



# ADVANCED TECHNOLOGY GROUP (ATG)



## Accelerate with ATG Webinar: Exploring the IBM DS8000 Safeguarded Copy Capacity Study

Rick Pekosh  
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IBM Advanced Technology Group  
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Dan Zehnpfennig  
Senior Storage Technical Specialist – DS8000 SME  
IBM Advanced Technology Group  
[danz@ibm.com](mailto:danz@ibm.com)



## Meet the Speakers

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**Rick Pekosh** is a Principal Storage Technical Specialist working in the IBM Advanced Technology Group as a DS8000 subject matter expert specializing in High Availability, Disaster Recovery, and Cyber Resiliency solutions. He is also the ATG DS8000 SME Team Lead. Rick works with customers, IBM Business Partners, and IBMers in the Americas. He began working with the DS8000 in early 2005 while working as a technical sales specialist and functioning as a regional designated specialist. He joined IBM in 2001 after spending 20 years in application development in various roles for the Bell System and as a consultant. Rick earned a BS degree in Computer Science from Northern Illinois University and an MBA from DePaul University. Additionally, his IBM Profession Certification is Technical Specialist (Thought Leader).



**Dan Zehnpfennig** joined the Advanced Technology Group as a Senior Storage Technical Specialist concentrating on DS8000 and Healthcare ISV. He is a DS8000 subject matter expert specializing in High Availability, Disaster Recovery, and Cyber Resiliency solutions. Dan comes from the Business Partner community, where he was a technical storage seller for more than 20 years. He has been involved with DS8000 products and their precursors since 2000 and Spectrum Virtualize products since 2003. He enjoys helping customers get the most out of their storage.



# ADVANCED TECHNOLOGY GROUP (ATG)



## Sizing Solutions for the DS8000

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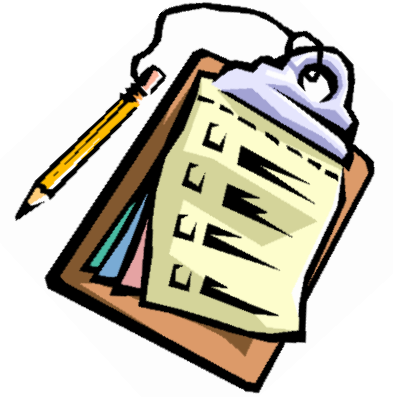





## Discussion Topics

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- **Sizing Solutions Data Requirements**
- **Safeguarded Copy Sizing**





**Sizing Solutions  
Data Requirements**

## What is the difference between SMF, RMF, & CMF? Aren't they the same thing?

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### IBM System Management Facilities (“SMF”)

- is a component of [IBM's z/OS](#) for [mainframe computers](#), providing a standardized method for writing out records of activity to a file (or data set to use a z/OS term). SMF provides full "instrumentation" of all baseline activities running on that [IBM mainframe](#) operating system, including I/O, network activity, software usage, error conditions, processor utilization

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### **IBM Resource Measurement Facility (“RMF”)**

- Resource Measurement Facility is a performance monitor for the z/OS Operating System. It also collects data for long-term performance analysis and capacity planning. The product consists both data gathering (i.e., collecting) and reporting components.

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### **BMC Comprehensive Management Facility (“CMF”)**

- CMF MONITOR is a performance monitoring, statistics gathering, and reporting system developed and maintained by BMC Software. Statistics gathered by CMF MONITOR can be compiled and presented either in batch reports or through windowed online displays.



## What is the difference between SMF, RMF, & CMF? Aren't they the same thing?

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**Note:** RMF & CMF are competitive products. Customers use one or the other and most typically collect data in 15 minute intervals. Sometimes 10, and on much rarer occasions, 1 or 5 minute intervals. Anything over 15 minutes smooths out the peaks too much and are not very useful for our ATG studies.

## IBM ATG, BTS, & WSC Studies

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### IBM ATG Studies Based on Customer Provided RMF or CMF data

- **DS8000 Global Mirror Bandwidth Study** – estimate required network bandwidth for target Recovery Point Objective (“RPO”)



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- **DS8000 Safeguarded Copy Sizing** – calculate the capacity needed to meet Cyber Resilience (“CR”) requirements



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- DS8000 PAV Analysis – analyze # aliases in use & make recommendations for HyperPAV or SuperPAV
- **DS8000 Transparent Cloud Tiering Savings Analysis** – calculate CPU savings from “TCT” offload of HSM host cycles for Migrate/Recall (SMF default record types 240 & 241)





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### IBM BTS Studies Based on Customer Provided RMF or CMF data

- **StorM Performance Modeling** – used to appropriately size a solution to meet workload performance requirements



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### IBM BTS Studies Based on Customer Provided RMF or CMF data

- StorM Performance Modeling – used to appropriately size a solution to meet workload performance requirements

### IBM WSC Studies Based on Customer Provided RMF or CMF data

- **zBNA HyperLink Study** – used to determine workloads eligible for zHyperLink e.g., Db2 reads, VSAM reads, Db2 sequential log writes (SMF record type 42.6). Customers can perform their own zBNA Hyperlink Study



## Starting Point for RMF based Studies

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- **Customer provides RMF or CMF data for at least one week. Week chosen should be representative. Some customers choose to use a peak week (end of month, quarter, or year); others elect to use a “typical” week or particular workload. Customer also completes questionnaire.**
- **RMF interval should be no more than 15 minutes. Longer intervals will not provide accurate detail**
- **Data must be collected and supplied from every system and LPAR accessing the disk system(s).**
- **RMF records should include SMF record types 70–78 and must include at a minimum:**
  - ✓ Type 70.1 – CPU activity
  - ✓ Type 73 – Channel path activity
  - ✓ Type 74.1 – Device activity
  - ✓ Type 74.5 – Cache subsystem activity
  - ✓ Type 74.8 – ESS/DS8000 statistics ← Note “ESS” in SYS1.PARMLIB(ERBRMFxx) must be set
  - ✓ Type 78.3 – I/O queuing activity and HyperPAV activity
- **The IBM Advanced Technology Group DS8000 subject matter expert will:**
  - ✓ **Run a series of jobs to transform customer RMF data**
  - ✓ **Load the transformed data into our bandwidth tools**
  - ✓ **Provide an analysis and recommendation**

## RMF or CMF 70 – 78 record types enables the following studies

### IBM ATG Studies Based on Customer Provided RMF or CMF data

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### IBM BTS Studies Based on Customer Provided RMF or CMF data

- **StorM Performance Modeling** – used to appropriately size a solution to meet workload performance requirements



## Spectrum Control & Storage Insights performance data enable the following studies

### IBM ATG Studies using Spectrum Control & Storage Insights performance data

- **DS8000 Global Mirror Bandwidth Study** – estimate required network bandwidth for target Recovery Point Objective (“RPO”)
- **DS8000 Safeguarded Copy Sizing** – calculate the capacity needed to meet Cyber Resilience (“CR”) requirements

### IBM BTS Study using Spectrum Control & Storage Insights performance data

- **StorM Performance Modeling** – used to appropriately size a solution to meet workload performance requirements







# ADVANCED TECHNOLOGY GROUP (ATG)



## Safeguarded Copy Sizing using StorM

**Dan Zehnpfennig**

Senior Storage Technical Specialist – DS8000 SME

IBM Advanced Technology Group

[danz@ibm.com](mailto:danz@ibm.com)





# Client Data Analysis using StorM

## StorM – enter safeguarded copy tab

The screenshot displays the IBM Storage Modeller interface for a DS8900 ATG Accelerate system. The left sidebar contains navigation options: ATG Accelerate, Canvas, Sites, Products, Hosts, Workloads, Performance, Integrated TDA, History, and Project report. The main content area is titled "DS8900 ATG Accelerate" and includes a configuration bar with "DS8950F (5341-996)", "9.4", and an "Only allow standard parts" checkbox. A green note states: "Note: This configuration contains only standard parts. Orders should ship within 15 business days." Below this are tabs for "System", "Adapters", "Capacity", and "Report". Under the "Capacity" tab, there are sub-tabs for "Physical Layout", "Logical Layout", and "Safeguarded Copy". The "Safeguarded Copy" tab is active, showing a "Source Data" section with a "Select source imported data" button and "Reset" link. Below this is a "Retention Policy" section with input fields for "Frequency of copies (per day): 1" and "Retention period (days): 1", along with a "Maximum backups per volume: 1" and a "Calculate SGC details" button. A "Summary Results" section shows "Number of volumes: 0" and "Smallest volume multiplier: 0". To the right, a "Safeguard Copy details - Storage Group level" table is visible, with columns for Storage Group, Size (GiB), SGC Physical capacity (GiB), Min volume multiplier, Max volume multiplier, SGC Virtual capacity (GiB), and Adjusted vol multiplier. A search bar and "Export volume level CSV File" button are also present.

