

Common Europe

# IBM i + FlashSystem

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## HADR Solution

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SEIDOR

# #whoami

## Nicolae Chirea



- Infrastructure solutions architect – design and implement solutions based on IBM Power and IBM Storage
- Covering (What I mostly do)
  - IBM Power system - PowerVM
  - IBM i, Linux, AIX
  - Block storage: Flash Systems, SVC and DS8K
  - AI on Power
  - HA, Performance
  - Open-Source on IBM i
  - Automation: Ansible, PowerVC
- 25+ years of working experience with IBM i
- Joined Seidor in 2007 as IBM Power specialist
  - IBM i – HA/DR solutions, Performance analysis, DB2 for i
  - Linux – HANA, DB2 Warehouse
  - IBM Power automation projects – infrastructure provisioning, HA/DR management, security
- CEAC member since 2024

# Agenda

**01 Starting point – 2 sites DR solution**

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**02 PBHA and PBR**

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**03 3 sites solution design**

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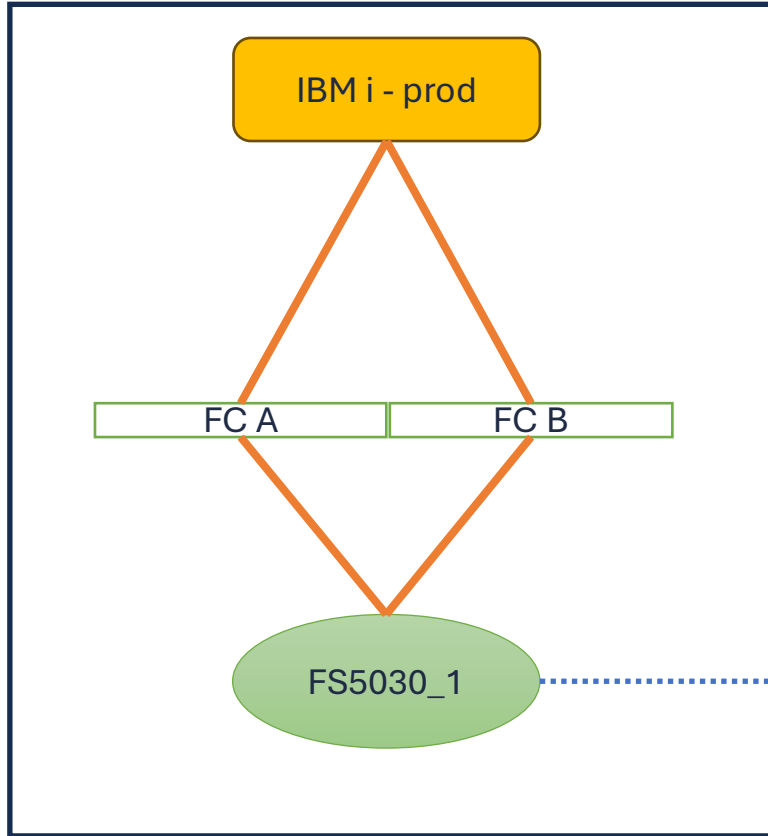
**04 LPM, Snapshots, CMC**

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**05 Conclusions**

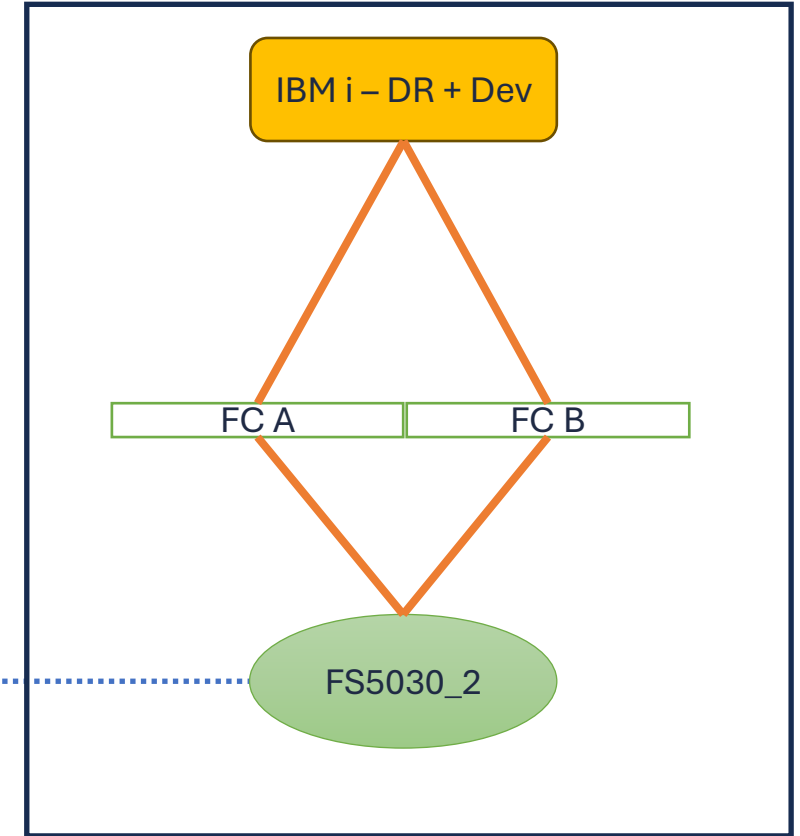
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# Starting point



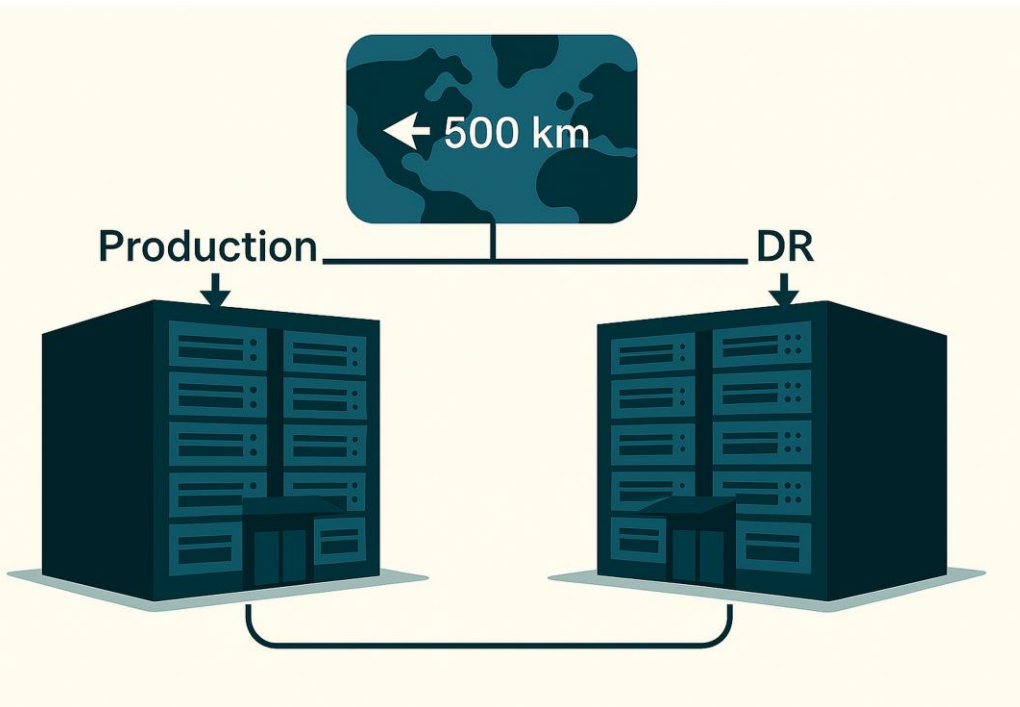
CPD PRODUCCION

Remote sync replication IP (20 km)



