IBM Storage FlashSystem 5015, 5045, and 5200 Entry Enterprise

Learn more

Operations made simple with IBM Storage Insights

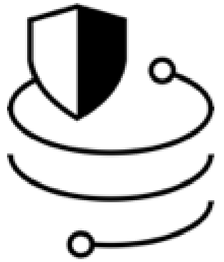
Storage made simple with IBM Storage Virtualize

Entry Enterprise Storage	Midrange Enterprise Storage	High-end Enterprise Storage	Storage Virtualization	Storage software for Public Cloud

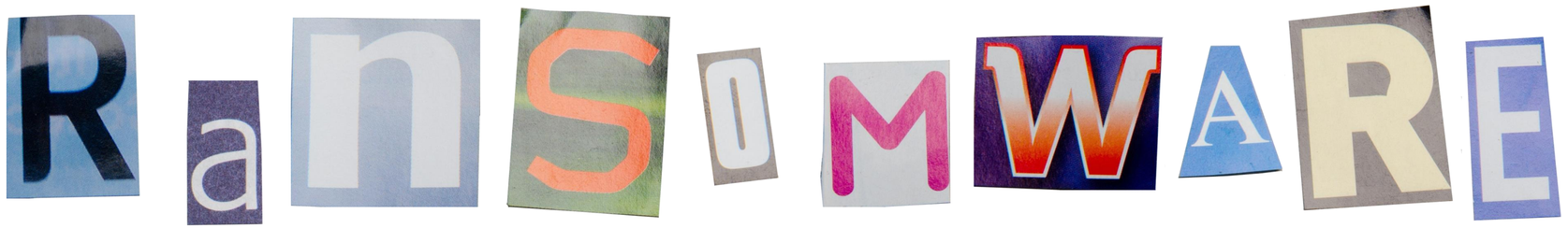
Data Resilience is critical nowadays

IBM’s data resilience story starts with clients, and the huge data resilience challenges they face from ransomware and other threats to their data. IBM’s data resilience solutions are featured, from software (Storage Defender) to data resilience in block storage (FlashSystem), software-defined storage (Scale, Fusion, and Ceph), and mainframe storage (DS8000 and tape). A growing concern are “zero-day” exploits, in which bad actors target major applications and operating systems, looking for vulnerabilities they can rapidly exploit before they’re detected and patched.

This presentation focuses on IBM’s entry-level FlashSystem arrays and discusses how they can help protect organizations by delivering rock-solid storage with a high degree of resilience.



Ransomware Threat Detection



IBM is protecting organizations in ways that other vendors simply do not appear to have available.

Beginning in mid-2023, IBM lead the storage market by building Ransomware Threat Detection into the powerful Storage Virtualize operating system v8.6.0 which runs all models of FlashSystem. It can detect anomalous behavior within minutes.

IBM has accelerated Ransomware Threat Detection by designing it into hardware within the award-winning FlashCore Module 4s (FCM4). The hardware implementation can detect anomalous behavior within seconds.

The faster anomalous behavior is spotted the faster it can be dealt with, thereby minimizing the impact on an organizations data, which in turn helps significantly reduce the time required to correct the situation.

Safeguarded Copy is a differentiator

Safeguarded Copy (SGC) is a protection mechanism for data on IBM Storage FlashSystem arrays.

- SGC creates a copy of data to prevent it from being compromised, either accidentally or deliberately.
- SGC provides immutable backup copies to recover data in case of logical corruption or destruction of primary data.

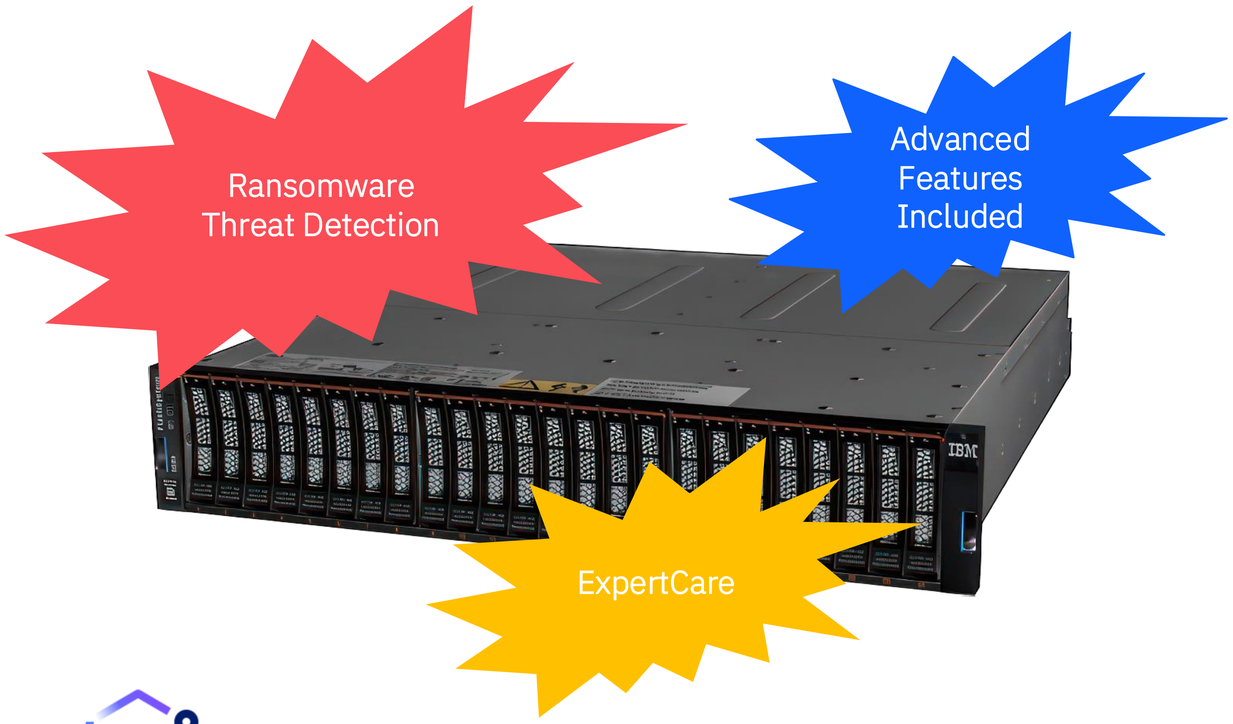
The majority of FlashSystem arrays support Safeguarded Copy, and this applies to IBM's entry-level models.

- SGC is available on FlashSystem 5045
- SGC is available on FlashSystem 5200

Business-critical data that needs to be resilient

Immutable Safeguarded Copies of business-critical data resides on the primary storage for rapid-recovery but remains hidden from view, and bad actors are unable to get to them.