## StorM – retrieve import data list

IBM Storage Modeller Perspectives

Projects / ATG Accelerate / DS8900 ATG Accelerate

DS8900 ATG Accelerate

IBM DS8000 Enterprise Storage DS8950F (5341-996) 9.4  Only allow standard parts

Warnings 0 Errors 0

Base/Units Binary TiB

Raw 447.03 TiB

Usable 267.08 TiB

Effective 267.08 TiB

System Adapters **Capacity** Report

Physical Layout Logical Layout **Safeguarded Copy**

**Source Data**

Select source imported data Reset

Imported data for Safeguarded copy: **No data selected.**

**Retention Policy**

Frequency of copies (per day): 1 Retention period: 1

Maximum backups per volume: 1 Calculate SGC details

**Summary Results**

Number of volumes: 0

Smallest volume multiplier: 0

Safeguard Copy details - Storage Group level

Search Export volume level CSV File

Storage Group	Size (GiB)	SGC Physical capacity (GiB)	Min volume multiplier	Max volume multiplier	SGC Virtual capacity (GiB)	Adjusted vol multiplier
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## StorM – select file from import data list

Select the Imported Data file to use for the Safeguarded Copy sizing. The selected data should capture the peak usage of the volumes in the system to be modeled. Currently, only RMF imports are supported for SGC sizing. Additional data can be imported into the Storage Modeller on the Imported Data panel.

Search

File Name	Type	Volume	Size	Start Date	End Date	Details
7-G		DS8100 / 921		2023-03-06 21:45:00		Details
	RMF	DS8100 / 921	164	2023-02-27 00:00:00 - 2023-03-06 21:45:00	900 69	Details
	RMF	DS8100 / 921	6821	2023-02-26 23:45:00 - 2023-03-06 21:45:00	893 69	Details
	RMF	DS8100 / 921	8213	2023-02-26 23:45:00 - 2023-03-06 21:45:00	893 69	Details
				2023-02-26 23:45:00		

Cancel OK

Number of volumes: 0  
Smallest volume multiplier: 0



## Safeguarded Copy current planning

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- Data is replicated as a 2-Site Global Mirror
- SGC will be implemented using SGC at the Secondary Site with logical isolation
- RMF data shows online production capacity as 93 TB
- Possible planned Safeguarded Copy management policy:
  - ✓ Backup every 12 hours with a retention period of 7 days
- Purpose of this study: help to estimate the required physical and virtual capacity for SGC

## StorM – Retention Policy select backup frequency

The screenshot displays the IBM Storage Modeller interface for configuring a retention policy. The main configuration area shows the system 'DS8900 ATG Accelerate' with a model 'DS8950F (5341-996)' and a version '9.4'. A note indicates that the configuration contains only standard parts and should ship within 15 business days. The 'Capacity' tab is active, showing a table of capacity metrics:

Base/Units	Binary	TiB
Raw	447.03	TiB
Usable	267.08	TiB
Effective	267.08	TiB

The 'Safeguarded Copy' sub-tab is selected, showing the 'Retention Policy' section. The 'Frequency of copies (per day)' is set to 2 (highlighted with a green circle), and the 'Retention period (days)' is set to 7. A 'Calculate SGC details' button is visible. The 'Summary Results' section shows 'Number of volumes: 0' and 'Smallest volume multiplier: 0'. To the right, the 'Safeguard Copy details - Storage Group level' table is shown with columns for Storage Group, Size (GiB), SGC Physical capacity (GiB), Min volume multiplier, Max volume multiplier, SGC Virtual capacity (GiB), and Adjusted vol multiplier. An 'Export volume level CSV File' button is also present.

## StorM – Retention Policy select retention period

The screenshot displays the IBM Storage Modeller interface for configuring a retention policy. The main configuration area shows the system 'DS8900 ATG Accelerate' with a model 'DS8950F (5341-996)' and a version '9.4'. A note indicates that the configuration contains only standard parts and should ship within 15 business days. The 'Capacity' tab is active, and the 'Safeguarded Copy' sub-tab is selected. In the 'Retention Policy' section, the 'Retention period (days)' is set to 7, which is highlighted with a green circle. The 'Frequency of copies (per day)' is set to 2. The 'Maximum backups per volume' is 14. The 'Summary Results' section shows 0 volumes and the smallest volume multiplier. To the right, the 'Safeguard Copy details - Storage Group level' table is visible, showing columns for Storage Group, Size (GiB), SGC Physical capacity (GiB), Min volume multiplier, Max volume multiplier, SGC Virtual capacity (GiB), and Adjusted vol multiplier. The table is currently empty. The top navigation bar shows 'Storage Modeller' and 'Perspectives'. The left sidebar contains navigation options like 'ATG Accelerate', 'Canvas', 'Sites', 'Products', 'Hosts', 'Workloads', 'Performance', 'Integrated TDA', 'History', and 'Project report'. The top right corner shows a user profile 'danz@ibm.com' and a settings icon.

Storage Modeller Perspectives

Projects / ATG Accelerate / DS8900 ATG Accelerate

DS8900 ATG Accelerate

IBM DS8000 Enterprise Storage DS8950F (5341-996) 9.4 Only allow standard parts

Warnings 0 Errors 0

Base/Units Binary TiB

Raw 447.03 TiB

Usable 267.08 TiB

Effective 267.08 TiB

System Adapters Capacity Report

Physical Layout Logical Layout Safeguarded Copy

Source Data

Change source imported data Reset

Imported data for Safeguarded copy RK

Retention Policy

Frequency of copies (per day): 2 Retention period (days): 7

Maximum backups per volume: 14 Calculate SGC details

Summary Results

Number of volumes: 0

Smallest volume multiplier:

Safeguard Copy details - Storage Group level

Search

Export volume level CSV File

Storage Group	Size (GiB)	SGC Physical capacity (GiB)	Min volume multiplier	Max volume multiplier	SGC Virtual capacity (GiB)	Adjusted vol multiplier
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## StorM – review maximum backups per volume

Storage Modeller Perspectives

Projects / ATG Accelerate / DS8900 ATG Accelerate

DS8900 ATG Accelerate

Warnings 0 Errors 0

Base/Units Binary TiB

Raw 447.03 TiB

Usable 267.08 TiB

Effective 267.08 TiB

System Adapters **Capacity** Report

Physical Layout Logical Layout **Safeguarded Copy**

**Source Data**

Change source imported data Reset

Imported data for Safeguarded copy [redacted] rk

**Retention Policy**

Frequency of copies (per day): 2 - + Retention period (days): 7 - +

**Maximum backups per volume: 14** Calculate SGC details

**Summary Results**

Number of volumes: 0

Smallest volume multiplier:

Safeguard Copy details - Storage Group level

Search

Export volume level CSV File

Storage Group	Size (GiB)	SGC Physical capacity (GiB)	Min volume multiplier	Max volume multiplier	SGC Virtual capacity (GiB)	Adjusted vol multiplier
---------------	------------	-----------------------------	-----------------------	-----------------------	----------------------------	-------------------------

## StorM – Calculate SGC details

The screenshot displays the IBM Storage Modeller interface for configuring a DS8900 ATG Accelerate system. The main configuration area shows the model DS8950F (5341-996) with a 9.4 multiplier. A note indicates that the configuration contains only standard parts and should ship within 15 business days. The interface is divided into several sections: Source Data, Retention Policy, and Summary Results. The Retention Policy section shows a frequency of 2 copies per day and a retention period of 7 days. A pink arrow points to the 'Calculate SGC details' button. The Summary Results section shows 0 volumes and a smallest volume multiplier. On the right, a table displays capacity details: Raw (447.03 TiB), Usable (267.08 TiB), and Effective (267.08 TiB). Below this, a table titled 'Safeguard Copy details - Storage Group level' is shown with columns for Storage Group, Size (GiB), SGC Physical capacity (GiB), Min volume multiplier, Max volume multiplier, SGC Virtual capacity (GiB), and Adjusted vol multiplier. The table is currently empty. A search bar and an 'Export volume level CSV File' button are also visible.