CPD DR

# New requirements



Distance between sites: 500 km



Production site: Hosts all workloads  
(Production + Development)



High availability: Continuous operations in  
the primary site; failover to DR site only in  
case of disaster



Resilience: Eliminate single points of failure  
and minimize planned downtime

# THE STORAGE STRATEGIC SHIFT



## Volume-Based Management

Traditional storage management relies on manual configuration of individual volumes and consistency groups,

leading to:

- ✓ Complex provisioning workflows
- ✓ Risk of inconsistent DR settings
- ✓ Increased administrative overhead



## Policy-Based Management

The modern approach uses automated policies applied to Volume Groups or Storage Partitions for:

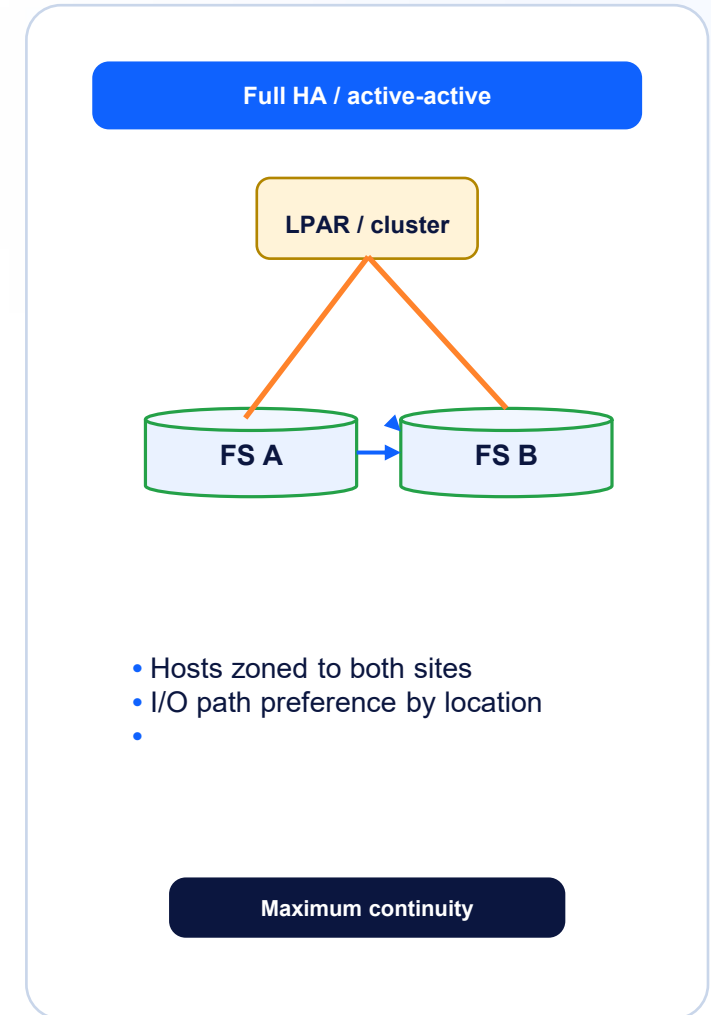
- ✓ Automated placement and mirroring
- ✓ Single-click SLA compliance
- ✓ Scalable multi-tenancy support

# POLICY-BASED HA (PBHA)

## Zero RPO, Zero RTO

PBHA provides active-active high availability using two independent systems across metro distances.

- ✓ **Active-Active Access:** Seamless host failover without manual intervention.
- ✓ **Storage Partitions:** Independent management containers for workloads.
- ✓ **Smart Tie-Break:** Per-partition quorum decisions avoid whole-site outages.
- ✓ **Synchronous Mirroring:** Guaranteed data consistency.



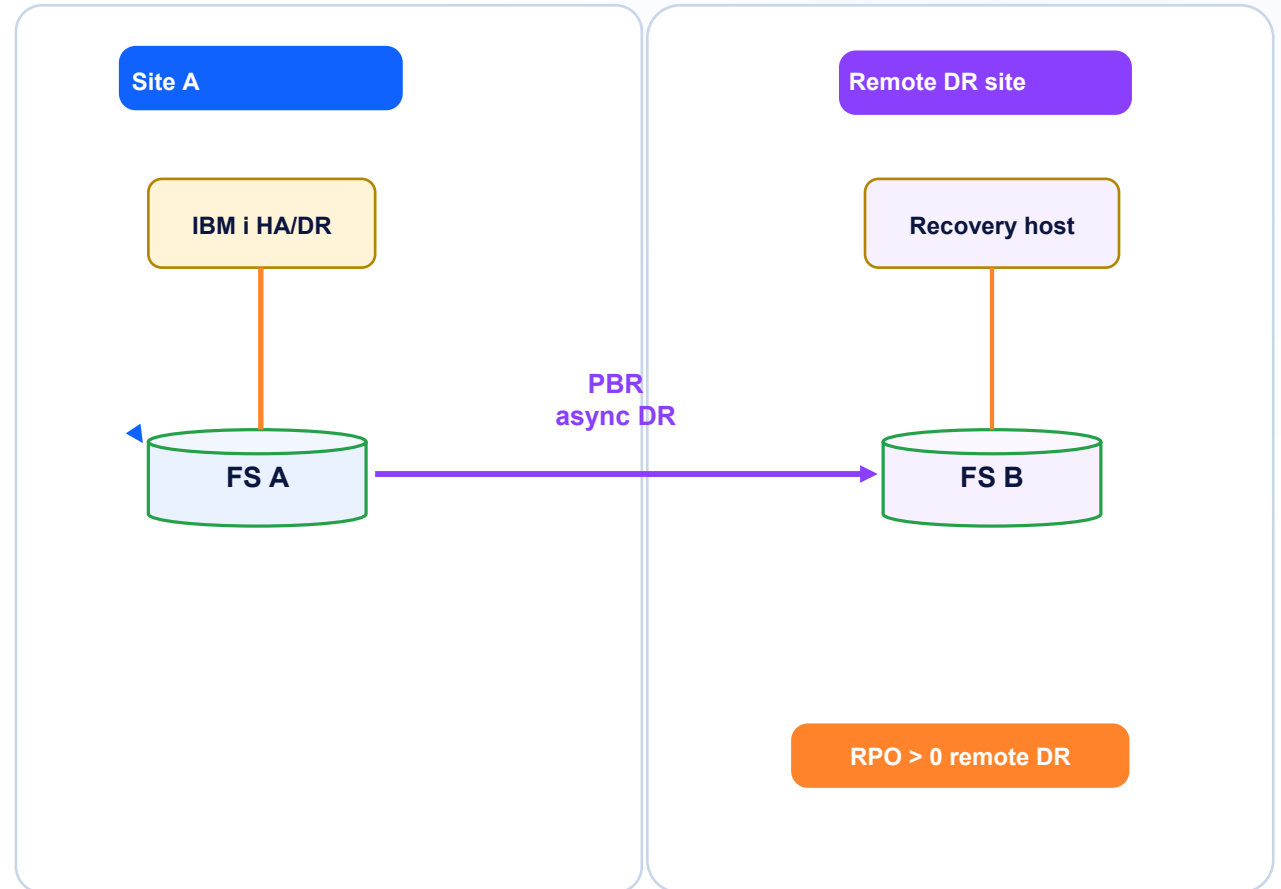
# POLICY-BASED REPLICATION

## Scalable Disaster Recovery

PBR is the modern successor to Remote Copy, designed for high-performance asynchronous replication.