Meet the IBM Storage FlashSystem 5015



Operations made simple with IBM Storage Insights

Storage made simple with IBM Storage Virtualize

Simple to configure and operate

Designed for budget conscious applications

Efficient, affordable and Safe

Hybrid disk and flash storage
for edge, virtual, and containerized environments

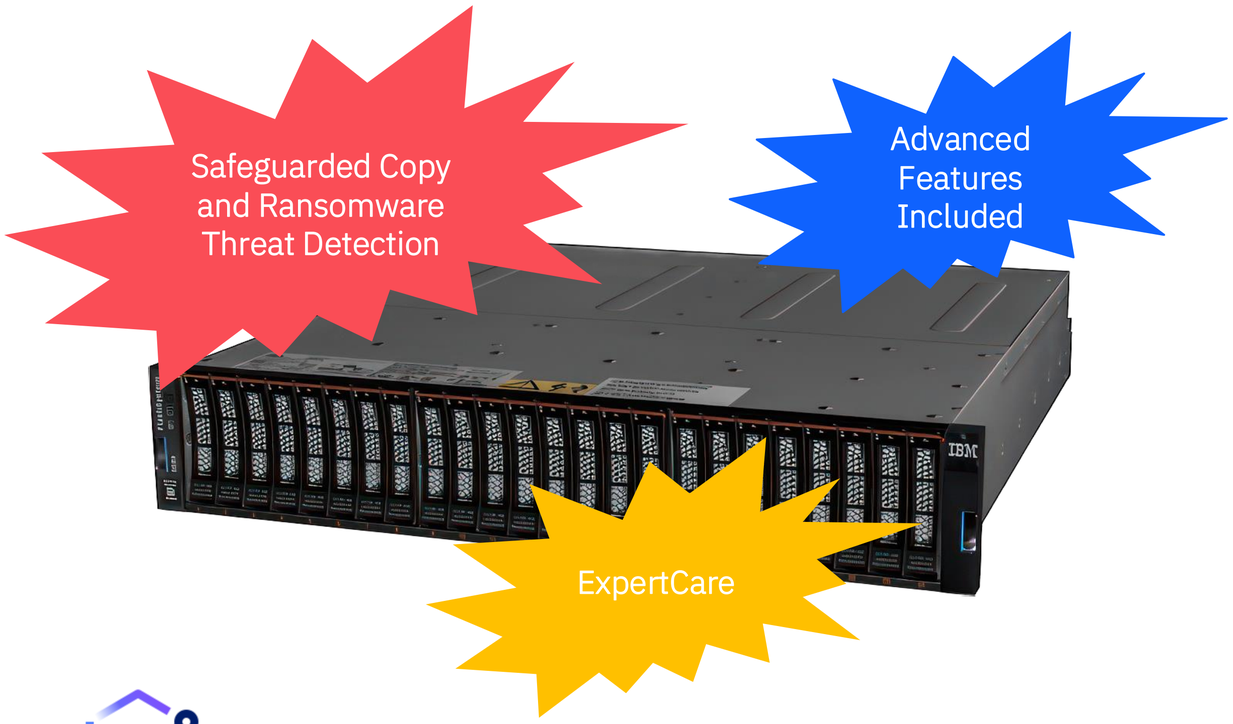
Uncompromising
service and performance

Ransomware Threat Detection
In the most entry system from IBM. Protecting clients regardless of their budgets.

FlashSystem 5015 flexibility solves issues

Pain Points	Solutions for solving pain points
Smaller clients often have wildly erratic budgets which limit acquisition flexibility	FlashSystem 5015 employs serial-attach-SCSI (SAS) drives. It is available in multiple configurations to meet all price points. • An array with only hard disk drives (HDDs). • An All-Flash-Array (AFA) configured with only solid-state drives (SSDs). • A hybrid array configured with both HDDs and SSDs
Client size is not an indicator of performance requirements.	FlashSystem 5015 offers configurations which deliver quick performance to very high-performance and still do so at attractive price points.
Cyber resiliency is important to every client throughout the world, but it can be too costly for smaller organizations	IBM’s entire FlashSystem portfolio, including the entry FlashSystem 5015 includes Ransomware Threat Detection (RTD) built into the Storage Virtualize operating system (OS). It is not an afterthought, and it does not increase the price of the system.
Smaller clients often have small IT departments, making it difficult to deal with multiple environments particularly when the cloud is involved.	IBM’s entire FlashSystem portfolio runs the same Storage Virtualize OS so there is nothing new to learn if larger modules are acquired. Additionally, Storage Virtualize for Public Cloud (SV4PC) enables them to run the same OS in major cloud environments such as AWS, Azure, and IBM Cloud. Once again it means there is nothing new to learn.

Meet the IBM Storage FlashSystem 5045



Operations made simple with IBM Storage Insights

Storage made simple with IBM Storage Virtualize

Simple to configure and operate

Simple to acquire and upgrade

- Supports multiple drive expansion enclosures.
- Supports HyperSwap for up to 100% uptime
- Supports expansion through IBM's new Policy Based HA (PBHA)

Efficient, affordable and Safe

Hybrid disk and flash storage for edge, virtual, and containerized environments

Uncompromising service and performance

Ransomware Threat Detection - Protecting organizations by have the Storage Virtualize OS examine data as it enters the FlashSystem 5045.

Safeguarded Copies - Enabling organizations to use IBM's powerful Safeguarded Copy ability starting with the mid-entry FlashSystem 5045.

FlashSystem 5045 flexibility solves issues

Pain Points	Solutions for solving pain points
Smaller clients often have wildly erratic budgets which limit acquisition flexibility	FlashSystem 5045 employs serial-attach-SCSI (SAS) drives. It is available in multiple configurations to meet all price points. • An array with only hard disk drives (HDDs). • An All-Flash-Array (AFA) configured with only solid-state drives (SSDs). • A hybrid array configured with both HDDs and SSDs
Client size is not an indicator of performance requirements.	FlashSystem 5045 offers configurations which deliver quick performance to very high-performance and still do so at attractive price points.
Cyber resiliency is important to every client throughout the world, but it can be too costly for smaller organizations	IBM’s entire FlashSystem portfolio, including the entry FlashSystem 5045 includes Ransomware Threat Detection (RTD) built into the Storage Virtualize operating system (OS). It is not an afterthought, and it does not increase the price of the system.
Small to medium clients are in need of cyber resiliency just as much as larger organizations but often times they can’t afford advanced solutions.	Beginning with FlashSystem 5045, IBM supports the ability to take Safeguarded Copies which are immutable snapshots, on the primary storage, that cannot be altered or deleted. This is a powerful tool for protecting business-critical data. It can be used together with IBM’s Ransomware Threat Detection (RTD)which is built into the Storage Virtualize operating system (OS).
Small to medium clients often have smaller IT departments, making it difficult to deal with multiple environments particularly when the cloud is involved.	IBM’s entire FlashSystem portfolio runs the same Storage Virtualize OS so there is nothing new to learn if larger modules are acquired. Additionally, Storage Virtualize for Public Cloud (SV4PC) enables them to run the same OS in major cloud environments such as AWS, Azure, and IBM Cloud. Once again it means there is nothing new to learn.

Introducing IBM FlashSystem 5045

- **Enables Volume Group Snapshots**
- **Enables Safeguarded Copy**
- Expert Care available on 5015 and 5045
- Licensed Machine Code full feature license
- Clustering only with other 5045’s

	5035	5045
SAS chain limit	10x 2Uxx	6x 2Uxx or 2x 5U92 + 1x 2Uxx
Max drives	392 per chain 760 per IO group 1520 per system	232 per chain 440 per IO group 880 per system

FlashSystem 5015 and 5045 are simply… flexible

	SAS Flash	SAS HDD
Drive sizes	From 0.8 – 30TB	From 0.9 – 18TB
Protocol	Serial Attach SCSI	Serial Attach SCSI
	FlashSystem 5015 FlashSystem 5045	FlashSystem 5015 FlashSystem 5045

Up to 720TB of raw capacity using twenty-four 30TB SAS solid-state drives (SSDs)

Host Connection Protocol	Number of cards per controller	Ports per card	Max ports per dual-controller system
16Gb Fibre Channel with NVMe-oF	1	4	8
10/25Gb Ethernet (RoCE v2)	1	2	4
10/25Gb Ethernet (iWarp)	1	2	4
10Gb Ethernet (iSCSI)	1	4	8
12Gb SAS	1	2	4

Meet IBM Storage FlashSystem 5200

Safeguarded Copy and Ransomware Threat Detection

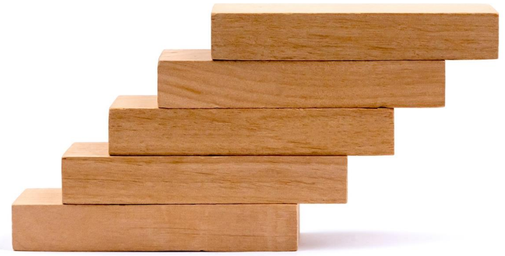
ExpertCare

Operations made simple with IBM Storage Insights

Storage made simple with IBM Storage Virtualize

Simple to configure and operate

Simple to acquire and upgrade



Small footprint. *Huge* impact!