Storage Modeller Perspectives ▾

Projects / ATG Accelerate / DS8900 ATG Accelerate

DS8900 ATG Accelerate

IBM DS8000 Enterprise Storage DS8950F (5341-996) 9.4  Only allow standard parts

Warnings 0 Errors 0

Base/Units Binary ▾ TiB ▾

Raw 447.03 TiB

Usable 267.08 TiB

Effective 267.08 TiB

System Adapters **Capacity** Report

Physical Layout Logical Layout **Safeguarded Copy**

**Source Data**

Change source imported data Reset

Imported data for Safeguarded copy RK

**Retention Policy**

Frequency of copies (per day): 2 - | + Retention period (days): 7 - | +

Maximum backups per volume: 14 Calculate SGC details

**Summary Results**

Number of volumes: 0

Smallest volume multiplier:

Safeguard Copy details - Storage Group level

Search

Export volume level CSV File

Storage Group	Size (GiB)	SGC Physical capacity (GiB)	Min volume multiplier	Max volume multiplier	SGC Virtual capacity (GiB)	Adjusted vol multiplier
---------------	------------	-----------------------------	-----------------------	-----------------------	----------------------------	-------------------------

## StorM – calculation results

IBM Storage Modeller
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Projects / ATG Accelerate / DS8900 ATG Accelerate

- ATG Accelerate
- Canvas
- Sites
- Products
- Hosts
- Workloads
- Performance
- Integrated TDA
- History
- Project report

### Source Data

Change source imported data
Reset

Imported data for Safeguarded cop K

### Retention Policy

Frequency of copies (per day): Retention period (days):

- | +      - | +

**Maximum backups per volume: 14** Calculate SGC details

### Summary Results

Number of volumes:	6821
Smallest volume multiplier:	1.5
Highest volume multiplier:	15
Configured system physical capacity:	267.08 TiB
Total SGC physical capacity:	92.87 TiB

✔ The Safeguarded Copy configuration can be satisfied. The sum of the system physical capacity and the total SGC physical capacity (359.95 TiB) does not exceed the system limit (2205 TiB).

Configured system virtual capacity:	267.08 TiB
Total SGC virtual capacity:	189.48 TiB

✔ The Safeguarded Copy configuration can be satisfied. The sum of the system virtual capacity and the total SGC virtual capacity (456.56 TiB) does not exceed the system limit (3538 TiB).

### Safeguard Copy details - Storage Group level

Export volume level CSV File

Storage Group	Size (GiB)	SGC Physical capacity (GiB)	Min volume multiplier	Max volume multiplier	SGC Virtual capacity (GiB)	Adjusted vol multiplier
SGBPLD	2.64	0	1.5	1.5	3.96	<input type="text"/>
SGBPS	7.93	0.01	1.5	1.5	11.89	<input type="text"/>
SGBPSDEV	2.64	0	1.5	1.5	3.96	<input type="text"/>
SGCMDPRD	7.93	0	1.5	1.5	11.89	<input type="text"/>
SGCOM	7.93	27.9	5	5	39.65	<input type="text"/>
SGCOMINF	31.72	37.91	1.5	2	59.47	<input type="text"/>
SGD2GC	8542.82	1627.32	1.5	12	13556.15	<input type="text"/>
SGD2GF	1244.85	979.7	1.5	13	2335.09	<input type="text"/>
SGD2GP	2.64	1.61	1.5	1.5	3.96	<input type="text"/>
SGD2GS	207.46	852.02	1.5	7	1063.21	<input type="text"/>
SGD2HS	829.82	3076.35	3	7	3786.07	<input type="text"/>
SGD2J	9998.47	17952.33	1.5	15	26827.77	<input type="text"/>

Project Guide ▾



## StorM – Adjusted Multiplier Planning


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- Review summary results










## StorM – Review Summary

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Projects / ATG Accelerate / DS8900 ATG Accelerate



ATG Accelerate

-  Canvas
-  Sites
-  Products
-  Hosts
-  Workloads
-  Performance
-  Integrated TDA
-  History
-  Project report

**Source Data**

Change source imported data
Reset

Imported data for Safeguarded copy:

**Retention Policy**

Frequency of copies (per day): 2 - | +      Retention period (days): 7 - | +

**Maximum backups per volume: 14**      Calculate SGC details

**Summary Results**

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**Safeguard Copy details - Storage Group level**

🔍 Search Export volume level CSV File ↓

Storage Group	Size (GiB)	SGC Physical capacity (GiB)	Min volume multiplier	Max volume multiplier	SGC Virtual capacity (GiB)	Adjusted vol multiplier
SGBPLD	2.64	0	1.5	1.5	3.96	📄
SGBPS	7.93	0.01	1.5	1.5	11.89	📄
SGBPSDEV	2.64	0	1.5	1.5	3.96	📄
SGCMDPRD	7.93	0	1.5	1.5	11.89	📄
SGCOM	7.93	27.9	5	5	39.65	📄
SGCOMINF	31.72	37.91	1.5	2	59.47	📄
SGD2GC	8542.82	1627.32	1.5	12	13556.15	📄
SGD2GF	1244.85	979.7	1.5	13	2335.09	📄
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SGD2J	9998.47	17952.33	1.5	15	26827.77	📄

Project Guide ▾

## StorM – Adjusted Multiplier Planning

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- Review summary results
- Check physical capacity

## StorM – Review Physical Capacity Limits

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Projects / ATG Accelerate / DS8900 ATG Accelerate

- ATG Accelerate
- Canvas
- Sites
- Products
- Hosts
- Workloads
- Performance
- Integrated TDA
- History
- Project report

**Source Data**

Change source imported data
Reset

Imported data for Safeguarded copy:

**Retention Policy**

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**Safeguard Copy details - Storage Group level**

🔍 Search
Export volume level CSV File
⬇️

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SGBPLD	2.64	0	1.5	1.5	3.96	<input type="text"/>
SGBPS	7.93	0.01	1.5	1.5	11.89	<input type="text"/>
SGBPSDEV	2.64	0	1.5	1.5	3.96	<input type="text"/>
SGCMDPRD	7.93	0	1.5	1.5	11.89	<input type="text"/>
SGCOM	7.93	27.9	5	5	39.65	<input type="text"/>
SGCOMINF	31.72	37.91	1.5	2	59.47	<input type="text"/>
SGD2GC	8542.82	1627.32	1.5	12	13556.15	<input type="text"/>
SGD2GF	1244.85	979.7	1.5	13	2335.09	<input type="text"/>
SGD2GP	2.64	1.61	1.5	1.5	3.96	<input type="text"/>
SGD2GS	207.46	852.02	1.5	7	1063.21	<input type="text"/>
SGD2HS	829.82	3076.35	3	7	3786.07	<input type="text"/>
SGD2J	9998.47	17952.33	1.5	15	26827.77	<input type="text"/>

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## StorM – Adjusted Multiplier Planning

---

- Review summary results
- Check physical capacity
- Examine the different maximum multipliers

## StorM – Examine Max volume multiplier column

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- History
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### Source Data

Change source imported data Reset

Imported data for Safeguarded copy:

---

### Retention Policy

Frequency of copies (per day):  - | +      Retention period (days):  - | +

Maximum backups per volume: **14** Calculate SGC details

---

### Summary Results

Number of volumes:	6821
Smallest volume multiplier:	1.5
Highest volume multiplier:	15
Configured system physical capacity:	267.08 TiB
Total SGC physical capacity:	92.87 TiB

✔ The Safeguarded Copy configuration can be satisfied. The sum of the system physical capacity and the total SGC physical capacity (359.95 TiB) does not exceed the system limit (2205 TiB).

Configured system virtual capacity:	267.08 TiB
Total SGC virtual capacity:	189.48 TiB

✔ The Safeguarded Copy configuration can be satisfied. The sum of the system virtual capacity and the total SGC virtual capacity (456.56 TiB) does not exceed the system limit (3538 TiB).

### Safeguard Copy details - Storage Group level

🔍 Search Export volume level CSV File ⬇

Storage Group	Size (GiB)	SGC Physical capacity (GiB)	Min volume multiplier	Max volume multiplier	SGC Virtual capacity (GiB)	Adjusted vol multiplier
SGBPLD	2.64	0	1.5	1.5	3.96	<input type="text"/>
SGBPS	7.93	0.01	1.5	1.5	11.89	<input type="text"/>
SGBPSDEV	2.64	0	1.5	1.5	3.96	<input type="text"/>
SGCMDPRD	7.93	0	1.5	1.5	11.89	<input type="text"/>
SGCOM	7.93	27.9	5	5	39.65	<input type="text"/>
SGCOMINF	31.72	37.91	1.5	2	49.47	<input type="text"/>
SGD2GC	8542.82	1627.32	1.5	12	10356.15	<input type="text"/>
SGD2GF	1244.85	979.7	1.5	13	16335.09	<input type="text"/>
SGD2GP	2.64	1.61	1.5	1.5	3.96	<input type="text"/>
SGD2GS	207.46	852.02	1.5	7	1063.21	<input type="text"/>
SGD2HS	829.82	3076.35	3	7	3786.07	<input type="text"/>
SGD2J	9998.47	17952.33	1.5	15	26827.77	<input type="text"/>

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## StorM – Adjusted Multiplier Planning

---

- Review summary results
- Check physical capacity
- Examine the different maximum multipliers
- The maximum multipliers list for this customer: 1.5, 2, 3, 4, 5, 6, 7, 10, 11, 12, 13, 14, 15

## StorM – Adjusted Multiplier Planning


---

- Review summary results
- Check physical capacity
- Examine the different maximum multipliers
- The maximum multipliers list for this customer: 1.5, 2, 3, 4, 5, 6, 7, 10, 11, 12, 13, 14, 15
- Storage Group maximum multiplies into no more than six groups
  - ✓ For example, 1.5, 2, 3 = 3










## StorM – enter Adjusted volume multipliers

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**Source Data**

Change source imported data
Reset

Imported data for Safeguarded copy:

**Retention Policy**

Frequency of copies (per day):  - | +      Retention period (days):  - | +

**Maximum backups per volume: 14**      Calculate SGC details

**Summary Results**

Number of volumes:	6821
Smallest volume multiplier:	1.5
Highest volume multiplier:	15
Configured system physical capacity:	267.08 TiB
Total SGC physical capacity:	92.87 TiB

✔ The Safeguarded Copy configuration can be satisfied. The sum of the system physical capacity and the total SGC physical capacity (359.95 TiB) does not exceed the system limit (2205 TiB).