By leveraging **Volume Groups**, PBR ensures that all related application volumes are replicated with full write-order consistency.

- ✓ Minimal overhead with higher throughput
- ✓ Reduced latency for global distances
- ✓ Automated failover and failback orchestration

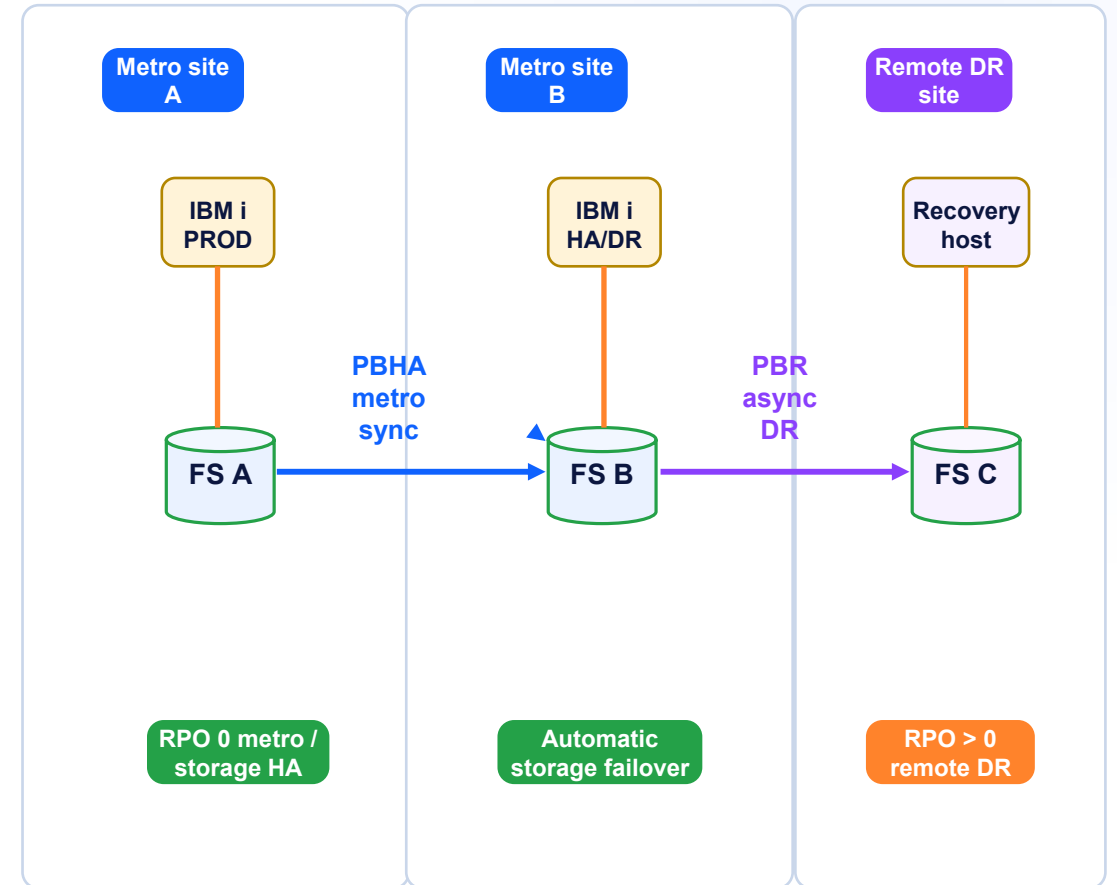


# 3-SITE DATA RESILIENCE

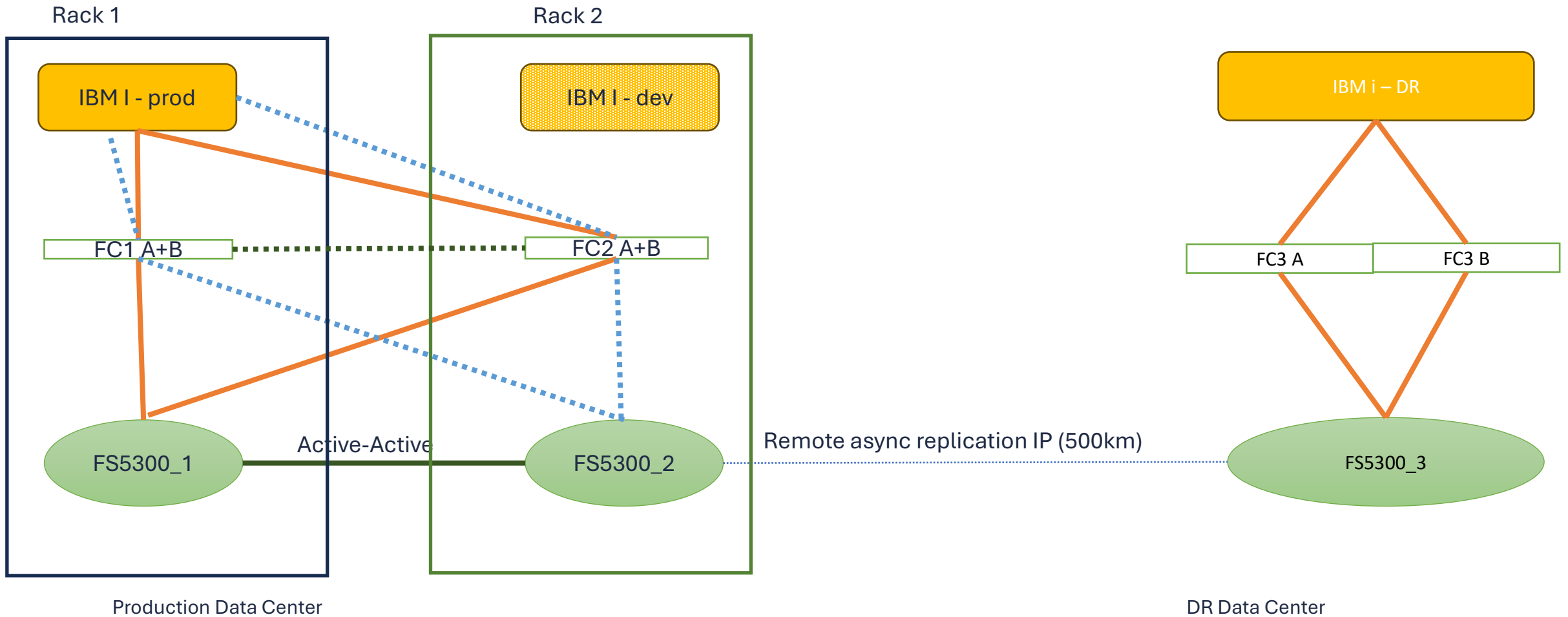
## Total Protection Strategy

Combine PBHA and PBR to achieve the highest level of business continuity for mission-critical apps.

- ✓ **Local HA:** PBHA provides zero-downtime protection against hardware failure or site loss.
- ✓ **Remote DR:** PBR adds asynchronous replication to a distant third site.
- ✓ **Unified Management:** Orchestrate recovery across all three sites from a single GUI.
- ✓ **Immutable Safeguarded Copies:** Enhanced protection against cyber threats.