Deliver more work with fewer drives and lower cost.

Reduce IT clutter with all your storage in as little as one skinny drawer.

Always on HA features in a pizza box instead of physically large systems.

Ransomware Threat Detection - Protecting organizations by having FlashCore Module 4s examine every I/O as it occurs.

Safeguarded Copies - Enabling organizations to use IBM's powerful Safeguarded Copy to create immutable snapshots that can never be altered or deleted.

FlashSystem 5200 flexibility solves issues

Pain Points	Solutions for solving pain points
Small to medium clients who need performance and flexibility may have difficulty obtaining fast storage at an attractive price point.	FlashSystem 5200 uses Non-Volatile Memory express (NVMe) drives. It is available in multiple configurations to meet all price points. • An all-flash-array (AFA) with IBM's unique FlashCore Modules (FCMs). • An all-flash-array (AFA) with industry standard commodity NVMe SSDs. • An all-flash-array (AFA) with Storage Class Memory (SCM) devices. • A hybrid array with any combination of NVMe drives + SAS SSDs and/or HDDs.
Client size is not an indicator of performance requirements.	FlashSystem 5200 offers very high performance with up to 26GB/s bandwidth in a 1U rack form factor. It also delivers latency as low as 50µs.
Cyber resiliency is important to every client throughout the world, but it can be too costly for smaller organizations	IBM's entire FlashSystem portfolio, including the entry FlashSystem 5200 includes Ransomware Threat Detection (RTD) built into each FlashCore Module 4 (FCM4), where detection occurs in seconds plus RTD in the Storage Virtualize operating system (OS). It is not an afterthought, and it does not increase the price of the system.
Small to medium clients are in need of cyber resiliency just as much as larger organizations but often times they can't afford advanced solutions.	FlashSystem 5200 supports the ability to take Safeguarded Copies which are immutable snapshots, on the primary storage, that cannot be altered or deleted. This is a powerful tool for protecting business-critical data. It can be used together with IBM's Ransomware Threat Detection (RTD) which is built into the Storage Virtualize operating system (OS).
Small to medium clients often have smaller IT departments, making it difficult to deal with multiple environments particularly when the cloud is involved.	IBM's entire FlashSystem portfolio runs the same Storage Virtualize OS so there is nothing new to learn if larger modules are acquired. Additionally, Storage Virtualize for Public Cloud (SV4PC) enables them to run the same OS in major cloud environments such as AWS, Azure, and IBM Cloud. Once again it means there is nothing new to learn.

FlashSystem 5200 is simply… flexible

	IBM FlashCore	NVMe Flash	Storage Class Memory	SAS Flash*
Drive sizes	From 4.8 – 38.4TB	From 1.92 – 30TB	1.6TB	From 1.92 – 30.72TB
Protocol	NVMe	NVMe	NVMe	Serial Attach SCSI

FlashSystem 5200

Host Connection Protocol	Number of cards per controller	Ports per card	Max ports per dual-controller system
32Gb Fibre Channel with NVMe-oF	2	2	8
16Gb Fibre Channel with NVMe-oF	2	4	16
10/25Gb Ethernet (iSCSI and NVMe)	2	2	8
10Gb Ethernet (iSCSI)	1	4	8

IBM Storage FlashSystem makes it simple to…

Choose your **capacity**

Choose your **performance**

Choose your **support**

1U 12 drives, 1.1PBe

Up to 300k real-world IOPS, 21GB/s

Expert Care Basic, Advanced, or Premium

2U 24 drives, 2.2PBe

Up to 580k real-world IOPS, 50GB/s

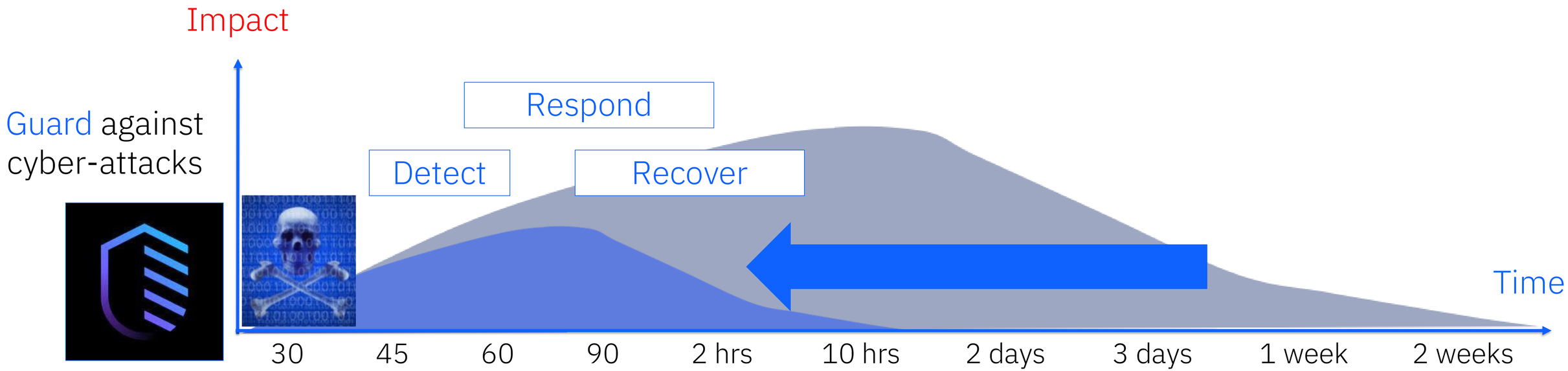
Expert Care Basic, Advanced or Premium

4U 48 drives, 4.5PBe

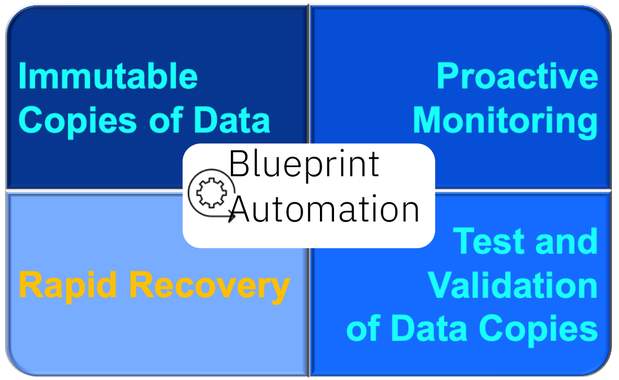
Up to 1.6M real-world IOPS, 100GB/s

Expert Care Advanced or Premium

IBM FlashSystem 5045 and 5200 can help prepare organizations deal with cyber-attacks



IBM FlashSystem Cyber Vault



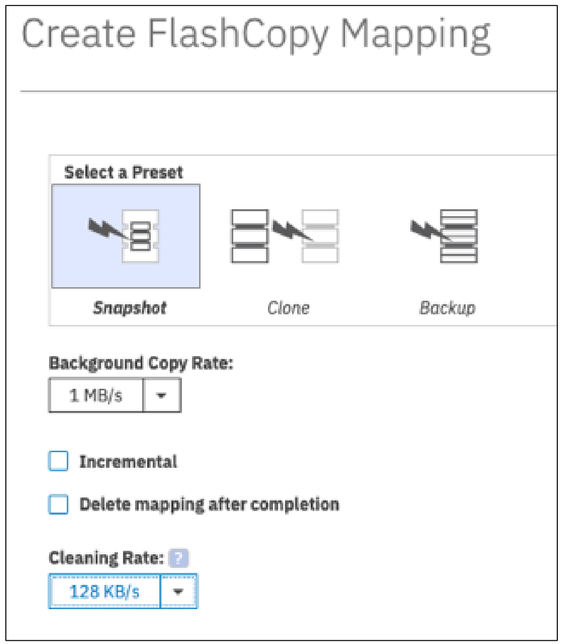
These systems are simply… data resilient