Configured system virtual capacity:	267.08 TiB
Total SGC virtual capacity:	189.48 TiB

✔ The Safeguarded Copy configuration can be satisfied. The sum of the system virtual capacity and the total SGC virtual capacity (456.56 TiB) does not exceed the system limit (3538 TiB).

**Safeguard Copy details - Storage Group level**

🔍 Search Export volume level CSV File ↓

Storage Group	Size (GiB)	SGC Physical capacity (GiB)	Min volume multiplier	Max volume multiplier	SGC Virtual capacity (GiB)	Adjusted vol multiplier
SGBPLD	2.64	0	1.5	1.5	3.96	<input type="text"/>
SGBPS	7.93	0.01	1.5	1.5	11.89	<input type="text"/>
SGBPSDEV	2.64	0	1.5	1.5	3.96	<input type="text"/>
SGCMDPRD	7.93	0	1.5	1.5	11.89	<input type="text"/>
SGCOM	7.93	27.9	5	5	39.65	<input type="text"/>
SGCOMINF	31.72	37.91	1.5	2	59.47	<input type="text"/>
SGD2GC	8542.82	1627.32	1.5	12	13556.15	<input type="text"/>
SGD2GF	1244.85	979.7	1.5	13	2335.09	<input type="text"/>
SGD2GP	2.64	1.61	1.5	1.5	3.96	<input type="text"/>
SGD2GS	207.46	852.02	1.5	7	1063.21	<input type="text"/>
SGD2HS	829.82	3076.35	3	7	3786.07	<input type="text"/>
SGD2J	9998.47	17952.33	1.5	15	26827.77	<input type="text"/>

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## StorM – Adjusted Multiplier Planning

---

- Review summary results
- Check physical capacity
- Examine the different maximum multipliers
- The maximum multipliers list for this customer: 1.5, 2, 3, 4, 5, 6, 7, 10, 11, 12, 13, 14, 15
- Storage Group maximum multiplies into no more than six groups
  - ✓ For example, 1.5, 2, 3 = 3
- The maximum multiplier grouping for this customer: 3, 8, 15
  - ✓ 1.5, 2, 3 = 3
  - ✓ 4, 5, 6, 7, 8 = 8
  - ✓ 10, 11, 12, 13, 14, 15 = 15

## StorM – Adjusted Multiplier Planning

---

- Review summary results
- Check physical capacity
- Examine the different maximum multipliers
- The maximum multipliers list for this customer: 1.5, 2, 3, 4, 5, 6, 7, 10, 11, 12, 13, 14, 15
- Storage Group maximum multiplies into no more than six groups
  - ✓ For example, 1.5, 2, 3 = 3
- The maximum multiplier grouping for this customer: 3, 8, 15
  - ✓ 1.5, 2, 3 = 3
  - ✓ 4, 5, 6, 7, 8 = 8
  - ✓ 10, 11, 12, 13, 14, 15 = 15
- Remember to press the “Save adjusted multipliers” button

## StorM – Save adjusted volume multipliers

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SGD2KS	142.72	1322.35	1.5	12	2140.8	<input type="text" value="15"/>
SGSYSLGR	23.79	91.02	1.5	12	356.85	<input type="text" value="15"/>
SGD2GF	1244.85	979.7	1.5	13	18672.75	<input type="text" value="15"/>
SGMQLOGC	372.66	854.23	1.5	14	5589.9	<input type="text" value="15"/>
SGMQSMDS	301.3	335.29	1.5	14	4519.5	<input type="text" value="15"/>
SGD2J	9998.47	17952.33	1.5	15	149977.05	<input type="text" value="15"/>
SGD2JS	638.23	9297.13	1.5	15	9573.45	<input type="text" value="15"/>
SGD2K	3877.28	3956.43	1.5	15	58159.2	<input type="text" value="15"/>
SGD2L	3472.9	5432.9	1.5	15	52093.5	<input type="text" value="15"/>
SGD2LS	539.17	2501.7	1.5	15	8087.55	<input type="text" value="15"/>
SGD2V	7175.75	10312.57	1.5	15	107636.25	<input type="text" value="15"/>
SGDB2WRK	673.96	5142.15	1.5	15	10109.4	<input type="text" value="15"/>
SGOMGPRD	222.01	1950.75	1.5	15	3330.15	<input type="text" value="15"/>
SGSYSTEM	103.08	270.77	1.5	15	1546.2	<input type="text" value="15"/>
None	35038.17	2337.41	1.5	15	525572.55	<input type="text" value="15"/>

Save adjusted volume multipliers


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







## StorM - results

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**Source Data**

Change source imported data
Reset

Imported data for Safeguarded

**Retention Policy**

Frequency of copies (per day):
Retention period (days):

2 - +
7 - +

**Maximum backups per volume: 14** Calculate SGC details

**Summary Results**

Number of volumes:	6821
Smallest volume multiplier:	1.5
Highest volume multiplier:	15
Configured system physical capacity:	267.08 TiB
Total SGC physical capacity:	92.87 TiB

✔ The Safeguarded Copy configuration can be satisfied. The sum of the system physical capacity and the total SGC physical capacity (359.95 TiB) does not exceed the system limit (2205 TiB).

Configured system virtual capacity:	267.08 TiB
Total SGC virtual capacity:	1146.89 TiB

✔ The Safeguarded Copy configuration can be satisfied. The sum of the system virtual capacity and the total SGC virtual capacity (1413.97 TiB) does not exceed the system limit (3538 TiB).

**Safeguard Copy details - Storage Group level**

Export volume level CSV File

Storage Group	Size (GiB)	SGC Physical capacity (GiB)	Min volume multiplier	Max volume multiplier	SGC Virtual capacity (GiB)	Adjusted vol multiplier
SGBPLD	2.64	0	1.5	1.5	7.93	<input type="text" value="3"/>
SGBPS	7.93	0.01	1.5	1.5	23.79	<input type="text" value="3"/>
SGBPSDEV	2.64	0	1.5	1.5	7.93	<input type="text" value="3"/>
SGCMDPRD	7.93	0	1.5	1.5	23.79	<input type="text" value="3"/>
SGCOM	7.93	27.9	5	5	55.5	<input type="text" value="7"/>
SGCOMINF	31.72	37.91	1.5	2	95.15	<input type="text" value="3"/>
SGD2GC	8542.82	1627.32	1.5	12	128142.32	<input type="text" value="15"/>
SGD2GF	1244.85	979.7	1.5	13	18672.79	<input type="text" value="15"/>
SGD2GP	2.64	1.61	1.5	1.5	7.93	<input type="text" value="3"/>
SGD2GS	207.46	852.02	1.5	7	1452.19	<input type="text" value="7"/>
SGD2HS	829.82	3076.35	3	7	5808.77	<input type="text" value="7"/>
SGD2J	9998.47	17952.33	1.5	15	149977.04	<input type="text" value="15"/>
SGD2JS	638.23	9297.13	1.5	15	9573.39	<input type="text" value="15"/>

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## StorM – Adjusted Multiplier Planning

---

- Review summary results
- Check physical capacity
- Examine the different maximum multipliers
- The maximum multipliers list for this customer: 1.5, 2, 3, 4, 5, 6, 7, 10, 11, 12, 13, 14, 15
- Storage Group maximum multiplies into no more than six groups
  - ✓ For example, 1.5, 2, 3 = 3
- The maximum multiplier grouping for this customer: 3, 8, 15
  - ✓ 1.5, 2, 3 = 3
  - ✓ 4, 5, 6, 7, 8 = 8
  - ✓ 10, 11, 12, 13, 14, 15 = 15
- Remember to press the “Save adjusted multipliers” button
- Check virtual capacity

## StorM – Check Total SGC virtual Capacity

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**Source Data**

Change source imported data
Reset

Imported data for Safeguarded copy: [Redacted]

**Retention Policy**

Frequency of copies (per day):

–
+

Retention period (days):

–
+

**Maximum backups per volume: 14** Calculate SGC details

**Summary Results**

Number of volumes:	6821
Smallest volume multiplier:	1.5
Highest volume multiplier:	15
Configured system physical capacity:	267.08 TiB
Total SGC physical capacity:	92.87 TiB

✔ The Safeguarded Copy configuration can be satisfied. The sum of the system physical capacity and the total SGC physical capacity (359.95 TiB) does not exceed the system limit (2205 TiB).

