

Long Term Retention

- Time based retention
- Long-term storage
- Point in time copy

Benefits of Archive

- Speed file-server recovery
 - Recover only active data
- Reduce backup times & resource usage
 - Focus on active files only
- Expedite locating historical information
 - Index archives with descriptive metadata



Policy Management

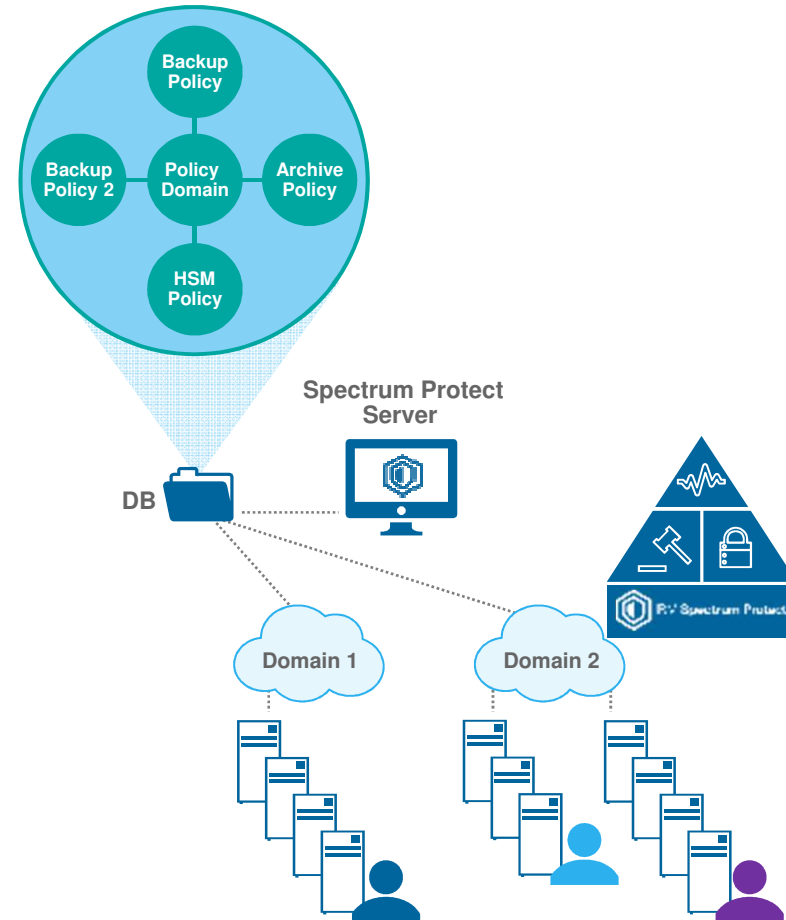
Policies

A **set of rules** that defines :

- What data to protect
- Where to store the data
- How long to keep it

Benefits

- Flexible policies meet business needs
- Policies can change as needs change
- Changes retroactively applied to existing data



How to protect databases and applications

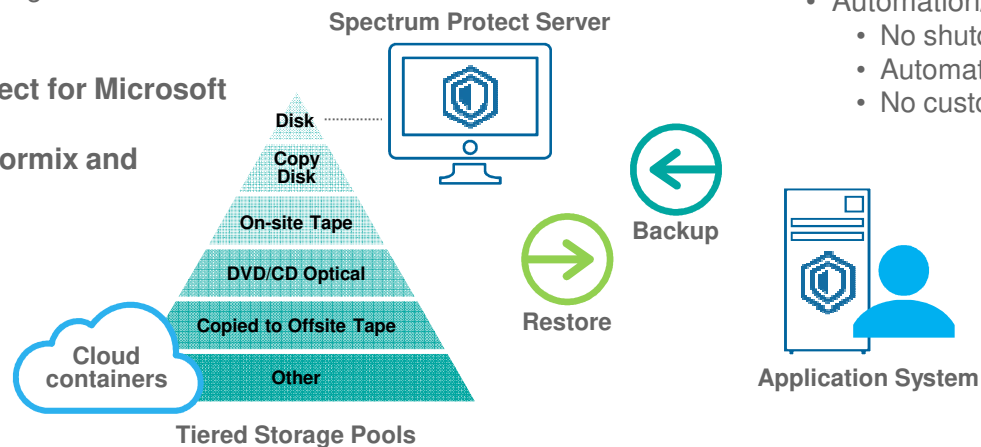
API Client

On-Line Protection

- **Spectrum Protect for Mail**
 - Lotus Domino
 - MS Exchange
- **Spectrum Protect for Databases**
 - Oracle
 - MS SQL
- **Spectrum Protect for Enterprise Resource Planning**
 - SAP/R3
 - SAP Hana
- **Spectrum Protect for Microsoft SharePoint**
- **Support for Informix and DB2 built in**

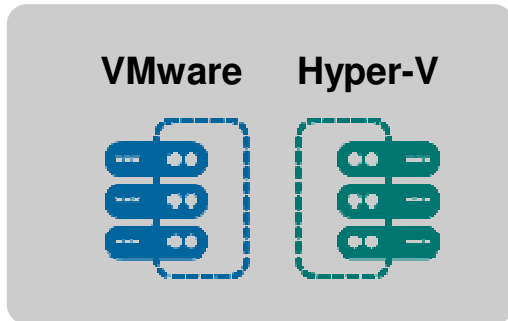
Benefits of Spectrum Protect for

- Online (hot) backup
 - 24x7 application availability
 - No downtime
- Incremental backup
 - Minimize data to store & maintain
 - Faster backups
- Data integrity
 - Use of certified application APIs
 - Automated, consistent backup of all needed files
- Automation/Scheduling
 - No shutdown required
 - Automated restore of consistently backed up files
 - No customized scripts and manual interaction



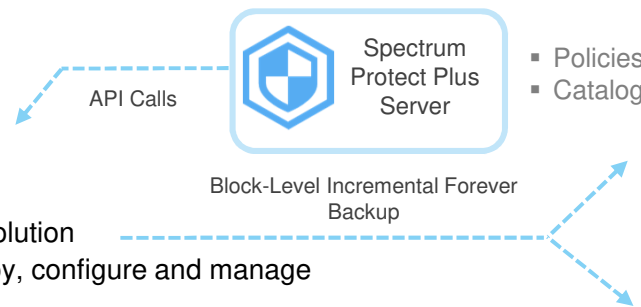
Virtual machines protection : Spectrum Protect Plus (detailed later)

Applications and Storage

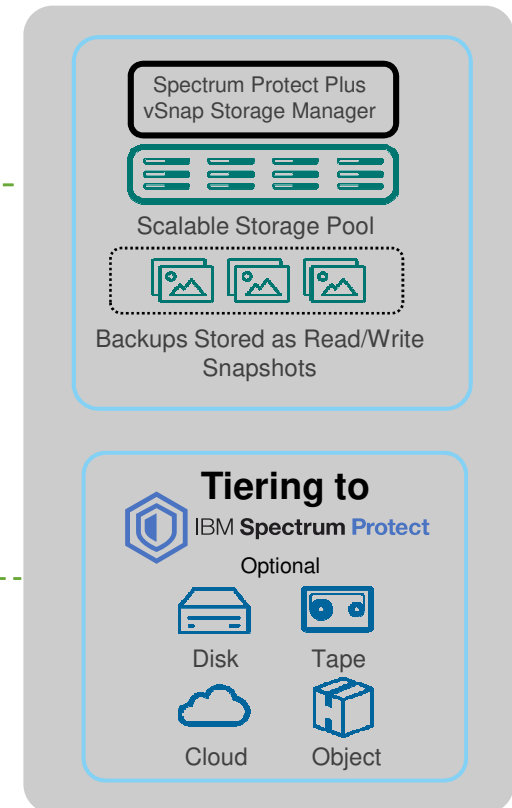


Data Protection Platform

- Simple deployment as a virtual machine image
- Integrated storage management



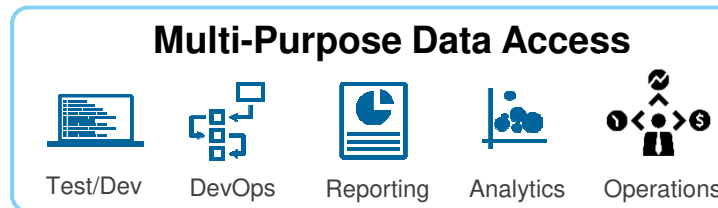
Secondary Storage and Reuse



▪Simplified Data Recovery & Data Access Solution

- Simple and light weight, easy to deploy, configure and manage
- Pre-defined policy based service level
- Secure, self-service (RBAC) administration
- Enterprise proven, scalable
- Leverage your backup data for new data reuse use cases
- Data recovery and reuse automation
- Easily fits your budget

Recovery



Spectrum Protect data reduction techniques

Client compression

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



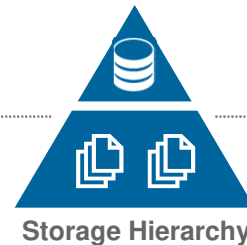
Incremental forever

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



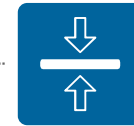
Device compression

- Compression performed by storage hardware
- Conserves server storage



Server Side Deduplication

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



Server side compression

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

Client Side Deduplication

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

Appliance deduplication

- Deduplication performed by storage appliance (VTL or NAS)
- Conserves server storage

Deduplication is an integrated part of Spectrum Protect

Spectrum Protect – Disaster Recovery with Node Replication

Node (Client) Replication

- Incrementally transfer copies of to a second Spectrum Protect server
 - Provides off-site copies
 - **Deduplication maintained across servers**
 - Automatically repairs damaged primary files
- Can store more or fewer versions on the Source and Target server
- Client restores automatically failover to target for restores if primary server is down

Benefits of Node Replication

- Incremental transfer of files
- Automatically send off-site copies to another Spectrum Protect server
- Seamless disaster recovery of files



