IBM PowerHA SystemMirror for IBM i

Reduce the risk and cost of downtime

Highlights

- Delivers high availability (HA) and disaster recovery (DR) through IBM storage-based clustering
- Provides higher utilization and performance capabilities for scale-up computing
- Offers a simplified user interface, is economical and automated
- Delivers a low cost easy to use solution for small customers with internal disk

PowerHA® SystemMirror® for IBM i is the IBM® Power Systems™ offering for high availability and disaster recovery. It's an IBM storage-based clustering solution that is an integrated extension of the storage management architecture and the IBM i operating system. With a PowerHA cluster, you are able to deploy an HA solution that addresses both storage requirements and high availability requirements with one integrated configuration that offers robust performance along with a simplified user interface.

PowerHA clustering

A shared storage cluster is a collection of servers with a common set of shared data and management technology. The cluster provides IT operations with a single screen and a set of commands that enable the applications and data to be readily moved between nodes in the cluster. A PowerHA cluster is created by taking the database out of SYSBAS[1] and placing it into an Independent Storage Pool (IASP) and adding SYSBAS objects into the administrative domain. The data in the IASP is shared between the systems in the cluster. When configured into an IBM storage server, the IASP can be switched (LUN level switching) between partitions (nodes) in the cluster, and it can also be replicated to systems dispersed between remote locations. Replication via storage server is accomplished with Metro Mirror or Global Mirror; if one is using an internal disk the technology is called geographic mirroring. The key to understanding this technology from a data resiliency perspective is that

all of the data that paged out of main store to an IASP, including the local journals, is the data that is switched or replicated between nodes in the cluster. PowerHA is displacing logical replication environments because it directly addresses the problems of data synchronization and operational complexity as well as providing a certainty of outcome that is often lacking with logical replication environments.

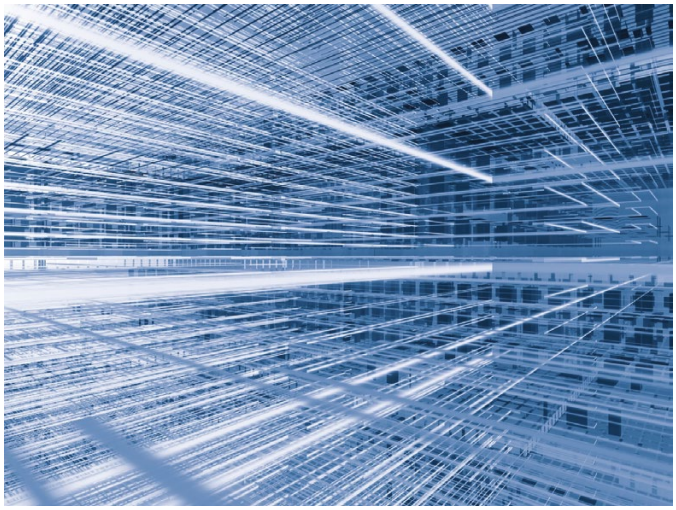
Once your PowerHA SystemMirror solution is deployed, there's minimal IT operational involvement required. Not only can this produce a big savings in manpower, it can also add to your peace of mind.

PowerHA SystemMirror for i standard edition

The IBM PowerHA SystemMirror for i standard edition helps you to protect your critical business applications from planned or unplanned outages in the data center (a single-site solution via switchable LUNs or geomirror synchronous mode). The standard edition provides reliable monitoring, failure detection, and automated recovery of business application environments. It provides the capability to monitor various event sources such as the hardware management console (HMC), Power Systems and storage, and errors from hardware and network to application or environmental (for example power loss) enabling automated or operator-initiated actions. PowerHA SystemMirror standard edition supports LUN level switching for the IBM DS8000®, and the IBM Storwize® family of storage servers. There is an express edition available for full system, not IASP enabled IBM HyperSwap® implementation with the IBM DS8700.

