

IBM FlashSystem

*An effective line of defense
against cyber attacks*

common
EUROPE LUXEMBOURG

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Power & Storage Brand Specialist

March 24, 2022

Agenda

- ❑ Part 1 - Introducing IBM FlashSystem Safeguarded Copy
 - ❑ Including demo
- ❑ COFFEE BREAK
- ❑ Part 2 - Latest IBM Storage announcements
 - ❑ Cyber Vault
 - ❑ FS7300, FS9500, FCM Gen. 3 & SVC
- ❑ Part 3 – Potential extra bonus (if time allows and according to audience)
 - ❑ IBM Cyber Vault Storage Assessment
 - ❑ (Internal NVMe Flash Storage for IBM i field experience)



Table of content

Cybercrime continues to grow

Every 11 seconds

a company will likely become a victim of a cyber attack.¹

\$3.86 million

Average total cost of a data breach in 2020³

\$6 trillion

expected total cost of damages during 2021.¹

A further increase

in cybercrime is highly likely in the near future.²

280 days

Average amount of time to identify and contain a security breach³

IBM Technology Zone Demos

A Live demo of IBM Storage and IBM Security recovering from a Ransomware attack

IBM Technology Zone My library - FAQ - Help

Resources and collections

Storage Live Demos Collection

Visibility | IBMers, Business Partners

Build, Show, Share.

★★★★☆ (4) Rate this resource

Business value Hybrid MultiCloud and FlashSystems Storage for Real Time Operations Storage for Data and AI **Data Resiliency** Tape and Spectrum Archive

Here are the "See it Learn it" tutorials and "Do it" IBM Storage Platinum Live Demo assets for IBM Storage for Data Resiliency.

IBM's SafeGuarded Copy (SGC) on FlashSystem Arrays, using Spectrum Virtualize (12 min video) : <https://ibmcloud.ibm.com/docs/ibm-storage/ibm-storage/sage-guarded-copy?context=ibm-storage/flashsystem/ibm-storage/sage-guarded-copy#sage-guarded-copy>

Catalog Scheduled Demo:
Cyberresiliency Scenario: how to face a cyber-attack with IBM Spectrum Virtualize 9.4.2 and SafeGuarded Copy : <https://ibmcloud.ibm.com/catalog/ibm-storage-live-demo-collection#tab-4>

Backup slides

Q&A

CSM

- HW & SW Requirements
- Setup
- Cost

Sizing

- StorM Estimator for capacity

Miscellaneous questions

- Policies

StorM Technical Sales Training:

NEW SafeGuarded Copy Estimator for FlashSystem

DATE: SEPTEMBER 15, 2021

TIME: 10:00 - 11:00 AM EDT

Registration Link:

<https://ibm.webex.com/ibm/onstage/g.php?MTID=eeab42d27a651a380135d1ba5a4c96574>

Audience: IBM and Business Partner Technical Sellers

Description:

Attend this training session to learn how to use the new SafeGuarded Copy Estimator function in IBM Storage Modeller, StorM and FlashSystem product experts will demo the function and discuss important factors to consider when estimating the capacity cost of SGC for your FlashSystem opportunities.

Users will have the opportunity to ask questions of the StorM and FlashSystem SafeGuarded Copy Experts panel during this session.

We look forward to meeting you at this live virtual event! This session will be recorded for on demand replay - links will be posted in the StorM Message of the Day function when available after the live session completes.

Note there is a Product Training session for SafeGuarded Copy on SEP 9 that is an important prerequisite for the StorM session. You can register for "Cyber Resiliency on IBM FlashSystem" at this link: <https://www.ibm.com/support/pages/node/6480731>

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Traditional resilience solutions don't protect from cyber attacks



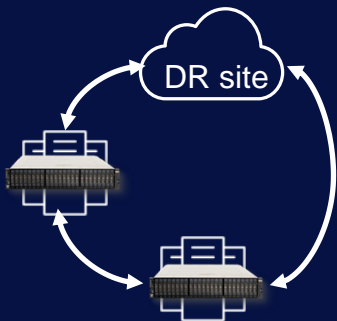
	You have	You need
Replication	Data is being replicated continuously but logical errors are also replicated instantaneously	Scheduled point in time copies stored in an isolated, secure location
Error detection	Immediate detection of system and application outages	Regular data analytics on point in time copies to validate data consistency
Recovery points	Single recovery point that may be compromised	Multiple recovery points
Isolation	All systems, storage and tape pools participate in the same logical system structure	Air gapped systems and storage so that logical errors and malicious intruders cannot propagate
Recovery scope	Continuous availability and disaster recovery	Forensic, surgical or catastrophic recovery capabilities

IBM FlashSystem

Resilient Primary Storage

2-site and 3-site replication

Short RTO



On-prem, on cloud
or hybrid

High-availability

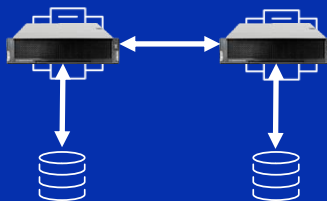
Zero RTO



100% data
availability guarantee

SVC enhanced high-availability

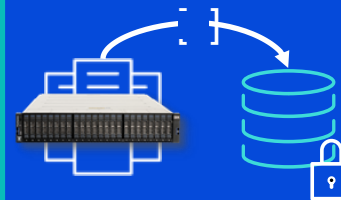
Zero RTO



Multi-platform support

IBM, Pure, HPE, Dell-EMC,
NetApp, 500+ others ...

Immutable copy



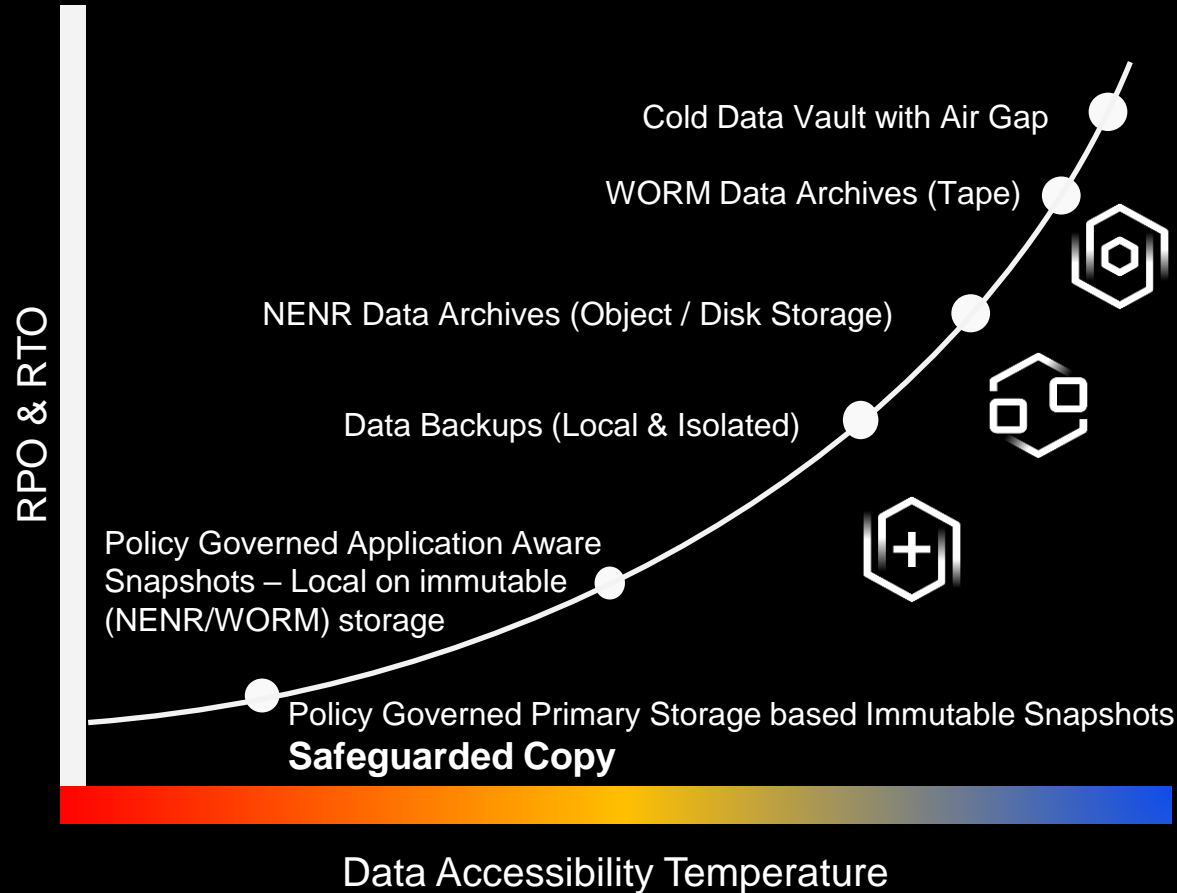
Air-gap

Encryption



FIPS 140-2

Data Resilience inc. Cyber Resilience



Copy Separation:

Create a structure of data separation across multiple layers and services including;

- Copy Services
- Backup Services
- Separation of security controls

Immutability & Access Isolation

Create a structure of data immutability at multiple layers and services including;

- Logical / physical isolation (Air Gap)
- Non-erasable / Non-rewritable Storage
- Cold Storage / Object Storage
- Data Vaults
- Isolated Infrastructure

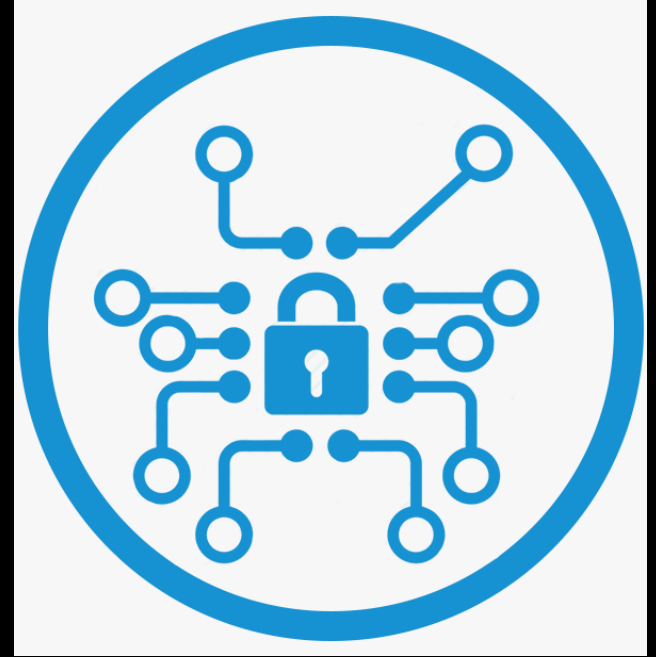
Cyber Resilience

Requires short, and long term, retention capability;

- High snapshot frequency & fastest restore for short to medium term retention
- RPO policy governed snapshot frequency for medium to long term retention and fast restore

What is Safeguarded Copy?

*Safeguarded Copy is a **virtual air gap** mechanism that uses FlashCopy functionality to take **immutable copies**, aiding in the **recovery from ransomware** or internal “bad actors” who would seek to destroy data*



Introducing Safeguarded Copy

Up to
15000

immutable point-in-time
copies of data

Fast restore
from primary storage

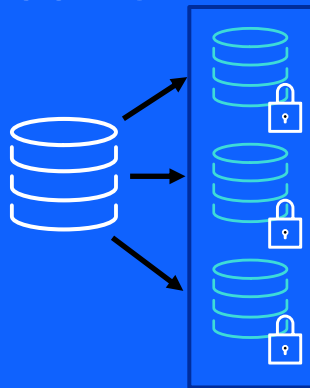
Immutable point-in-time copies of
production data

Isolated logical air-gap offline by design

Separate privileges for admins of
production data and Safeguarded
backups

Prevents modification

or deletion of sensitive
point-in-time copies due
to user error, malicious
destruction, or
ransomware attack



IBM FlashSystem Safeguarded Copy

Delivering three essential cyber resiliency features

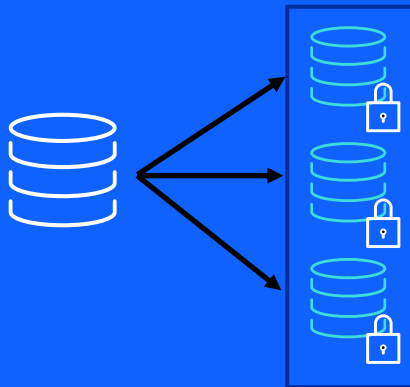
IBM FlashSystem Safeguarded Copy is designed to prevent point in time copies of data from being modified or deleted by user errors, malicious destruction, or ransomware attacks

Separation of duties



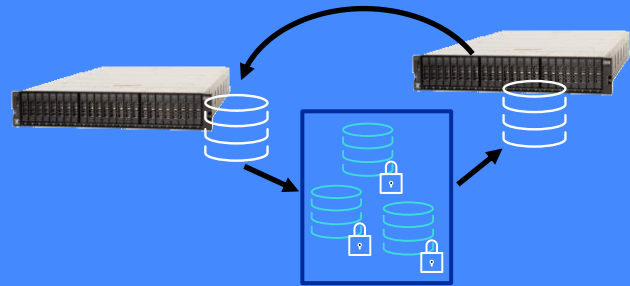
Additional security capabilities to prevent non-privileged users from compromising production data

Protected copies of data



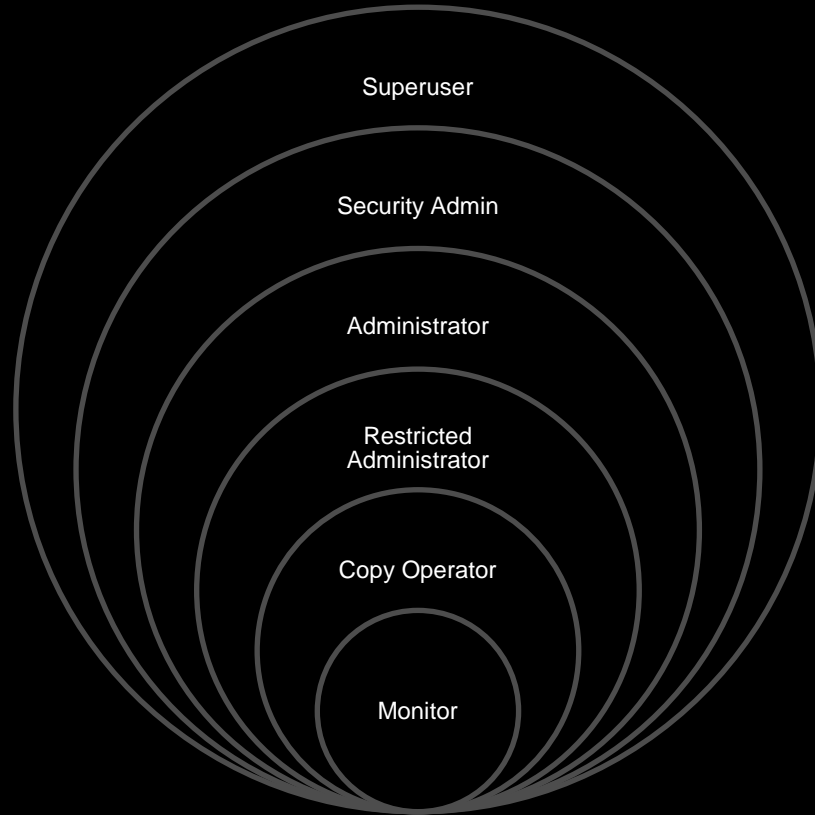
Capabilities to regularly create secure, immutable point in time copies

Speed of recovery



Functionality that enables different use cases to restore corrupted data **rapidly**

Separation of Duties: Current user role overview



IBM FlashSystem Safeguarded Copy

Separation of duties

Administrator



Can provision and configure Safeguarded Copies



Can create Safeguarded Policies and modify them



Can **not** remove or damage existing Safeguarded backups



Can **not** remove or compromise a Safeguarded backup location (child pool)

Superuser



Can perform maintenance actions unrestricted



Can remove a Safeguarded Copy and Safeguarded backup location (child pool)



Account can be disabled for extra security.
Re-enable by Remote Support (IBM) or Tech Port