Clients Spectrum Protect HSM

Lifecycle Management

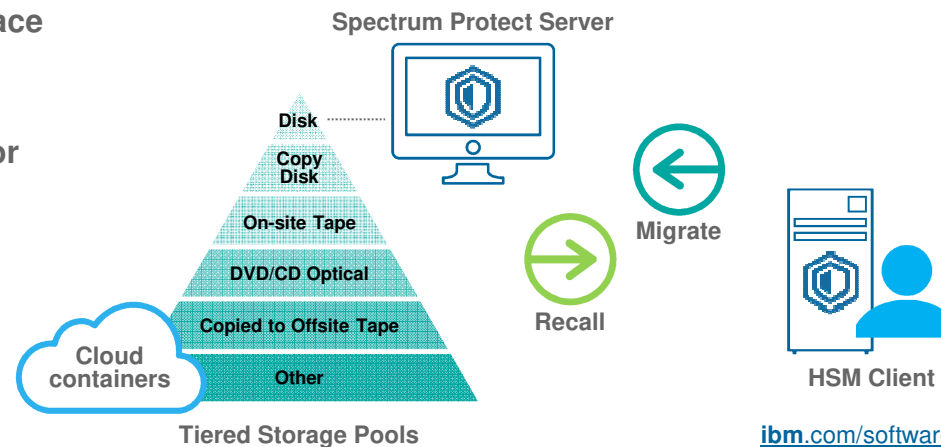
- **Migrates inactive data**
- Transparent recall
- Policy managed
- Integrated with backup

Benefits

- Improve response times of file servers by off-loading inactive data
- Move low-activity or inactive files to a hierarchy of lower-cost storage
- Use existing storage assets more efficiently
- Reduce backup times and resource usage by focusing on active files only
- Eliminate manual file system clean-up activities

Two products :

- **Spectrum Protect for Space Management**
- **Spectrum Protect HSM for Windows**



ibm.com/software/tivoli/products/storage-mgr-space/

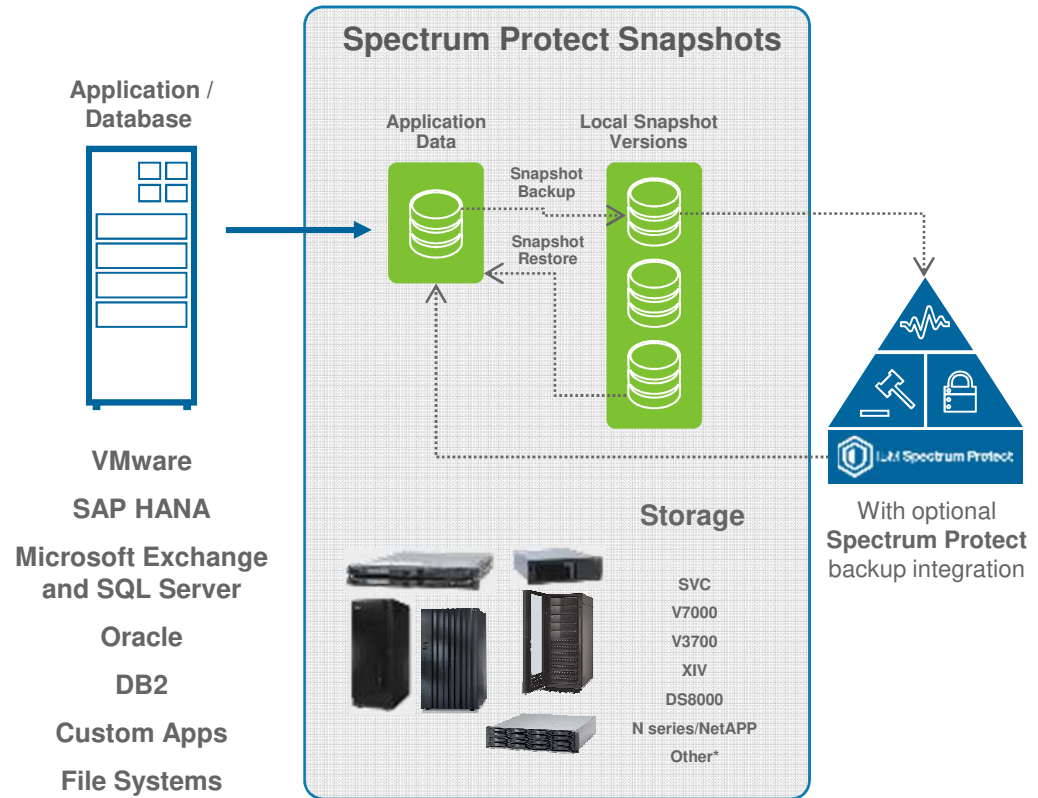
Spectrum Protect Snapshot

Spectrum Protect Snapshot

- Online, near instant snapshot backups with minimal performance impact
- High performance, near instant restore capability
- **Integrated with Storage Hardware**
- Simplified deployment
- Database Cloning

Benefits

- Nearly instant online backup
- Multiple restore paths
- **Standalone** or **integrated** with Spectrum Protect



IBM Spectrum Protect Operations Center

A **web-application** that uses:

- A visual dialogue with administrators delivering decision point information necessary for successful use of the product
- Integrated wizards to expedite common tasks
- An integrated command-line to bridge from visibility to control
- Hub/Spoke model monitors multiple Spectrum Protect servers
- Replacement of Admin Center

• IBM Spectrum Protect **Operation Center** can control :

- Spectrum Protect server
- The storage hierarchy
- All Spectrum Protect clients

Benefits

- Visual dialogue with administrators providing decision point information necessary for successful use of Spectrum Protect
- At-a-glance view of data protection, from any browser enabled device



Since 2014 with Version 6.4

IBM Spectrum Protect and the CLOUD



Leverage cloud infrastructure

Businesses extending or transforming their existing environment to **leverage cloud infrastructure** to reduce costs of data protection

Use Cases

1. Cloud compute hosts data protection servers
2. Cloud storage hosts data protection repository
3. Cloud compute provides DR site for production workload



Protect workloads in the cloud

Businesses that need to **protect workloads** running in the cloud

- ✓ Spectrum Protect servers can use **object storage** as a backup target – 'to the cloud' (**Cloud containers**)
 - Bluemix (S3 and Swift), Amazon S3, OpenStack Swift, **IBM Cloud Object Storage**
 - **Inline deduplication + LZ4 compression (optional)**
- ✓ Spectrum Protect servers can be **hosted on cloud**
 - Bluemix, Amazon, Azure, Google
 - As Primary target – partners or clients can **leverage Frontsafe portal** to deliver Spectrum Protect 'as a Cloud' Service
 - As Replication target (**DR**) – partners or clients can host Spectrum Protect servers 'in the cloud' Spectrum Protect can **protect workloads running on cloud**
- ✓ Spectrum Protect can **protect workloads running on cloud**

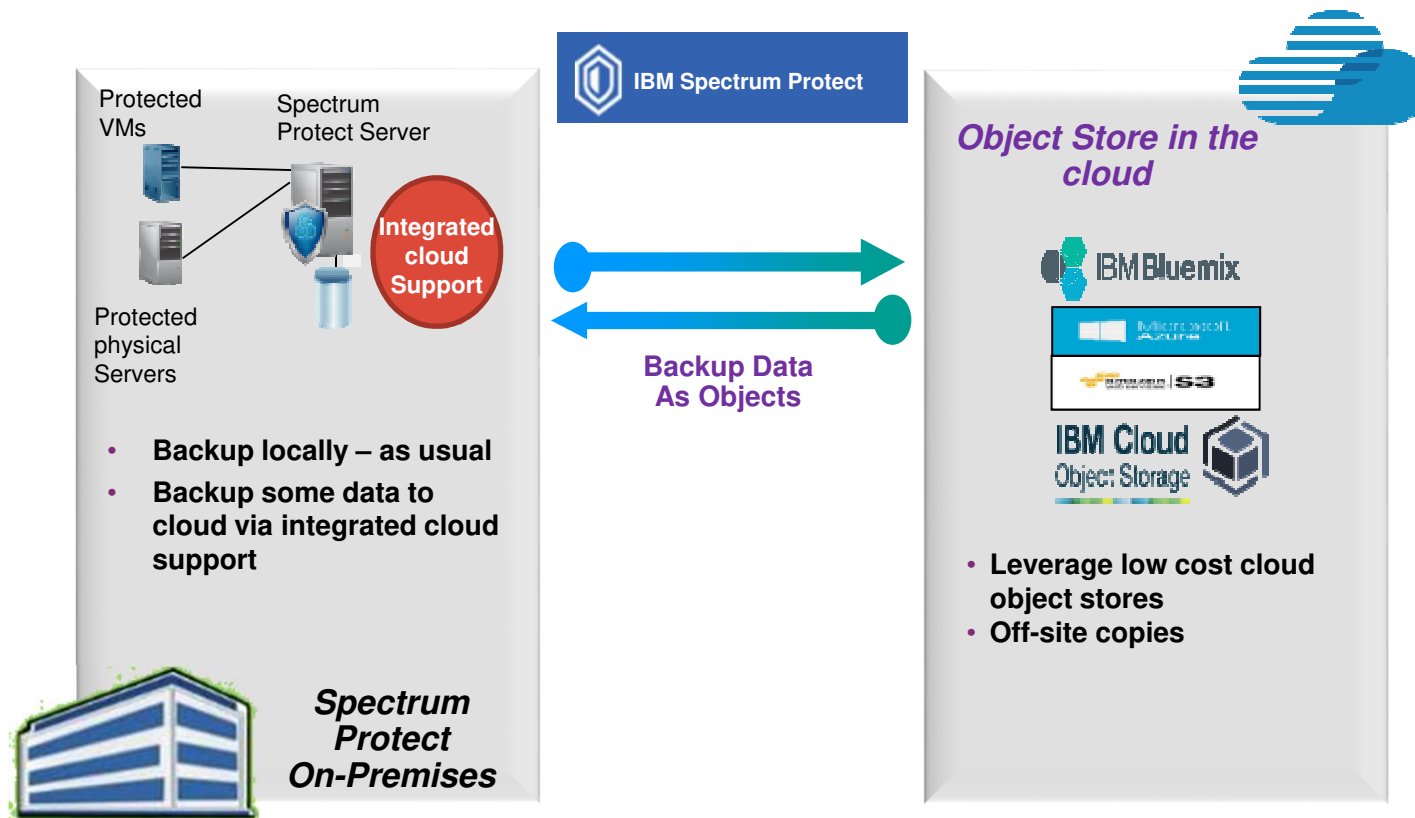
Spectrum Protect's Containers Storage Pools

A **Container Storage Pool** is a pool of one of the following types:

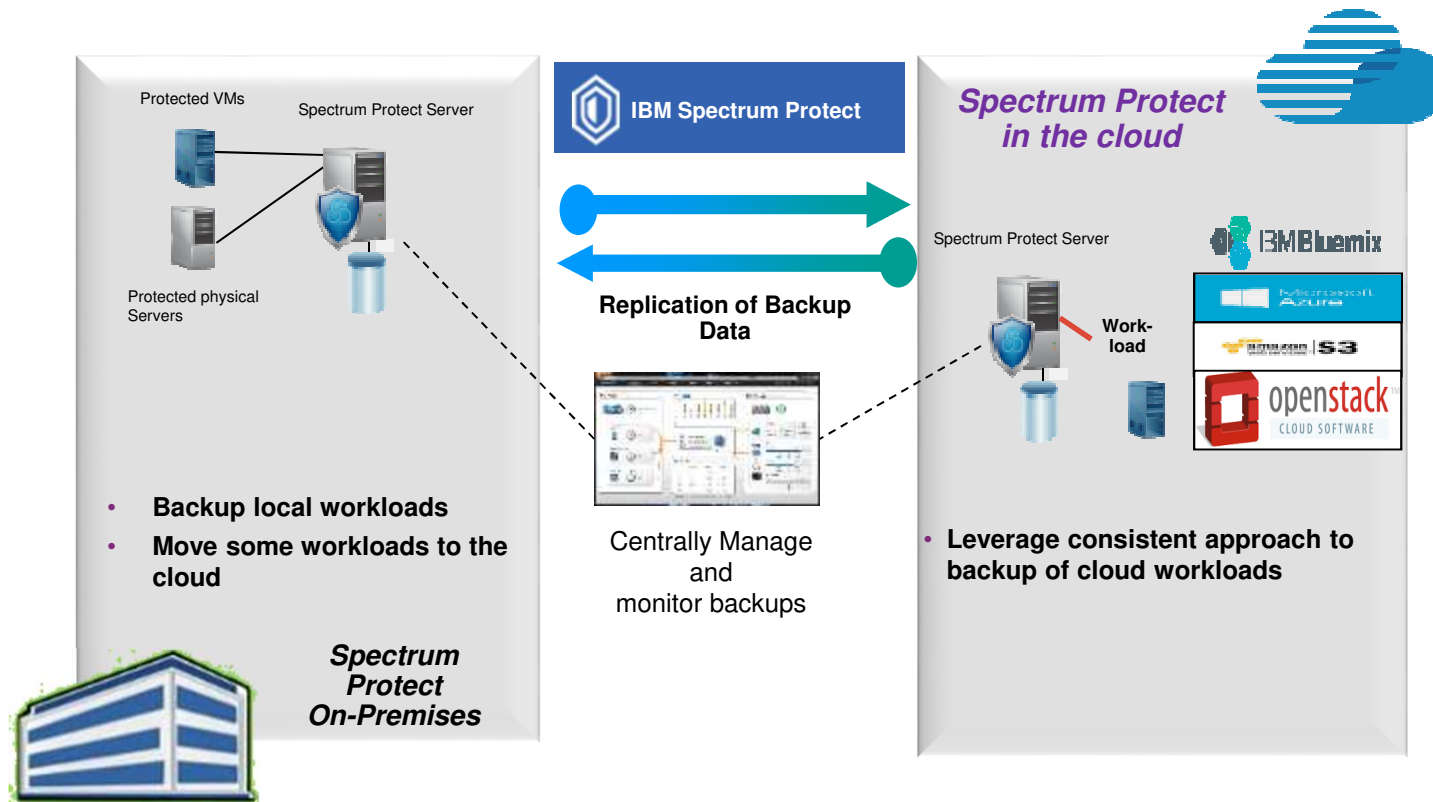
- **Directory Storage Pools**, which reside on disk, and have characteristics of Sequential FILE pools and random DISK pools:
 - Dynamic allocation and removal of files like Sequential FILE volumes
 - Re-usable space within a container like Random DISK volumes
 - More intelligent space utilization and I/O balancing across directories

- **Cloud Storage Pools**, which may be on- or off-premise (in the Cloud)

Spectrum Protect Backup to Cloud Storage Cloud Containers



Cloud based DR for Spectrum Protect



Introducing IBM Spectrum Protect Plus



IBM
Spectrum
Protect Plus

The new data protection offering from IBM

Pre-announcement: August 23, 2017

First public viewing: VMworld US 2017

General Availability (GA): 4Q 2017

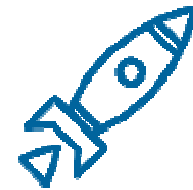
Primary use cases :

- Data Protection for **virtual machines**, applications
- Disaster Recovery
- Data Reuse
 - Test/Dev, DevOps, Reporting, Analytics, etc...

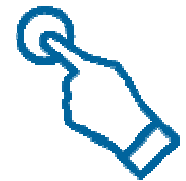
What Is Spectrum Protect Plus ?

Simplified Data Recovery and Data Access Solution for Virtual Environments

- **Simple** and light weight, **easy to deploy**, configure and manage
- Pre-defined **policy based service level**
- Secure, **self-service** (RBAC) administration
- Leverage your backup data for **new data reuse use cases**
- Data recovery and reuse **automation**
- Easily fits your budget



Modern



Easy



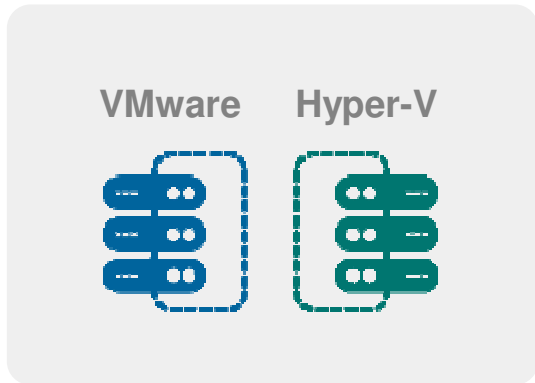
Fast



Low Cost

Spectrum Protect Plus Architecture

Applications and Storage



Data Protection Platform

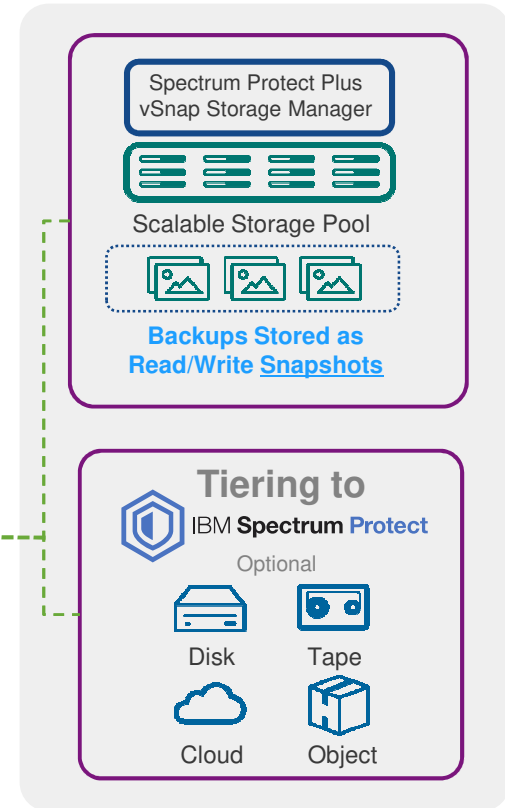
- [Simple deployment as a virtual machine image \(OVA Open Virtual Appliance\)](#)
- Integrated storage management



- Policies
- Catalog

Block-Level Incremental Forever Backup

Secondary Storage and Reuse



Recovery

Instant Restore

Multi-Purpose Data Access



Multi-Use Data Access

- Spectrum Protect Plus is **not just backup**, it's a **snapshot management system**, which covers anything you could snapshot – VMs, Arrays, Apps and has data protection, snapshot and CDM functions.
- Derive business value from your protected data
- **Spin up VMs and VMDKs** (Virtual Machine Disk File) by **Read/Write Clones** for easy & secure data access for multiple use cases.

Data Access Use Cases



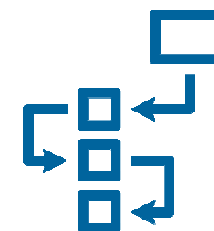
Test/Dev



Reporting



Analytics



DevOps

6 Key Spectrum Protect Plus Attributes

SLA policy-based data protection

Gold, Silver, Bronze pre-configured
Custom policy creation as needed

Instant data recovery or data access

Support for multiple use cases: Test/Dev,
DevOps, reporting, analytics, training, etc.
Roles-based access; **user self-service**

Simple to use, anyone can manage

VM, database or **application** admin
Light weight: **Installs in less than 15 minutes,**
configured in under an hour

Extends the capabilities of Spectrum Protect for virtual environments

Stand alone – great for small environments
Integrated with Spectrum Protect for long term
data retention

Global search and restore

Search across all virtual machine data at
once (VMware and Hyper-V)
Restore from search: **files, VMs, VMDKs**

Exploits VM and application API's

Creates **application consistent** or **crash
consistent** data copies
Supporting further data reduction with
compression and **de-duplication**

Policy Driven, **SLA**-Based Automation

- Select, click and done simplicity
- **SLAs pre-defined or create-your-own**
- Select a VM and assign an SLA to define its **recovery service**
- Unprotected VMs identified in dashboard view
- Set it and forget it

Service Levels



Gold



Silver



Bronze



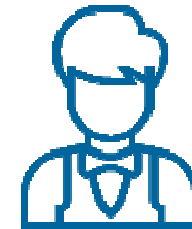
Custom

Simple, Secure SLA Based **Self-Service** Management

- Easily assign functionality based on **user roles** (Backup admin, Storage admin, VM admin, Help Desk User, ..)
- Assign one or multiple roles to each user
- Reduces load on IT staff
- End-users prefer **self-service models**
- Safe and secure access



Backup Admin



VM Admin



Developer



Help Desk

Global Search and Recover

- Unified, **Google-like search** across files and objects **across the entire protected environment** and not within a single machine.
- Search across VMware and Hyper-V in a single operation
- Locate **files, VMs, datastores**
- Easy restore from search



Instant Data and VM Recovery

- **Recover rapidly from snapshot copies**
- Suitable for all recovery use cases
- **Multiple recovery points** for all VMs
- No waiting for streaming restores :
backups accessible as soon as snapshot is mounted
- Application or crash consistent backups,
recovery, cloning

Data Loss Scenarios



Ransomware



Human Error



Hardware Failure



Data Corruption

Long-term Retention Using Spectrum Protect

- Automated copy transfer to **Spectrum Protect***
- Long-term retention / tier to **cloud**
- Single-step recovery
- Meets legal and regulatory compliance needs