Recover from snapshots

Recover Virtual Machines or Containers

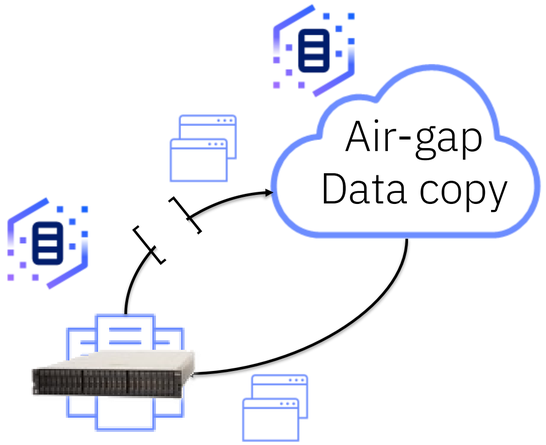
Recover from immutable storage or cloud

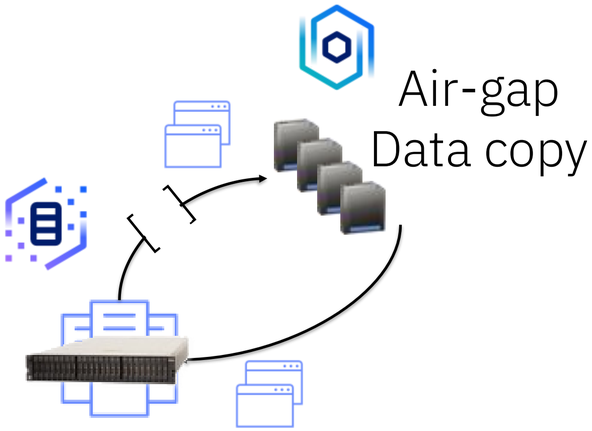
Recover from tape



Application-aware
Environment-integrated

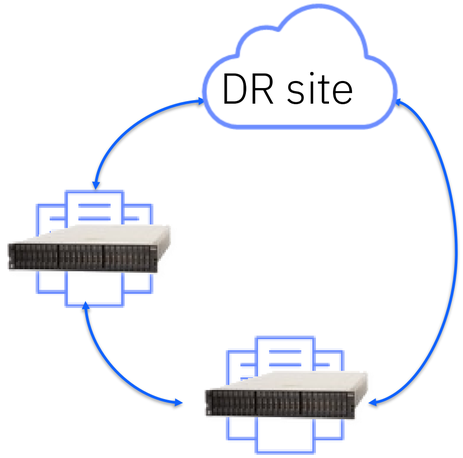
vmware
OPENSHIFT Container Platform
ORACLE
kubernetes
Microsoft SQL Server
Microsoft Exchange
IBM DB2
mongoDB.





These systems are simply… operationally resilient

Traditional 2-site and 3-site replication configuration

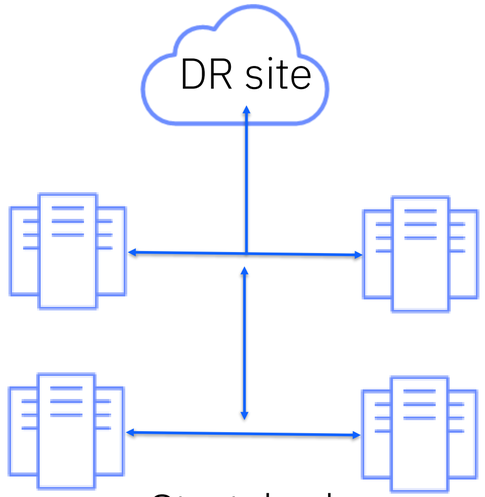


On-prem or hybrid

HyperSwap
Available 100% data availability guarantee

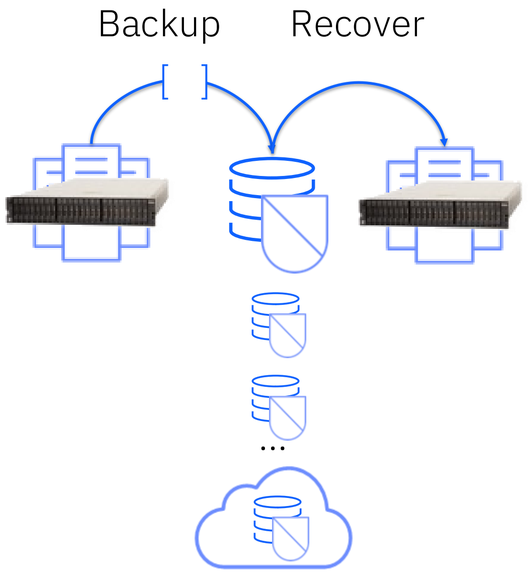
Replicated logical volumes

Enhanced High-availability



Stretched logical volumes

Safeguarded Copy
Air-gapped immutable copy



These systems are simply… efficient

Data reduction pools

selectable data reduction to optimize your investments

Guaranteed

reduction up to 5:1 highest performance with up to 3:1 with IBM FlashCore Modules 4 (FCM4)

Hardware-accelerated compression

Ideal for performance sensitive applications that can benefit from data reduction

Data reduction pool flexibility

Select what’s best for your pool of data

1. Thin provisioning and SCSI Unmap (space reclamation)
2. Hardware-accelerated compression
3. Software compression and deduplication

IBM FlashCore Module 4s (FCM4s)

Unique IBM flash technology

- Hardware compression with no performance impact
- Hardware encryption with no performance impact
- 100% of I/O is examine for Ransomware Threat Detection

90%

In 2023, IBM clients chose FlashCore Modules for 90+% of their FlashSystem flash capacity

Zero

Number of FlashCore Modules that have ever worn out

Smart data placement

- Position the most active data in SLC flash for highest performance
- With drives up to 38.4TB, QLC flash provides the highest density available reducing rack space and lowering cost

These systems are simply… interoperable

Data Mobility

Migrate
Tier
Snapshot
Replicate

Encryption

Data Reduction

Monitoring delivered securely from the IBM Cloud or on-premises health, capacity, and performance