Security Administrator

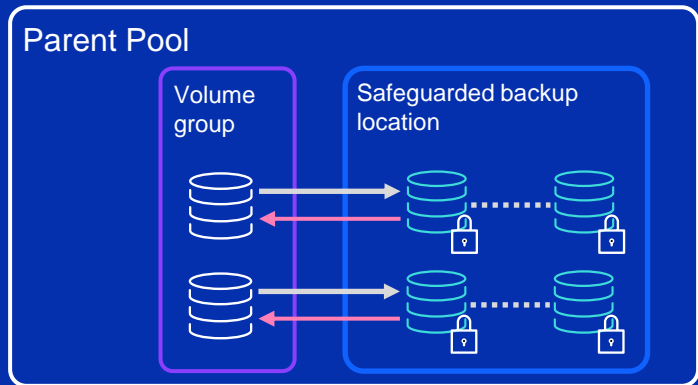


Can manage users and security



Can remove a Safeguarded Copy and Safeguarded Pool

Protected Copies

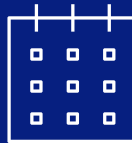


Can **not** be mapped to a host

Immutable

Can **not** be written or read by an application

Automatically created and deleted based on a predefined **schedule**



Protected copies of production volumes

Thinly-provisioned point-in-time

Built on existing FlashCopy snapshot technology

Can quickly be restored to online volumes for recovery

Stored in a **Safeguarded backup location**

Uses existing Child Pool technology

Logical separation from other volumes

Capacity control

Access restrictions (separation of duties)

IBM Copy Services Manager

Creation, deletion, and restore automation

IBM Spectrum Virtualize automatically creates copies based on a defined schedule

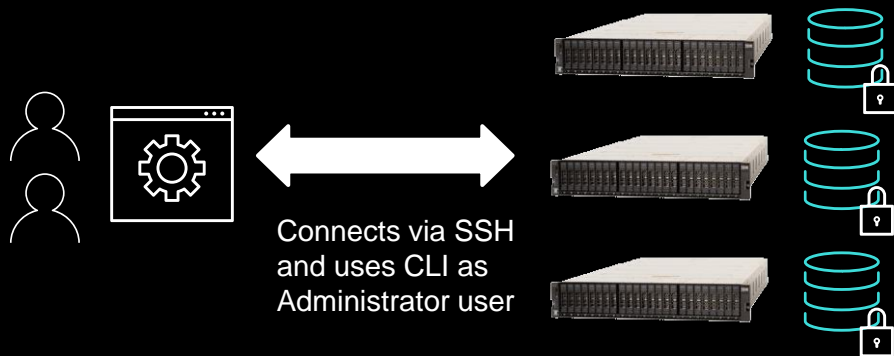
CSM automates restore from a safeguarded copy to a new volume, or to the previous source volume

IBM Spectrum Virtualize software automatically deletes expired backups

No external APIs for copy deletion

Coordinate and catalog copies across systems

Dual authentication control option to make changes



IBM Copy Services Manager software provides scheduled creation of backups and helps with recovery

Licensed with IBM Spectrum Control, IBM Virtual Storage Center, IBM Spectrum Storage Suite

Available separately as IBM Copy Manager for IBM Spectrum Virtualize

Can use spare DS8000 CSM license capacity

Safeguarded Copy - Use Cases



Validation

- Regular analytics on the copy to provide early detection of a problem or reassurance that the copy is a good copy prior to further action

Forensic

- Use a copy of the production system to investigate the problem and determine if recovery action is necessary

Surgical

- Extract data from the copy and logically restore back to the production environment

Catastrophic

- Recover the entire environment back to the point in time of the copy as this is the only recovery option

Offline Backup

- Performing an offline backup of data from a consistent point-in-time copy can be used to build a second line of defense, providing a greater retention period and increased isolation and security

Who is this solution for? Anyone is concerned!

- *Hospitals ! (Many are IBM clients already using Spectrum Virtualize (for Power IBM i WISH application) :*

« **Cyberattaque à la Clinique Saint-Luc de Bouge : un millier de consultations annulées** »

« **Attaque informatique au Chwapi** »

« **Les hôpitaux bruxellois font l'objet de cyberattaques** »

- *But many other sectors too :*

« **Asco Industries piraté, toutes les entreprises menacées par la cybercriminalité ?** »

- *In fact, every single company is concerned :*
 - *In Q2, a Belgian health insurance invested 1M in IBM FlashSystem and IBM Tape Libraries to have a true air gap after a security audit*
 - *In Q3, in a RFP, a Belgian Bank was seeking information to have frequent « secured Golden Copies »*
- **Collaborate with the IBM Security team ! (See next slide)**

Threat Detection and Data Resilience with IBM Security QRadar SIEM

IBM QRadar analyzes event data in real time for early detection of attacks and data breaches.

Proactively safeguard your data

Real-time alerting on potential threats

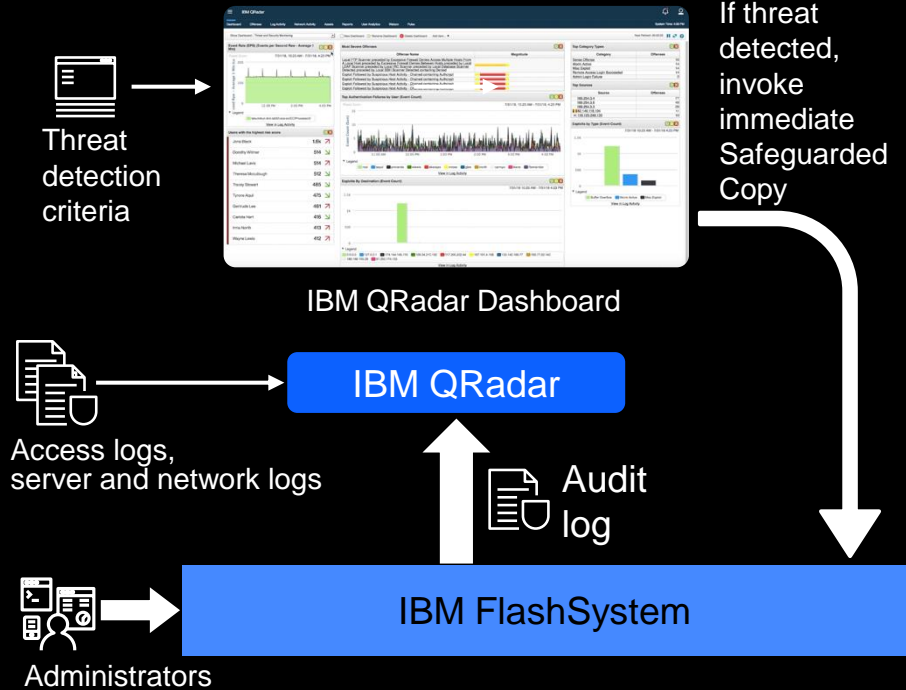
Auto trigger Safeguarded Copy based on threats

Login attempt from unusual IP address

Login attempt outside business hours

Multiple failed login events

[A Live demo of IBM Storage and IBM Security recovering from a Ransomware attack](#)



2021 IBM i Marketplace Survey Results

IT INITIATIVES & TRENDS:

TOP CONCERNS

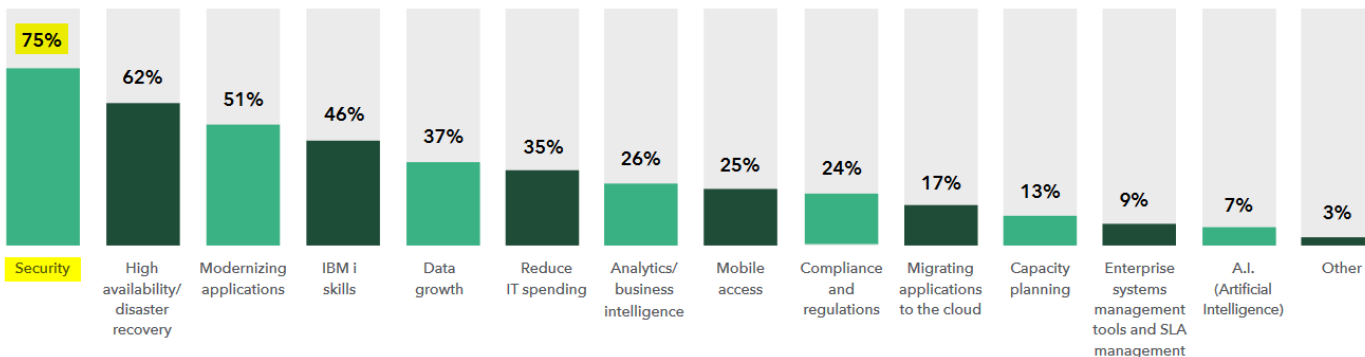
<https://www.helpsystems.com/resources/guides/ibm-i-marketplace-survey-results>

Perhaps the most consistent data point in the IBM i Marketplace Survey Results is the ongoing security threat. Over the past five years, security has been the main concern for people planning their IT environment, and this year was no different, with 75% saying this was their number one concern. Such is the constant threat posed by cybercriminals, security is perhaps destined to continue as the main concern for our respondents.

