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## Power Virtualization Center (PowerVC)

Evan Hollander ([ehollander@us.ibm.com](mailto:ehollander@us.ibm.com))



IBM Power Virtualization Center (PowerVC) is the new advanced virtualization management offering. Built on OpenStack, it delivers simplified virtualization management for IBM POWER® Systems. PowerVC and the leverage of OpenStack technology are designed to enable IBM Power Systems™ servers to integrate into a Software Defined Environment (SDE) and provide the necessary foundation required for the delivery of Infrastructure as a Service (IaaS) within the Cloud. IBM PowerVC is simple to install, configure and use, with a Time to Value of less than an hour. Being based on OpenStack enables broad support for vendor devices and open APIs that accelerate integration into existing infrastructures.

PowerVC has been built to require little to no training to get moving on optimizing your power system virtualization, with advanced placement policies and monitoring and management of VMs. Using automatic capture of existing host/hypervisor configuring including CPU, Memory, and I/O Settings as well as capturing volume definitions in supported storage controllers and zoning information from supported SAN switches, PowerVC has the capability to manage your existing infrastructure with little setup.

Using IBM Power Virtualization Center, you can do the following:

1. Register physical hosts, a storage system, and network resources and use them to create a virtual environment as well as view the resource health status.
2. Create, resize, and attach volumes to virtual machines. Simplify further by creating Configuration Templates.
3. Monitor the utilization of the resources that are in your environment.
4. Migrate virtual machines while they are running (hot migration). Manage VM location through mobility placement policies.
4. Capture a running virtual machine that is configured just the way you want it to be. When you capture the virtual machine, an image is created that can be deployed multiple times in your environment.
5. Deploy images quickly to create new virtual machines that meet the demands of your ever-changing business needs.

PowerVC will be available in two editions, IBM PowerVC Express edition and IBM PowerVC Standard edition. The express edition will be offered to manage systems that are currently using IVM (Integrated Virtualization Manager) which tend to be small tier servers. The standard edition will be offered to manage systems that are currently being controlled by the HMC. Both editions will be available on December 6<sup>th</sup>, 2013.

[Announcement Letter](#)  
[Hands On Demo!](#)



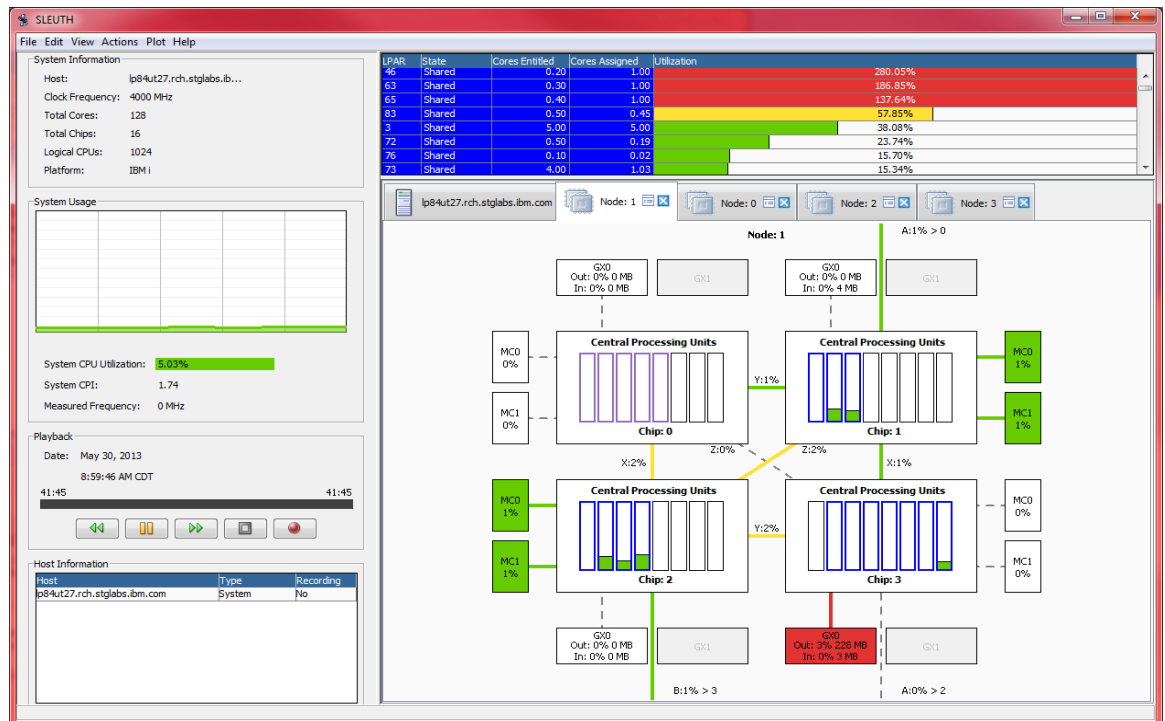
# Power Virtualization Performance, a real-time graphical performance monitor for Power Systems

Doug Herman ([Hermand@us.ibm.com](mailto:Hermand@us.ibm.com))

IBM PowerVP (virtualization performance) for Power Systems presents a graphical approach for monitoring virtual workloads as they are using specific physical resources. This graphical monitor will help to reduce time identifying performance bottlenecks by using a simple color-coded dashboard to show the performance health of the Power System server.

