Block Size of a VPC

In the context of VPCs, block size refers to the range of IP addresses defined by CIDR notation that can be allocated for subnets i.e. the range of addresses that can be used to define subnets. AWS VPC allows different block sizes, typically ranging from `/16` (65,536 IP addresses) to `/28` (16 IP addresses). The 10.0.0.0/16 CIDR block notation for example, theoretically gives us access to 65,536 addresses (from 10.0.0.0 to 10.0.255.255). However, not all of these are usable as AWS has something called reserved addresses, which is used for the operation of the subnet and are not made available to us. These IP Addresses, and their uses are as follows:

- **.0**: Network address, used to identify the network device

- **.1**: Reserved for the VPC router

- **.2**: Reserved for DNS

- **.3**: Reserved for future use

- **.255**: Broadcast address, the last address within the IP address range, it is used to communicate with other broadcasting devices

Thus, while a `/16` subnet may offer 65,536 addresses, only 65,531 of them are actually usable. Here are some examples of usable IP addresses within the 10.0.0.0/16 CIDR block:

- **First Usable Address**: **10.0.0.1**

- **10.0.1.1**

- **10.0.128.5**

- **Last Usable Address**: **10.0.255.254**

Though we have been using the `/16` subnet so far, it is obviously not the only CIDR block size available, a list of the most commonly used CIDR Block sizes and their number of IP Addresses:

CIDR Notation	Total IP Addresses	Usable IP Addresses	Suitable For
/8	16,777,216	16,777,214	Very Large Applications
/16	65,536	65,534	Large Applications
/20	4,096	4,094	Medium to Large Applications
/24	256	254	Small to Medium Applications
/25	128	126	Small to Medium Applications
/26	64	62	Small to Medium Applications
/27	32	30	Small Applications
/28	16	14	Very Small Applications
/29	8	6	Very Small Applications
/30	4	2	Smallest Applications

Note that block sizes with a larger amount of available IP addresses have a premium associated with them and as such choosing the right block size is as much an exercise in cost minimization as it is in IP Address or device management.