



IBM HACMP for AIX, V5.4.1 and HACMP for Linux, V5.4.1 help achieve business continuity with IBM's world-class clustering technology

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At a glance

IBM High Availability Cluster Multi-Processing (HACMP) V5.4.1 offers robust high availability and disaster recovery for IBM System p and System i customers with mission-critical applications.

New HACMP V5.4.1 features include:

- AIX Workload Partitions (WPAR)
- HACMP/XD support of IBM TotalStorage® disk subsystem (PPRC) including Consistency Groups
- New GLVM monitoring
- NFSv4 support improvements
- HACMP usability and RAS improvements
- New options for detecting and responding to a partitioned cluster

The optional features HACMP/XD and HACMP Smart Assist for AIX V6.1 provide high availability disaster recovery solutions for your business. **For ordering, contact:**

Your IBM representative, an IBM Business Partner, or the Americas Call Centers at

800-IBM-CALL Reference: RE001

Overview

HACMP™ V5.4.1 helps protect critical business applications from outages. For over a decade, HACMP has been providing reliable monitoring, failure detection, and automated failover for 24 x 7 business application environments. The optional HACMP Extended Distance (HACMP/XD) feature adds unlimited distance data mirroring and recovery solutions for critical business needs; the optional HACMP Smart Assist feature helps you easily deploy high availability into your critical applications.

HACMP V5.4.1 offers you:

- Integrated support for utilizing AIX® WPAR to maintain high availability for your applications by configuring them as a resource group and assigning the resource group to an AIX WPAR. By using HACMP in combination with AIX WPAR, you can leverage the advantages of application environment isolation and resource control provided by AIX WPAR along with the high availability feature of HACMP V5.4.1.
- HACMP/XD support of PPRC Consistency Groups to maintain data consistency for application-dependent writes on the same logical subsystem (LSS) pair or across multiple LSS pairs. HACMP/XD

responds to PPRC consistency group failures by automatically freezing the pairs and managing the data mirroring.

- A new Geographical Logical Volume Manager (GLVM) Status Monitor that provides the ability to monitor GLVM status and state. These monitors enable you to keep better track of the status of your application data when using the HACMP/XD GLVM option for data replication.
- Improved support for NFS V4, which includes additional configuration options, as well as improved recovery time. HACMP can support both NFS V4 and V2/V3 within the same high availability environment.
- Usability improvements for the WebSMIT GUI, including the ability to customize the color and appearance of the display. Improvements to First Failure Data Capture and additional standardized logging are designed to increase the reliability and serviceability of HACMP V5.4.1.
- New options for detecting and responding to a partitioned cluster. Certain failures or combinations of failures can lead to a partitioned cluster, which, in the worse case, can lead to data divergence (out-of-sync data between the primary and backup nodes in a cluster). HACMP V5.4.1 introduces new features for detecting a partitioned cluster and avoiding data divergence through earlier detection and reporting.

Statement of direction

IBM plans to support the IBM BladeCenter® JS22 with IBM POWER6™ technology on HACMP V5.3 and V5.4. This capability is planned to be provided by first quarter 2008.

All statements regarding IBM's plans, directions, and intent are subject to change or withdrawal without notice. Any reliance on these statements of general direction is at the relying party's sole risk and will not create liability or obligation for IBM.

Key prerequisites

- System p™ or System i™ servers with adequate slots for your disk and network adapters in a no-single-point-of-failure configuration
- AIX V5.2 or V5.3, or later, or AIX V6.1, or later, for HACMP for AIX

For additional product details on AIX V6.1 support, refer to the HACMP V5.3 and V5.4 support on AIX V6.1 document, dated November 6, 2007.

- Red Hat Enterprise Linux™ 4 or Novell SUSE Linux Enterprise Server 9 for HACMP for Linux

Planned availability dates

- November 9, 2007, for HACMP for AIX
- January 25, 2008, for HACMP for Linux

Description

AIX Workload Partitions

WPAR, a new feature of AIX V6.1, is a software-created virtualized operating system environment that exists within a single instance of the AIX operating system. To most applications, the WPAR appears to be a separate instance of AIX because applications and WPARs have a private execution environment. Applications are isolated in terms of process, signal, and file system space. Workload partitions have their own unique users and groups, as well as dedicated network addresses. Applications can be defined as being "WPAR enabled" and HACMP will automatically keep them highly available using available WPAR resources. Using this approach, you can take advantage of the rich AIX WPAR features combined with the high availability features provided by HACMP.

With HACMP V5.4.1 support for WPAR, HACMP will use WPAR resources to keep your applications highly available. HACMP provides high availability by managing the logical collection of inter-related resources (such as applications, volume groups, and IP addresses) as a single unit. With WPAR support, these resources can be assigned to an AIX WPAR at startup

or failover (recovery) time. WPAR also lets you control the amount of resources that a certain application should use by assigning a certain percentage of resources (like CPU, memory, and number of processes) to the WPAR that will host the application.

By using HACMP in combination with AIX WPAR, you can leverage the advantages of application environment isolation and resource control assignment (provided by AIX WPAR) and the high availability feature provided by HACMP V5.4.1.

HACMP/XD support of PPRC Consistency Groups

The IBM TotalStorage disk subsystem has a Peer-to-Peer Remote Copy (PPRC) function for replicating data from a storage unit at a primary site to a storage unit at a backup site. This is commonly used in disaster recovery configurations where a copy of critical application data is maintained at a remote location.

HACMP/XD supports PPRC by automatically managing the disk subsystems at each site. HACMP responds to failures by sending the appropriate commands to the disk subsystems to manage the data replication.