# Solution Diagram

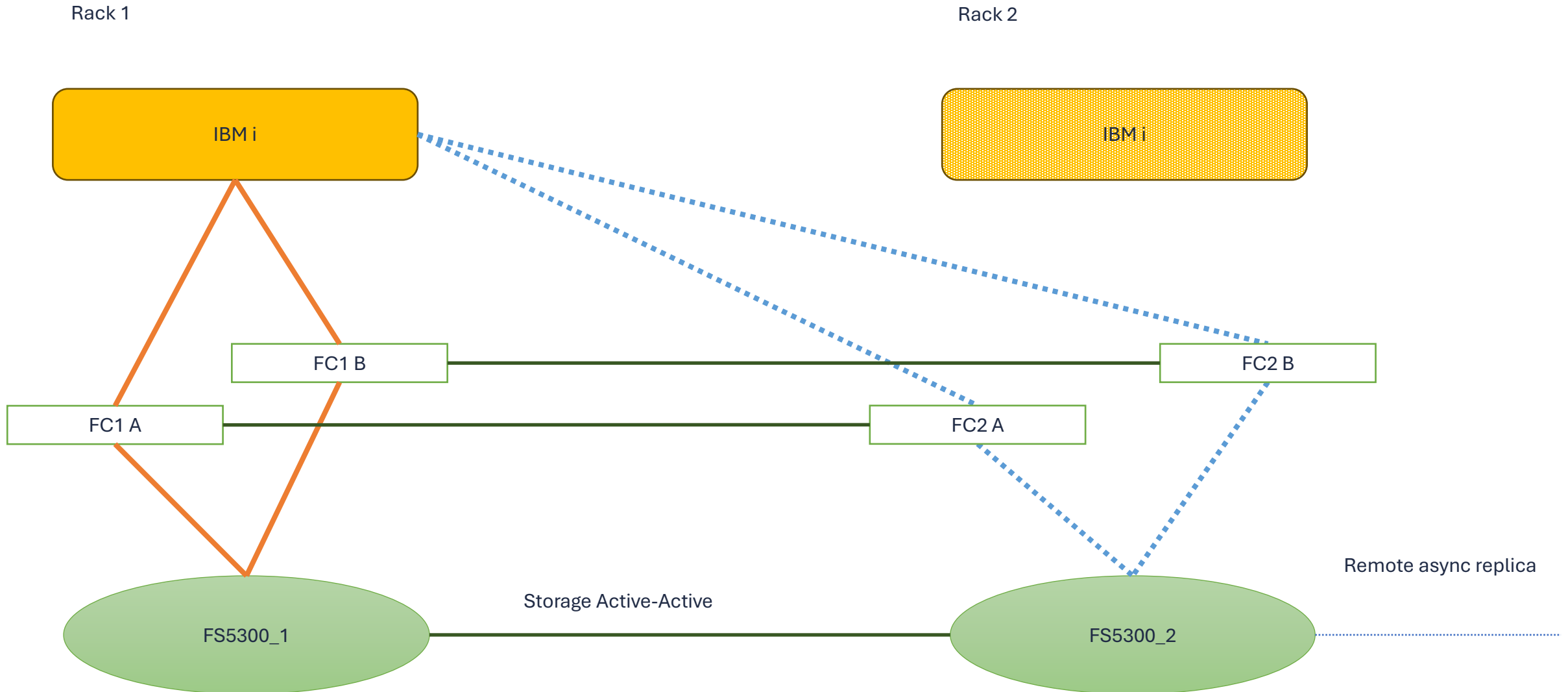


# SOLUTION ADVANTAGES

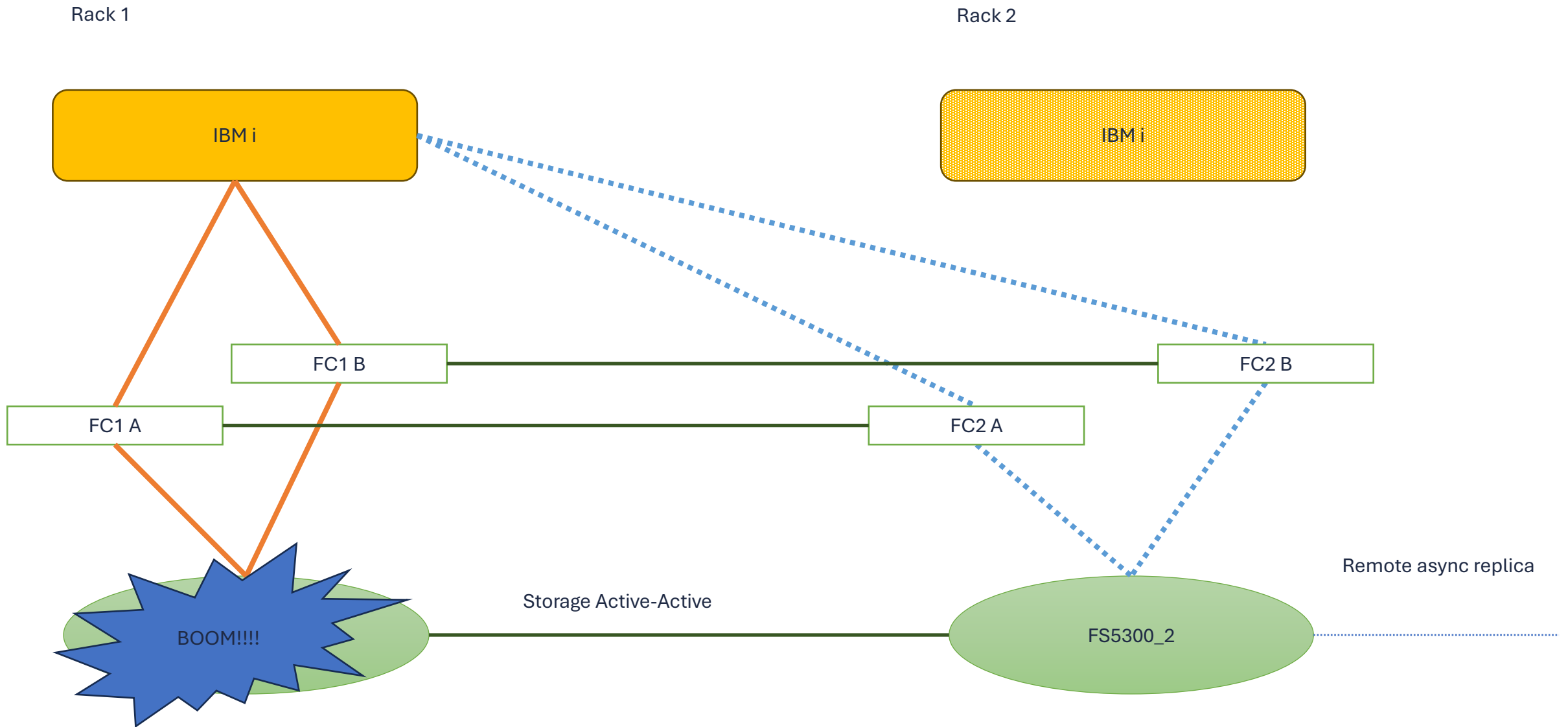
- ✓ **Zero Data Loss:** Synchronous HA ensures no transactions are lost during site failures.
- ✓ **Simplified Lifecycle:** Automated volume creation and mapping across systems.
- ✓ **3-Site Resilience:** Combine PBHA and PBR for the ultimate protection strategy.
- ✓ **Reduced Latency:** Optimized for NVMe/TCP and high-performance links.