The next biggest concerns were high availability/disaster recovery, modernizing applications, and IBM i skills, respectively. The latter is especially worrying since it means there are fewer people with the know-how to address the other concerns. Organizations offering early retirement in 2020 because of COVID-19 cost-saving measures could have exacerbated this problem even further.

Additional concerns with significant year-over-year changes included reduced IT spending, which increased seven points to 35%. This was almost certainly caused by COVID-19 budget restrictions. Another concern impacted by the pandemic was migrating applications to the cloud, which fell eight points to just 17%. People have put many specialty projects on hold due to COVID-19, and cloud is likely one of those projects.

What are your top 5 concerns as you plan your IT environment?



In a nutshell

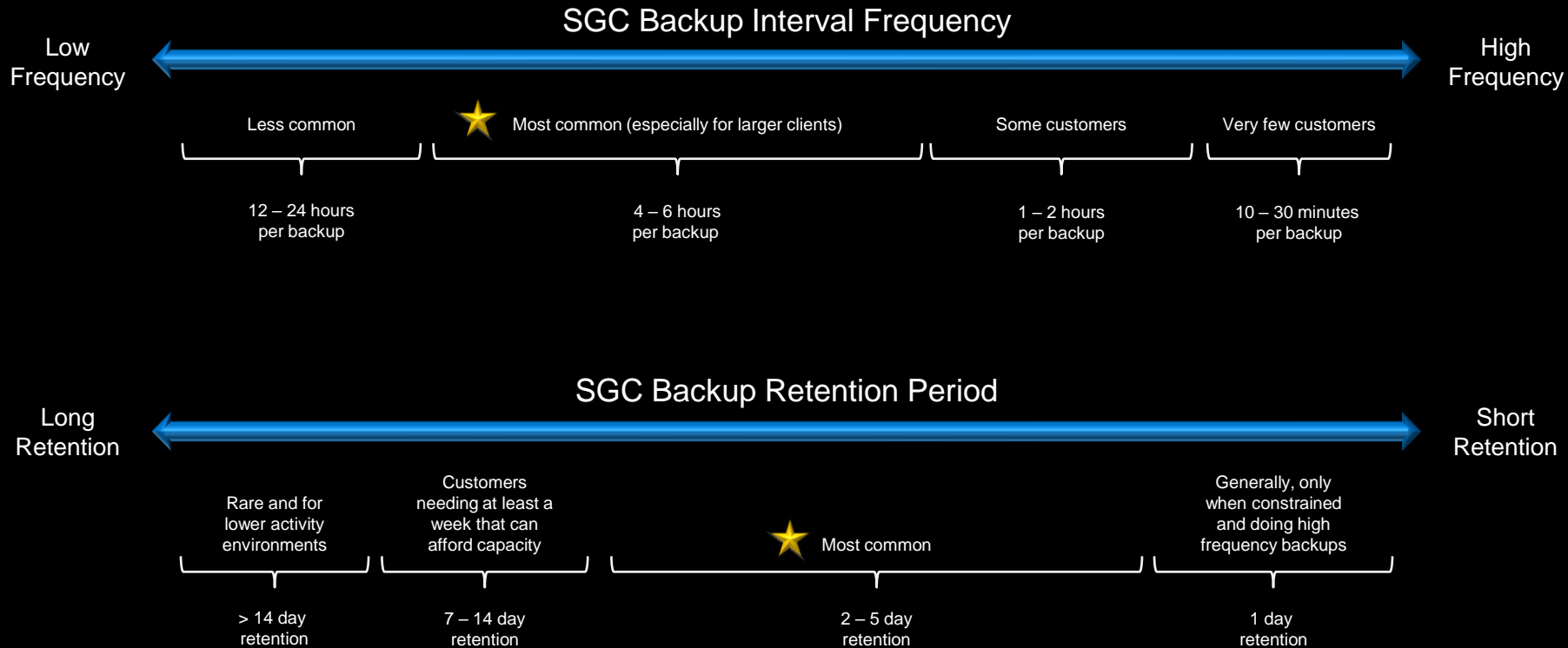
- There is not a single **company** that is not **worried about Cyber Resiliency and how to protect themselves from Ransomware attacks** !
- IBM FlashSystem **SafeGuarded Copy** is a **simple solution, easy to implement and use** (setup in 10min)
- We already have 4+ years of expertise with Safeguarded Copies on DS8xxx
- Available through a **classical software upgrade** (8.4.2 Technical Update)
- You only need :
 - a **FlashCopy license** (included in most (recent) systems), and
 - **Copy Services Manager** (already included in IBM Spectrum Control, VSC and Spectrum Storage Suite or via new CM4SV offering)
 - And of course, extra storage capacity ! 😊

Spectrum Virtualize Safeguarded Copy Considerations

Capacity Planning/Performance Considerations

- Additional Space required for Safeguarded Copy depends on three factors:
 - Volume capacity (number of volumes and size)
 - Data change rate
 - Number of daily snapshots
- Consider not using Safeguarded Copy for everything
 - Use it strategically for what needs to be protected
- Consider the performance and system overhead considerations of extensive numbers of FlashCopies !

Safeguarded Copy – What are clients doing for Backup Interval Frequency & Backup Retention Period?



IBM Technology Zone Demos

[A Live demo of IBM Storage and IBM Security recovering from a Ransomware attack](#)

IBM Technology Zone

My library ▾

FAQ

Help



Build. Show. Share.

Resources and collections

Storage Live Demos Collection

Visibility IBMers, Business Partners



(6) Rate this resource



Business value

Hybrid MultiCloud and FlashSystems

Storage for Red Hat Openshift

Storage for Data and AI

Data Resiliency

Tape and Spectrum Archive

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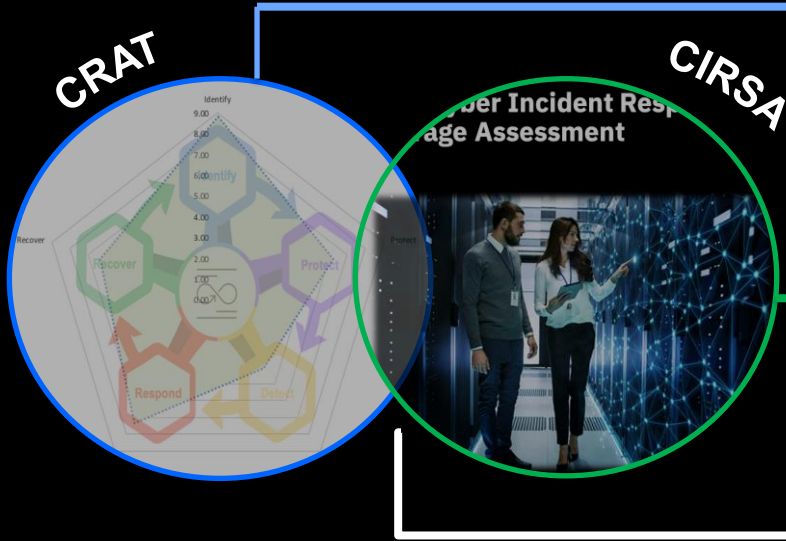
https://mediacenter.ibm.com/media/IBM%27s+SafeGuarded+Copy++%28SGC%29+on+FlashSystem+Arrays%2C+using+Spectrum+Virtualize/1_vcf6edqs

Catalog Scheduled Demo:

Cyberresiliency Scenario: how to face a cyber-attack with IBM Spectrum Virtualize 8.4.2 and SafeGuarded Copy :

<https://techzone.ibm.com/collection/storage-live-demos-collection#tab-4>

CRAT and CIRSA assessments



Uniqueness: CRAT

- No cost assessment
- Short cycle time. :
 - Assessment two hrs. and results presentation one hr.
 - Total assessment cycle time (1-2 wks.)
- Self-paced client assessment guided by IBM SMEs
- Light touch project; minimal time / effort required from the client

Uniqueness: CIRSA

- Lab Services consultant led
- Report includes Current State vs Proposed Future State
- Report draws from IBM's CR portfolio of products to create tailored IBM CR solutions
- Provides a prioritized recommendations roadmap