FlashSystem
5200, 7300, 9500

500+ systems including…

IBM

PURESTORAGE®

Hewlett Packard Enterprise

Hitachi Vantara

NetApp

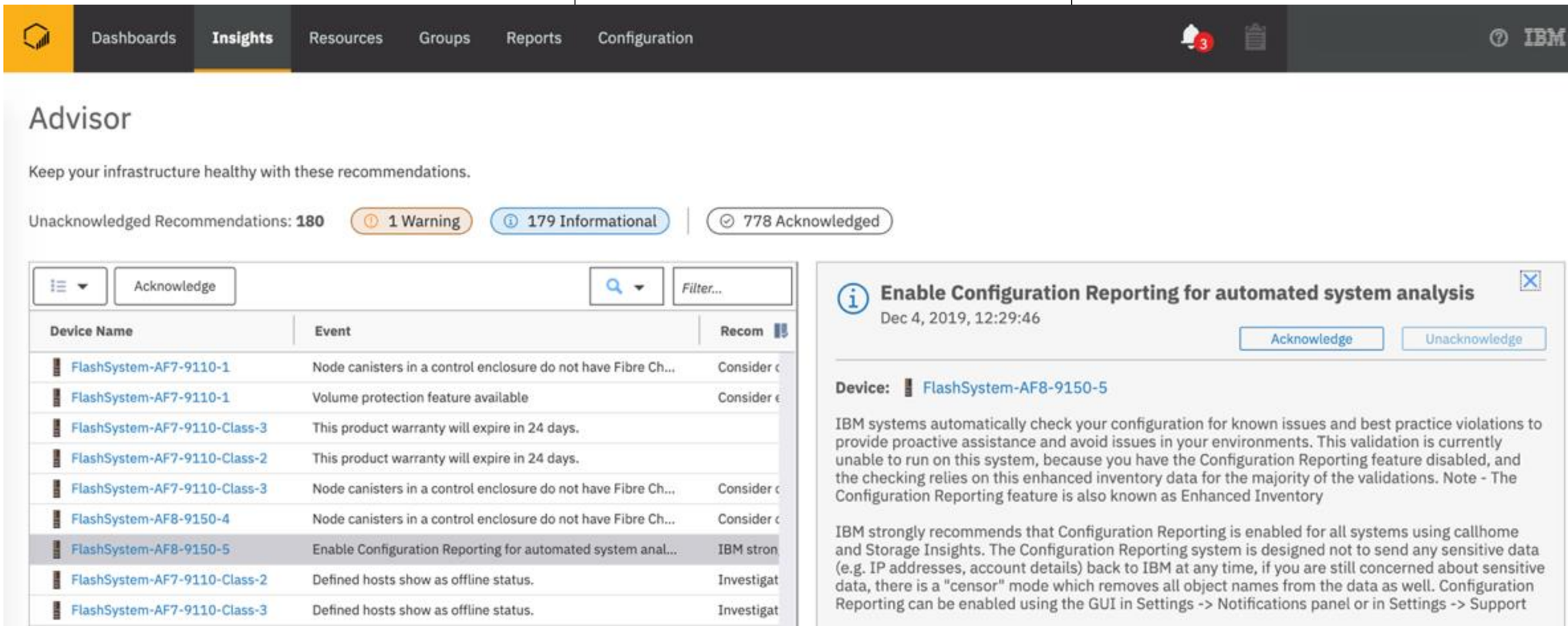
DELL EMC

HUAWEI

These systems are simple… to configure for best practices

Analytics offer **insights into best practice configuration**

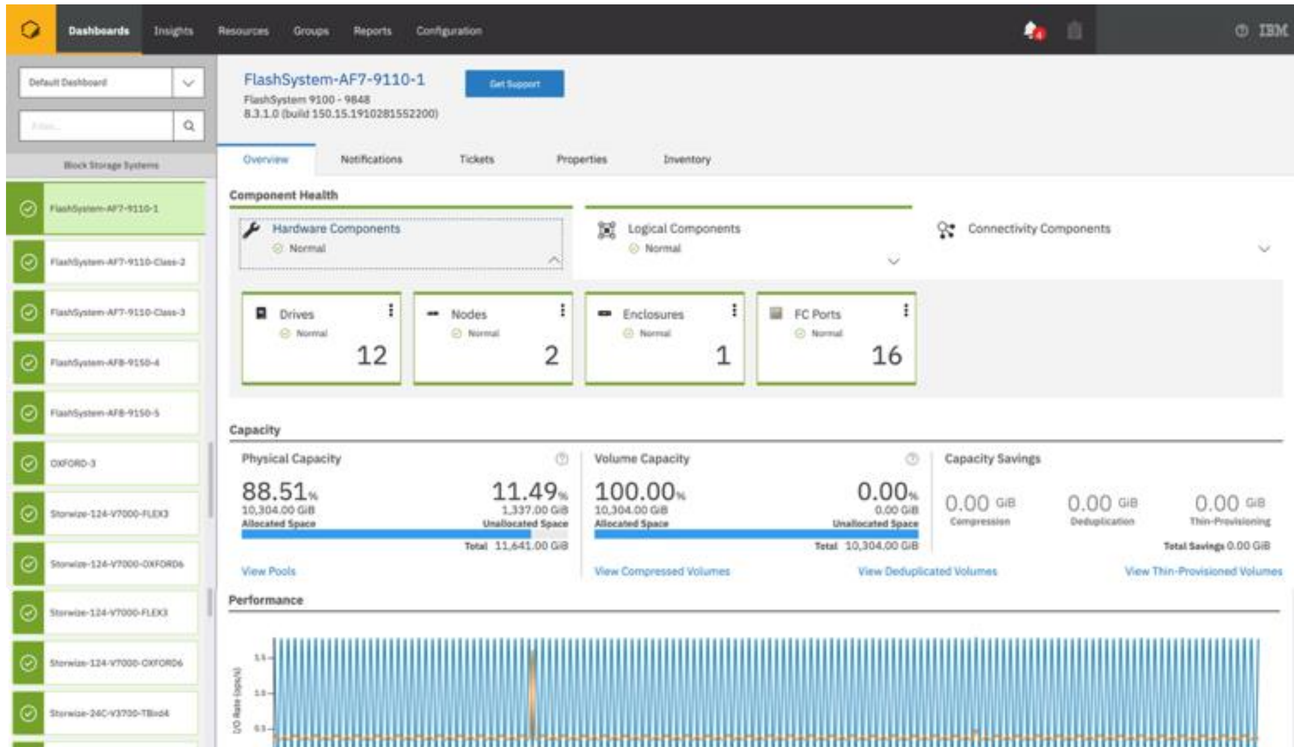
Best practice checks
High-availability safety checking
Risk analysis



