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PowerVC 1.2.3

September 2015 | by Jaqui Lynch

PowerVC (Power Virtualization Center) is a tool built on OpenStack that can be used to provide management for LPARs running on IBM Power Systems servers. Specifically, PowerVC supports IBM i, AIX and Linux on Power. The intent is for PowerVC to be the management interface that provides more agility to administrators, allowing for more scalable cloud management. Additionally, PowerVC can manage any Power Systems server controlled by PowerVM through an HMC or managed by PowerKVM, as long as it's POWER6 or higher. PowerVC requires that the PowerVM and PowerKVM managed LPARs are not managed by the same management server.

So What's New?

PowerVC v1.2.2 provided significant updates to PowerVC, including support for new Linux versions (including Ubuntu 14) as well as support for EMC and XIV. Depending on the disk hardware, PowerVC supports vSCSI and NPIV as well as shared storage pools (SSPs); this support is hardware dependent so it's important to check the support site to get the latest information.

PowerVC v1.2.3 takes PowerVC to the next level, adding support for many new features, including redundant HMCs, storage mirrors, volume sharing, SDDPCM in Virtual I/O servers, MTU support (allows use of jumbo frames) and remote restart. This version now scales to 3,000 virtual machines (VMs), although each HMC is capped at 500 VMs. V1.2.3 also adds support for three Little Endian Linux operating systems—RHEL 7.1, SLES 12 and Ubuntu 15.04. Lastly, PowerVC v1.2.3 adds the capability to group hosts together so they can be managed as groups. This allows hosts to be grouped together in meaningful ways such as production versus test or by application group. Although PowerVC supports redundant HMCs, it only uses one of the HMCs to manage hosts, so if an HMC fails you need to go into the PowerVC GUI manually and switch to the redundant HMC.

Planning

Starting with PowerVC v1.2.2, there's now only one edition of PowerVC—PowerVC standard edition. There are different requirements depending on whether you're managing VMs controlled by PowerVM or PowerKVM. The first requirement is a management server, which is either a RHEL 7.1 Linux on an LPAR on a POWER7 or higher server or a RHEL 7.1 Linux on x86_64 system. Specific requirements around storage connectivity ensure you can manage the storage. The storage must be one of the supported models and the management server must have access to at least one Fibre channel SAN switch. Additionally, there are network requirements for connectivity to the SAN as well as the managed LPARs. PowerVC makes use of RMC (resource monitoring and control) connections for hot migration and DLPAR (dynamic LPAR) operations so an active RMC connection between the management console and each VM is required.

A PowerVC management server can support up to 30 managed hosts, each of which can have a maximum of 500 VMs. The limit of 500 VMs also applies to the HMCs managing the hosts. The maximum managed VMs across all of the managed hosts is 3,000. PowerVC can also support up to 50 concurrent operations although this will require additional memory and CPU on the management host. PowerVC can also manage migrations; the maximum number of migrations supported depends on whether the host is

running PowerVM or PowerKVM.

PowerVC supports specific levels of the various client operating systems and the IBM Redbooks publication listed in the Resources section provides details. For example, for AIX using the strategic image activation technology of IBM (cloud-init), the minimum level for AIX is 6.1 tl09 sp5 or 7.1 tl03 sp5. The HMC needs to be at least a CR5 with 8 GB memory (<= 300 VMs) or a CR6, CR7 or CR8 with 16 GB memory (>300 VMs) and should be installed with HMC v8.2.0 or higher. PowerVM needs to be installed at 2.2.3.52 or later.

PowerVC requires that every host be in a host group. There's a default group that can't be deleted, which is where hosts end up by default. However, you can define host groups to logically group hosts. You can then deploy VMs to a specific host or to a host group. When deploying to a host group you can choose from one of five placement policies:

1. Packing—fill up a single host until it has no resources left
2. Striping—evenly spread VMs across all the hosts in the host group (this is the default)
3. CPU Utilization balance—place VMs on the least busy host in the host group
4. CPU Allocation balance—place VMs on the host with the most unallocated CPU
5. Memory Allocation balance—place VMs on the host with the most unallocated memory

A significant amount of additional planning must be done including storage access, SAN planning, network management planning, SEA (shared Ethernet adapter) planning, user management and security management. These are well covered in the Introduction and Configuration Redbooks publication.

Installing PowerVC on Power Linux

Installing PowerVC on Power Linux requires three basic tasks: Defining the management VM, installing RHEL 7.1 on the management VM and then customizing the VM for use with PowerVC. Prior to customization, it's important that the new RHEL VM has a fully configured active network with either DNS or /etc/hosts being used for name resolution. Prior to adding any managed VMs, their network names must resolve correctly. Additionally, the managed server must use a fully qualified domain name. It's important to pay attention to the instructions to correctly install RHEL on the management server; some filesets must be installed and others cannot be installed. You'll also need to download some additional packages that aren't on the RHEL media, specifically multiple packages related to the Python implementation.

Once RHEL is correctly installed and customized you can download PowerVC from the Entitled Software Support website. Then untar the files and run the installation using ./install. Ensure there's sufficient space in /opt or create a new filesystem called /opt/ibm/powervc prior to the installation. Once your installation is complete and PowerVC has been started, you can then connect via a Web browser to the PowerVC GUI.

https://hostname

From here you can discover, add and control resources.

Important Component

PowerVC is an important component of IBM's cloud strategy. It provides the management interface that lets you quickly scale cloud implementations and manage hundreds of images from a single interface. This vastly simplifies systems management. However, you should always remember that this requires proper planning in advance.