Retention Options



Disk



Tape



Cloud



Object Store

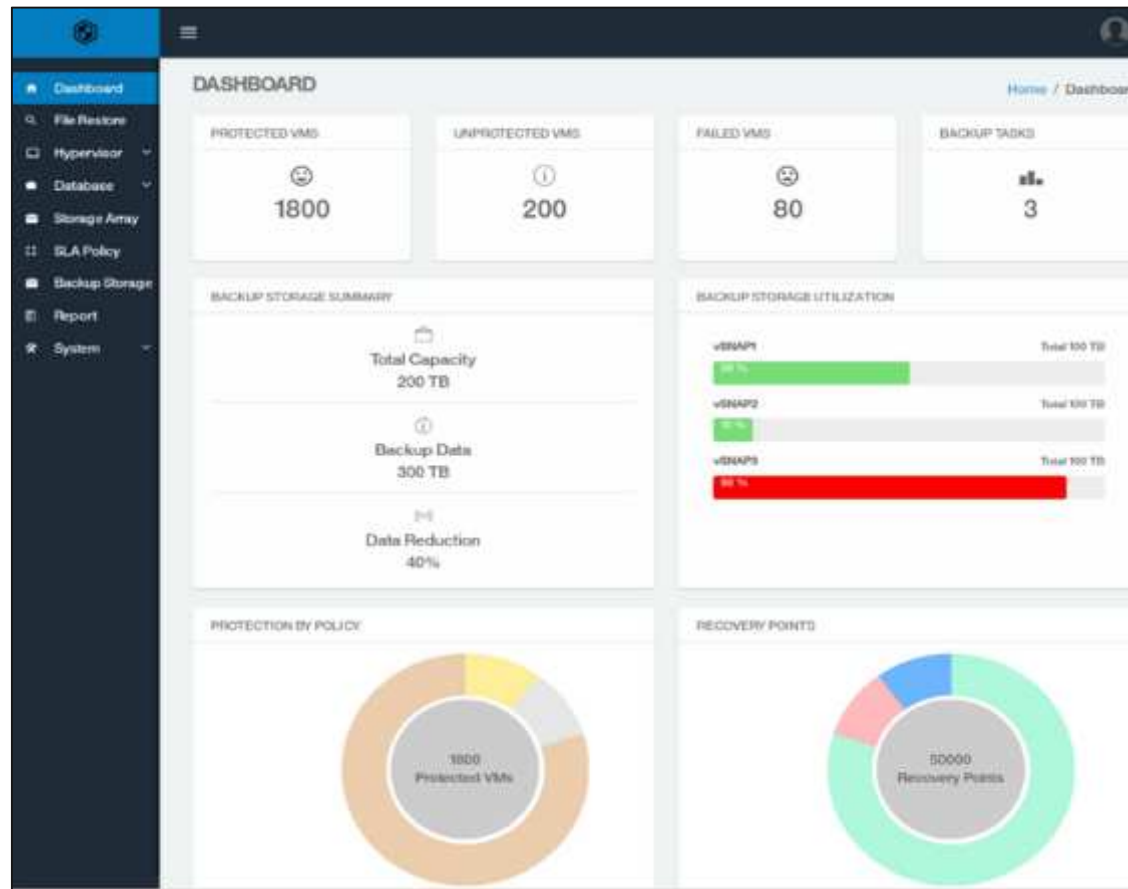
* Need to be running **Spectrum Protect 8.1** or better

Dashboard and Reporting
































At-a-glance status

Drill-down data on:

- Protection status
- SLA compliance
- Storage utilization
- VM sprawl



Competition

Caractéristiques	Protect Plus	Veeam	Comm-vault	Veritas	Dell EMC
Simple à installer et à configurer		En partie			En partie
Simple à utiliser (par non spécialiste backup)					
Accès à la données sécurisé					
Politique basée sur des SLA					
Support Cloud / Stockage Objet	/ Protect				En partie
Moteur de recherche global			En partie	En partie	
Automatisation de l'accès à la donnée				En partie	En partie
Sauvegarde Serveurs Physiques	/ Protect				

Spectrum Protect Plus vs Veeam 9.5/10



IBM
Spectrum
Protect Plus

- Veeam is based on Windows OS only, not secure as Linux
- **Extreme ease of install**, <15min time to value
- Inexpensive **Fully Featured Licenses** :
 - **Trial** fully functional up to 90 days
 - **Freemium** fully functional for 10VMs
- Delivered as a Virtual Appliance based on Linux **with no licence need**
 - No OS costs like Windows licences with Veeam !
- Simple Active/Passive failover cluster configuration
- Self-Repairing Datastore as standard
- Global File Indexing
- Advanced Copy Data Management

VEEAM

Conclusion

- **Simplicité:** Installation, Configuration, Utilisation
- Deux services : Protection de la donnée & Accès à la donnée
- Puissant **moteur de recherche global** : VM / VMDK / Fichiers → Restauration
- **Utilisation des API de sauvegarde** VMware (CBT) / Hyper-V (RCT)
 - performances sauvegarde et optimisation stockage
- Sécurité d'accès à la donnée (Rôle + ID / PW)
- Une interface d'administration & d'exploitation simple et conviviale
- Support du Cloud via Spectrum Protect

IBM Spectrum Protect Plus

live Demonstration

IBM Spectrum Protect Plus Live Demonstration

This demonstration are available on **IBM Client Demonstration Center** :

- <https://www.ibm.com/systems/clientcenterdemonstrations/>



https://www.ibm.com/systems/clientcenterdemonstrations/faces/_r/vid.jsp?_rap=lviewDemo&demold=2760&conversationContext=1&_rvip=/dcSearchDemonstrations.jsp

Home Demonstrations ▾ My Requests Calendar Owner actions ▾ My Demo profile

IBM Client Demonstration Center

IBM Spectrum Protect Plus - Protect easily and effectively your VMware environment

Discover IBM Spectrum Protect Plus and try it in a VMware environment

Objectives

WARNING: This demonstration is using a beta version of IBM® Spectrum Protect Plus until GA

IBM® Spectrum Protect™ Plus is a data protection and availability solution for virtual environments that can be deployed in minutes and protect your environment within an hour. It simplifies data protection, whether data is hosted in physical, virtual, software-defined or cloud environments. It enables easy data availability by providing:

- OVA deployment and agentless management
- SLA-based data protection management and monitoring
- A searchable global catalog of VM and files versions

IBM Spectrum Protect Plus can be implemented as a stand-alone solution or integrate with your IBM Spectrum Protect environment to off-load copies for long term storage and data governance with scale and efficiency.

You can leverage this demonstration to understand and show:

- The Web interface overview, including Dashboard and Menus overview
- How to define your own backup SLAs, schedule and run your own backup tasks
- How to test, plan and run data restore

[? Help](#)

Efficiency average rating

★ ★ ★ ★ ★

Qty per rating:

Very efficient	1	<div style="width: 100%;"></div>
Efficient	2	<div style="width: 200%;"></div>
Ok	0	<div style="width: 0%;"></div>
Not so hot	1	<div style="width: 100%;"></div>
Poor	1	<div style="width: 100%;"></div>

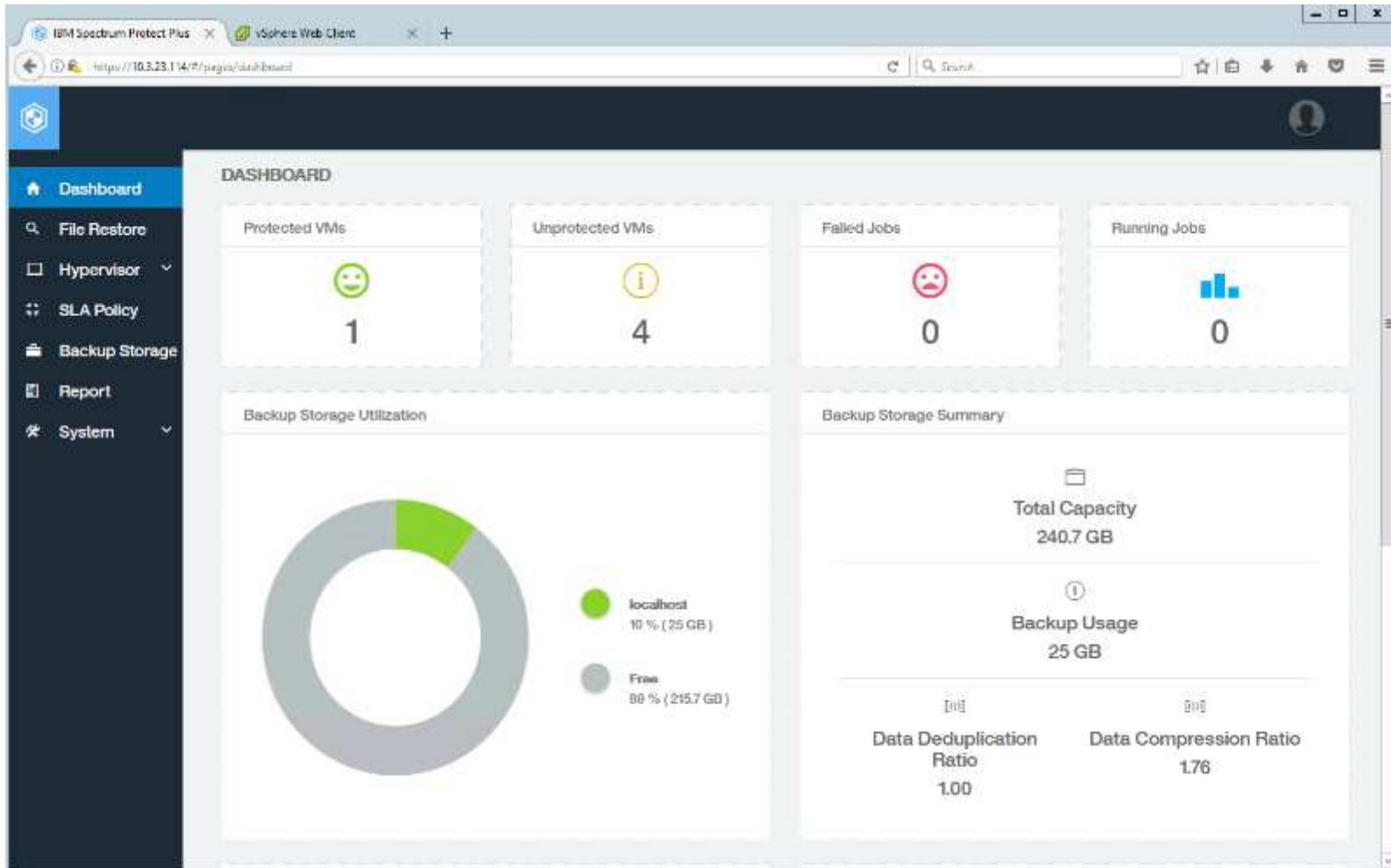
Make a request

[Book this demonstration](#)

About this demo

Remote **(Automatic)**

IBM Spectrum Protect Plus : Dashboard



IBM Spectrum Protect Plus : SLA Policies

The screenshot displays the IBM Spectrum Protect Plus user interface for configuring SLA Policies. On the left is a dark navigation sidebar with options: Dashboard, File Restore, Hypervisor, SLA Policy (highlighted), Backup Storage, Report, and System. The main content area is titled 'SLA POLICY' and features a table of existing policies. A table with 4 columns (Name, Frequency, Retention) lists policies: Gold (Every 4 Hour(s) at 5 minutes past, 7 Day(s)), Silver (Every 1 Day(s) at 7:00, 30 Day(s)), Bronze (Every 1 Day(s) at 7:00, 7 Day(s)), and limestone (Every 1 Day(s) at 0:00, 2 Snapshot(s)). Below the table is an 'Edit SLA Policy' form. The form includes fields for Name, Backup Storage, Retention (2 Snapshot(s)), Frequency (Every 1 Day(s) at 0:00), Target Site (Primary), and a checked checkbox for 'IBM Spectrum Protect Offload'. Underneath, there is a checked checkbox for 'Offload to IBM Spectrum Protect' with a frequency of 'Every 1 Day(s) at 7:00' and an unchecked checkbox for 'Leverage most recent backup'.

