

IBM Power Systems

PowerHA Tools for IBM i
Full System Copy Services Manager 4.6
Version 2

Capabilities and requirements



IBM i Full System Copy Services Manager



Perform full system backups with minimal downtime

Features

- Automates managing IBM i partitions, performing a FlashCopy and starting your backups.
- Supports DS8000, SVC (V3700/V7000/V9000/CSM/**PowerVS Cloud**) external storage.
- Additional storage (XIV etc) can be supported when attached to an SVC
- Toolkit can change host connections on DS8000 and SVC to minimize LPAR usage.
- Communicates with the HMC to IPL and monitor partitions.
- Production LPAR can be IPL'd, quiesced, or just a memory flush
- Integrated with BRMS to maintain the integrity of the database, including transferring QUSRBRM back to the source partition.
- Supports Space Efficient, Thin Provisioned and incremental / Resynch FlashCopy.
- Perform FlashCopy at source and target of metro mirror, global mirror, and global mirror w/ change volumes
- A single command is used to initiate and monitor the process, from quiesce to backups to BRMS information transfer.
- Administrative and Operator tasks separated for ease of use and security.
- Can perform sequential operations on shared target disks or parallel operations on dedicated disks, or from one source to several targets sequentially.
- Prevents production IP addresses from coming online at the target partition.
- All sensitive communications and data are stored and transferred with encrypted

Typical Benefits

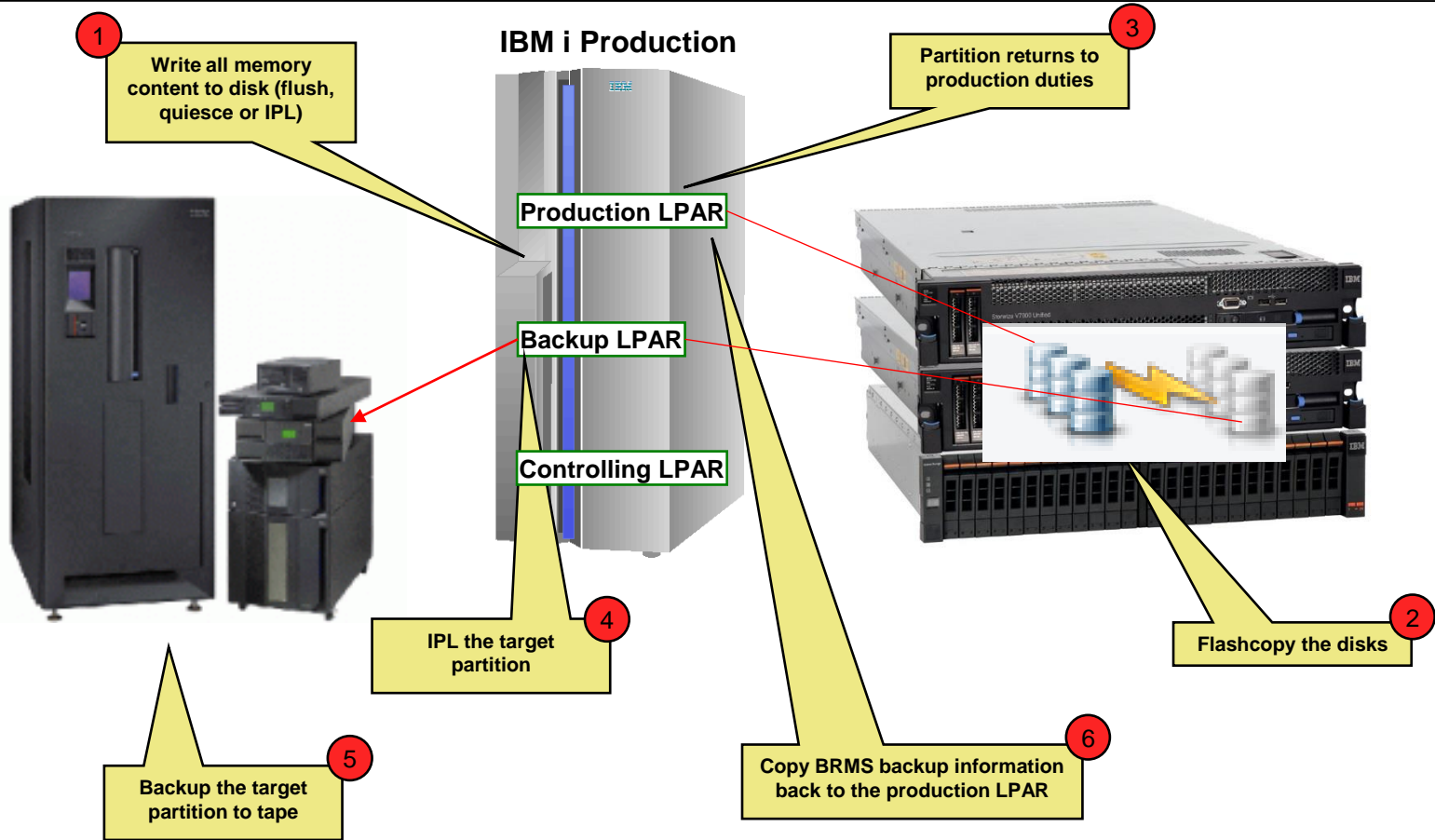
- Perform full system backups without a system outage
- Impact to users or application is usually just a few seconds – and does not disconnect their jobs or end TCP.
- Create copies of partitions for any purpose.
- Minimize potential user errors that cause system outages.
- Reduce personnel training requirements.
- Can be combined with replication to provide HA
- 24x7 phone support for software and services are provided through a services contract.