These systems are simple… to monitor

Consistent
operational view of
all your storage
Health
Capacity
Performance

Delivered securely
from the
IBM Cloud or on-premises



These systems are simple… to support

Support process automation

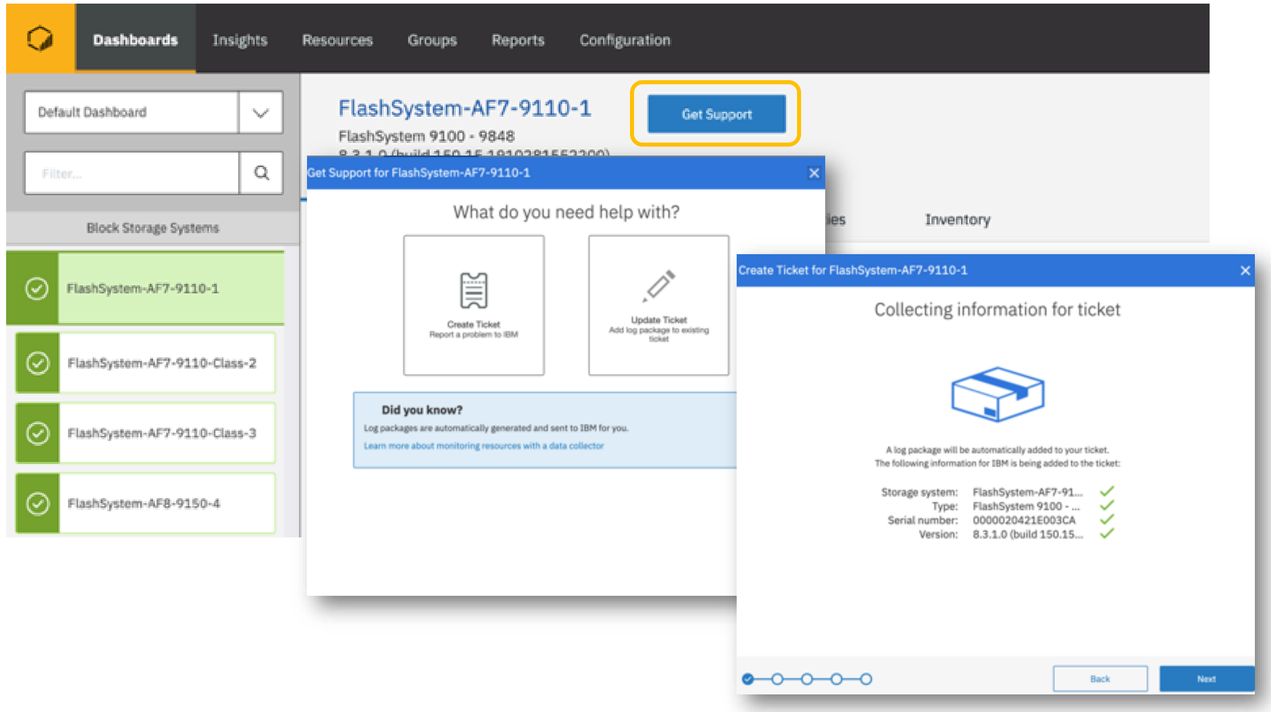
to enable faster resolution of issues

Delivered securely from the

IBM Cloud

Watch the demo

ibm.biz/insightssupport



These systems are simple… to secure

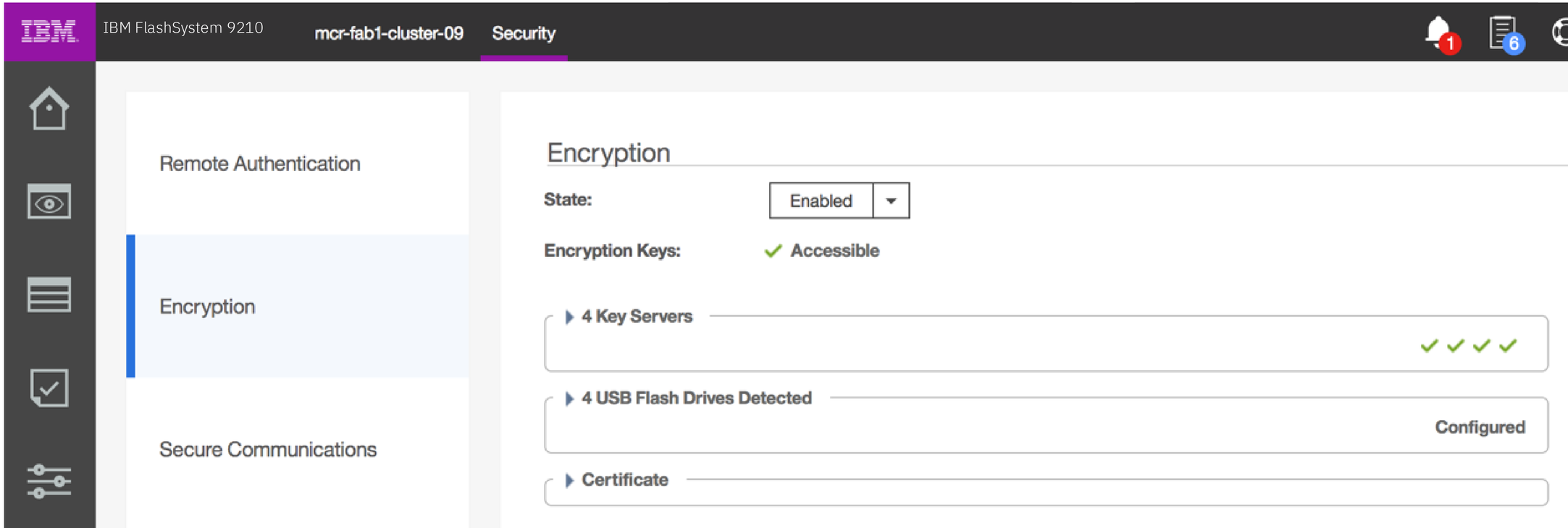
Consistent system-wide software encryption

FIPS 140-2 hardware encryption with IBM FlashCore

USB or Key Server encryption management

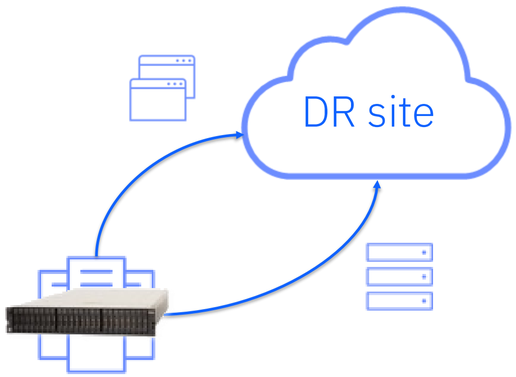
IBM Security

gemalto
security to be free

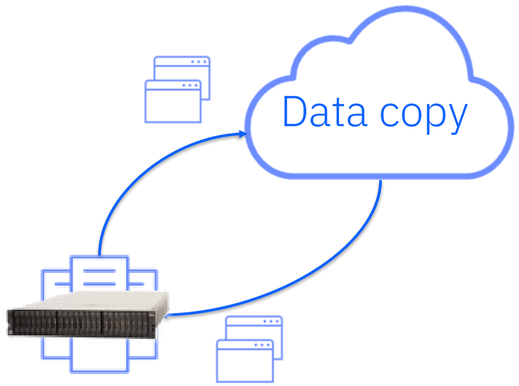


These systems are simple… to connect to the cloud

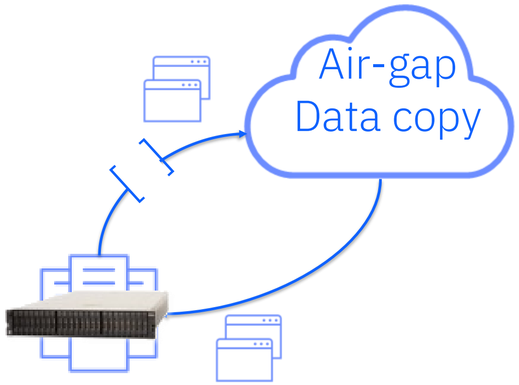
Traditional 2-site and 3-site replication configuration



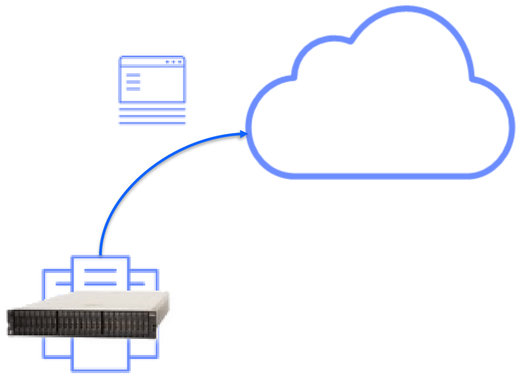
HyperSwap
Available 100% data availability guarantee



Enhanced High-availability



Safeguarded Copy
Immutable copies in the cloud



These systems are simple… to tier

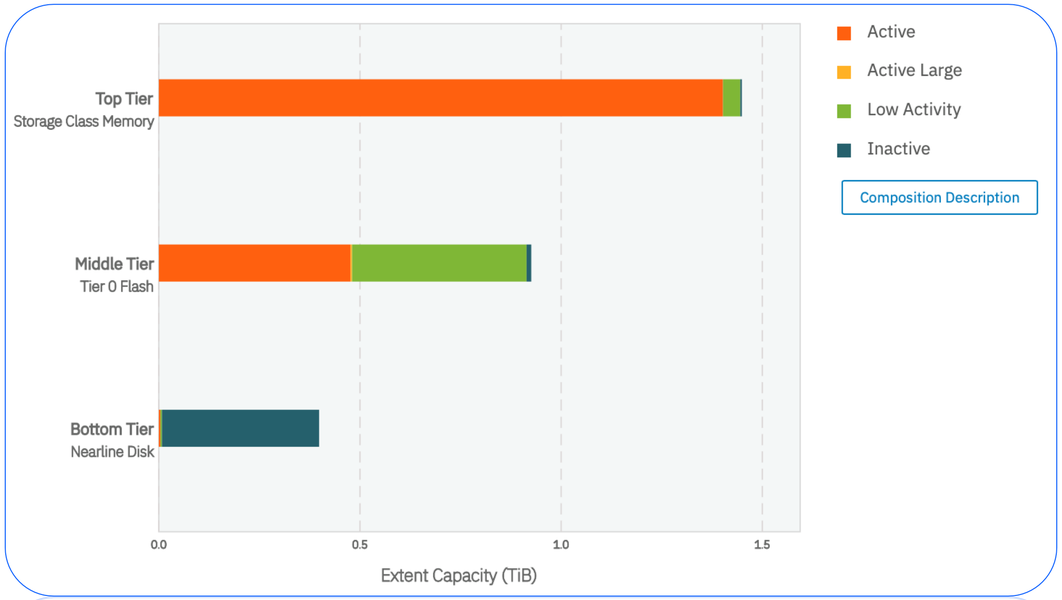
Set it and forget it

Improve performance

AI identifies the hottest blocks of data and transparently moves them to the fastest performing storage