Name	Frequency	Retention
Gold	Every 4 Hour(s) at 5 minutes past	7 Day(s)
Silver	Every 1 Day(s) at 7:00	30 Day(s)
Bronze	Every 1 Day(s) at 7:00	7 Day(s)
limestone	Every 1 Day(s) at 0:00	2 Snapshot(s)

Edit SLA Policy

Name:

Backup Storage:

Retention: 2 Snapshot(s)

Frequency: Every 1 Day(s) at 0:00

Target Site: Primary

IBM Spectrum Protect Offload

Offload to IBM Spectrum Protect

Frequency: Every 1 Day(s) at 7:00

Leverage most recent backup

IBM Spectrum Protect Plus : Backup a VMware VM

The screenshot displays the IBM Spectrum Protect Plus Backup interface. On the left is a dark navigation sidebar with the following menu items: Dashboard, File Restore, Hypervisor (expanded to show VMware), Backup (highlighted), Restore (expanded to show Hyper-V), SLA Policy, Backup Storage, Report, and System. The main content area is titled 'BACKUP' and contains a 'Manage vCenter' button, a search bar, and filter buttons for 'None', 'Not in SLA', and 'All SLA'. A 'View: VM(s)' dropdown is also present. Below this is a table listing vCenters and their VMs. The table has columns for Name, Path, Guest OS, and SLA Policy. The 'WIN1SPP' VM is selected, indicated by a red box around its checkbox. At the bottom right, there are three buttons: 'Select SLA Policy' (highlighted with a red box), 'Select Options', and 'User Access'. A 'Total: 5' indicator is visible at the bottom right of the table area.

Name	Path	Guest OS	SLA Policy
D_CDM_VCSCA	/10.3.23.47/IBM...Center/vCenter	SUSE Linux Enterprise 11 (64-bit)	
SPP-315	/10.3.23.47/IBM...otect Plus DEMO	Linux 3.10.0-693.5.2.el7.x86_64 CentOS Linux release 7.4.1708 (Core)	
spp-bounce	/10.3.23.47/IBM...otect Plus DEMO	Microsoft Windows Server 2012 (64-bit)	
win2012-standard	/10.3.23.47/IBM...enter/Templates	Microsoft Windows Server 2012 (64-bit)	
<input checked="" type="checkbox"/> WIN1SPP	/10.3.23.47/IBM...otect Plus DEMO	Microsoft Windows Server 2012 (64-bit)	Imestone

IBM Spectrum Protect Plus : Backup a VMware VM : Select the Policy

The screenshot displays the IBM Spectrum Protect Plus web interface. On the left is a dark navigation sidebar with menu items: Dashboard, File Restore, Hypervisor (expanded to show VMware and Backup), Restore (expanded to show Hyper-V), SLA Policy, Backup Storage, Report, and System. The main content area is titled 'SLA Policy' and features three buttons at the top: 'Select SLA Policy' (highlighted with a red box), 'Select Options', and 'User Access'. Below these buttons is a table with columns for 'SLA Policy', 'Frequency', and 'Retention'. The table lists four policies: Gold, Silver, Bronze, and limestone. The 'Bronze' policy is selected, indicated by a checked checkbox and a red box around the row. Below the table is a 'Save' button, also highlighted with a red box. At the bottom of the main content area is the 'SLA Policy Status' section, which contains a table with columns: Policy, Frequency, Total VMs, Success VMs, Failed VMs, Next Run, and Status. This table shows the status of all four policies. The 'Bronze' policy has 0 VMs, and the 'limestone' policy has 1 VM. To the right of the 'SLA Policy Status' table are 'Actions' buttons for each policy. At the bottom left of the status section is an 'Auto Refresh' button, and at the bottom right is a 'Total: 4' indicator.

SLA Policy	Frequency	Retention
<input type="checkbox"/> Gold	Every 4 Hour(s) at 5 minutes past	7 Day(s)
<input type="checkbox"/> Silver	Every 1 Day(s) at 7:10	30 Day(s)
<input checked="" type="checkbox"/> Bronze	Every 1 Day(s) at 7:10	7 Day(s)
<input type="checkbox"/> limestone	Every 1 Day(s) at 0:00	2 Snapshot(s)

Policy	Frequency	Total VMs	Success VMs	Failed VMs	Next Run	Status
> Gold	Every 4 Hour(s) at 5 minutes past	0	0	0		
> Silver	Every 1 Day(s) at 7:10	0	0	0		
> Bronze	Every 1 Day(s) at 7:10	0	0	0	Nov 18 07:10:00 2017	IDLE
> limestone	Every 1 Day(s) at 0:00	1	1	0	Nov 18 00:00:00 2017	IDLE

IBM Spectrum Protect Plus : Backup a VMware VM : force a backup

The screenshot displays the IBM Spectrum Protect Plus web interface. On the left is a navigation sidebar with options: Dashboard, File Restore, Hypervisor (expanded to show VMware), Backup, Restore, Hyper-V, SLA Policy, Backup Storage, Report, and System. The main content area shows a list of VMs with columns for checkboxes, VM names, paths, and operating systems. The VM 'WINMSPP' is highlighted with a red box. Below the VM list are buttons for 'Select SLA Policy', 'Select Options', and 'User Access'. A 'Total: 5' indicator is present. The 'SLA Policy Status' section contains a table with columns: Policy, Frequency, Total VMs, Success VMs, Failed VMs, Next Run, and Status. The 'Bronze' policy is selected. An 'Actions' dropdown menu is open, showing 'Start', 'Hold', and 'Schedule' options. An 'Auto Refresh' button is at the bottom left of the SLA table.

Policy	Frequency	Total VMs	Success VMs	Failed VMs	Next Run	Status
> Gold	Every 4 Hour(s) at 5 minutes past	0	0	0		
> Silver	Every 1 Day(s) at 7:10	0	0	0		
> Bronze	Every 1 Day(s) at 7:10	0	0	0	Nov 18 07:10:00 2017	IDLE
> limestone	Every 1 Day(s) at 0:00	1	1	0	Nov 18 00:00:00 2017	IDLE

IBM Spectrum Protect Plus : Backup a VMware VM : Backup running

The screenshot displays the IBM Spectrum Protect Plus web interface. On the left is a dark navigation sidebar with options: Dashboard, File Restore, Hypervisor (expanded to show VMware and Backup), Restore, Hyper-V, SLA Policy, Backup Storage, Report, and System. The main content area shows a list of VMs with columns for name, path, and OS. Below this is a section for SLA Policy Status with a table of policies and their execution logs. A red box highlights the 'RUNNING' status in the log table.

Policy	Frequency	Total VMs	Success VMs	Failed VMs	Next Run	Status
Gold	Every 4 Hour(s) at 5 minutes past	0	0	0		
Silver	Every 1 Day(s) at 7:10	0	0	0		
Bronze	Every 1 Day(s) at 7:10	0	0	0	Nov 18 07:10:00 2017	RUNNING

Log	Start Time	End Time	Duration	Status	Total VMs	Success VMs	Failed VMs
>	Nov 17 15:44:01 2017		0hr 0min 5secs	RUNNING	0	0	0
>	limestone	Every 1 Day(s) at 0:00	1	1	0		Nov 18 00:00:00 2017

IBM Spectrum Protect Plus : Restore a VM

The screenshot displays the 'RESTORE' interface in IBM Spectrum Protect Plus. The left sidebar contains navigation options: Dashboard, File Restore, Hypervisor (with sub-options for VMware and Backup), Restore (highlighted), Hyper-V, SLA Policy, Backup Storage, Report, and System.

The main content area is titled 'RESTORE' and shows a search bar for 'VM(s)'. Below the search bar, the view is set to 'VMs and Templates'. The breadcrumb path is 'vCenters / 10.3.23.47 / IBM Montpellier Demos Center / Protect Plus DEMO'. A table lists restore points:

Restore Points	Name
>	WIN4SPP

A red box highlights the 'WIN4SPP' entry, and another red box highlights a blue arrow icon next to it, indicating a selection or action.

At the bottom right, there are three buttons: 'Options', 'Manage Jobs', and 'Restore'. A red box highlights the 'Options' button.