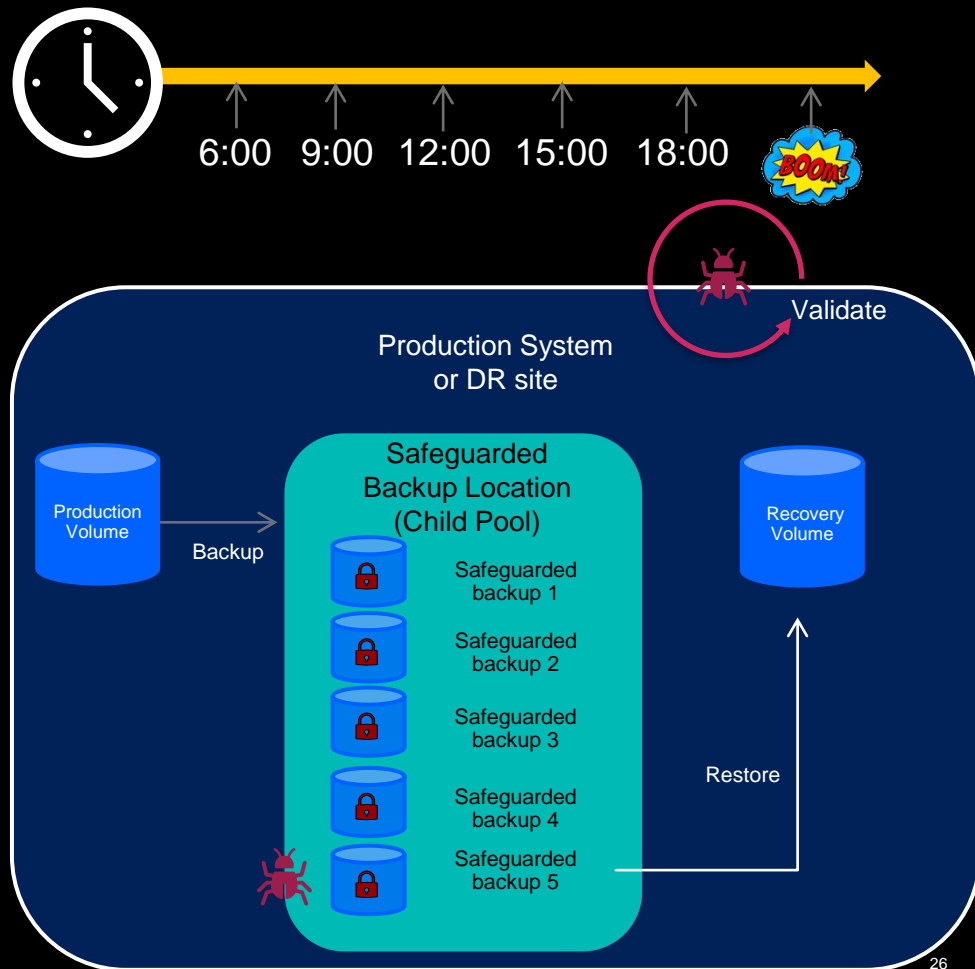
Commonalities

- Both assessment are based on NIST Security framework
- A vehicle to showcase and promote Storage portfolio
- Use the virtual workshop along with IBM thought leadership to provide recommendations
- Progress opportunities through ATG, Client Exec Workshops

Backup slides

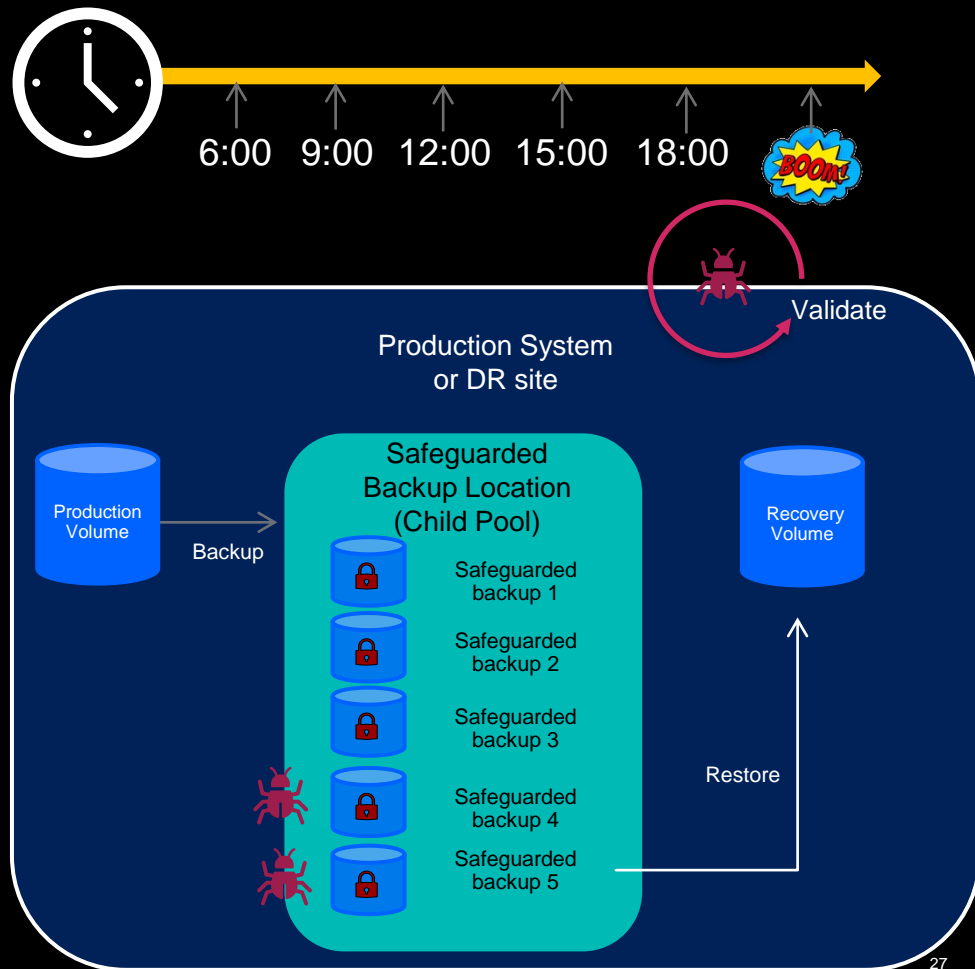
IBM Safeguarded Copy for Logical Corruption Protection

Safeguarded Copy prevents sensitive point in time copies of data from being modified or deleted due to user errors, malicious destruction or ransomware attacks