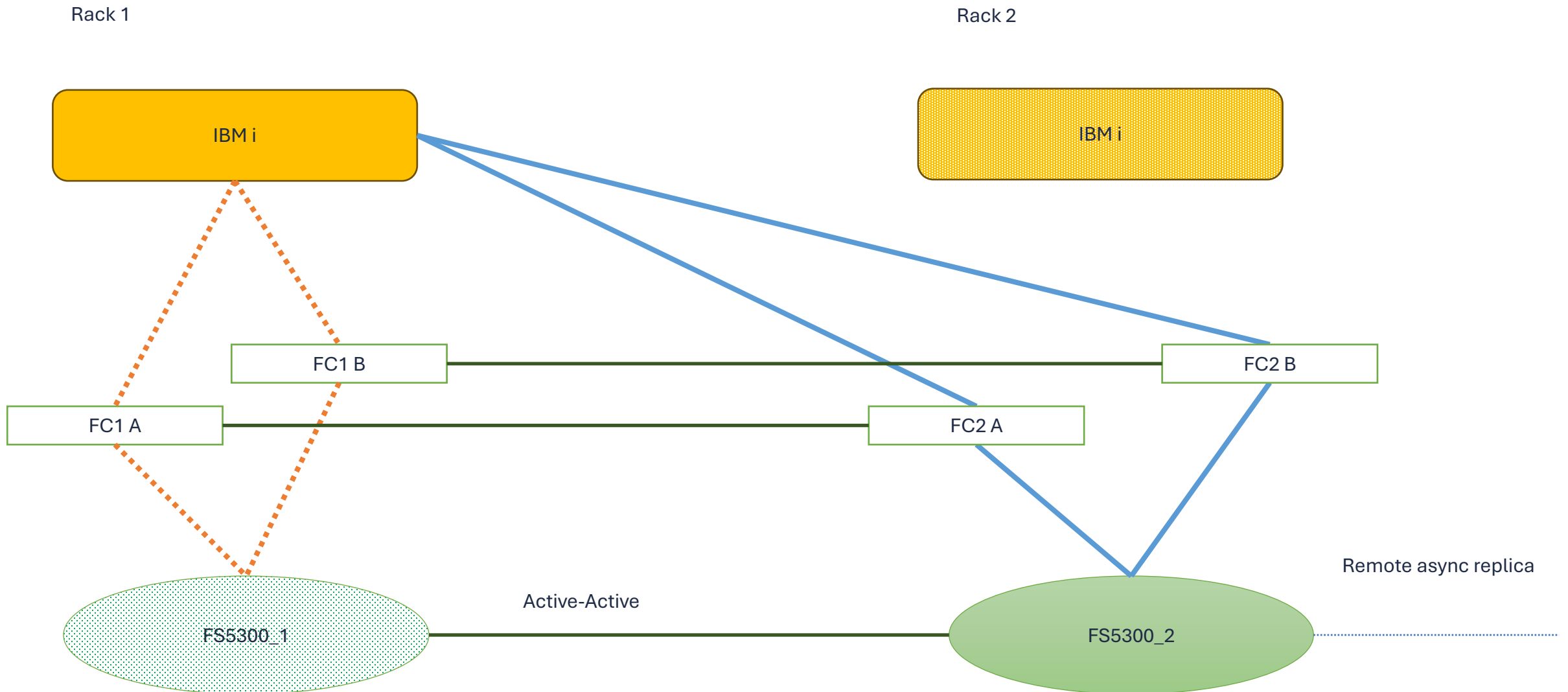
# Normal Operation in the Production Data Center



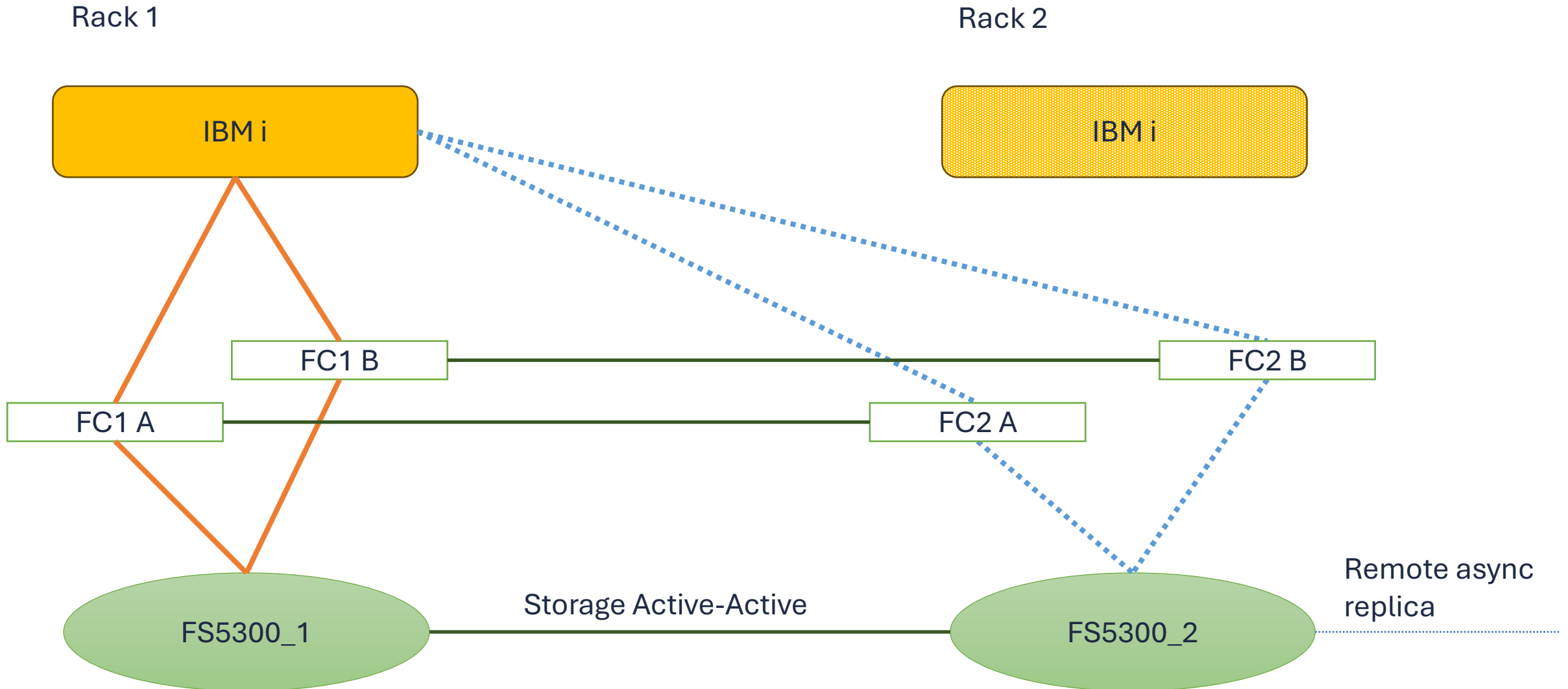
# FS5300\_1 Issues



# FS5300\_1 Issues



# Planned intervention on Rack1- LPM





## Migrate partitions

updated

[Learn more](#)Source System  
P10\_2\_FRSource Machine Type \* Serial Number  
9105-22A\*78D07B1

- Confirm partition lists
- Select target systems
- Edit configuration settings (optional)
- Validate and edit migration settings
- Migrate partitions



## Validate and edit migration settings

[Start Validation](#)