PowerVP utilizes the PowerVM hypervisor to collect performance data, which gives the most precise information about the virtual machines running on the system. This data is displayed in real-time, giving a continuous graphical representation of processors, memory, Ethernet, and GX adapters. This is also available for historical playback like DVR replay for point in time review.

- IBM PowerVP is available on POWER7 or POWER7+ processors running system firmware V7.7 or higher.
- Available with Single Edition of PowerVP Standard Edition
- PowerVP is included in PowerVM Enterprise Edition (available for existing PowerVM EE customers)



- Requires system level agent running on VIO 2.2 or LPAR level agent for IBM i 7.1 TR6 + PTF SI50350, AIX 6.1 or 7.1, or Redhat Linux 6.4, SUSE Linux 11 SP2
- PowerVP is packaged as software installable components, Java graphical console that can be run on Windows, Linux or AIX. Collector agents are installable packages for AIX, IBM i, and Linux.

For more information see <http://www-03.ibm.com/systems/power/software/performance/>

## It's a TKO! What Power can do that Intel Can't?

Is your organization continually struggling with making the right hardware platform decision? There is a great overview of the architectural advantages Power has over Intel in the latest [IBM Systems Magazine](#).

1. Fast processors
2. Always enabled, hardware based hypervisor
3. A comprehensive system design that optimizes hardware, software and storage performance
4. Built-in "other" features including mainframe based reliability, security and scalability

[Click here to learn more!](#)

# SVC Stretched Clusters with PowerVM and PowerHA SystemMirror

Kyle Strohm ( [klstrohm@us.ibm.com](mailto:klstrohm@us.ibm.com) )



In today's business environment it more important than ever to ensure your IT applications remain continuously available. IBM provides several tools working independently, and combined to provide high levels of business continuity. In this article, we will discuss a relatively new capability in the IBM Storage and Power Systems space called "SAN Volume Controller Stretched Cluster with PowerVM and PowerHA".

A Stretched Cluster will contain nodes from sites located on the same campus, or city. There are several considerations that need to be reviewed in order to determine hardware requirements: distance and latency between locations, connectivity, bandwidth, budgets and current infrastructure. In this particular discussion, IBM SAN Volume Controller (SVC), along with PowerVM and PowerHA are represented to implement the Stretched Cluster. It is important to note that the SVC Stretched Cluster configuration can be used in other OS environments including Microsoft Cluster, VMWare and Linux Clustering. In version 6.3 of the SVC product, the maximum supported distance that can be used for configurations not using Inter-Switch Links (ISLs) is 40 km (roughly 25 miles). Using ISLs you can extend up to 300 km (186 miles). SVC relies on two I/O functions, thin provisioning and volume mirroring to replicate physical copies of data on independent MDisk groups.

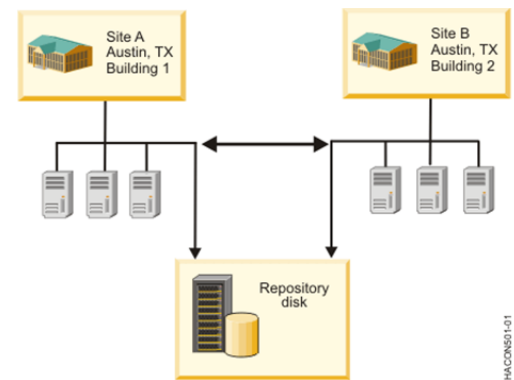
PowerVM provides the virtualization mechanisms needed for the capability. Redundant VIO servers using NPIV, LPM and other virtual functionality are relied on to create the basis for fault tolerant partitions.

PowerHA SystemMirror v7.1.1 at a high level will provide capability for items such as application and hardware monitoring, cross-site environment replication, shared volume groups, heartbeat and failover. As always while designing your PowerHA Cluster, avoid creating single points of failure, and above all KEEP IT SIMPLE. Perform failover testing to ensure the reliability of the cluster. Consider overall solution and performance testing to verify that expected uptime and SLA's will be met for your particular organization. Items such as data transfer Round Trip Times (RTT) and Write Latency (WL) should be reviewed.