Version 2 Improvements

- Multiple controlling LPARs for redundancy and resiliency
- All data stored and transferred is encrypted
- BRMS Transfer is 3-5 times faster in 4.3+
- Thousands of configurations
- Flashcopy can be triggered from controlling or source LPARs
- Simplified and improved interfaces and new commands for ease of use
- Less time required for deployment
- All communication is via IP addresses (no dependency on name resolution)
- Controller and Source toolkit code levels can be different for staging upgrades
- Improved platform for future features
- Integrated into same library (QZRDHASM) and release as IASP and Full System Replication Toolkits
- Use any DS8K user profile, not just QLPAR

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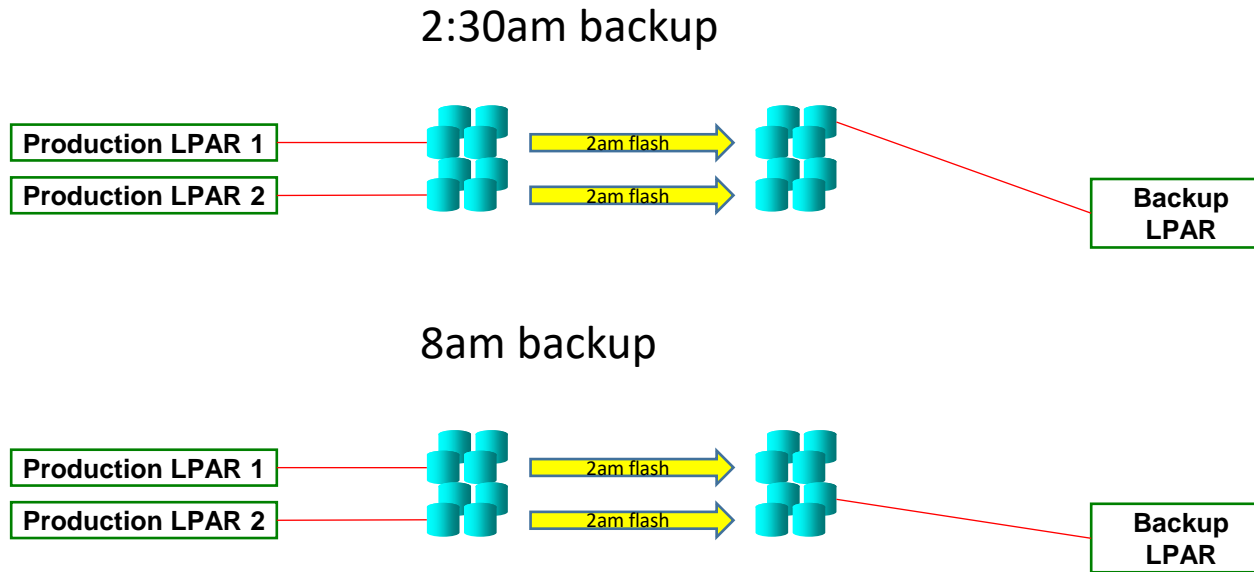
Overview of sequence of events