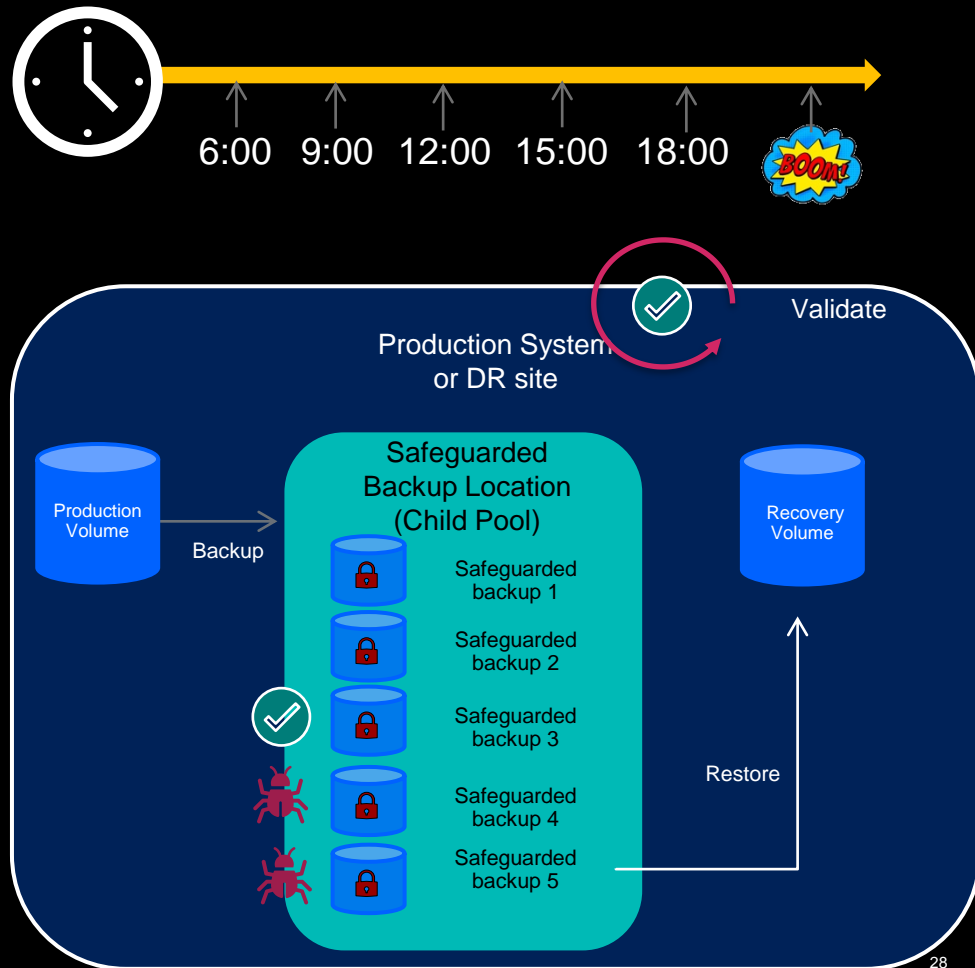
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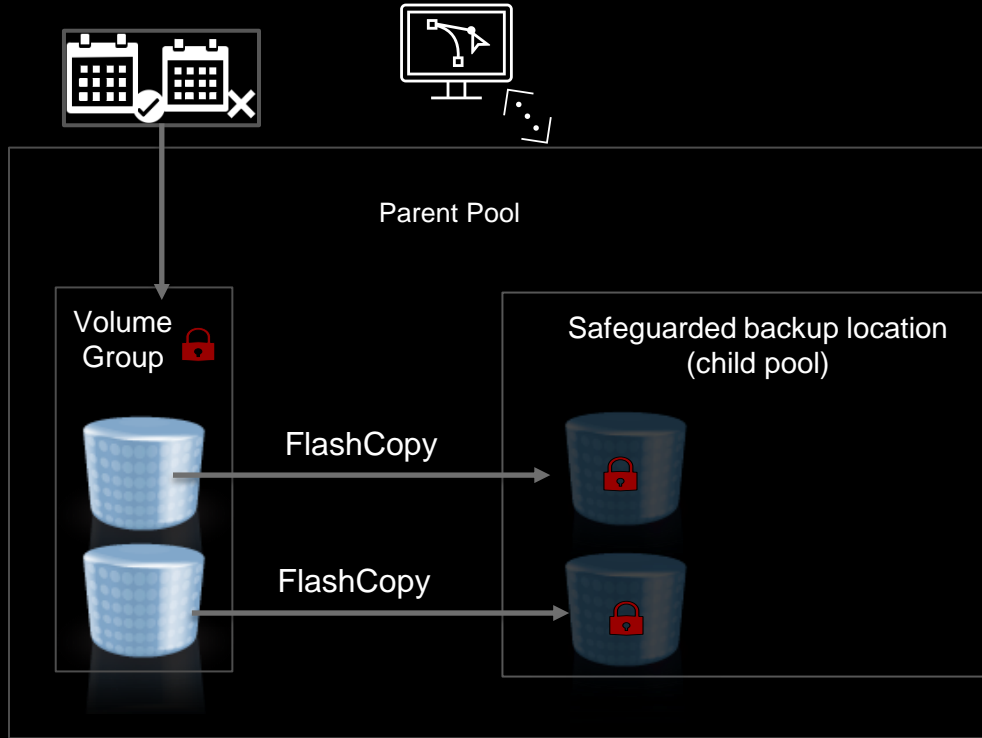


IBM Safeguarded Copy for Logical Corruption Protection

Safeguarded Copy prevents sensitive point in time copies of data from being modified or deleted due to user errors, malicious destruction or ransomware attacks



Safeguarded Copy - Backup



CSM creates **FlashCopy mappings** and a **consistency group** based on the volumes in the Volume Group

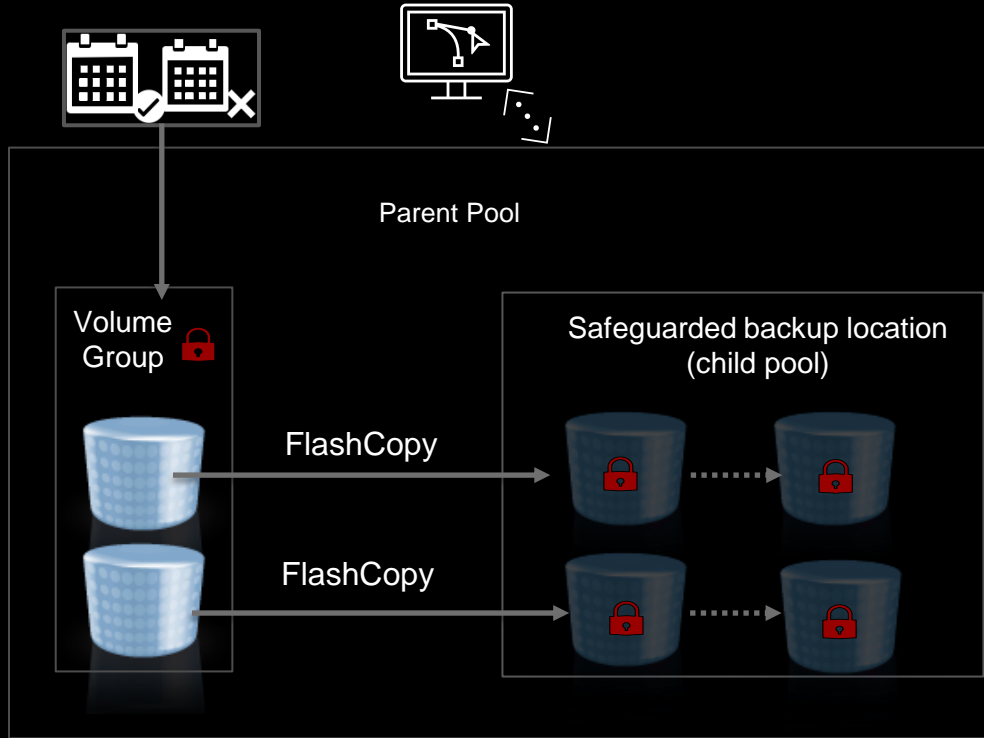
Safeguarded backups are the target volumes created in a Safeguarded backup location. They cannot be mapped to hosts, or removed by an Administrator or inferior role. The original volume cannot be removed by an Administrator or inferior role.

FlashCopy **snapshots** are taken based on the schedule

Snapshots are thinly provisioned copies: no background copy, no cleaning rate

The only data copied to the target is the modified data from the source

Safeguarded backups continue to be generated on a schedule



CSM creates snapshots based on the Safeguarded Policy schedule

Once the backups reach their expiration time, Spectrum Virtualize software removes them automatically

CSM Safeguarded Copy Schedule (example)



Assign Safeguarded policy

Select a Safeguarded policy to specify how often copies occur and how long they are retained. The schedule and retention period cannot be changed for pre-set policies, but additional policies can be created through the command-line interface.

Safeguarded policies

NAME	COPY INTERVAL	RETENTION
predefinedsgpolicy0	Copy every 6 hours	Retain for 7 days
predefinedsgpolicy1	Copy every week	Retain for 30 days
predefinedsgpolicy2	Copy every month	Retain for 365 days

Choose start schedule date Choose a time

hh:mm AM

Close

Assign

SVCSGC

Session Actions:

Status

State

Session Type

Active Host

Recoverable

Description

Copy Sets

Group Name

☒ Normal

Protected

Safeguarded Copy

H1

Yes

(modify)

2 (view)

Volume Group: MySGCVolGroup

Backup Schedule: Every 2.0 hours

Last Recoverable Backup: 2020-12-04 11:42:31 CST

Backup Info

Recover Backup Info

Total Number Backups: 2 Total Recoverable Backups: 2 Total Unrecoverable Backups: 0

Backup Time	Backup ID	Recoverable	Copy Sets	Last Result
2020-12-04 07:03:57 CST	1607087037	Yes	2	<input checked="" type="checkbox"/> iWNR2800I
2020-12-04 11:42:31 CST	1607103751	Yes	2	<input checked="" type="checkbox"/> iWNR2800I

