Hibernation and Stop

Sometimes it might not be technically and/or economically prudent for us to have an EC2 instance running 24/7, and we might instead wish to halt an instance at a specific moment in time, with the intention of resuming it in the future as we see fit. AWS provides us with two methods of halting EC2 instances: **Hibernation** and **Stop**. Both methods are discussed in greater detail below:

Stopping an EC2 instance

What we must understand before we differentiate between Hibernation and Stopping an EC2 instance is that all EC2 instances have an EBS (Elastic Block Store) volume attached to them upon creation, with the specifics of the EBS volume being decided by the administrator who performed the creation operation in the first place. Said EBS volumes serve as the default secondary storage device for the created EC2 instances with the files, directories and programs utilized by the EC2 instance stored in it.

Stopping an EC2 instance means temporarily shutting down the virtual machine while preserving its configuration and data on the attached EBS volume. When an instance is stopped, its CPU and RAM are no longer running, but its storage and settings remain intact. The instance goes through a normal shutdown process when stopped, similar to when we turn off our personal computers with all running processes and applications terminated.

Once the instance stops, the account will not be charged for the EC2 compute resources (CPU, RAM) though the account will still be charged for the EBS volumes and any Elastic IP Addresses attached to the instance, that is, until the instance is restarted of course.

Hibernating an EC2 instance

Hibernation is similar to stopping an EC2 instance though it may be best understood as the pausing and resuming of EC2 instances rather than the stopping and restarting of them. When we hibernate an EC2 instance, we cease its operation just like with the stopping of an EC2 instance with the key difference being that the data stored in the primary memory/RAM is retained when an EC2 instance is hibernated, which is not the case with the stopping of an EC2 instance.

This is particularly relevant in environments that are time-sensitive, have long startup times or must retain sticky sessions because it saves the administrator the effort of setting up the environment or applications all over again every time an EC2 instance has to be halted. Instead of having to rebuild the memory footprint from the ground up, hibernation allows applications to pick up exactly where they left off often reducing both the startup time taken by the Operating system as well as the frictions associated with setting up a work environment.

Also worth noting is that just like with the stopping of an EC2 instance, while the instance is in hibernation, you pay only for the EBS volumes and Elastic IP Addresses attached to it; there are no other hourly charges (just like any other stopped instance). However, unlike with stopping which is a function available to all EC2 instances, hibernation is a feature which the user must opt-in to when an EC2 instance is being created, as it is not possible to enable or disable hibernation for an instance after it has been launched.

TLDR;

Stopping: Halts the EC2 instance while retaining the data in the secondary storage; Equivalent to Shut Down / Turn Off options in personal computers.

Hibernation: Halts the EC2 instance while retaining both the data in the secondary storage as well as the data in the memory (RAM). Equivalent to Sleep / Hibernate options in personal computers.