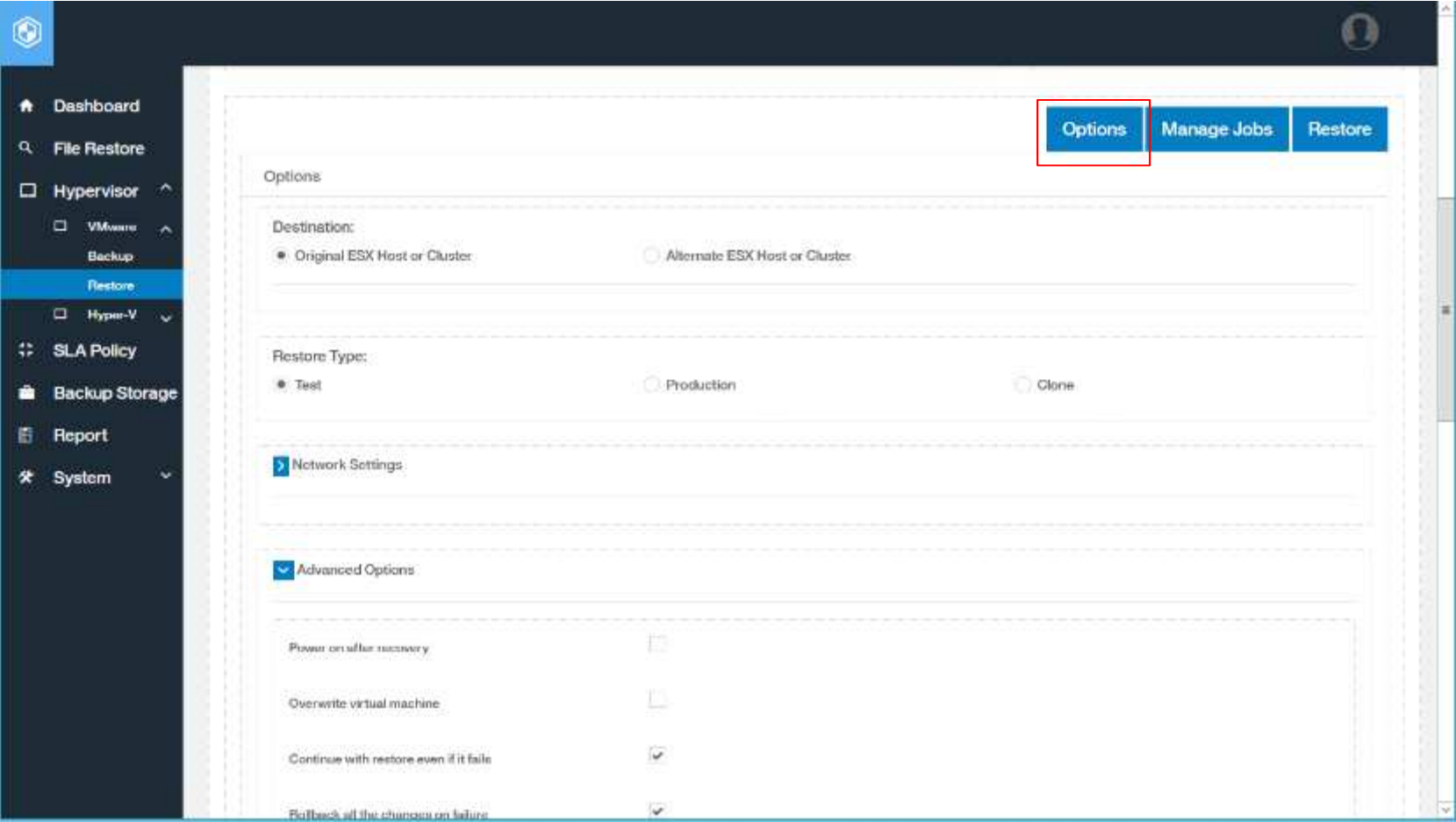
On the right side, a 'Restore List' table is visible:

Item	Restore Point	Type
WIN4SPP	Use Latest	vm

A red box highlights the 'WIN4SPP' row in the 'Restore List' table.

The bottom right corner shows 'Total: 1' with a refresh icon.

IBM Spectrum Protect Plus : Restore Options



IBM Spectrum Protect Plus : Start Restore

RESTORE

VM(s)

Search for...

View: VMs and Templates

vCenters / 10.3.23.47 / IBM Montpellier Demos Center / Protect Plus DEMO

Select	Backup Time	SLA Policy	Site	Type
<input type="radio"/>	Nov 9, 2017, 10:08:38 PM	limestone	Primary	vSnap
<input type="radio"/>	Nov 9, 2017, 9:55:48 PM	limestone	Primary	vSnap

Total: 1

Restore List

Item Restore Point Type

Select at least one resource on the left and add to the Restore list.

Options Manage Jobs Restore

IBM Spectrum Protect Plus : Start Restore

RESTORE

VM(s)

Search for... View: VMs and Templates ▾

vCenters / 10.3.23.47 / IBM Montpellier Demos Center / Protect Plus DEMO

Select	Backup Time	SLA Policy	Site	Type
<input checked="" type="radio"/>	Nov 9, 2017, 10:06:38 PM	limestone	Primary	vSnap
<input type="radio"/>	Nov 9, 2017, 9:55:48 PM	limestone	Primary	vSnap

Total: 1

Restore List

Item	Restore Point	Type
WIN4SPP	Nov 9, 2017, 10:06:38 PM	vm

Options Manage Jobs **Restore**

IBM Spectrum Protect Plus : Restore

The screenshot displays the 'Manage Restore Jobs' interface in IBM Spectrum Protect Plus. The left sidebar contains navigation options: Dashboard, File Restore, Hypervisor (with sub-options for VMware and Hyper-V), Restore (highlighted), SLA Policy, Backup Storage, Report, and System. The main content area has tabs for 'Options', 'Manage Jobs', and 'Restore'. Below the 'Manage Restore Jobs' header, there is a table with columns 'Name' and 'Schedule'. A '+' icon is visible below this table. The 'Job Session(s)' section contains a table with columns: Name, Status, Progress, Start Time, and Duration. The first row shows a job named 'onDemandRestore' with a status of 'RUNNING' and 68% progress. The second row shows a job named 'onDemandRestore' with a status of 'COMPLETED' and 100% progress. A red box highlights the 'Status' and 'Progress' columns for the first row. Below this, the text 'After some time' is written in red. A second 'Job Session(s)' table shows the same two jobs, but the first row now has a status of 'RESOURCE ACTIVE' and 100% progress, while the second row remains 'COMPLETED' and 100%. A red box highlights the 'Status' and 'Progress' columns for the first row in this second table. At the bottom left, there is an 'Auto Refresh' button, and at the bottom right, it says 'Total: 2' with a refresh icon.

Name	Status	Progress	Start Time	Duration
onDemandRestore	RUNNING	68%	Nov 17 16:10:47 2017	0hr 0min 16secs
onDemandRestore	COMPLETED	100%	Nov 9 21:11:03 2017	0hr 4mins 57secs

After some time

Name	Status	Progress
onDemandRestore	RESOURCE ACTIVE	100%
onDemandRestore	COMPLETED	100%

Auto Refresh Total: 2

IBM Spectrum Protect Plus : File Restore : Search for specific VM

The screenshot displays the IBM Spectrum Protect Plus File Restore interface. On the left is a dark navigation sidebar with the following menu items: Dashboard, File Restore (highlighted), Hypervisor, SLA Policy, Backup Storage, Report, and System. The main content area features a search bar at the top with the placeholder text "Search for files by name, e.g. file (exact match), file* (asterisk for wildcard), f?le (question mark for pattern match)". Below the search bar is a "Filters" section with a dropdown arrow. Under "Filters", the "Virtual Machine" filter is selected, showing a search box with "WIMSPP" entered. A dropdown menu is open below this search box, listing search results:

Name	Guest OS
WIMSPP	Microsoft Windows Server 2012 (64-bit)

The "Total: 1" indicator is visible at the bottom right of the dropdown. Below the search results, there are two buttons: "Options" and "Restore". The "Options" button is highlighted with a red box. At the bottom of the interface is a "Job Session(s)" section with a table header:

Name	Status	Progress	Start Time	Duration
------	--------	----------	------------	----------

IBM Spectrum Protect Plus : File Restore : Select destination

The screenshot displays the 'File Restore' configuration page in IBM Spectrum Protect Plus. The interface includes a left-hand navigation menu with options like Dashboard, File Restore, Hypervisor, SLA Policy, Backup Storage, Report, and System. The main content area is titled 'Options' and 'Restore'. Under 'Options', there is a checkbox for 'Overwrite existing Files/Folder'. The 'Destination' section offers two radio button options: 'Restore file(s) to original location' and 'Restore file(s) to @!%native location', with the latter being selected and highlighted by a red box. Below this is a search bar for virtual machines. A table lists five virtual machines with columns for Name and Guest OS. The 'WINSP' entry is selected and highlighted with a red box. At the bottom, a 'Destination Folder' field contains the path 'c:\users\administrator\desktop' and is also highlighted with a red box. A 'Save' button is located at the bottom left of the main content area, also highlighted with a red box.

Options

Overwrite existing Files/Folder

Destination

Restore file(s) to original location

Restore file(s) to @!%native location

Search for virtual machines...

Hypervisor / 10.3.23.47

Name	Guest OS
<input type="radio"/> D_CDM_VCSEA	SUSE Linux Enterprise 11 (64-bit)
<input type="radio"/> SPP-315	Linux 3.10.0-693.5.2.el7.x86_64 CentOS Linux release 7.4.1708 (Core)
<input type="radio"/> spp-bounce	Microsoft Windows Server 2012 (64-bit)
<input type="radio"/> win2012-standard	Microsoft Windows Server 2012 (64-bit)
<input checked="" type="radio"/> WINSP	Microsoft Windows Server 2012 (64-bit)

Total: 5

Destination Folder: c:\users\administrator\desktop

Save

IBM Spectrum Protect Plus : File Restore : Select File to restore & Snapshot

The screenshot displays the 'FILE RESTORE' interface in IBM Spectrum Protect Plus. The left sidebar contains navigation options: Dashboard, File Restore (selected), Hypervisor, SLA Policy, Backup Storage, Report, and System. The main content area is titled 'FILE RESTORE' and features a search bar with 'etc' entered. Below the search bar, a 'Filters' section shows 'Virtual Machine' set to 'WIN4SPP'. The 'Search Results' section contains a table with the following data:

Filename	Path	VM	Host	Size	Last Backup	OS
etc	C:\Windows\System32/drivers	WIN4SPP	10.3.23.47	0 bytes	Nov 9, 2017, 9:10:22 P	WINDOWS
M						
Snapshot Time						
<input checked="" type="radio"/>	Nov 9, 2017, 10:04:55 PM	Site		Storage Server		
<input type="radio"/>	Nov 9, 2017, 9:53:49 PM	Primary		localhost		
<input type="radio"/>	Nov 9, 2017, 9:40:22 PM	Primary		localhost		
>	etc	C:\Program Files\HammerDB-2.23\lib\icl8.8\1	WIN4SPP	10.3.23.47	0 bytes	Nov 9, 2017, 9:10:22 P
zdata						
M						

At the bottom right, there are 'Options' and 'Restore' buttons. A mouse cursor is pointing at the 'Restore' button.