Configured system virtual capacity:	267.08 TiB
Total SGC virtual capacity:	1146.89 TiB

✔ The Safeguarded Copy configuration can be satisfied. The sum of the system virtual capacity and the total SGC virtual capacity (1413.97 TiB) does not exceed the system limit (3538 TiB).

**Safeguard Copy details - Storage Group level**

🔍 Search
Export volume level CSV File
⬇️

Storage Group	Size (GiB)	SGC Physical capacity (GiB)	Min volume multiplier	Max volume multiplier	SGC Virtual capacity (GiB)	Adjusted vol multiplier
SGBPLD	2.64	0	1.5	1.5	7.93	<input style="width: 20px; text-align: center;" type="text" value="3"/>
SGBPS	7.93	0.01	1.5	1.5	23.79	<input style="width: 20px; text-align: center;" type="text" value="3"/>
SGBPSDEV	2.64	0	1.5	1.5	7.93	<input style="width: 20px; text-align: center;" type="text" value="3"/>
SGCMDPRD	7.93	0	1.5	1.5	23.79	<input style="width: 20px; text-align: center;" type="text" value="3"/>
SGCOM	7.93	27.9	5	5	55.5	<input style="width: 20px; text-align: center;" type="text" value="7"/>
SGCOMINF	31.72	37.91	1.5	2	95.15	<input style="width: 20px; text-align: center;" type="text" value="3"/>
SGD2GC	8542.82	1627.32	1.5	12	128142.32	<input style="width: 20px; text-align: center;" type="text" value="15"/>
SGD2GF	1244.85	979.7	1.5	13	18672.79	<input style="width: 20px; text-align: center;" type="text" value="15"/>
SGD2GP	2.64	1.61	1.5	1.5	7.93	<input style="width: 20px; text-align: center;" type="text" value="3"/>
SGD2GS	207.46	852.02	1.5	7	1452.19	<input style="width: 20px; text-align: center;" type="text" value="7"/>
SGD2HS	829.82	3076.35	3	7	5808.77	<input style="width: 20px; text-align: center;" type="text" value="7"/>
SGD2J	9998.47	17952.33	1.5	15	149977.04	<input style="width: 20px; text-align: center;" type="text" value="15"/>
SGD2JS	638.23	9297.13	1.5	15	9573.39	<input style="width: 20px; text-align: center;" type="text" value="15"/>

## StorM – Check Virtual Capacity Limits

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**Source Data**

Change source imported data
Reset

Imported data for Safeguarded copy: [Redacted]

**Retention Policy**

Frequency of copies (per day):

-
+

Retention period (days):

-
+

**Maximum backups per volume: 14** Calculate SGC details

**Summary Results**

Number of volumes:	6821
Smallest volume multiplier:	1.5
Highest volume multiplier:	15
Configured system physical capacity:	267.08 TiB
Total SGC physical capacity:	92.87 TiB

✔️ The Safeguarded Copy configuration can be satisfied. The sum of the system physical capacity and the total SGC physical capacity (359.95 TiB) does not exceed the system limit (2205 TiB).

Configured system virtual capacity:	267.08 TiB
Total SGC virtual capacity:	1146.89 TiB

✔️ The Safeguarded Copy configuration can be satisfied. The sum of the system virtual capacity and the total SGC virtual capacity (1413.97 TiB) does not exceed the system limit (3538 TiB).

Safeguard Copy details - Storage Group level

Export volume level CSV File

↓

Storage Group	Size (GiB)	SGC Physical capacity (GiB)	Min volume multiplier	Max volume multiplier	SGC Virtual capacity (GiB)	Adjusted vol multiplier
SGBPLD	2.64	0	1.5	1.5	7.93	3
SGBPS	7.93	0.01	1.5	1.5	23.79	3
SGBPSDEV	2.64	0	1.5	1.5	7.93	3
SGCMDPRD	7.93	0	1.5	1.5	23.79	3
SGCOM	7.93	27.9	5	5	55.5	7
SGCOMINF	31.72	37.91	1.5	2	95.15	3
SGD2GC	8542.82	1627.32	1.5	12	128142.32	15
SGD2GF	1244.85	979.7	1.5	13	18672.79	15
SGD2GP	2.64	1.61	1.5	1.5	7.93	3
SGD2GS	207.46	852.02	1.5	7	1452.19	7
SGD2HS	829.82	3076.35	3	7	5808.77	7
SGD2J	9998.47	17952.33	1.5	15	149977.04	15
SGD2JS	638.23	9297.13	1.5	15	9573.39	15

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## StorM – Adjusted Multiplier Planning

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- Review summary results
- Check physical capacity
- Examine the different maximum multipliers
- The maximum multipliers list for this customer: 1.5, 2, 3, 4, 5, 6, 7, 10, 11, 12, 13, 14, 15
- Storage Group maximum multiplies into no more than six groups
  - ✓ For example, 1.5, 2, 3 = 3
- The maximum multiplier grouping for this customer: 3, 8, 15
  - ✓ 1.5, 2, 3 = 3
  - ✓ 4, 5, 6, 7, 8 = 8
  - ✓ 10, 11, 12, 13, 14, 15 = 15
- Remember to press the “Save adjusted multipliers” button
- Check virtual capacity
- Press the “Export volume level CSV file”
  - ✓ You may need this file if you need to do a more detailed volume-level multiplier planning

## StorM – Export volume level CSV file

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**Source Data**

Change source imported data
Reset

Imported data for Safeguarded copy

**Retention Policy**

Frequency of copies (per day):

-
+

Retention period (days):

-
+

**Maximum backups per volume: 14** Calculate SGC details

**Summary Results**

Number of volumes:	6821
Smallest volume multiplier:	1.5
Highest volume multiplier:	15
Configured system physical capacity:	267.08 TiB
Total SGC physical capacity:	92.87 TiB

✔ The Safeguarded Copy configuration can be satisfied. The sum of the system physical capacity and the total SGC physical capacity (359.95 TiB) does not exceed the system limit (2205 TiB).

Configured system virtual capacity:	267.08 TiB
Total SGC virtual capacity:	1146.89 TiB

✔ The Safeguarded Copy configuration can be satisfied. The sum of the system virtual capacity and the total SGC virtual capacity (1413.97 TiB) does not exceed the system limit (3538 TiB).

**Safeguard Copy details - Storage Group level**

Storage Group	Size (GiB)	SGC Physical capacity (GiB)	Min volume multiplier	Max volume multiplier	SGC Virtual capacity (GiB)	Adjusted vol multiplier
SGBPLD	2.64	0	1.5	1.5	7.93	<input style="width: 20px;" type="text" value="3"/>
SGBPS	7.93	0.01	1.5	1.5	23.79	<input style="width: 20px;" type="text" value="3"/>
SGBPSDEV	2.64	0	1.5	1.5	7.93	<input style="width: 20px;" type="text" value="3"/>
SGCMDPRD	7.93	0	1.5	1.5	23.79	<input style="width: 20px;" type="text" value="3"/>
SGCOM	7.93	27.9	5	5	55.5	<input style="width: 20px;" type="text" value="7"/>
SGCOMINF	31.72	37.91	1.5	2	95.15	<input style="width: 20px;" type="text" value="3"/>
SGD2GC	8542.82	1627.32	1.5	12	128142.32	<input style="width: 20px;" type="text" value="15"/>
SGD2GF	1244.85	979.7	1.5	13	18672.79	<input style="width: 20px;" type="text" value="15"/>
SGD2GP	2.64	1.61	1.5	1.5	7.93	<input style="width: 20px;" type="text" value="3"/>
SGD2GS	207.46	852.02	1.5	7	1452.19	<input style="width: 20px;" type="text" value="7"/>
SGD2HS	829.82	3076.35	3	7	5808.77	<input style="width: 20px;" type="text" value="7"/>
SGD2J	9998.47	17952.33	1.5	15	149977.04	<input style="width: 20px;" type="text" value="15"/>
SGD2JS	638.23	9297.13	1.5	15	9573.39	<input style="width: 20px;" type="text" value="15"/>

