LVM — The Volume Group Descriptor Area

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About This Document

This document discusses the volume group descriptor area (VGDA), its default size, and the "not enough descriptor space" error. It explains why the VGDA may run out of space before the limit of 32 disks per volume group is met. This document applies to AIX 3.2 and 4.1.

"Not enough descriptor space"

In some instances, the user will experience a problem adding a new disk to an existing volume group or creating a new volume group. The warning message provided by LVM will be:

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Not enough descriptor space left in this volume group.  Either
try adding a smaller PV or use another volume group.
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VGDA Overview

On every disk in a volume group, there exists an area called the Volume Group Descriptor Area (VGDA). This space is what allows the user to take a volume group to another AIX system and "importvg" that volume group into that AIX system. The VGDA contains the names of disks that make up the volume group, their physical sizes, partition mapping, logical volumes that exist in the volume group, and other pertinent LVM management information.

Default VGDA Size

When the user creates a volume group, the "mkvg" command defaults to allowing the new volume group to have a maximum of 32 disks. However, as bigger disks have become more prevalent, this 32-disk limit is usually not achieved because the space in the VGDA is used up faster, as it accounts for the capacity on the bigger disks. This maximum VGDA space is a fixed size which is part of the LVM design. Large disks require more management

mapping space in the VGDA, which causes the number and size of available disks to be added to the existing volume group to shrink. When a disk is added to a volume group, not only does the new disk get a copy of the updated VGDA, but all existing drives in the volume group must be able to accept the new, updated VGDA.

rootvg

The exception to this description of the maximum VGDA is rootvg. In order to provide AIX users more free space, when rootvg is created, "mkvg" does not use the maximum limit of 32 disks that are allowed into a volume group. Instead, the number of disks picked in the install menu of AIX is used as the reference number by "mkvg -d" during the creation of rootvg. This limit does not mean the user cannot add more disks to rootvg in the post-install phase. The amount of free space left in a VGDA, and thus the number of size of the disks added to a volume group, depends on the size and number of disks already defined for a volume group. However, this smaller size during rootvg creation implies that the user will be able to add fewer disks to rootvg than compared to a non-rootvg volume group.

If more VGDA space is needed in the rootvg, use the "mksysb" and "migratepv" commands to reconstruct and reorganize their rootvg (the only way to change the "-d" limitation is recreation of the rootvg).

Note: It is always strongly recommended that users do not place user data onto rootvg disks. This separation provides an extra degree of system integrity.

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