IBM Spectrum Protect Plus : File Restore : Job progression

The screenshot displays the IBM Spectrum Protect Plus File Restore interface. On the left is a navigation sidebar with options: Dashboard, File Restore (selected), Hypervisor, SLA Policy, Backup Storage, Report, and System. The main content area shows a file restore job in progress. A table lists the restore items:

Path	File Name	Site	Storage Server
C:/Windows/System32/drivers	etc	WIN4SPP	10.3.23.47
C:/Program Files/HammerDB-2.23/ib/tdllib/i	etc	WIN4SPP	10.3.23.47

Below the file list, there are 'Options' and 'Restore' buttons. A 'Job Session(s)' section is highlighted with a red box, containing a table of job sessions:

Name	Status	Progress	Start Time	Duration
onDemandRestoreFile	RUNNING	54%	Nov 17 17:29:15 2017	0hr 0min 33secs

The job session details are expanded, showing a log of events:

- Starting job for policy onDemandRestoreFile...17, 2017 4:29:15 PM UTC. id 1510936155190
- IBM Spectrum Protect Plus version 10.1.0-315
- Database and File System Restore job
- Instant Disk Restore, Instant Database Restore, DevOps
- Task = (RECOVERY_APPLICATION_RESOLVE_TASK), ChunkAndRestoreFile_1510936154892, Policy Id = (1010)
- Policy resolution task 1 is starting
- Number of elements in policy 1

At the bottom of the job session details, there is an 'Auto Refresh' button and a 'Total: 2' indicator.

IBM Spectrum Protect Plus : Backup Storage configuration

The screenshot displays the 'BACKUP STORAGE' configuration page in IBM Spectrum Protect Plus. The left sidebar contains navigation options: Dashboard, File Restore, Hypervisor (with sub-options for VMware Backup, Restore, and Hyper-V), SLA Policy, Backup Storage (highlighted), Report, and System.

The main content area is titled 'BACKUP STORAGE' and features a table with the following columns: Hostname/IP, Site, Type, Status, and Actions. A single entry is shown for 'localhost' with Site 'Primary', Type 'vsnap', and Status 'Ready'. A red box highlights the edit icon (a star) next to the 'localhost' entry.

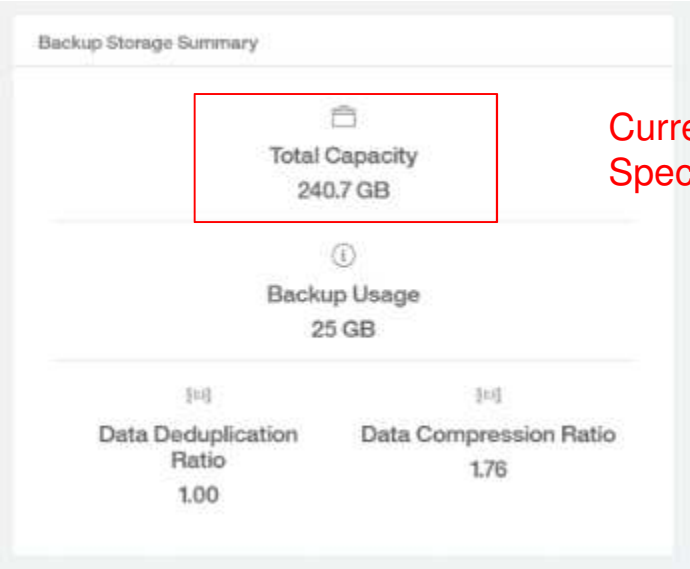
Below the table, there is a section for 'Manage Backup Storage localhost'. It includes a sub-section for 'Compression and Deduplication Settings' with two checkboxes: 'Enable Compression' (checked) and 'Enable Deduplication' (unchecked). A red box highlights these checkboxes. A 'Save' button is located below these settings.

Another section, 'Add New Disks to Backup Storage', is also highlighted with a red box. It contains a table with columns: Select, Disk, Size, Vendor, and Model. One disk is listed: /dev/sdg, 2 GB, VMware, Virtual disk. A 'Save' button is located below this table.

Hostname/IP	Site	Type	Status	Actions
localhost	Primary	vsnap	Ready	Actions

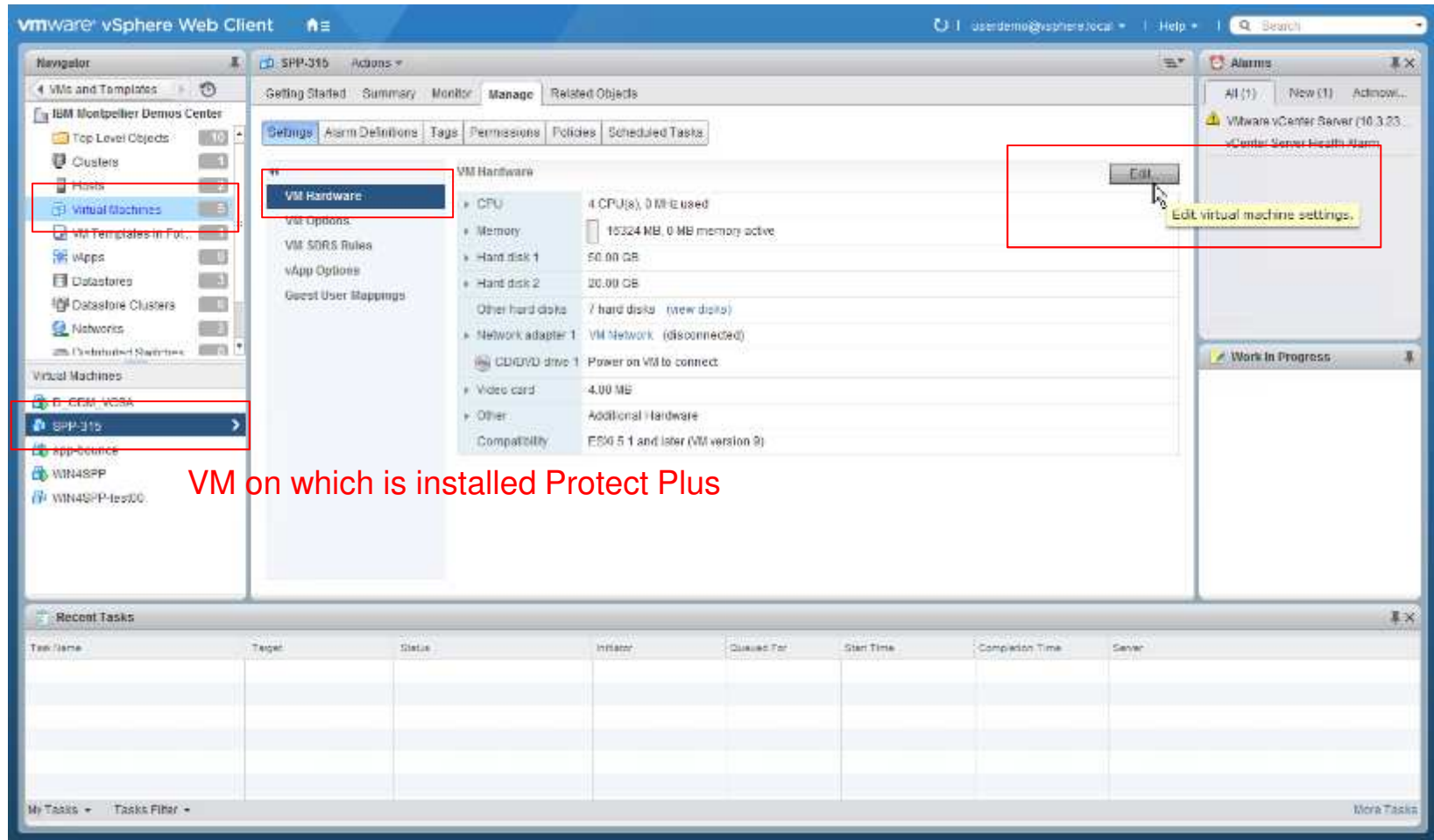
Select	Disk	Size	Vendor	Model
<input type="checkbox"/>	/dev/sdg	2 GB	VMware	Virtual disk

IBM Spectrum Protect Plus : Backup Storage configuration : Dashboard view



Current storage space used by Spectrum Protect Plus

IBM Spectrum Protect Plus : Backup Storage configuration : Add New disk to Protect Plus VM



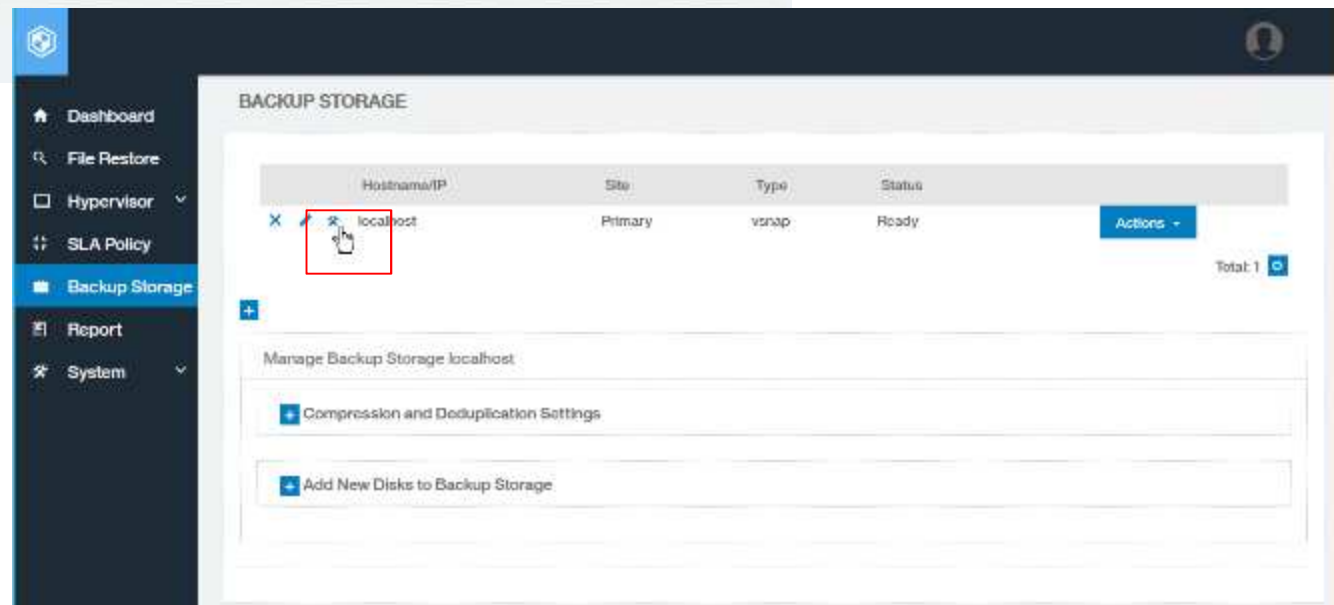
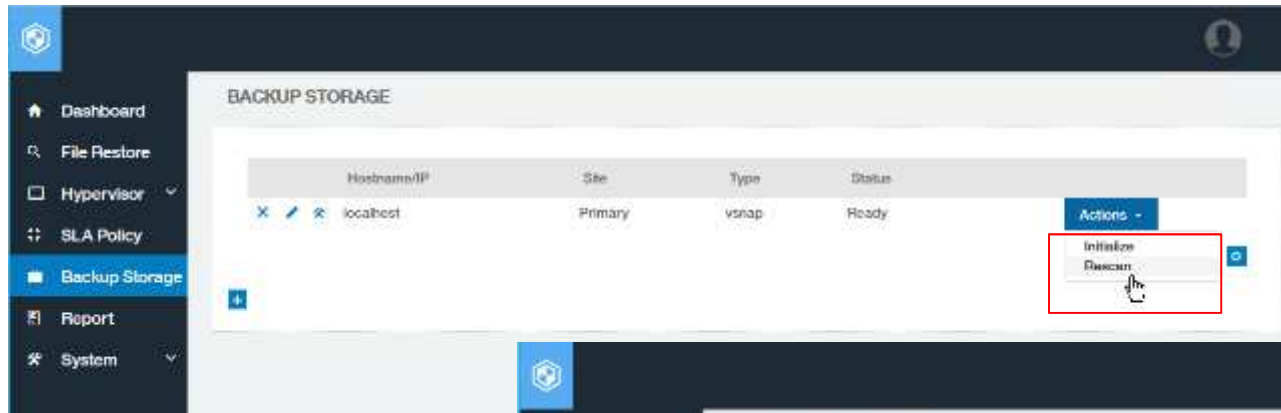
VM on which is installed Protect Plus

