



PowerQuest Corporation

PartitionMagic® White Paper

Primary, Logical, Extended, Free Space! What Do I Need?

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Abstract

We have found here at PowerQuest that many of our users are confused by the Extended partition and what it does. We have also found that many users are unsure of what type of partition they need—whether it be a Primary partition or a Logical partition. Hopefully, we are able to provide a little insight that will eliminate some of the confusion.

Section 1: A Brief History

How did it all begin? Many years ago, when hard drives became common in computers, most hard drives were small and therefore limited. Though the drives were small, they were still considered to contain adequate space to carry us many years into the future. Well, we all know the story. Despite the advances in hard drive technology and storage capacity, there never seems to be enough hard drive space.

In the beginning, however, with one hundred to five hundred MB hard drives, it was believed that most users would never need any more than one partition, or division of space on the drive. However, the governing powers at the time decided to build in a small provision for "power users" which would allow them to divide their drives into more than one partition. For this reason, a standard was developed that allowed for a "generous" four Primary partitions. It was soon discovered, however, with the development of larger hard drives and a variety of different operating systems, that four partitions would no longer be sufficient.

Section 2: The Arrival of the Extended Partition

This insufficiency led to the development of the Extended partition. The Extended partition, by nature, is a Primary partition. What then makes it different? The Extended partition was created in an attempt to overcome the four Primary limit. This is significant because inside the Extended partition more partitions called Logical partitions can be created. Logical partitions are so called because they are a logical chain of partitions that, when added together, equal the size of the

Extended partition.

One thing to note about the Extended partition is that it never receives a drive letter. One way to think of the Extended partition is as a container that goes around all of the Logical partitions. Although the Extended partition does not have a drive letter and does not contain information like the Primary partition and the Logical partition, it is still necessary to make modifications to it when attempting to move space from a Logical partition to a Primary partition or vice-versa.

Section 3: Which Type of Partition Should I Use?

Now that we know what each one of the partitions are, let's discuss what they do. We have found through a number of our own in-house tests and from many of our users that several of the most common operating systems such as Windows 95 and OS/2 have a problem working with multiple visible Primary partitions (MVP's). MVP's occur when two or more Primary partitions (up to four) are visible on a single drive at one time. Therefore, the rule of thumb states that there should only be one Primary partition visible (or assigned a drive letter) at any given time. This brings up several questions of how and when to use Primary partitions.

In general, Primary partitions should be used in conjunction with a multiple operating system environment. In this case, one Primary partition would be active and bootable, and the other Primary partition containing the other operating system, would be hidden or not visible, and therefore not receive a drive letter. With this setup, PartitionMagic (or BootMagic™—which is included for free with PartitionMagic) would be used to set active the desired Primary partition for boot. It would also hide the remaining Primary partitions therefore only keeping one Primary partition visible at any given time.

Once the Primary partition has been created for the operating system, then Logical partitions can be created for programs and data. Remember, however, that before the Logical partition can be created, an Extended partition must be created. PartitionMagic handles this automatically. When the Extended partition is created using PartitionMagic, a blue outline is created surrounding free space (unformatted space that is not currently reserved or set up to store data). It is with this Free Space that Logical partitions can be created and allocated as desired.

Let's assume we have made it this far and have successfully created a Primary partition for our operating system and an Extended partition that contains two Logical partitions. This would give us drive letters of C: (Primary partition 500 MB), D: (Logical partition 250 MB), and E: (Logical partition 250 MB). Both D: and E: are inside of the Extended partition. Let's say that this setup has worked fine for several months but now we want to install a new program on our D: partition, and there is not enough space. This is not a problem for PartitionMagic. We can take some space from our C: partition and add it to our D: partition with these simple steps:

1. Select the C: partition and choose Resize.
2. Resize the C: partition smaller by the amount to add to the D: partition. (For this example, let's choose 50 MB).

This will leave us with a 450 MB C: partition, 50 MB Free Space, and a 500 MB Extended partition with a 250 MB D: partition and a 250 MB E: partition inside it.

3. Select the D: partition and choose Resize to resize the partition to 300 MB. This puts the Free Space that came from our C: partition into the D: partition and automatically resizes the Extended partition appropriately.

This will leave us with a 450 MB C: partition, a 550 MB Extended partition, a 300 MB D: partition, and a 250 MB E: partition.

Section 4: Conclusion

At this point, we are done. To recap, Primary partitions should be used for operating systems, all Logical partitions must be created inside the Extended partition, and all Logical partitions added together equal the size of the Extended partition. When using multiple Primary partitions, only one partition should be active and visible at a time; the others should be hidden. (Hiding, unhiding and setting partitions active can all be done with PartitionMagic.) A tip that may come in handy when installing a second drive is to only create an Extended partition with Logical partitions on that drive. By not creating a Primary partition on the second drive, having drive letters change can be avoided.

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