Another important item to test is SVC Component Loss by disabling/enabling SVC port switches. These steps should all be done to provide validation that the Stretched Cluster solution, sizing, and other configurations and infrastructure will function correctly for your particular distances between sites.

IBM Redbook: <http://www.redbooks.ibm.com/abstracts/sg248142.html?Open>

Figure 1. Typical stretched cluster configuration



## News FLASH: Power Systems I/O Just Got a Whole Lot Faster ...

Joe Graham ( [jvgraham@us.ibm.com](mailto:jvgraham@us.ibm.com) )

On October 7<sup>th</sup> IBM announced a new adapter to help customers recognize the full potential of real-time databases, OTLP, and other applications requiring extremely fast response times. Introducing the IBM Flash Adapter 90!!!

The IBM Flash Adapter 90 is a single-wide, full-height PCIe 2.0 x8 adapter with 0.9TB of eMLC flash memory. It delivers up to 325,000 read IOPS and less than 100 microsecond latency!

The IBM Flash Adapter 90 is supported in the POWER7+ 720, 730, and 740 models. IBM intends to support select additional POWER7+ servers in the future. The adapter can be installed in either the system unit for maximum bandwidth or in a 12X PCIe I/O drawer (#5802 or #5877). In the Power

730, it can be placed only in a 12X PCIe I/O drawer due to the system unit's low-profile slots. The following limits apply: max of four per system unit, max of four per 12X PCIe I/O drawer, max of four per LPAR, no boot support, no VIOS support.

The IBM Flash Adapter 90 is supported on:

- AIX - 7.1 TL3 or later, 6.1 TL9 or later (Statement of Direction- 7.1 TL1, 7.1 TL2, 6.1 TL7, 6.1 TL8)
- IBM i – not supported
- Linux – not supported

As of 4Q2013, adapter support is not included on the base AIX installation media. AIX feature support can be acquired at IBM Fix Central by selecting the Product Group "System Storage".

[Fix Central Link](#)

# Power Enterprise Pools

Amy Wilder ([awilder@us.ibm.com](mailto:awilder@us.ibm.com))

The Power Enterprise Pool is an offering that includes the Power 770, 780 and 795. This offering allows a way to aggregate compute resources, including processor and memory, across multiple Power systems to provide a highly resilient and flexible IT environment.

The Power Enterprise Pools establish a new level of flexibility and value for systems that operate together as a pool of resources. New mobile activations are also available for use on the Power 770, 780, and 795 systems. They can be assigned to any system in a predefined pool by the user with simple HMC commands.

Two types of pools are available, one that enables Power 770 class systems and the other enables Power 780 and Power 795 class systems. Systems with different clock speeds are supported to co-existing within the same pool.

The Power Enterprise Pool allows workloads to be rebalanced within the pool to meet capacity demands. In addition, Elastic COD processor and memory days can be accumulated and managed at a pool level to effectively and efficiently manage and balance an application workload's peak requirements.

Power servers participating in an IBM Power Enterprise Pool environment are provided with up to 8 maintenance events in a calendar year. During maintenance, a system can be evacuated and powered off by relocating workloads within the remaining resources in the Enterprise Pool.

In addition, all Elastic COD processor and memory days can be accumulated and managed at a pool level to effectively and efficiently manage and balance your application workload's peak requirements.

## Some requirements for Power Enterprise Pools

- All systems in a pool must be attached to the same HMC (or redundant set of HMCs)
- Systems must be one of the following models: 9117-MMD, 9179-MHD or 9119-FHB. All systems in the pool must be at eFW 7.8, or later.
- Power 770 systems must be together in their own pool and cannot be combined with Power 780 or Power 795 systems (Power 780 and 795 systems can be combined together in the same pool).
- A base number of static cores must be activated on each system in the pool, consistent with previous minimum configurations

- Each eligible program that is licensed on one of the systems in the pool must be licensed for at least one core on each of the additional systems in the pool.
- All systems in the pool must either be on IBM maintenance or not be on IBM maintenance.
- Power IFL activations are not supported as mobile activations within Power Enterprise Pools but can reside separately on systems within a pool.

For a full list of requirements use the following link:

[Announcement Link](#)

## Power Integrated Facility for Linux (IFL)



The new [Power Integrated Facility for Linux](#) (Power IFL) enables you to exploit the performance, reliability and scalability of enterprise-class Power Systems 770, 780 and 795 to improve QoS (Quality of Service) and to reduce the cost of managing your Linux ecosystem.

The Power IFL offering enables you to activate Power cores – four at a time – with PowerVM for Linux and Capacity-On-Demand memory at a price competitive to running Linux on x86.