Improve economics

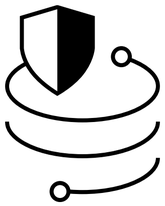
AI identifies the coolest blocks of data and transparently moves them to the most economical storage



These systems are simple… to protect

Software-driven

- Offload to tape and the cloud
- Search and access copies
- Instantly access



Snapshots

- Application-aware
- Environment-integrated

Microsoft SQL Server
IBM DB2
ORACLE
Microsoft Exchange
vmware
OPENSHIFT Container Platform
kubernetes
mongoDB.

System-assist

- Orchestrate system snapshots.
- Search and access copies
- Directly access in-place

These systems
are simple…
to integrate

When storage is
driven by VMware
or Kubernetes
administrators

VASA

vVol

SRM

kubernetes

OPENSHIFT
Container Platform

These systems are simple... to orchestrate

Avoid risk and uncertainty

with everyone doing things their own way

Consistently automate tasks

developers accomplish goals without needing infrastructure expertise

Ansible playbook integration

ANSIBLE

RED HAT®
ANSIBLE®
Automation

These systems are simple… to acquire

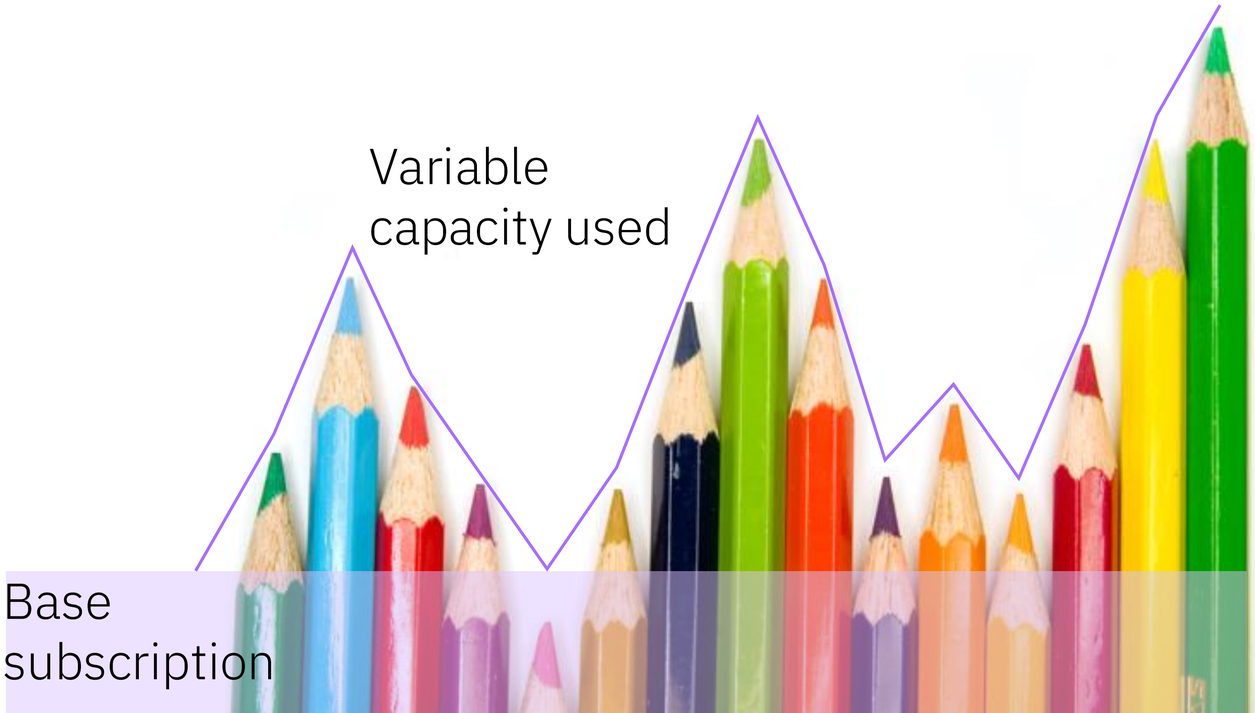
Base subscription
+
Variable utilized capacity

Metered by
IBM Storage Insights

See the case study

Pay only for the capacity consumed

as opposed to purchasing
bulk capacity in
advance and hoping
it is used efficiently