✔ Validated  
**1**

✘ Error  
**0**

[Edit MSP mappings](#)

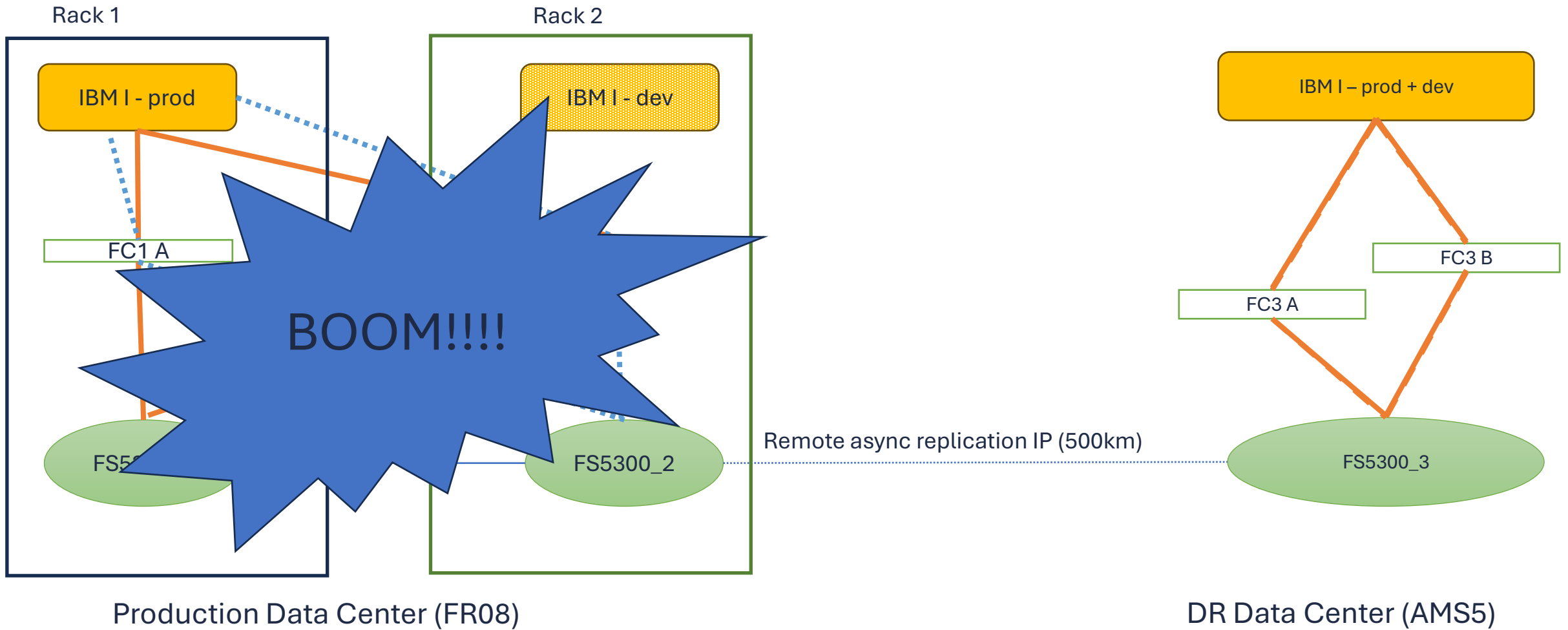
Partition	ID	Target system	Validation status	Messages
FLASHMGT	20	P10_1_FR	✔ Validated	<a href="#">Messages</a>  