Practical uses for the Power IFL offering include:

- transitioning workloads from x86 Linux to PowerLinux (business application middleware for web/mobile clients, infrastructure and data integration services, new social and mobile applications)
- multi-tier core business applications with a middle tier currently deployed on x86 Linux (such as web application servers)
- new workloads emerging in the Linux and open community space (such as Big-Data analytics).

[Click here for more information](#)

## Dynamic Platform Optimizer Now Available for 770/780 “B-Models”

Firmware update AM780\_040 enables DPO for MTM 9119-MMB and 9179-MHB. Note: you will still have to process a No-cost MES to add the feature code to your server to trigger VET code generation.

[Announcement](#)

*Happy Holidays from IBM !!*

## Useful URLs:

Prerequisite Site - [https://www-912.ibm.com/e\\_dir/eserverprereq.nsf](https://www-912.ibm.com/e_dir/eserverprereq.nsf)

IBM Systems Energy Estimator - <http://www-912.ibm.com/see/EnergyEstimator>

AIX Whitepapers - <http://www-03.ibm.com/systems/power/software/aix/whitepapers/index.html>

AIX Release Strategy - [http://www-03.ibm.com/systems/power/software/aix/support/release\\_strategy.html](http://www-03.ibm.com/systems/power/software/aix/support/release_strategy.html)

Power Systems Technical Guide - <http://www-03.ibm.com/systems/power/hardware/reports/factsfeatures.html>

AIX Movies - <https://www.ibm.com/developerworks/mydeveloperworks/wikis/home?lang=en#/wiki/Power%20Systems/page/Hands-On%20Technical%20Movies>

Power Code Matrix - <http://www-304.ibm.com/support/customer/sas/f/power5cm/home.html>

## Tools for Planning and Documentation

HMC Scanner - <https://www.ibm.com/developerworks/community/wikis/home?lang=en#/wiki/Power+Systems/page/HMC+Scanner>

NMON Analyser - [https://www.ibm.com/developerworks/community/wikis/home/wiki/Power%20Systems/page/nmon\\_analyser](https://www.ibm.com/developerworks/community/wikis/home/wiki/Power%20Systems/page/nmon_analyser)

IBM Systems Workload Estimator - <http://www-947.ibm.com/systems/support/tools/estimator/index.html>

IBM System Planning Tool - <http://www-947.ibm.com/systems/support/tools/systemplanningtool/>

IBM Energy Estimator - <http://www-912.ibm.com/see/EnergyEstimator>

IBM Stencils - <http://www.visiocal.com/ibm.htm>



## POWER7+ Server Redbooks (aka "D" models)

[Power 710 and 730 Technical Overview and Introduction](#)

[Power 720 and 740 Technical Overview and Introduction](#)

[Power 750 and 760 Technical Overview and Introduction](#)

[Power 770 and 780 Technical Overview and Introduction](#)

### Updated Redbooks

[IBM PowerVM Virtualization Managing and Monitoring](#)

*Redbooks*, published 17 Jun 2013, last updated 26 Aug 2013, Rating: ★★★★★(based on 1 review)

[AIX V6 Advanced Security Features Introduction and Configuration](#) *Redbooks*, published 12 Sep 2007, last updated 26 Aug 2013, Rating: ★★★★★(based on 2 reviews)

[IBM PowerVM Best Practices](#)

*Redbooks*, published 12 Oct 2012, last updated 26 Aug 2013, Rating: ★★★★★(based on 5 reviews)

[IBM PowerHA SystemMirror Standard Edition 7.1.1 for AIX Update](#)

*Redbooks*, published 24 Oct 2012, last updated 27 Jul 2013, Rating: ★★★★★(based on 2 reviews)

[IBM PowerHA SystemMirror 7.1.2 Enterprise Edition for AIX](#)

*Redbooks*, published 6 May 2013, last updated 26 Jul 2013, Rating: ★★★★★(based on 1 review)

[IBM System Networking RackSwitch G8264CS](#)

*Product Guide*, published 5 Feb 2013, last updated 14 Nov 2013

[IBM Systems Director 6.3 Best Practices](#)

*Redbooks*, published 8 Nov 2013, Rating: ★★★★★(based on 2 reviews)

[IBM Technical Computing Clouds](#)

*Redbooks*, published 28 Oct 2013, Rating: ★★★★★(based on 1 review)

[IBM PureFlex System and IBM Flex System Products and Technology](#)

*Redbooks*, published 15 Oct 2013, last updated 24 Oct 2013

[The IBM Parallel Environment \(PE\) Developer Edition](#)

*Solution Guide*, published 13 Sep 2013