Controlling LPAR with IP connection to production/backup LPARs, HMC and external storage is key to manage the Full System FlashCopy process as FlashCopy cannot be invoked from a quiesced or powered off production LPAR

Example of one Backup LPAR servicing multiple disk sets

Reuse of LPAR minimizes toolkit footprint

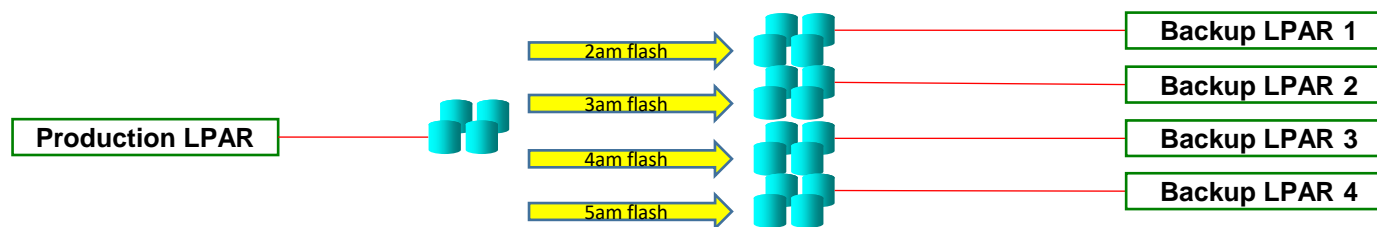


The controlling LPAR can manage the host connections of the Backup LPAR to its disks. This allows one backup LPAR to sequentially service the backups of multiple production LPARs, reducing the footprint of the total solution.

Our toolkit's controlling LPAR can coordinate the flashcopy processes among multiple production LPARs. This includes when to perform the flashcopy and managing the locks of multiple processes when they share resources (LPARs, disks, etc).

Example of Multi-Flash

Concurrent backups from a single production LPAR



When one production LPAR hosts multiple applications which quiesce at different times, or an application that has both pre-batch and post-batch processing, our toolkit can manage concurrent flashcopy operations. In these scenarios each backup LPAR typically backup only a portion of the data, i.e. the data associated with a specific application. Note that a quiesce or memory flush affects the entire production LPAR, not just one application.

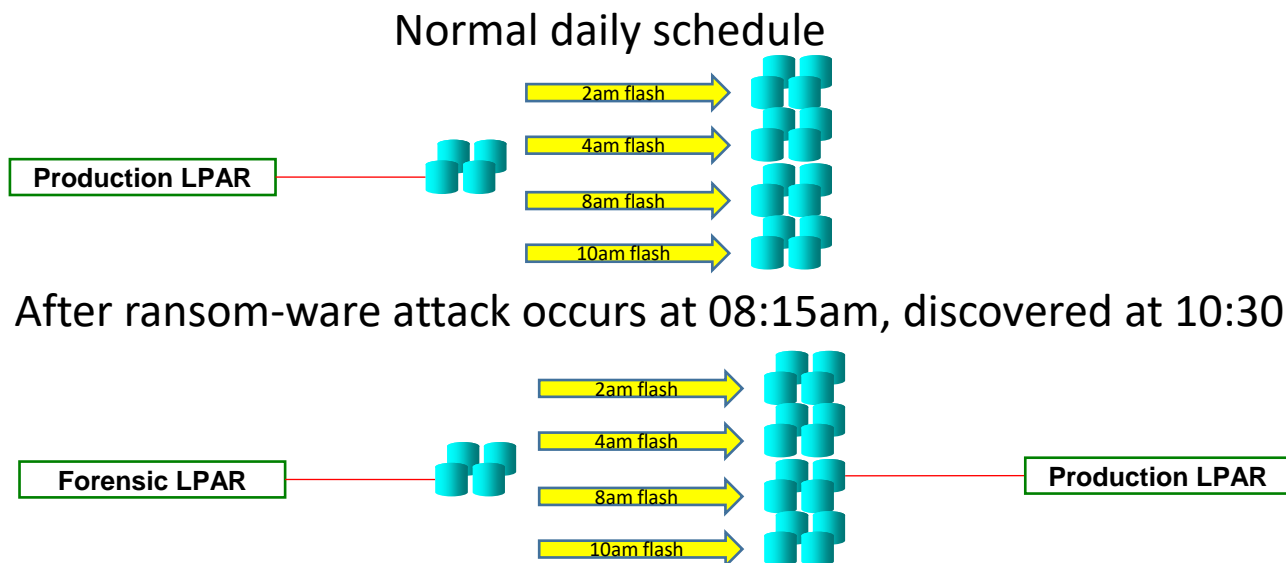
On the surface this doesn't appear to be problematic, but when BRMS is added to the mix there are complications. The official BRMS flashcopy process copies the entire BRMS library (QUSRBRM) from the backup LPAR to the production LPAR. Thus, when QUSRBRM is copied from backup LPAR 4 to the production LPAR, that will overwrite any changes copied from the other backup LPARs. Likewise, and backup activity on the production LPAR between the time of flashcopy and the BRMS data copy will be lost.