Policy Creation

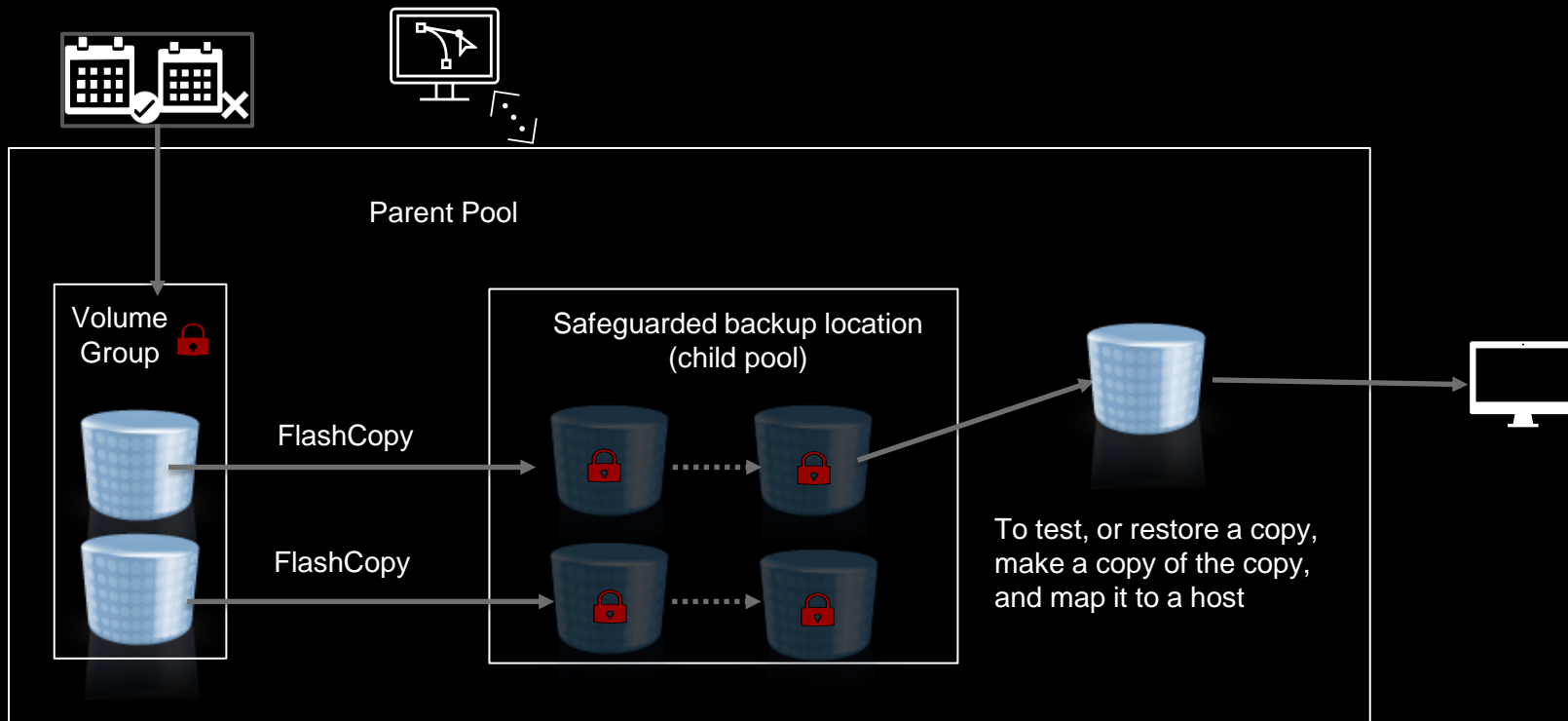
- Policies cannot be created from the GUI at this point in time
- mksafeguardedpolicy
- lssafeguardedpolicy
- chsafeguardedpolicy
 - Can only change name
- mkvolume group
- chvolume group

```
>>-mksafeguardedpolicy--+-+-----+----->
                               '- -name-- safeguarded_policy_name-'
>-- -backupunit +-minute+-- -backupinterval--interval_value--->
                               +-hour---+
                               +-day----+
                               +-week---+
                               '-month--'
>-- -backupstarttime--start_time-- -retationdays--num_days-----><

For more details type 'help mksafeguardedpolicy'.
```

Policies can only be deleted if they have no association with a volume group

Safeguarded Copy – Recover and validate data



CSM Safeguarded Copy – Recover Process

Recover

BFSSGCVolumeGroup

Session Actions:

Commands	Backup
View/Modify	Recover Backup
Export	Restore Backup
Remove Session	Refresh States
recoverable	TerminateH1R1
Description	TerminateH1R1 Keep R1

Copy Sets 5 (view)
Group Name Automatically Generated Session

Backup Schedule Every 6.0 hours
Last Recoverable Backup 2021-06-15 09:30:07 EDT
Volume Group BFSSGCVolumeGroup



Recover Backup BFSSGCVolumeGroup?



IWNR1883W

[Jun 15, 2021 11:22:08 AM] This command will recover the R1 volumes to the selected backup of session BFSSGCVolumeGroup. If hardware levels do not support recovering the latest backup, then recovering to the most recent backup will cause another backup to be taken, which would occupy more space on the volumes. Are you sure you want to continue?



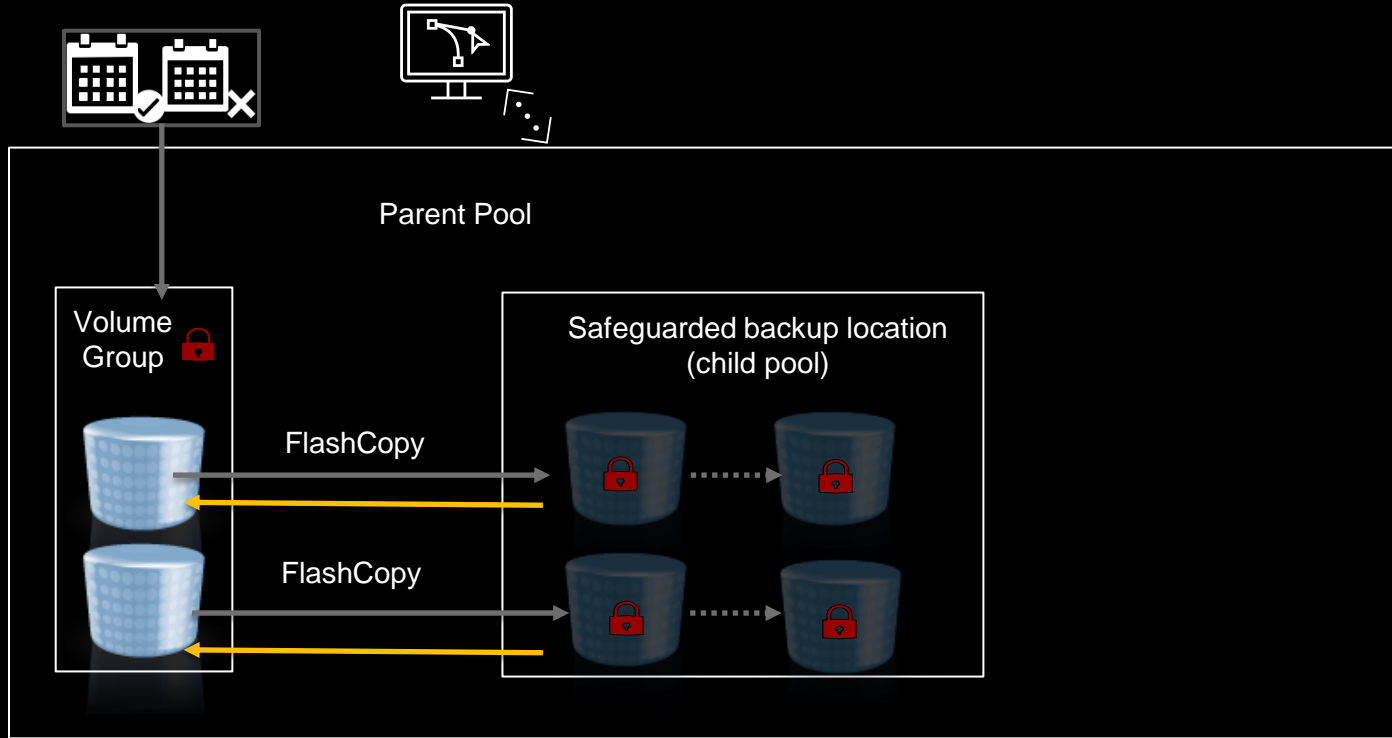
Filter...