PowerHA SystemMirror for i enterprise edition

The PowerHA SystemMirror for i enterprise edition includes all of the capabilities of the standard edition and more. The enterprise edition package enables you to extend your data



center solution across up to three sites. PowerHA SystemMirror enterprise edition includes support for the DS8000 and the Storwize family using either Metro Mirror or Global Mirror. The enterprise edition also includes support for geomirroring asynchronous mode. Geographic mirroring synchronous mode support is included with the PowerHA SystemMirror standard edition. With PowerHA SystemMirror 7.2, IBM HyperSwap® is IASP-enabled so that a two system PowerHA cluster with DS8000 storage servers connected with Metro Mirror can have near continuously available storage. Geographic mirroring is the IBM i host-based mirroring over an IP network solution, that enables small clients to set up a geographically dispersed two-node PowerHA SystemMirror cluster using either internal or external disk storage. The geographic mirroring solution can significantly lower your total cost of ownership in comparison to software replication options in both cost of acquisition and in the reduction of operational

complexity. When planning for geomirroring, you need to assess your requirements for bandwidth, quality of service and resync time (which is dependent on the size of the IASP). In the event of a hard crash when using geomirroring, the target will need to be resynchronized with the source after the crashed server is back running normally. Note that this is the case with logical replication as well.

The enterprise edition and standard edition also manage IBM FlashCopy®., enabling you to create a point-in-time copy with minimal disruption to your production environment. Integrated with PowerHA and the IBM Backup Recovery, and Media Services for i, (BRMS), FlashCopy enables you to backup to tape at your convenience.

Feature	Benefits
Administrative domain	• Keeps SYSBAS objects in sync across the nodes in a PowerHA cluster.
Shared (active/passive) storage clustering IBM PowerHA enables high availability and disaster recovery solutions based on disk storage pools	• Storage pools (IASPs) are switched or mirrored in real time between systems in a cluster. With virtually no out-of-sync conditions and no lag time on the backup system, you can be ready to role-swap on demand.
LUN level switching	• A single storage server shared by two or more Power Systems servers enables simple role-swap operations for datacenter HA management and is typically a component in a multi-site topology.
Geographic Mirroring IBM i host-based mirroring between two systems	• Affordable two node PowerHA cluster with a simple user interface for entry level operations.
Metro Mirror Synchronous DS8000, SVC, V7000, V5000, V3700, V9000 mirroring for your PowerHA cluster	• Synchronous storage replication; the replicated data is synchronous to the application state at all times, providing an RPO of zero.
Metro Global Mirror (MGM) A three site PowerHA cluster, two sites via Metro Mirror, third site via Global Mirror	• Provides three geographically dispersed sites within a single PowerHA cluster.
HyperSwap (7.2) IASP enabled Two systems, two mirrored DS8000s via Metro Mirror in a PowerHA enterprise edition cluster	• Application outage management via the PowerHA cluster while the DS8000s are mirrored and cross coupled between two the Power System nodes. You get clustering for failover operations on top of continuously available storage.
Global Mirror Asynchronous DS8000, SVC, V7000, V5000, V3700, V9000 mirroring for your PowerHA disaster recovery cluster	• Asynchronous storage replication, the data can be replicated for an unlimited distance with minimal data loss in the event of an unplanned outage.
FlashCopy	• Create almost instantaneous copies of your IASP to use for offline backups to tape without disrupting your production environment. Integrated with BRMS for complete automation.

PowerHA tools for IBM i from IBM Lab Services provides a range of options and services to enhance and simplify your PowerHA cluster environment. This offering provides pre-written scripts and services for implementing and managing your IBM storage and PowerHA SystemMirror solution environment. The PowerHA tools for IBM i further simplifies your HA and DR operations including FlashCopy.

Gaining the IBM advantage

PowerHA high availability solutions from IBM provide you the confidence that comes from integrated design and testing. IBM PowerHA solutions are designed as an integrated extension of the operating system environment. This reduces the risk of failures resulting from combining disparate components from multiple vendors and can be a critical factor for business environments. IBM PowerHA high availability solutions provide the advantage of IBM Power Systems, the IBM AIX® and IBM i operating systems, IBM System Storage® offerings and the PowerHA SystemMirror offering. PowerHA clusters are backed by comprehensive offerings and resources that provide value at every stage of IT implementation. These include PowerHA high availability cluster implementation services, providing customized assistance designed to meet your requirements for on-demand business needs.

For more information

To learn more about IBM PowerHA for IBM i for IBM Power® servers, please contact your IBM representative or IBM Business Partner, or visit the following website: **ibm.com**/systems/power/software/availability

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[1] SYSBAS is the term IBM OS/400® architects used for libraries that aren't in an IASP.

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