Export volume level CSV File
↓

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# ADVANCED TECHNOLOGY GROUP (ATG)



## Acme Widgets – Safeguarded Copy Study

**Dan Zehnpfennig**

Senior Storage Technical Specialist – DS8000 SME

IBM Advanced Technology Group

[danz@ibm.com](mailto:danz@ibm.com)



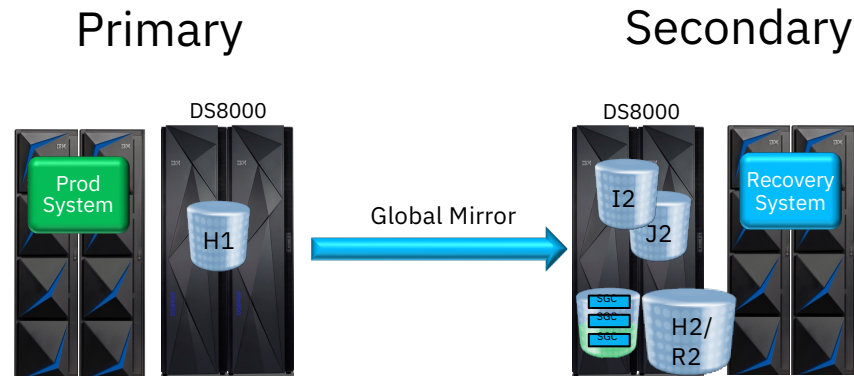


## Safeguarded Copy current planning

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- Data is replicated as a 2-Site Global Mirror
- SGC will be implemented using SGC at the Secondary Site with logical isolation
- RMF data shows online production capacity as 93 TB
- Possible planned Safeguarded Copy management policy:
  - ✓ Backup every 12 hours with a retention period of 7 days
- Purpose of this study: help to estimate the required physical and virtual capacity for SGC

## Safeguarded Copy logical isolation at Secondary site



### Safeguarded Copy on Global Mirror Secondary

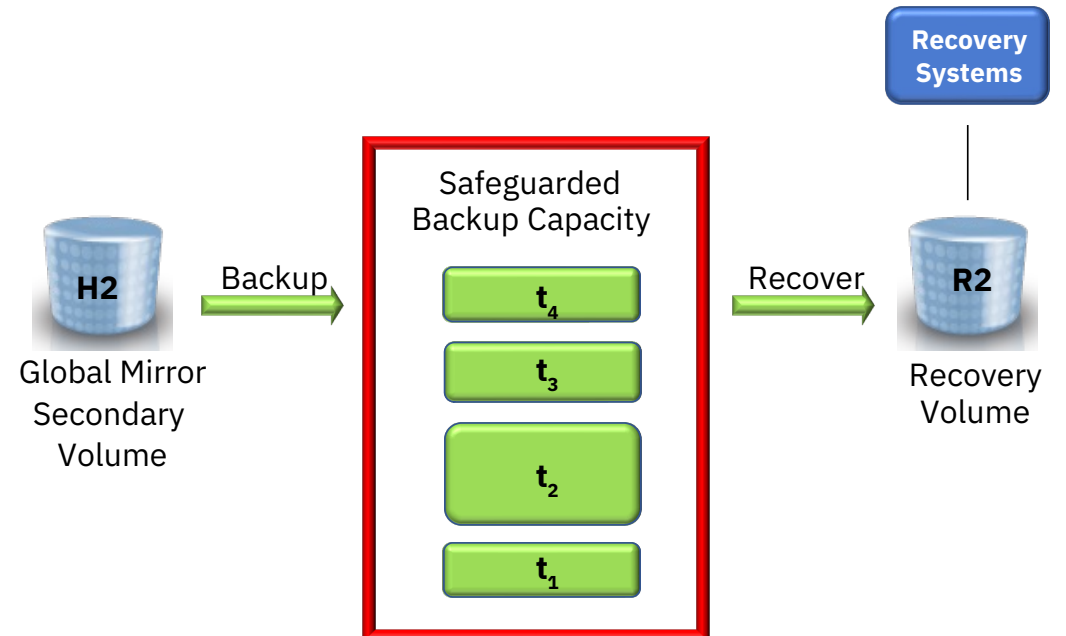
Global Mirror suspended with consistency to enable consistent data copy to be used to perform captures

No production impact with SGC capture process but Global Mirror will be paused for some seconds each time a Safeguarded Backup is taken

Practice volumes can be used as recovery volumes but can only be used as practice volumes or recovery volumes.

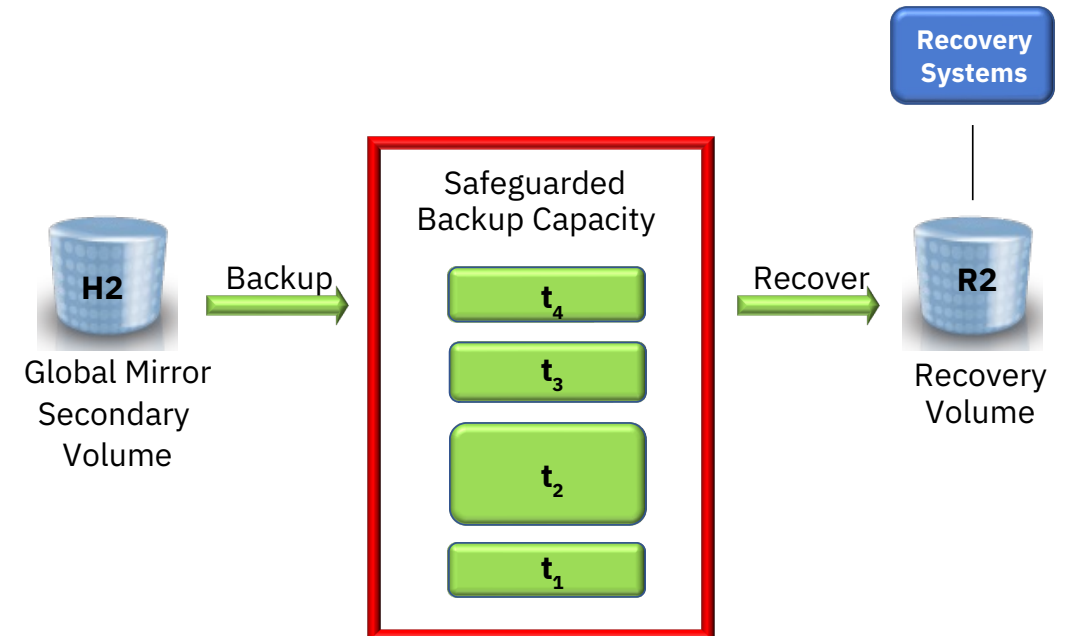
## Two components of capacity for Safeguarded Copy

- Safeguarded Backup Capacity
  - ✓ Required to store backup data
  - ✓ Required physical capacity depends on change rate on H1, frequency of backups, retention period of backups and threat scenarios to cover
- Recovery volume (R2)
  - ✓ Required to recover backups for analysis and / or restore
  - ✓ Same virtual capacity as H1
  - ✓ Physical capacity depends on purpose



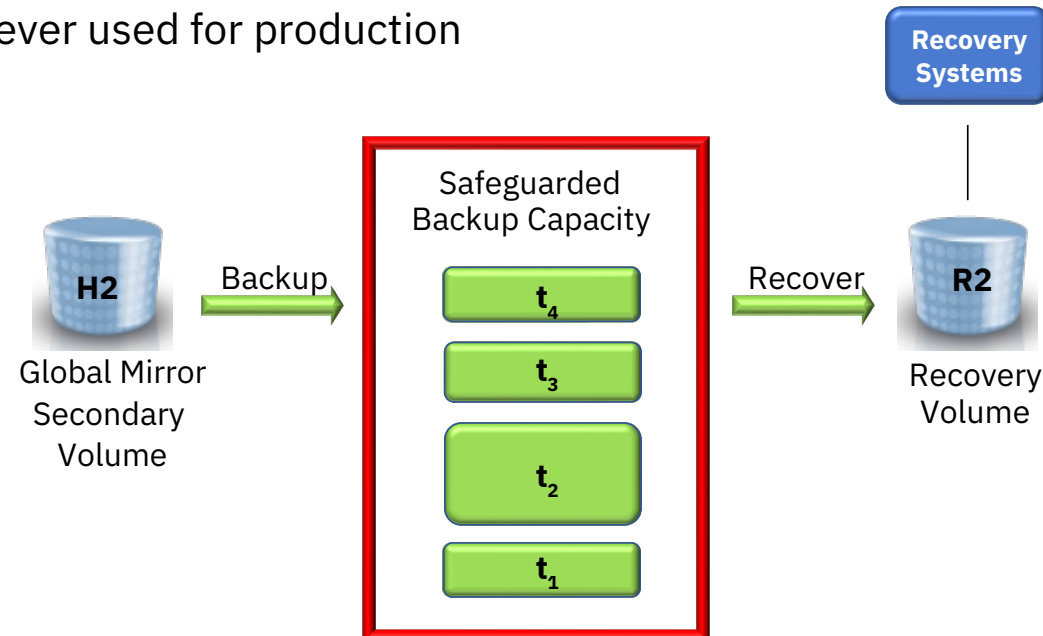
## Safeguarded Copy Backup capacity

- Required capacity for regular backup without incident depends on
  - ✓ Data change rate to production volume
  - ✓ Retention period for backups
  - ✓ Frequency of backups
- Threat scenarios to cover
  - ✓ Selective manipulation or deletion of small amounts of data: little extra capacity required, depends on client expectations
  - ✓ Worst case: ransomware attack, all data is encrypted before attack is recognized; requires additional 100% of production capacity