These systems are simple… to upgrade

Refresh your controller and storage

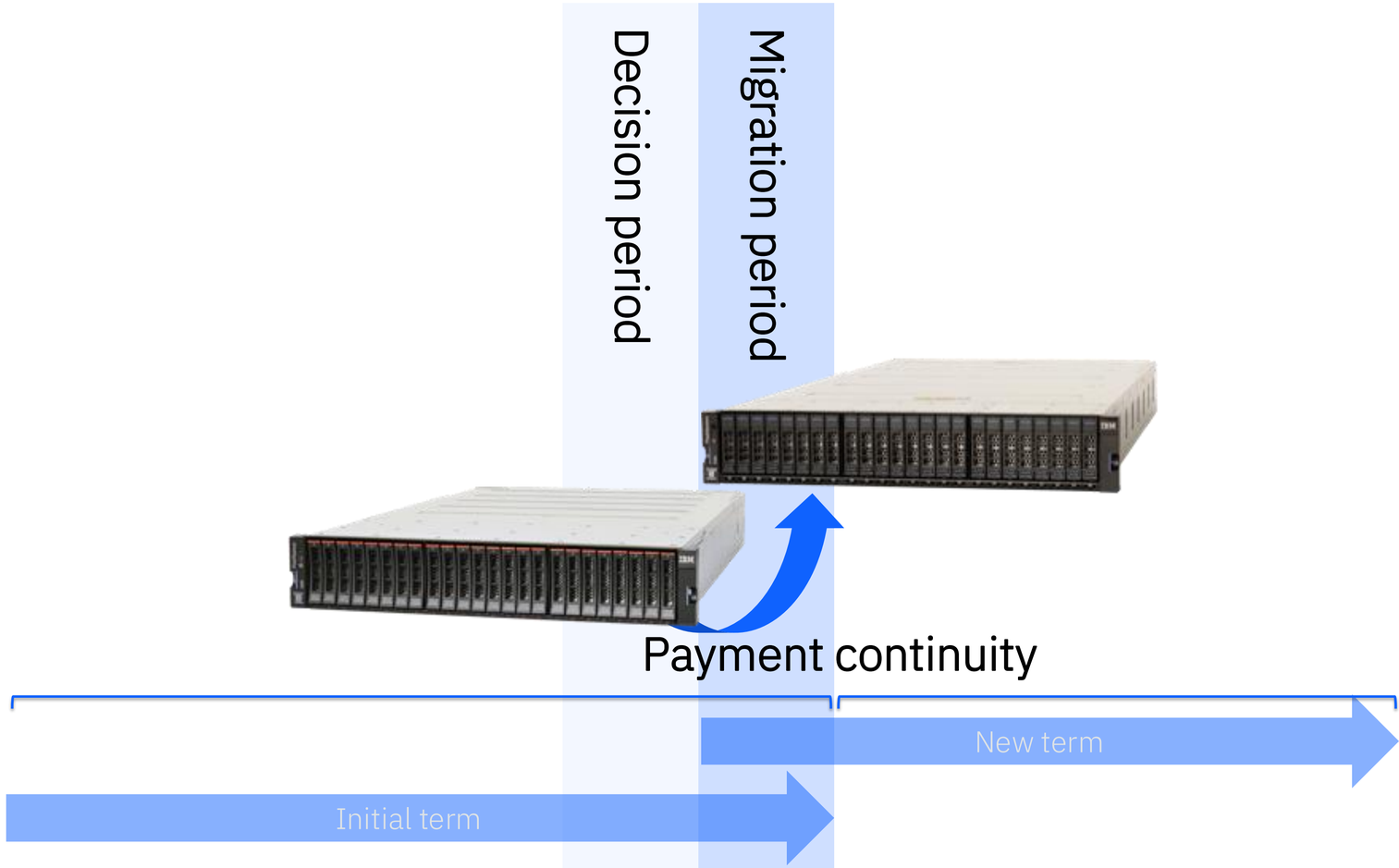
Same or lower price TB/month

Up-size or down-size your system to meet your needs

No lock-in

Toward the end of ownership of a current system, a business decides whether to refresh, keep their old system, or walk away

Storage upgrade program



IBM Storage Expert Care

Integrates and prepackages hardware and software support services into a tiered support model, helping organizations to choose the right fit of services – including the number of years of support, response times from initial contact to fix.

Simple to choose

Which tier?
Basic, Advanced, or Premium[1]

And for how long?
1-5 years

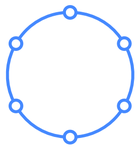
Included with the “Premium” Expert Care tier services:

Hardware Services

24x7[1] same day onsite repair

Enhanced response Time

30 minutes initial response for severities 1 and 2 issues



Predictive Support

Predictive analytics support, capacity planning, monitoring, and reporting

Technical Account Manager

Proactive and personal support from a highly specialized subject matter expert

IBM Remote Code Loads

Remote software microcode updates twice per year

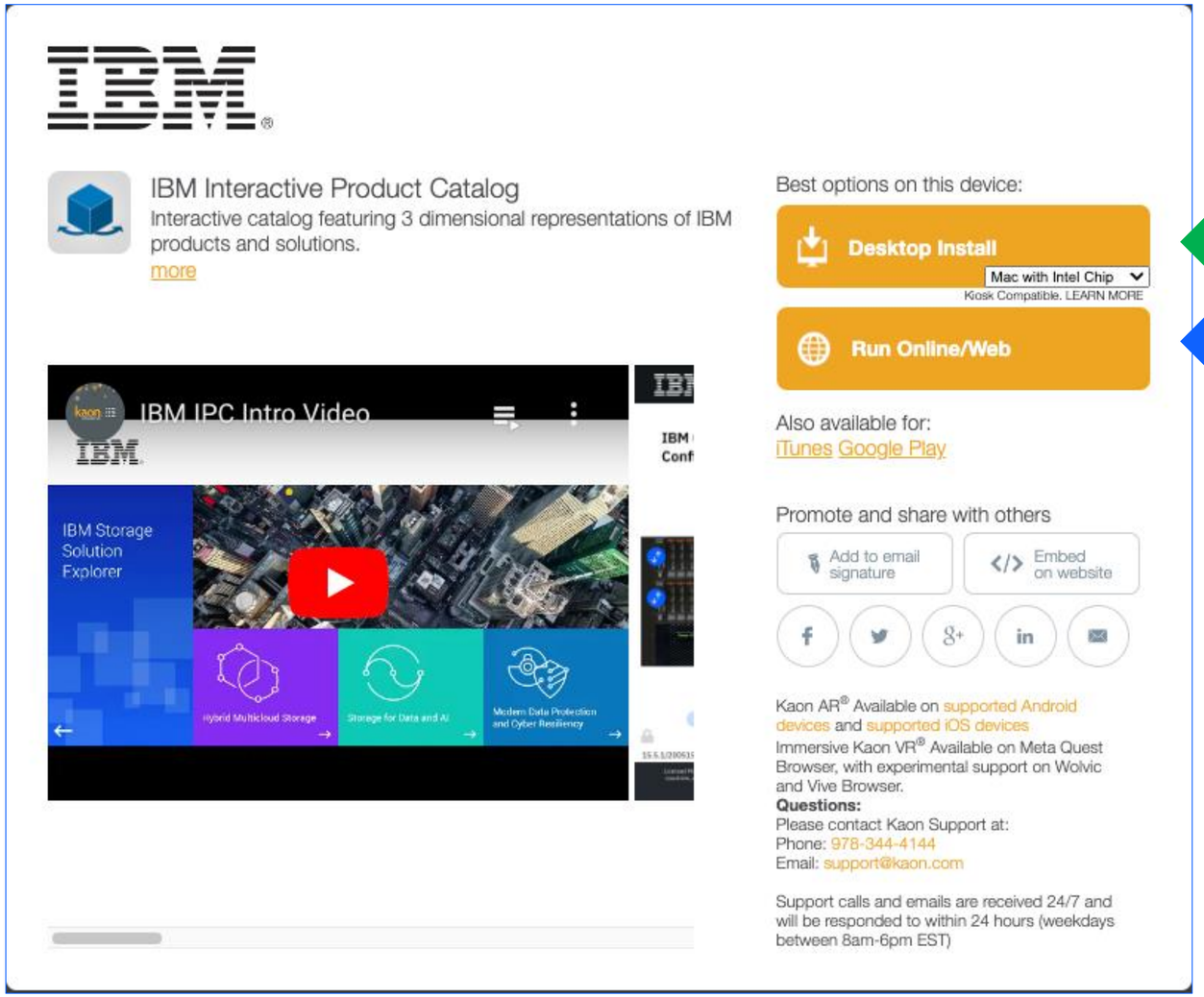
IBM Storage Expert Care

IBM FlashSystem

Choose the level of support required for the duration needed.

Services	Base Warranty	Basic IBM FlashSystem 5015, 5045, 5200 & 7300	Advanced IBM FlashSystem 5015, 5045, 5200, 7300, 9500 & 9500 LMC	Premium IBM FlashSystem 5015, 5045, 5200, 7200, 7300, 9200, 9500 & 9500 LMC
IBM Hardware Maintenance (IBM onsite repair)	FS 5015/ 5045/ 5200/ 7200/ 7300 - 9x5 next business day, IBM On-site Limited FS 9200/ 9500 – 24x7 same day, IBM On-site Repair	9x5 next business day, IBM On-site Repair	24x7 same day, IBM On-site Repair	24x7 same day, IBM On-site Repair
IBM Storage Virtualize fixes/updates/new releases	Included for 1 year	Included for number of years selected	Included for number of years selected	Included for number of years selected
Support Line for Storage (24x7 remote technical support)		Included for number of years selected	Included for number of years selected (5200, 7300 & 9500 LMC –machine type 4983)	Included for number of years selected (7300 & 9500 LMC – machine type 4983)
IBM Software Maintenance (24x7 subscription/support)	90 days		Included for number of years selected (FS9500 – *not applicable to machine type 4983*)	Included for number of years selected (7200, 9200 & 9500 – *not applicable to machine type 4983*)
Predictive Support with IBM Storage Insights			Included for number of years selected	
Predictive Support with IBM Storage Insights Pro				Included for number of years selected
IBM Storage Technical Account Manager				Included for number of years selected
Enhanced response time – 30 min for Severity 1 and 2				Included for number of years selected
IBM Remote Code Load upgrade (2x per year)				Included for number of years selected

Easily learn about, and examine, FlashSystem 5xxx



IBM Interactive Product Catalog: https://m.kaon.com/c/ib

On their web page, click here to download the app.

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