1. **Verify the VM server is ON.**

2. **Login as root and verify 3 new disks are available to the server.**

```
[root@CentOS-VM-162 ~]# fdisk -l

Disk /dev/sda: 42.9 GB, 42949672960 bytes
255 heads, 63 sectors/track, 5221 cylinders
Units = cylinders of 16065 * 512 = 8225280 bytes

   Device Boot      Start         End      Blocks   Id  System
/dev/sda1   *           1          13      104391   83  Linux
/dev/sda2              14        5221    41833260   8e  Linux LVM

Disk /dev/sdb: 64.4 GB, 64424509440 bytes
255 heads, 63 sectors/track, 7832 cylinders
Units = cylinders of 16065 * 512 = 8225280 bytes

   Device Boot      Start         End      Blocks   Id  System
/dev/sdb1               1        1452    11663158+  83  Linux
/dev/sdb2            1453        3630    17494785   83  Linux
/dev/sdb3            3631        6414    22362480   83  Linux

Disk /dev/sdc: 17.1 GB, 17179869184 bytes
255 heads, 63 sectors/track, 2088 cylinders
Units = cylinders of 16065 * 512 = 8225280 bytes

Disk /dev/sdc doesn't contain a valid partition table

Disk /dev/sdd: 17.1 GB, 17179869184 bytes
255 heads, 63 sectors/track, 2088 cylinders
Units = cylinders of 16065 * 512 = 8225280 bytes

Disk /dev/sdd doesn't contain a valid partition table

Disk /dev/sde: 17.1 GB, 17179869184 bytes
255 heads, 63 sectors/track, 2088 cylinders
Units = cylinders of 16065 * 512 = 8225280 bytes

Disk /dev/sde doesn't contain a valid partition table
[root@CentOS-VM-162 ~]#
```

Note: Please notice that eventhough we have given 16 GB for sdc/sdd and sde from VMware Web Access page, it is auto corrected to 17.1 GB by VMWare.

Each 17.1 GB disk has 2088 Cyclinders. Next step is to create 15 partitions from each disk.

3. **Partition Table**

From our past experience, we alredy know 1GB is equal to ~121 cylinders and since each disk can have a maximum of 15 partitions (14 writable and 1 non-writable), I performed some math on starting and ending cylinder for each partitions. You can see the results below.

Disk	Partition Type	Partition Name	Extended Partition Name	Size in GB	First Cylinder #	Last Cylinder #
	Primary # 1	/dev/sdc1		1	1	121
	Primary # 2	/dev/sdc2		1	122	243
	Primary # 3	/dev/sdc3		1	244	365
		/dev/sdc4		Remaining Disk	366	
			/dev/sdc5	1	366	487
			/dev/sdc6	1	488	609
			/dev/sdc7	1	610	731
			/dev/sdc8	1	732	853
			/dev/sdc9	1	854	975
			/dev/sdc10	1	976	1097
			/dev/sdc11	1	1098	1219
			/dev/sdc12	1	1220	1341
			/dev/sdc13	1	1342	1463
			/dev/sdc14	1	1464	1585
			/dev/sdc15	1	1586	1707
	Extended # 1					2088
/dev/sdc						

Imagine the entire graph above is physical hard drive named /dev/sdc. When you partition in Linux, you can only have 3 Primary and 1 Extended partition. An extended partion can have 11 more sub partitions.

Our first job is to create 3 Primary Partitions on our first disk /dev/sdc. Once the primary partions are created, we will proceed to extended partition.

```
[root@CentOS-VM-162 ~]# fdisk /dev/sdc
Device contains neither a valid DOS partition table, nor Sun, SGI or OSF disklabel
Building a new DOS disklabel. Changes will remain in memory only,
until you decide to write them. After that, of course, the previous
content won't be recoverable.


The number of cylinders for this disk is set to 2088.
There is nothing wrong with that, but this is larger than 1024,
and could in certain setups cause problems with:
1) software that runs at boot time (e.g., old versions of LILO)
2) booting and partitioning software from other OSs
   (e.g., DOS FDISK, OS/2 FDISK)
Warning: invalid flag 0x0000 of partition table 4 will be corrected by w(rite)

Command (m for help): n
Command action
   e   extended
   p   primary partition (1-4)
p
Partition number (1-4): 1
First cylinder (1-2088, default 1):
Last cylinder or +size or +sizeM or +sizeK (1-2088, default 2088): 121

Command (m for help): n
Command action
```

```
   e   extended
   p   primary partition (1-4)
p
Partition number (1-4): 2
First cylinder (122-2088, default 122):
Using default value 122
Last cylinder or +size or +sizeM or +sizeK (122-2088, default 2088): 243

Command (m for help): n
Command action
   e   extended
   p   primary partition (1-4)
p
Partition number (1-4): 3
First cylinder (244-2088, default 244):
Using default value 244
Last cylinder or +size or +sizeM or +sizeK (244-2088, default 2088): 365

Command (m for help): w
The partition table has been altered!

Calling ioctl() to re-read partition table.

WARNING: Re-reading the partition table failed with error 16: Device or resource
busy.
The kernel still uses the old table.
The new table will be used at the next reboot.
Syncing disks.
[root@CentOS-VM-162 ~]#
```