## Recovery volume capacity depends on usage after recovery

- Mostly read only for forensic analysis & to restore back to (any) of the production volumes (H1)
  - ✓ Recover with NOCOPY option
  - ✓ Small percentage of primary capacity (10% - 20%)
  - ✓ The longer the recovery point is retained with production ongoing, the more capacity is needed for copy-on-write operations H2 → R2
  - ✓ The R2 DS8K volume set is a “Cyber Vault only” set which is never used for production
- Full read / write access for production
  - ✓ Recover with COPY option
  - ✓ Same physical capacity as H1
  - ✓ The R2 DS8K volume set is used for Cyber Vault AND for production in case of an event



## Determination of data change rate

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- Base: RMF data, SMF record type 74-5 (Cache Activity), field R745DCTD (Cache to DASD XFRs)
  - R745DCTD = Tracks de-staged during SMF interval
  - 1 CKD track = 56,664 Bytes
  - GiB destaged / interval =  $R745DCTD * 56,664 / 1024^3$
  - Changed amount during retention period = GiB destaged / interval \* interval period \* retention period
  - Estimation is at the upper end: it does not consider rewrites of data within the same backup
- Client RMF data available for:
  - December 28, 2024– January 4, 2024
  - Estimation is based on available data
  - Workload changes, or incomplete data, render the estimation invalid

## Safeguarded Copy Capacity Estimates – 12 Hour Interval with a 7 Day Retention

- Protected      Assumption: Protected data is 93 TB
- SGC Backup      Capacity estimates for SGC based on measurement data from RMF
- Full Recovery      Fully provisioned Recovery volumes

Volume / Capacity Type	Physical Capacity	Virtual Capacity
SGC Backup Capacity ("SGBC")	93 TB	1,262 TB
Source Volumes (H2)	93 TB	93 TB
Recovery Volumes (R2)	93 TB	93 TB
Global Mirror Journal Volumes (J2)	28 TB	93 TB
<b>Total</b>	<b>307 TB</b>	<b>1,541TB</b>

## Additional considerations

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- Once the required capacity is determined, the DS8900F configuration can be created
  - ✓ System must be able to handle peak write workload of primary (H1) system
    - Global Copy secondary workload
    - Safeguarded Copy backup workload
  - ✓ Basically 2 x the write workload of H1
- Sizing / disk modelling strategy:
  - ✓ Model Cyber Vault system from peak write interval of H1 system
  - ✓ Make sure utilization of resources like devices and device interfaces is at or below 30%
- Virtual capacity requirements are needed before implementation phase
  - ✓ SGC backup capacity (multiplier) is defined at the volume level and needs to be set to hold track changes for the retention period
  - ✓ Best approach for this analysis is using the SGCSizer capability provided by DS8900F R9.4 and CSM 6.9 or higher



## Disclaimer Notice

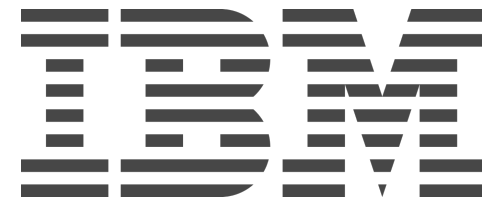
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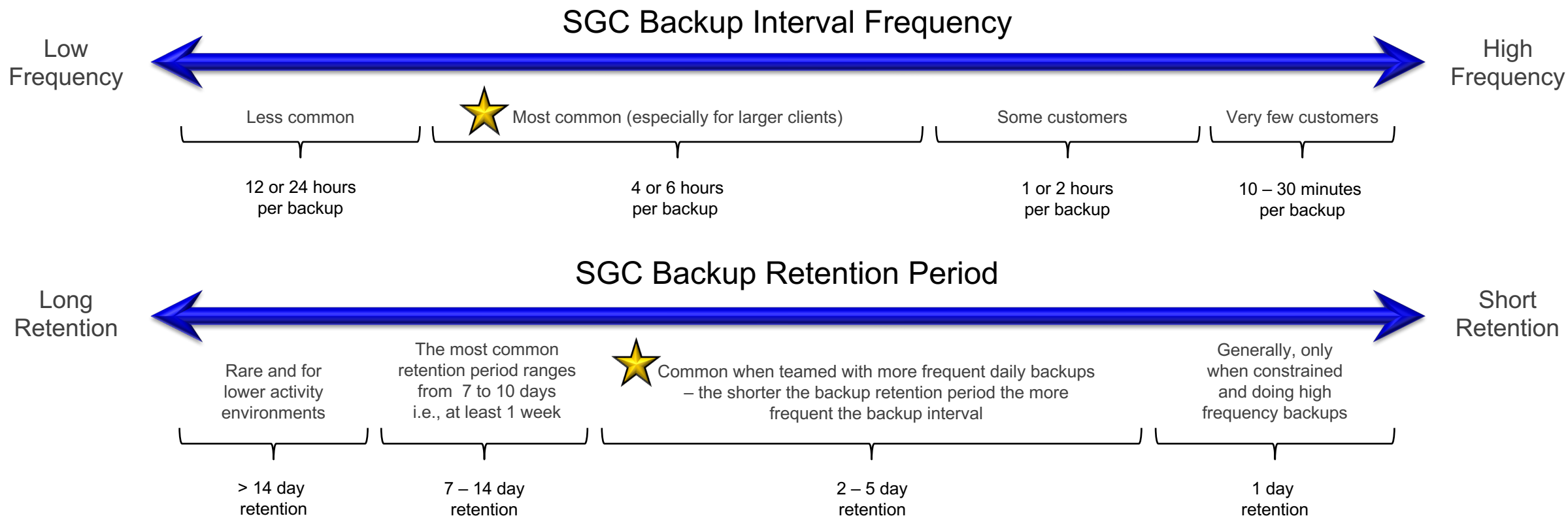
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## IBM DS8000 SGC – Backup Frequency & Retention Period – Early Adopters 2018-19

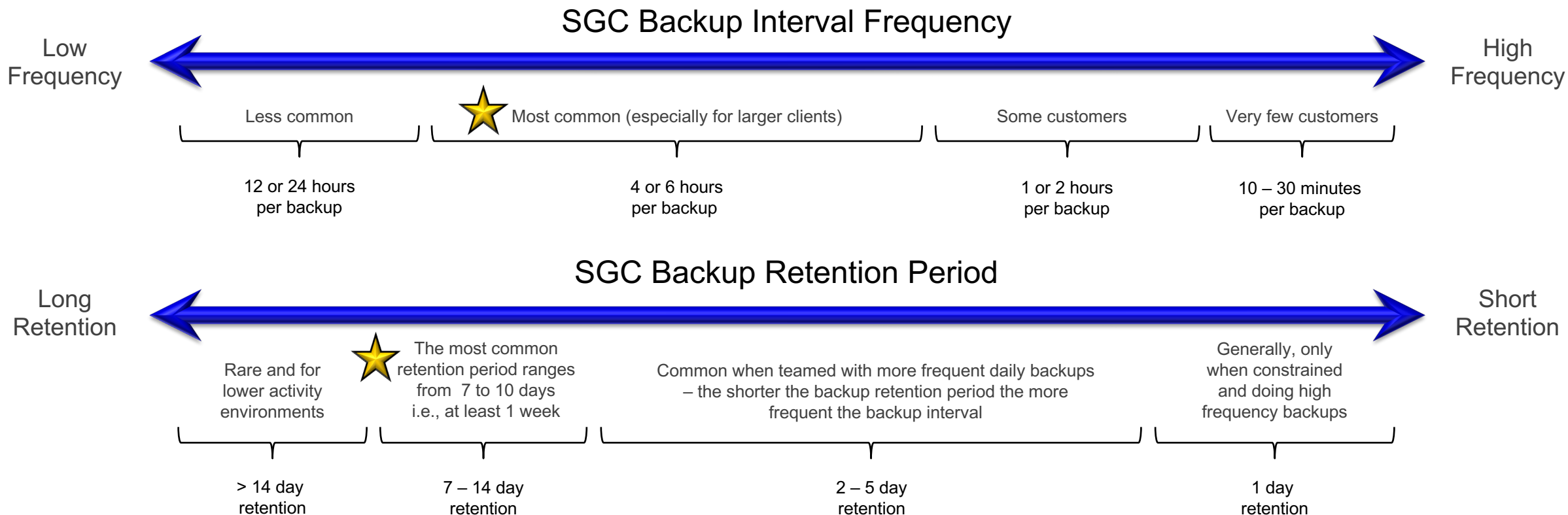
★ Safeguarded Copy Backup Interval Frequency & Retention Period should be determined by <sup>1</sup>*business requirements* to ensure that the frequency and retention period are relevant for business recovery. Safeguarded Copy can be complemented with offline backup to virtual tape for longer term retention. e.g., create an offline backup after data validation.