Backup Time	Backup ID	Copy Set
2021-06-15 09:30:07 EDT	1623763800	5
2021-06-15 03:30:10 EDT	1623742200	5
2021-06-14 21:30:08 EDT	1623720600	5
2021-06-14 15:30:07 EDT	1623699000	5
2021-06-14 09:30:10 EDT	1623677400	5
2021-06-14 03:30:08 EDT	1623655800	5
2021-06-13 21:30:06 EDT	1623634200	5
2021-06-13 15:30:05 EDT	1623612600	5
2021-06-13 09:30:08 EDT	1623591000	5
2021-06-13 03:30:06 EDT	1623569400	5

Yes

No

Safeguarded Copy – Restore to production



If the source volume is not needed for forensics, and if the backup is known to be good, restore back to source directly can be used (with care)

CSM Safeguarded Copy – Restore Process



BFSSGCVolumeGroup

Session Actions:

- Commands
 - Backup
 - View/Modify
 - Recover Backup
 - Restore Backup**
 - Export
- Remove Session
 - Refresh States
- Recoverable**
 - TerminateH1R1
 - TerminateH1R1 Keep R1
- Description**

Safeguarded
- Copy Sets**

5 (view)
- Group Name**

Automatically Generated Session
- Backup Schedule**

Every 6.0 hours
- Last Recoverable Backup**

2021-06-15 09:30:07 EDT
- Volume Group**

BFSSGCVolumeGroup



Recover Backup BFSSGCVolumeGroup?

! IWNR1883W
[Jun 15, 2021 11:22:08 AM] This command will recover the R1 volumes to the selected backup of session BFSSGCVolumeGroup. If hardware levels do not support recovering the latest backup, then recovering to the most recent backup will cause another backup to be taken, which would occupy more space on the volumes. Are you sure you want to continue?

Filter...

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2021-06-14 09:30:10 EDT	1623677400	5
2021-06-14 03:30:08 EDT	1623655800	5
2021-06-13 21:30:06 EDT	1623634200	5
2021-06-13 15:30:05 EDT	1623612600	5
2021-06-13 09:30:08 EDT	1623591000	5
2021-06-13 03:30:06 EDT	1623569400	5

Yes

No

IBM Spectrum Virtualize Safeguarded Copy – Setup Workflow

Spectrum Virtualize workflow

- Create Administrator user for IBM Copy Services Manager
- Create Safeguarded backup locations (child pool)
- Create volume groups and add source volumes
- Assign Safeguarded backup policies to volume groups

Copy Services Manager workflow

- Create the Administrator user
- Create a connection to the system in IBM Copy Services Manager
 - After a connection is established, IBM Copy Services Manager automatically detects volume groups with Safeguarded backup policies and schedules the backup copies
- Optional - setup Dual authentication control

Spectrum Virtualize Safeguarded Copy Considerations

Limitations and restrictions:

- Increased VDisk and FC mappings from 10,000 to 15,864 in R8.4.2
- Safeguarded copy supports a maximum of:
 - 256 volume groups
 - 512 volumes per volume group
 - 256 safeguarded copies per source volume
 - 32 Safeguarded policies
 - 3 default IBM supplied policies
 - Use the `mksafeguardedpolicy cli` command to create user-defined backup policies
 - GUI does not currently support creating user-defined Safeguarded backup policies (but can display both)
- Safeguarded copy backup location
 - Defined as an immutable target location for safeguarded copy backups
 - Resides in the same Parent Pool as any source volume(s) defined as requiring a safeguarded copy
 - Parent Pools can be traditional pools or Data Reduction Pools (DRP)
- Source volume of a safeguarded copy cannot be:
 - A mirrored copy of a volume
 - In an ownership group
 - A change volume that is used in either HyperSwap or Global Mirror relationships
 - Used as cloud backups with the Transparent Cloud Tiering (TCT) function
- Spectrum Virtualize for Public Cloud (SV4PC) is not currently supported by Safeguarded Copy

Licensing Options for FlashCopy / CSM

Spectrum Virtualize Safeguarded Copy requires FlashCopy and Copy Services Manager (CSM). The following table provides the methods of acquiring licenses

IBM Spectrum Virtualize Safeguarded Copy for FlashSystem and SVC support matrix				
HW platform	SGC INCLUDED in Spectrum Virtualize SW	FlashCopy INCLUDED in Spectrum Virtualize SW	FlashCopy Add-On feature code is required	*NEW* offering IBM Copy Manager for IBM Spectrum Virtualize package/license (includes CSM)
FS5200, FS7200, FS9xx0	Y	Y	N	Y
FS5100	Y	N	Y	Y
V7000 Gen3	Y	N	Y	Y
SVC 2145/2147, including DH8	Y	N	Y	Y

Note:

CSM is already included in all versions of IBM Spectrum Control, VSC and Spectrum Storage Suite

IBM CM4SV will be offered to FlashSystem and SVC customers interested in using SGC and do not currently have CSM

IBM CM4SV will be available on both AAS and PPA ordering platforms

For systems that do not have FlashCopy (FC) with Spectrum Virtualize SW, they will need to get FC as an Add-On since it is required for SGC

SGC is not supported on these specific models - V50X0E, FS50x0, FS50x5, V7000G2/G2+. Customers interested in SGC function are advised to upgrade

Alternatively, SGC function can be used via the SAN Volume Controller (SVC) when these systems are virtualized by SVC

Q&A

CSM

- HW & SW Requirements
- Setup
- Cost

Sizing

- StorM Estimator for capacity

Miscellaneous questions

- Policies

IBM CSM requirements

IBM Copy Services Manager (CSM) HW requirements :

<https://www.ibm.com/docs/en/csm/6.3.0?topic=prerequisites-distributed-systems>

Hardware requirements

- Minimum disk space requirement: 10 GB minimum
- Memory: 1280 MB minimum
- Processor: Quad-core processor or higher recommended

IBM CSM SW requirements :

<https://www.ibm.com/docs/en/csm/6.3.0?topic=manager-installing-distributed-systems>

Run the installation setup file that is provided with your license.

- AIX: csm-setup-6.2.x-aix.bin
- Linux: csm-setup-6.2.x-linux-x86_64.bin
- Linux on z Systems: csm-setup-6.2.x-linux-s390x.bin
- PowerPC Linux: csm-setup-6.2.x-linux-ppc.bin
- Windows: csm-setup-6.2.x-win.exe

CSM Setup

Using IBM Copy Services
Manager for FlashSystem and
Spectrum Virtualize
Safeguarded Copy

**How does do I setup FlashSystem
/ Spectrum Virtualize Safeguarded
Copy using Copy Services
Manager (CSM)?**

<https://community.ibm.com/community/user/storage/blogs/blea1/2021/08/27/ibm-csm-sgc-for-flashsystem>

Q&A

Q: Can we assign more than one policy to a given volume group?

A: *You can only assign one policy per volume group and BTW you need always a volume group and can not assign the policy to a single volume (without volume group)*

Q: If a FlashCopy is running for a backup and this backup is running several hours, can a Safeguarded Copy snapshot be taken during that FlashCopy?

A: *FlashCopy isn't listed under the "known" restrictions for Safeguarded Copy like volume mirroring. Checking the design document clearly states that a Safeguarded Copy source "Can be the source for regular (non-safeguarded) FlashCopy mappings with targets not in the designated Safeguarded backup location". So, there should be no problems.*

Q&A

Q: How to best determine the change rate and the performance impact?

A: *The change rate would ideally be determined from an existing or temporarily established FlashCopy for this purpose.*

The possible performance impact will be highest when starting a backup where each host write will trigger a copy-on-write for the grain subject to change and become less over the lifetime of the FlashCopy relationship. If you want to model the worst-case performance impact (when starting a backup) you could add an additional workload in StorM for the copy-on-write with 2x host write I/O with 50% reads, 0% cache hits and 256 or 64 KiB grain size.

IBM CM4SV list price with 5 years SW Maint. for 1 device example

5639-003	IBM Copy Manager for IBM Spectrum Virtualize 1.1	1	
MEFNQE	Copy Mgr for Spectrum Virt per Storage Device	1	3.186,00
Serial: N/A		Total	EUR 3.186,00
5639-008	5-Year Registration SWMA for 5639-003	1	N/C
MEFUX6	Per Storage Dev SW Maint 5-Yr Registration	1	2.549,00
Serial: N/A		Total	EUR 2.549,00



e-config Warning

Please ensure the following minimum license quantity rules have been adhered to:

- 1) For every 25 slots, one license is required
 - 2) For every 500 TB (decimal) raw, one license is required
- For each enclosure, the larger number of the two calculations above determines the number of licenses required.

For example,
if there are 24 slots (one license required)
and
768 TB (two licenses required),

then two licenses are required.