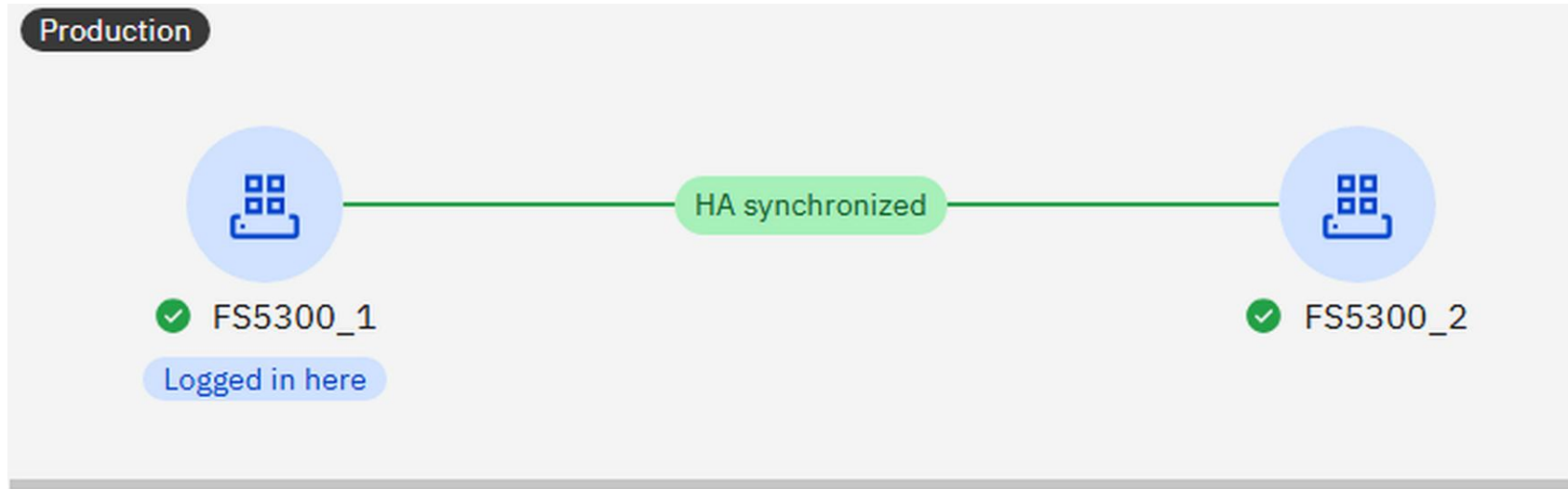
Cancel

Previous

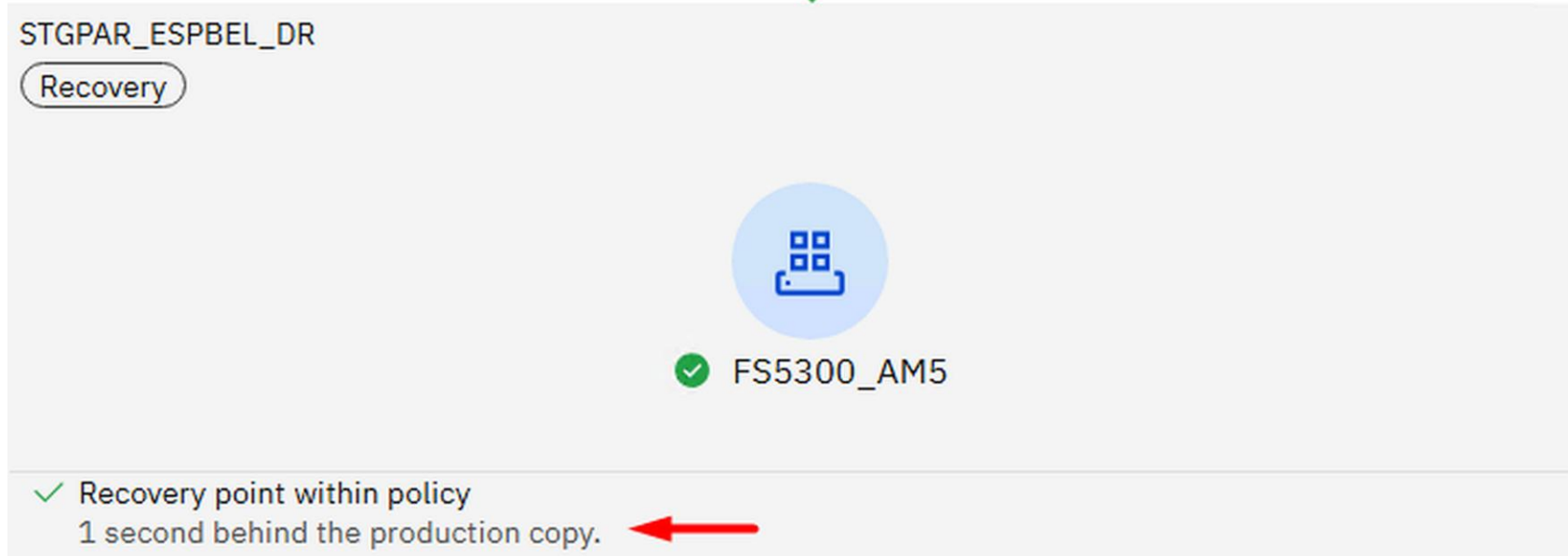
Start Migration

# DR ACTIVATION



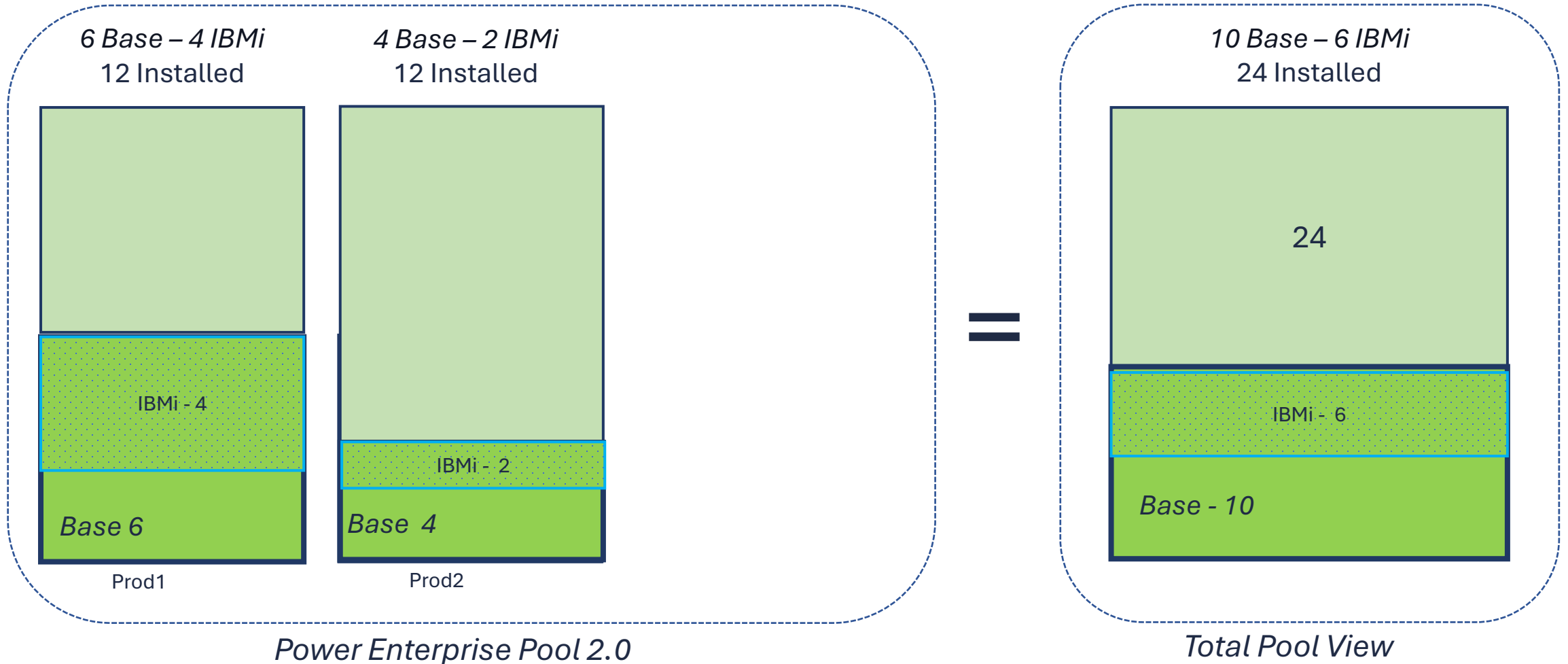


HADR Graphical Interface

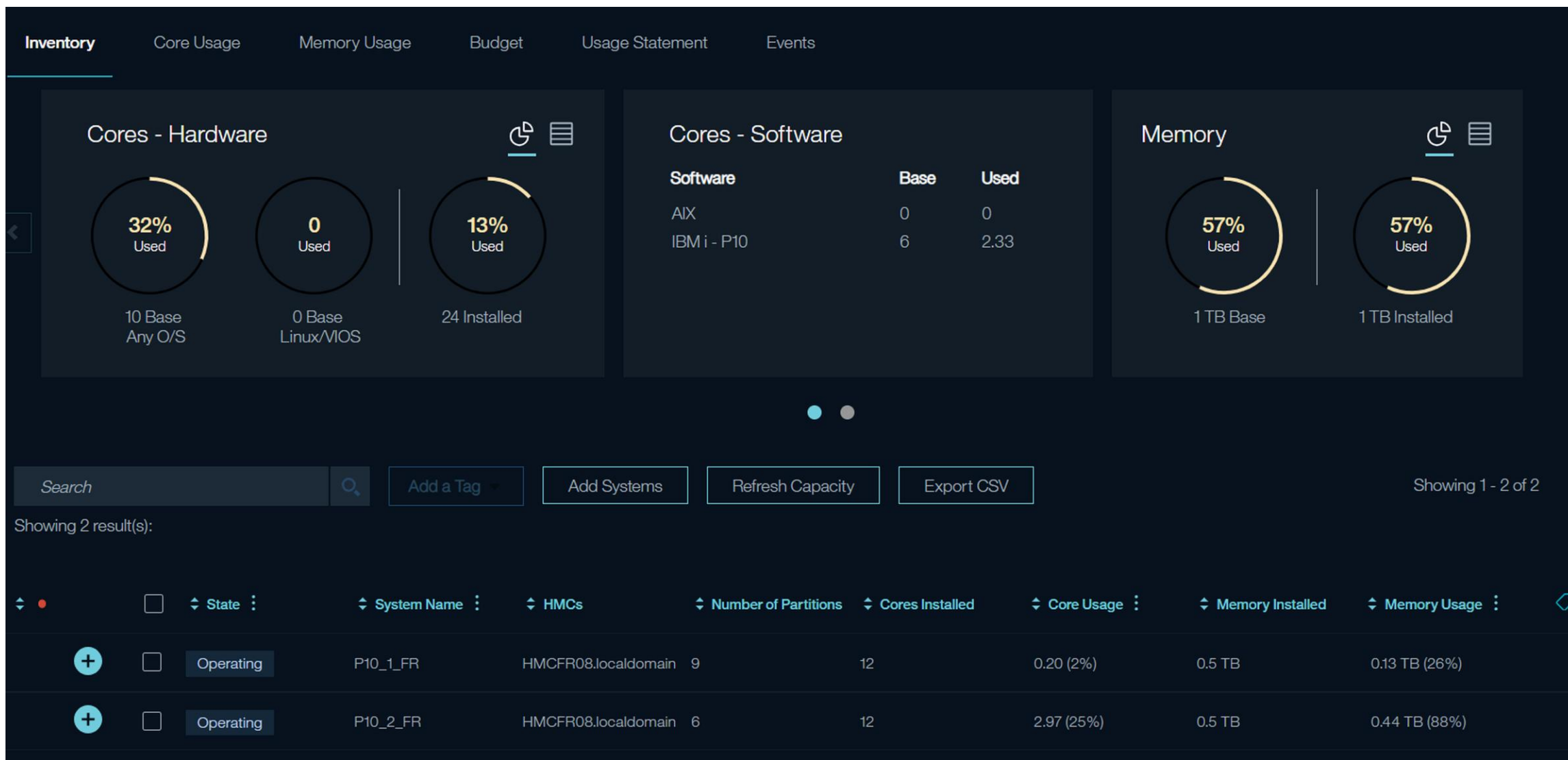


# Power Enterprise Pools 2.0

All installed processor are activated and available for use

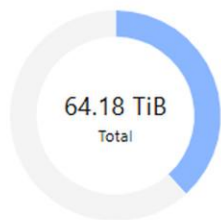


# Power Enterprise Pools 2.0



# Storage Insight

## Capacity



Used capacity ⓘ  
38.32% (24.6 TiB)

Available capacity ⓘ  
61.68% (39.59 TiB)

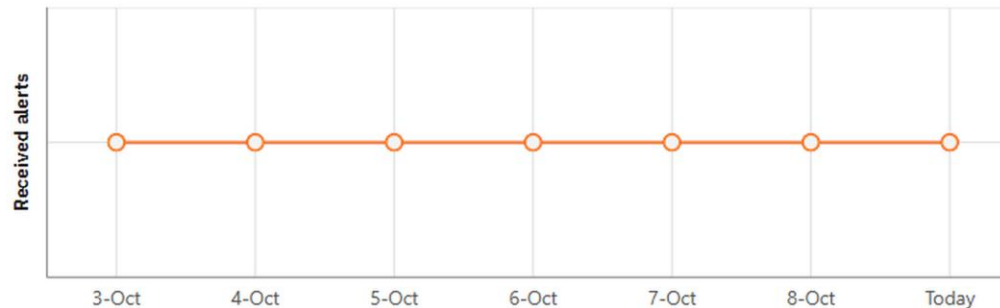
Data reduction ⓘ  
40.22 TiB

Total savings ⓘ  
45.00 TiB

Total provisioned ⓘ  
47.08 TiB

## Alerts

Current 0 Critical | 1 Warning



## System protection

Derived from 3 of 3 applicable systems ⓘ

### Storage systems

3 Total

More than 70% compliance ✓ 3

Ransomware threat detection active - 100% ⓘ 🟢 3 🚫 0 🛑 0

For Flash systems

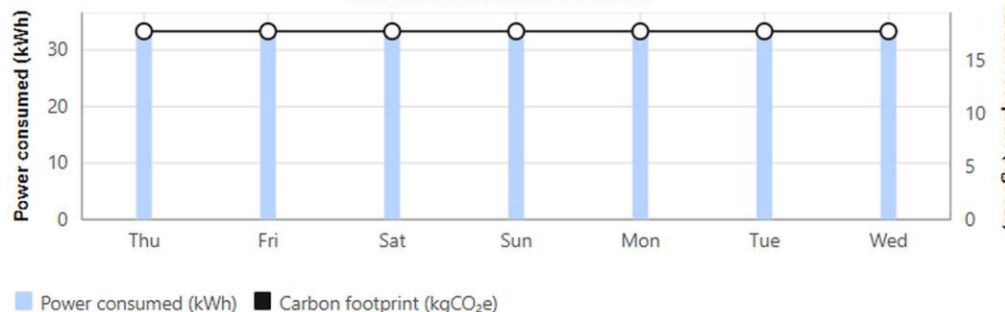
[View details](#)

## Environment

Derived from 3 of 3 applicable systems ⓘ

CO<sub>2</sub>e Power Temperature

Carbon footprint: 124.32 kgCO<sub>2</sub>e ⓘ



## Workload protection

Derived from 3 of 3 applicable systems ⓘ

### Volumes mapped to hosts

472 of 556 total

Covered by HA - 48.73% ✓ 230


## Performance Deviations

Unusual performance patterns detected for block storage systems over the past 14 days  
Dates are based on the UTC time zone.




## HADR 3 SITES Solution


3 new IBM Power10 1022 systems – two configured in a shared capacity pool, enabling license and resource sharing for greater flexibility and cost efficiency.



Cloud Management Console (CMC) – provides real-time CPU utilization monitoring with a pay-per-use model, optimizing operational costs.



3 new IBM FlashSystem 5300 storage systems – delivering high performance and scalability for critical workloads.



IBM Storage Insights – offers continuous monitoring of storage performance, health, and security, ensuring proactive management and reliability.