<sup>1</sup>For more on *business requirements* see Chapter 2 in IBM Redbook [IBM DS8000 Safeguarded Copy \(Updated for DS8000 Release 9.3\)](#)

## IBM DS8000 SGC – Backup Frequency & Retention Period – Second Wave 2020-22

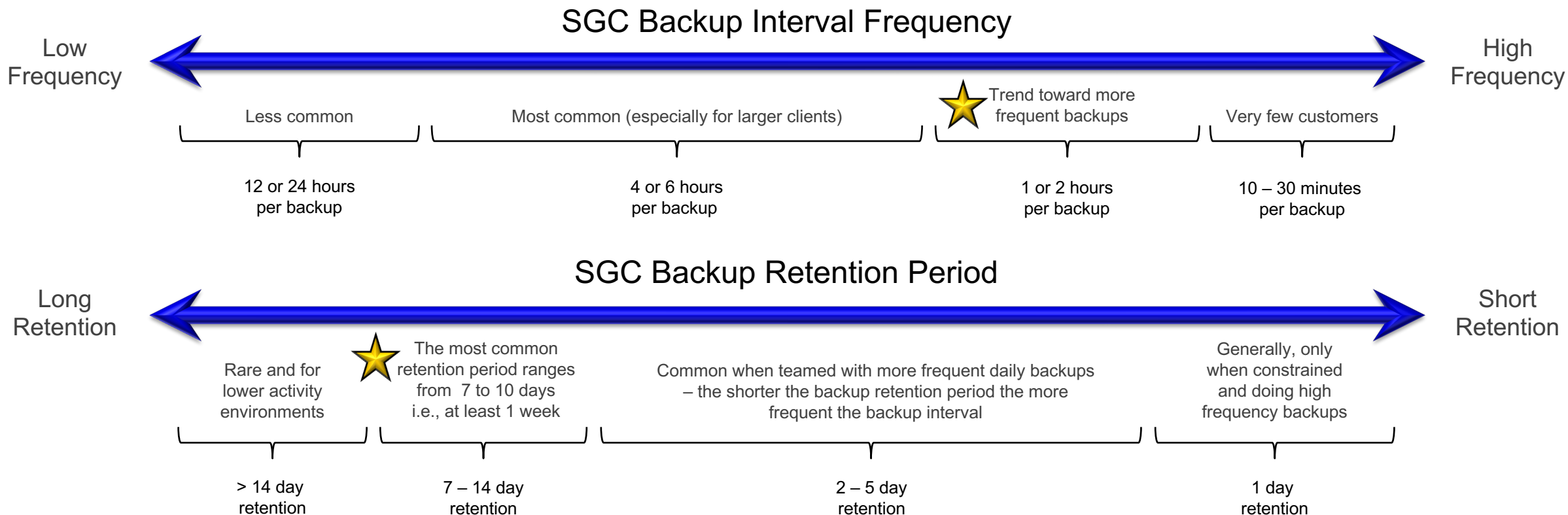
★ Safeguarded Copy Backup Interval Frequency & Retention Period should be determined by <sup>1</sup>*business requirements* to ensure that the frequency and retention period are relevant for business recovery. Safeguarded Copy can be complemented with offline backup to virtual tape for longer term retention. e.g., create an offline backup after data validation.



<sup>1</sup>For more on *business requirements* see Chapter 2 in IBM Redbook [IBM DS8000 Safeguarded Copy \(Updated for DS8000 Release 9.3\)](#)

## IBM DS8000 SGC – Backup Frequency & Retention Period – Current 2023+


★ Safeguarded Copy Backup Interval Frequency & Retention Period should be determined by <sup>1</sup>*business requirements* to ensure that the frequency and retention period are relevant for business recovery. Safeguarded Copy can be complemented with offline backup to virtual tape for longer term retention. e.g., create an offline backup after data validation.



<sup>1</sup>For more on *business requirements* see Chapter 2 in IBM Redbook [IBM DS8000 Safeguarded Copy \(Updated for DS8000 Release 9.3\)](#)

## IBM DS8900F Advanced Functions Workshop in Chicago May 8<sup>th</sup> & 9<sup>th</sup>

IBM  
**ADVANCED TECHNOLOGY GROUP (ATG)**



### IBM DS8900F Advanced Functions Workshop

#### May 8-9, 2024 - Chicago, IL

Data latency, availability and cyber resilience are all hot topics. IBM designed and built the DS8900F to provide unrivaled solutions for all three. The DS8900F is the fastest, most reliable, and secure storage system for IBM Z® and IBM Power Systems. It is field proven with industry leading ultra-high performance, the highest availability with up to “seven nines” of availability, disaster recovery with the lowest recovery point objective, and the most robust cyber resilient (air gap) solutions.


The workshop is intended for Americas clients interested in upgrading their disk environment from competitive offerings from Dell and Hitachi to the IBM DS8900F; and current IBM DS8000 customers interested in upgrading to current models or upgrading an existing DS8900F solution. IBM subject matter experts will perform a deep dive on DS8900F family of all flash arrays features and functions. Topics include DS8900F management and monitoring via its GUI, replication management using IBM Copy Services Manager (CSM), and performance and availability management using Storage Insights. They will present and demonstrate the suite of advanced functions that provide business continuity solutions that enable IBM’s unique 2-site, 3-site, & 4-site solutions. Demonstrations include Metro Mirror with HyperSwap – high availability for planned and unplanned outages, Global Mirror – out of region disaster recovery, Metro Global Mirror – integrated high availability and disaster recovery; and Safeguarded Copy - cyber resilience (air gap).

**Audience:** Clients along with their respective Business Partner and IBM Host  
**Dates:** Wednesday, May 8 & Thursday, May 9, 2024  
**Times:** May 8<sup>th</sup>: 8:30 a.m. to 5:00 p.m. and May 9<sup>th</sup>: 8:30 a.m. to 4:00 p.m.  
**Location:** Hyatt Center, Room 6607 6th Floor 71 South Wacker – Chicago, IL

**Important Notes:**

- This is an IBM nomination event. Please check with your IBM or BP representative on how you may qualify to attend.
- Customers will be responsible for their own travel and lodging arrangements and expenses.

Advanced Technology Group  
IBM



### IBM DS8900F Advanced Functions Workshop

#### May 8-9, 2024

**Wednesday, May 8<sup>th</sup> – 9:00 am CDT**

- Welcome & Introduction
- DS8900F – An Introduction
- DS8000 GUI demo
- Easy Tier
- Thin Provisioning
- Session wrap-up / Final Q&A

**Midday break – 60 minutes**

- Copy Services Manager & demo
- Storage Insights/Pro
- FlashCopy and Safeguarded Copy & demo
- Brocade Update
- Daily wrap-up / Final Q&A

▪ Post-Workshop Group Event – Time & Place TBD

**Thursday, May 9<sup>th</sup> – 9:00 am CDT**

- Review of day 1 and day 2 logistics
- Global Copy
- Metro Mirror
- HyperSwap & demo
- Global Mirror & demo
- Combining Replication Technologies & demo
- ATG Solution Sizing Studies
- Session wrap-up / Final Q&A

**Midday break – 60 minutes**

- Open discussion for any previous topic
- DS8000 for LinuxONE & Linux on Z
- Introduction to GDPS
- DS8000 for IBM i
- Power HA - IBM i & HyperSwap/MT demos
- Workshop wrap-up / Final Q&A

**Thank you!**

## Accelerate with ATG Survey

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Please take a moment to share your feedback with our team!

You can access this 6-question survey via [Menti.com](https://www.menti.com) with code 1708 6924 or

Direct link <https://www.menti.com/alwhyze7z1gz>

Or

QR Code

