

IBM Cloud tip: A basic understanding of ephemeral storage

Quickly gain an understanding of how to assign ephemeral storage to your IBM Cloud instance

Skill Level: Introductory

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Ephemeral disk storage, also known as local disk devices (although the disks aren't always collocated with other VM resources) is an important component in using the IBM® Smart Business Development and Test in the IBM Cloud. In this article, the author details the layout of the virtual disk drives available to the Linux® and Windows™ operating systems for each choice of instance size in the IBM Cloud.

The IBM Smart Business Development and Test on the IBM Cloud allows users to select from a variety of supplied virtual machine images; for each image, users can select from several configurations which provide stepped combinations of CPU count, memory, and ephemeral disk storage.

Ephemeral disk storage is sometimes also referred to as local disk devices; however, it should not be assumed that these disks always are collocated with the other resources of the virtual machine guest.

Ephemeral storage, as its name suggests, exists only as long as the instance it is associated with. If and when the user decides to delete the instance, the ephemeral storage is destroyed along with it. This is in contrast to persistent storage which remains in existence even if it is not currently being used by an instance. Persistent storage can thus be reused across instances and is priced separately while ephemeral storage is tied to each instance and is included in the instance charges.

Users familiar with PC storage might think of ephemeral storage as akin to a PC's internal disk drives; persistent storage can be considered similar to an external USB drive.

If you want to learn more about cloud-based storage in general, see "Anatomy of a cloud storage infrastructure: Models, features, and internals" in the [Resources](#) section. The purpose of this article is to describe the layout of the virtual disk drives available to the Windows and Linux operating systems for each choice of instance size on the IBM Cloud.

Ephemeral storage for Windows instances

Ephemeral disk storage for Windows instances is divided into two categories:

- Every instance gets a 60GB virtual disk which holds the boot partition and C: drive, and
- Additional storage is allocated depending on the size of the offering selected, split into unformatted volumes of no more than 500GB each. The user is thus free to format and use the extra storage however he sees fit.

Note that if the "Root only" or "Local disk only" option is selected at instance creation time, then only the 60GB Disk 0 is allocated. Users are of course able to add persistent storage to such a "sparse" instance.

Ephemeral storage for Windows instance sizes

Offering	Disk 0	Disk 1	Disk 2	Disk 3	Disk 4
Copper 32	60GB boot C:				
Copper 64	60GB boot C:				
Bronze 32	60GB boot C:	175GB			
Bronze 64	60GB boot C:	500GB	350GB		
Silver 32	60GB boot C:	350GB			
Silver 64	60GB boot	500GB	500GB		

	C:				
Gold 32	60GB boot C:	350GB			
Gold 64	60GB boot C:	500GB	500GB		
Platinum 64	60GB boot C:	500GB	500GB	500GB	500GB

Ephemeral storage for Linux instances

Ephemeral disk storage for Linux instances is divided into three categories:

- Every instance gets a 60GB virtual disk which holds the boot loader, /boot, and / (root) partitions, and
- A small separate virtual disk holding the swap partition.
- In between these two volumes, extra storage is allocated depending on the size of the offering selected.

This extra storage is unformatted and split into volumes of no more than 500GB each. The user is thus free to format and use the extra storage however he sees fit, though it is anticipated that most users will use LVM (logical volume manager).

Useful Linux commands to view the disk configuration are `fdisk -l` and `df -h`.

Note that if the "Root only" or "Local disk only" option is selected at instance creation time, then only the 60GB /dev/vda root drive and applicable /dev/vdb swap drive is allocated. Users are of course able to add persistent storage to such a "sparse" instance.

Ephemeral storage for Linux instance sizes

Offering	/dev/vda	/dev/vdb	/dev/vdc	/dev/vdd	/dev/vde	/dev/vdf	/dev/vdg	/dev/vdh	/dev/vdi	/dev/vdj
Copper 32	60GB /boot /root	2GB swap								
Copper 64	60GB /boot /root	4GB swap								
Bronze 32	60GB /boot /root	175GB	2GB swap							

Bronze 64	60GB /boot /root	500GB	350GB	4GB swap						
Silver 32	60GB /boot /root	350GB	4GB swap							
Silver 64	60GB /boot /root	500GB	500GB	8GB swap						
Gold 32	60GB /boot /root	350GB	4GB swap							
Gold 64	60GB /boot /root	500GB	500GB	16GB swap						
Platinum 64	60GB /boot /root	500GB	500GB	500GB	500GB	16GB swap				
Iridium 64	60GB /boot /root	500GB	500GB	500GB	500GB	500GB	500GB	500GB	500GB	58GB swap

Resources

Learn

- "[Anatomy of a cloud storage infrastructure: Models, features, and internals](#)" provides more details on cloud storage models in general.
- In "[IBM on the Cloud: What do you want to know?](#)," learn the difference between ephemeral and persistent storage.
- The "[Migrate your Linux application to the Amazon cloud series](#)" explains storage from the point of view of Amazon EC2.
- "[Cognos cloud best practices](#)" has a section that describes where and how files are stored on the IBM Cloud.
- In the developerWorks [cloud developer resources](#), discover and share knowledge and experience of application and services developers building their projects for cloud deployment.
- The next steps: Find out how to [access IBM Smart Business Development and Test on the IBM Cloud](#).

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About the author

Jon Etkins

Jon Etkins is a member of the Base OS image development team for the IBM Smart Business Development and Test in the IBM Cloud. In addition to helping design and implement the foundations for all Linux images in the IBM Cloud, he also provides third-level support for problems identified in those images. Jon has been with IBM for a total of almost nine years and has worked with various virtualization platforms for more than six years.