PPRC replication is done on a per-volume basis. That is, the data written to the volume at the primary site is replicated to the corresponding volume at the backup. Some applications perform logical updates that span multiple volumes; for example, a database application may write a transaction to one volume and a log of that transaction to another volume. In this scenario, the PPRC replication of the data to the backup site must preserve the logical association of the updates even though they occur on different volumes.

By using PPRC Consistency Groups, you can maintain data consistency for application-dependent writes on the same LSS pair or across multiple LSS pairs.

HACMP/XD supports consistency groups and will react to failures by freezing or unfreezing the PPRC pairs. HACMP/XD V5.4.1 leverages the advanced features of IBM storage subsystems with the availability features of HACMP for implementing a disaster recovery solution.

GLVM Status Monitor

HACMP/XD offers a number of data replication options, including Geographic Logical Volumes (GLVM). HACMP/XD with GLVM provides replication of your data to a remote site over IP networks to create an integrated remote replication and high availability disaster recovery solution. HACMP/XD V5.4.1 introduces two new monitors for GLVM. From SMIT or the command line, these monitors display the status of:

- GLVM remote physical volumes (RPV)
- GLVM geographically mirrored volume groups (GMVG)

RPV status information includes the accumulated counts of completed and pending reads, writes, kilobytes read, kilobytes written, and device errors for one or more RPs. It can also be used to display the maximum recorded numbers of pending reads, writes, kilobytes to be read, and pending kilobytes to be written to an RPV device ("high water mark" values). GMVG status information includes the total number of physical volumes (PV), RPs, stale volumes, total physical partitions (PP), and stale PPs, as well as the synchronization percentage for one or more GMVGs. Both monitors can run continuously and display updated information on a user-supplied interval basis.

GLVM requires AIX V5.3, or later. GLVM is also available in stand-alone form from base AIX; however, this version does not include integrated support with HACMP/XD.

NFSv4 support

Network Filesystem (NFS) is a mature industry standard for sharing information in a networked environment. HACMP provides integrated support for keeping NFS highly available in a cluster configuration. The next generation of NFS is V4.

HACMP support for NFSv4 includes:

- Better failover of client state using stable storage
- Support for configuring NFSv4 exports directly through SMIT
- Support for configuring a file system to be exported with both NFSv2/3 and NFSv4
- A Configuration Assistant to help create and modify resource groups with NFS exports

NFSv4 support improvements bring greater convenience for configuring NFSv4 exports, as well

as improved failover time.

With a mix of NFSv3 and NFSv4, HACMP will support both protocols to allow for gradual adoption of the new V4 standard.

NFSv4 support with HACMP requires at minimum AIX V5.3 with Technology Level 5300-07 (bos.net.nfs.client and bos.net.nfs.server V5.3.7.0) or AIX V6.1.

HACMP usability and RAS improvements

A number of improvements have been made to the ease-of-use, performance, reliability, availability, and serviceability of the HACMP product. These improvements include:

- An updated WebSMIT user interface that adds an industry standard "look and feel" as well as options to customize the interface for local language and color preferences. Setup and performance are also improved.
- First Failure Data Capture and extended, standardized logging make it easier to maintain your high availability environment.
- Progress indicators and heartbeat metric displays to keep you informed about the operation and status of your cluster.

Multi-node disk heartbeat and disk fencing

This feature provides new capabilities for HACMP to detect and react to a partitioned cluster. There are two new concepts:

- Multi-node disk heartbeat (MNDHB): Like regular disk heartbeat networks, the disk subsystem is used as the media for exchanging heartbeat messages. Multi-node disk heartbeat lets you configure network access for multiple nodes instead of the simple point-to-point network available using regular disk heartbeat.
- Disk fencing: When a multi-node disk heartbeat network is configured, HACMP performs additional checks when a node failure is detected. Each node connected to the MNDHB network will check its access to the disks defined for the network. If a node has access to less than a quorum (one more than half) of the disks, it will exercise a configurable policy to either shut down the node, fence it from the disks, or simply run a notification event.

Extended withdrawal and support discontinuance dates for HACMP V5.3

- The withdrawal from marketing date for HACMP V5.3 (5765-F62) has been extended from September 30, 2007, to September 30, 2008.
- The end of support date for HACMP V5.3 (5765-F62) has been extended from September 30, 2008, to September 30, 2009.

Refer to [206-176](#), dated July 25, 2006.

Accessibility by people with disabilities

A U.S. Section 508 Voluntary Product Accessibility Template (VPAT) containing details on accessibility compliance can be requested at

http://www.ibm.com/able/product_accessibility/index.html

Reference information

Refer to [207-271](#), dated November 6, 2007, for AIX V6.1.

Refer to [206-176](#), dated July 25, 2006, for IBM HACMP for AIX 5L™, V5.4.

Refer to [206-175](#), dated July 25, 2006, for IBM HACMP for Linux, V5.4.

Business Partner information

If you are a Direct Reseller - System Reseller acquiring products from IBM, you may link directly to Business Partner information for this announcement. A PartnerWorld ID and password are required (use IBM ID).

<https://www.ibm.com/partnerworld/mem/sla.jsp?num=207-279>

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Terms and conditions

The terms and conditions for the HACMP™ programs and associated SWMA PID numbers are the same as previously announced.

Ordering information

The program and feature numbers for ordering HACMP remain the same as previously announced.

Refer to [206-176](#), dated July 25, 2006, for IBM HACMP for AIX 5L™, V5.4.

Refer to [206-175](#), dated July 25, 2006, for IBM HACMP for Linux™, V5.4.

Prices

For current prices, contact us at 888-Shop-IBM, or visit

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