# RPO / RTO targets

Targets for the IBM i HADR design using FlashSystem Policy-Based HA and Policy-Based DR

RPO

## Data loss target

How much committed data can be lost after a failure?

Local / PBHA

**0**

No data loss objective

Remote / PBR

**< 1 min**

Typically only seconds

- Synchronous replication protects the primary IBM i data set between FlashSystem arrays.
- Asynchronous replication protects to geographically separated site

RTO

## Recovery time target

How long until the IBM i environment is usable again?

Local issue

**0**

Transparent storage HA

DR activation

**< 15 min**

After disaster decision

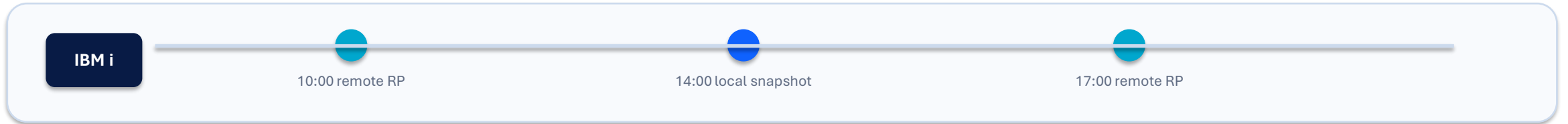
- Planned maintenance: RTO target is 0 through storage-side high availability.
- Disaster activation: IBM i LPAR starts against the promoted DR copy.

PBHA = local continuity | PBR = remote disaster recovery



# Snapshot recovery model

Restore points complement PBHA/PBDR for logical corruption, accidental deletion and selective object recovery



## LOCAL RECOVERY

### Fast recovery from local snapshots

#### Total recovery

**< 30 min**

Restore complete LPAR copy

#### Partial recovery

**Objects**

Retrieve + transfer by FTP

- Best for application or data corruption detected in the production site.
- Snapshot policy provides a known restore point without breaking the HA design.

## REMOTE RECOVERY

### Recovery from DR restore points

#### Recovery points

**10:00 / 17:00**

Remote snapshots

#### Role change

**PRD → DR**

Promote DR storage copy

- Used when production site is unavailable or local copies cannot be trusted.
- Partial object recovery follows the same retrieve-and-transfer approach.

Operational principle: PBHA keeps the local service online; PBR provides a controlled remote recovery path; snapshots add point-in-time rollback.

# Thank you

Questions & discussion

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