IBM Spectrum Protect Plus : Backup Storage configuration : Add New disk to Protect Plus VM

The image shows the vSphere VM settings for SPP-315. The 'Virtual Hardware' tab is active, showing the configuration for CPU (4), Memory (16324 MB), and Hard disks (Hard disk 1: 50 GB, Hard disk 2: 20 GB). The 'Add' button is highlighted, and the 'New Hard Disk' option is selected in the dropdown menu. The 'New Hard disk' entry is visible in the 'Other disks' list with a size of 30 GB. A 'Recent Tasks' window is open, showing the task 'Reconfigure virtual machine' as completed.

Task Name	Target	Status	Initiator
Reconfigure virtual machine	SPP-315	Completed	VSPHERE.LOCAL...

IBM Spectrum Protect Plus : Backup Storage configuration : Add New disk to Protect Plus VM



IBM Spectrum Protect Plus : Backup Storage configuration : Add New disk to Protect Plus VM

The screenshot displays the 'BACKUP STORAGE' configuration page in IBM Spectrum Protect Plus. The left sidebar contains navigation options: Dashboard, File Restore, Hypervisor, SLA Policy, Backup Storage (selected), Report, and System. The main content area is titled 'Manage Backup Storage localhost' and includes sections for 'Compression and Deduplication Settings' and 'Add New Disks to Backup Storage'. A table lists available disks for selection:

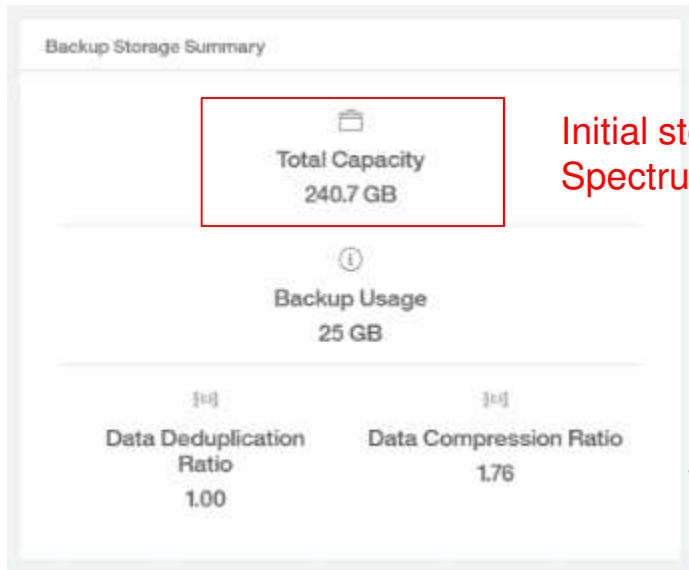
Select	Disk	Size	Vendor	Model
<input type="checkbox"/>	/dev/sdg	2 GiB	VMware	Virtual disk
<input checked="" type="checkbox"/>	/dev/sdh	30 GiB	VMware	Virtual disk

A red box highlights the second row of the table, indicating the selected disk. Below the table is a blue 'Save' button. At the top of the main content area, a table shows the current backup storage configuration:

Hostname/IP	Site	Type	Status	Actions
localhost	Primary	vsnap	Ready	Actions

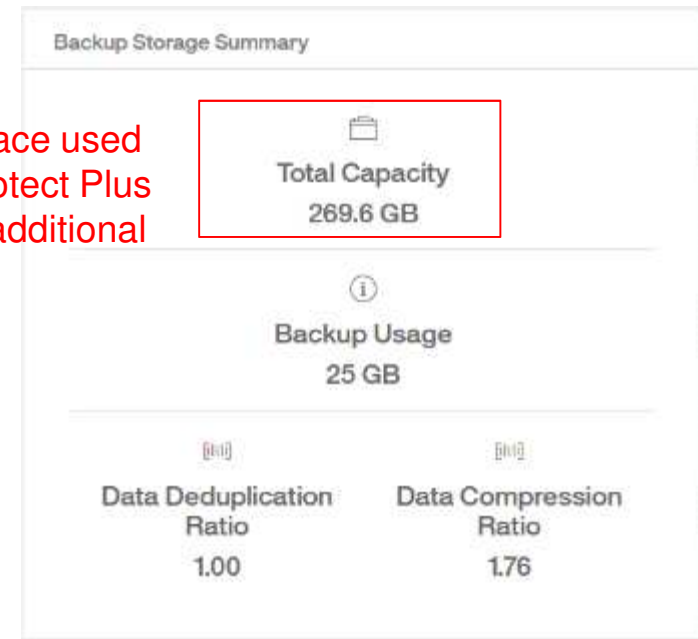
The total number of backup storage configurations is indicated as 'Total: 1'.

IBM Spectrum Protect Plus : Backup Storage configuration : Dashboard view



Initial storage space used by Spectrum Protect Plus

New storage space used by Spectrum Protect Plus with the 30 GB additional



IBM Spectrum Protect Plus : System : Jobs Monitoring

JOB MONITORING

Name	Type	Status	Next Run	Last Run	Actions
Default Hypervisor Inventory	Inventory	HELD	Nov 17 22:15:00 2017	Nov 9 22:15:00 2017	Actions
Maintenance	Maintenance	HELD	Nov 18 00:00:00 2017	Nov 9 22:07:42 2017	Actions
Default Storage Server Inventory	Inventory	HELD	Nov 17 22:15:00 2017	Nov 7 19:50:28 2017	Actions
vmware_Bronze	Backup	IDLE	Nov 18 07:10:00 2017	Nov 17 15:44:01 2017	Actions
vmware_jimestone	Backup	IDLE	Nov 18 00:00:00 2017	Nov 9 22:04:56 2017	Actions
onDemandRestore	Restore	IDLE		Nov 9 21:11:03 2017	Actions
hyperv_Bronze	Backup	IDLE	Nov 18 07:10:00 2017		Actions
onDemandRestore	Restore	RESOURCE ACTIVE			Actions

Auto Refresh

Start
Hold Schedule
Total: 8

IBM Spectrum Protect Plus : System : Audit Log

AUDIT LOG

Search User...

Access Time	Server Time	User	Group	Operation	Description
Nov 17 16:58:56 2017	Nov 17 16:58:56 2017	admin		GET	Resource [/api/endeavour/job] was requested.
Nov 17 16:58:26 2017	Nov 17 16:58:26 2017	admin		GET	Resource [/api/endeavour/job] was requested.
Nov 17 16:57:56 2017	Nov 17 16:57:56 2017	admin		GET	Resource [/api/endeavour/job] was requested.
Nov 17 16:57:25 2017	Nov 17 16:57:25 2017	admin		POST	RESCAN action was performed on resource "UNKNOWN RESOURCE" with ID STORAGE.
Nov 17 16:57:12 2017	Nov 17 16:57:12 2017	admin		GET	Resource [/api/storage] was requested.
Nov 17 16:57:12 2017	Nov 17 16:57:12 2017	admin		GET	Resource [/api/storage] was requested.
Nov 17 16:33:51 2017	Nov 17 16:33:51 2017	admin		GET	Resource [/api/storage] was requested.
Nov 17 16:33:50 2017	Nov 17 16:33:50 2017	admin		GET	Resource [/api/identity] was requested.
Nov 17 16:33:50 2017	Nov 17 16:33:50 2017	admin		GET	Resource [/api/storage] was requested.
Nov 17 16:33:50 2017	Nov 17 16:33:50 2017	admin		GET	Resource [/api/site] was requested.
Nov 17 16:33:49 2017	Nov 17 16:33:49 2017	admin		GET	Resource [/api/site] was requested.
Nov 17 16:33:49 2017	Nov 17 16:33:49 2017	admin		GET	Resource [/api/spec] was requested.
Nov 17 16:33:43 2017	Nov 17 16:33:43 2017	admin		PUT	Resource [/api/storage] was updated.
Nov 17 16:17:54 2017	Nov 17 16:17:54 2017	admin		GET	Resource [/api/storage] was requested.
Nov 17 16:17:54 2017	Nov 17 16:17:54 2017	admin		GET	Resource [/api/storage] was requested.
Nov 17 16:17:47 2017	Nov 17 16:17:47 2017	admin		GET	Resource [/api/storage] was requested.
Nov 17 16:17:47 2017	Nov 17 16:17:47 2017	admin		GET	Resource [/api/identity] was requested.
Nov 17 16:17:47 2017	Nov 17 16:17:47 2017	admin		GET	Resource [/api/storage] was requested.
Nov 17 16:17:47 2017	Nov 17 16:17:47 2017	admin		GET	Resource [/api/site] was requested.
Nov 17 16:17:34 2017	Nov 17 16:17:34 2017	admin		GET	Resource [/api/endeavour/job/session] was requested.
Nov 17 16:17:34 2017	Nov 17 16:17:34 2017	admin		GET	Resource [/api/endeavour/job/session] was requested.

Questions?



Thank you.



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