Our toolkit addresses this by offering a second BRMS transfer option: Changes Only. This will extract the relevant BRMS data from the backup LPAR's QUSRBRM and merge that with what is on the production LPAR. Note that while the total amount of data transferred is reduced, additional time is required as extracting and inserting potentially millions of records may be time-consuming ... especially if the backup LPAR has significantly less resources than the production LPAR. There may be other restrictions as well, but overall, this feature provides customers with much needed flexibility in complex environments.

With the toolkit we've included additional BRMS integrations, such as the ability to monitor control group progress while the backup LPAR is in batch restricted state, support for custom timestamps on the saves, creating recovery reports with custom recovery steps, etc.

Recovery Point Flash (RPF)

Enable quick recovery after ransom-ware attack, corruption, etc.



Our toolkit has the ability to recovery quickly in the even of a ransom-ware attack (or anything similar, such as file corruption, malicious or accidental deletion, etc). In the scenario where a long recovery from a backup would be required, our toolkit can get your production LPAR running again quickly.

The normal daily schedule would involve scheduled flashcopies; the frequency of flashcopy, and how many copies to keep, can be configured. Most customers will want utilize thin-provisioned flashcopies. In general, the more frequent and numerous the copies are, the more granular recovery point can be selected.

Once the problem has been detected, a single toolkit command call will trigger the following:

- Production LPAR is powered down
- Host connections are changed
- Production LPAR is IPLd
- If thin-provisioned flashcopy was used, background copy can be initiated
- The compromised production disk are retained for forensic investigations or data access (reverse-flash does not provide this option)

This is only supported for Storwize units. Our toolkit supports Safeguarded Copies for DS8000 and CSM for similar functionality, and we are considering adding RPF capabilities to PowerVS Cloud environments.

Flexible options for customization



Exit programs, APIs, and other flashcopy parameters allow for complex environments

Every customer is different. That's why we've built flexibility into our toolkit.

For example:

- Change Storwize background copy and cleaning rates
- Execute DSCLI scripts from the controlling LPAR (or just get a command line)
- Run any SVC and HMC command line instructions from the controlling LPAR
- Rich program exits to do simple things like running BRMS maintenance after flashcopy or quiescing and including IASPs in the flashcopy
- API calls to programmatically change toolkit configurations

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Allows you to perform full system backups with minimal downtime

Requirements

- PowerHA Standard Edition licensed on the controlling LPARs
- IASP not required.
- Controlling LPAR (IBM i) required to manage the process. One controller can manage many source/target pairs.
- Multiple Controllers can be clustered for redundancy
- LPAR HMC or SDMC or PowerVS Cloud required (FSM, IVM and Blades without HMC are not supported)
- IBM i 7.2+
- Some features may not be supported by all storage types
- Source and Target LPARs must be on 100% external storage
- Virtual SCSI host connections are not supported
- 3rd party backup software is not supported but can usually be accommodated

Why IBM?

- Deep skills in IBM i implementation and integration.
- Nearing 500 FSFC implementations world-wide
- Experience in application architecture and design gained from thousands of engagements across many industries.
- Ability to deliver skills transfer as part of service engagement.
- Knowledgeable 24x7 Phone Support

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