

Oracle and the Purpose of a Logical Volume Manager

Your database server machine will have one or more disks, either internal to the computer or in external disk arrays. These disks are the physical volumes. In virtually all modern computer installations, there is a layer of abstraction between these physical volumes and the logical volumes. Logical volumes are virtual disks, or file systems, that are visible to application software, such as the Oracle database. Physical volumes are presented to the software as logical volumes by the operating system's logical volume manager, or LVM.

Even the simplest computer nowadays will probably be using some sort of LVM, though it may be extremely limited in its capabilities. In the case of a Windows PC, you may well have only one disk, partitioned into two logical drives: perhaps a C: drive formatted with the FAT32 file system, and a D: drive formatted with the NTFS file system. Thus one physical volume is presented to you by Windows as two logical volumes. Larger installations may have dozens or hundreds of disks. By using an LVM to put these physical volumes into arrays that can be treated as one huge disk area and then partitioned into as many (or as few) logical volumes as you want, your system administrators can provide logical volumes of whatever size, performance, and fault tolerance is appropriate.



If the physical volumes are mapped one-to-one onto logical volumes, the performance and fault tolerance of the logical volumes is exactly that of the physical volumes. RAID, in its various levels, is intended to enhance performance and fault tolerance by exploiting the presence of multiple physical volumes. There are four levels to consider in most environments.