Now it is time to create extended partition for the remaining disk. Notice I just use the default value for both start and ending cylinder? This is because we will use the entire remaining disk space for extended partition.

```
[root@CentOS-VM-162 ~]# fdisk /dev/sdc

The number of cylinders for this disk is set to 2088.
There is nothing wrong with that, but this is larger than 1024,
and could in certain setups cause problems with:
1) software that runs at boot time (e.g., old versions of LILO)
2) booting and partitioning software from other OSs
   (e.g., DOS FDISK, OS/2 FDISK)

Command (m for help): n
Command action
   e   extended
   p   primary partition (1-4)
e
Selected partition 4
First cylinder (366-2088, default 366): <enter>
Using default value 366
Last cylinder or +size or +sizeM or +sizeK (366-2088, default 2088): <enter>
Using default value 2088

Command (m for help): w
```

```
The partition table has been altered!

Calling ioctl() to re-read partition table.
Syncing disks.
[root@CentOS-VM-162 ~]#
```

Since extended partition is created, let us continue creating remaining partitions using “fdisk /dev/sdc”. At the end, you should have a screen similar to the following in which there will be total of 14 working partitions and 1 non-working (extended partition).

```
[root@CentOS-VM-162 ~]# fdisk -l /dev/sdc

Disk /dev/sdc: 17.1 GB, 17179869184 bytes
255 heads, 63 sectors/track, 2088 cylinders
Units = cylinders of 16065 * 512 = 8225280 bytes

   Device Boot      Start         End      Blocks   Id  System
/dev/sdc1               1         121      971901   83  Linux
/dev/sdc2             122         243      979965   83  Linux
/dev/sdc3             244         365      979965   83  Linux
/dev/sdc4             366        2088    13839997+   5  Extended
/dev/sdc5             366         487      979933+  83  Linux
/dev/sdc6             488         609      979933+  83  Linux
/dev/sdc7             610         731      979933+  83  Linux
/dev/sdc8             732         853      979933+  83  Linux
/dev/sdc9             854         975      979933+  83  Linux
/dev/sdc10            976        1097      979933+  83  Linux
/dev/sdc11           1098        1219      979933+  83  Linux
/dev/sdc12           1220        1341      979933+  83  Linux
/dev/sdc13           1342        1463      979933+  83  Linux
/dev/sdc14           1464        1585      979933+  83  Linux
/dev/sdc15           1586        1707      979933+  83  Linux
[root@CentOS-VM-162 ~]#
```

Repeat the same thing for /dev/sdd and at the end you should see all the partitions created (like below).

```
[root@CentOS-VM-162 ~]# fdisk  -l /dev/sdd

Disk /dev/sdd: 17.1 GB, 17179869184 bytes
255 heads, 63 sectors/track, 2088 cylinders
Units = cylinders of 16065 * 512 = 8225280 bytes

   Device Boot      Start         End      Blocks   Id  System
/dev/sdd1               1         121      971901   83  Linux
/dev/sdd2             122         243      979965   83  Linux
/dev/sdd3             244         365      979965   83  Linux
/dev/sdd4             366        2088    13839997+   5  Extended
/dev/sdd5             366         487      979933+  83  Linux
/dev/sdd6             488         609      979933+  83  Linux
/dev/sdd7             610         731      979933+  83  Linux
/dev/sdd8             732         853      979933+  83  Linux
/dev/sdd9             854         975      979933+  83  Linux
/dev/sdd10            976        1097      979933+  83  Linux
/dev/sdd11           1098        1219      979933+  83  Linux
/dev/sdd12           1220        1341      979933+  83  Linux
/dev/sdd13           1342        1463      979933+  83  Linux
/dev/sdd14           1464        1584      971901   83  Linux
/dev/sdd15           1585        1707      987966   83  Linux
[root@CentOS-VM-162 ~]#
```

Lastly, we want to create our last disk /dev/sde and create partitions on it. At the end you should see something like below.

```
[root@CentOS-VM-162 ~]# fdisk  -l /dev/sde

Disk /dev/sde: 17.1 GB, 17179869184 bytes
255 heads, 63 sectors/track, 2088 cylinders
Units = cylinders of 16065 * 512 = 8225280 bytes

   Device Boot      Start         End      Blocks   Id  System
/dev/sde1               1         121      971901   83  Linux
/dev/sde2             122         243      979965   83  Linux
/dev/sde3             244         365      979965   83  Linux
/dev/sde4             366        2088    13839997+   5  Extended
/dev/sde5             366         487      979933+  83  Linux
/dev/sde6             488         609      979933+  83  Linux
/dev/sde7             610         731      979933+  83  Linux
/dev/sde8             732         853      979933+  83  Linux
/dev/sde9             854         975      979933+  83  Linux
/dev/sde10            976        1097      979933+  83  Linux
/dev/sde11           1098        1219      979933+  83  Linux
/dev/sde12           1220        1341      979933+  83  Linux
/dev/sde13           1342        1463      979933+  83  Linux
/dev/sde14           1464        1584      971901   83  Linux
/dev/sde15           1585        1707      987966   83  Linux
[root@CentOS-VM-162 ~]#
```

--Moid Muhammad