

Thin-provisioned volumes can be used as volumes that are assigned to the host, by FlashCopy to implement thin-provisioned FlashCopy targets, and with the mirrored volumes feature.

When a thin-provisioned volume is initially created, a small amount of the real capacity is used for initial metadata. I/Os are written to grains of the thin volume that were not previously written, which causes grains of the real capacity to be used to store metadata and the actual user data. I/Os are written to grains that were previously written, which updates the grain where data was previously written.

The grain size is defined when the volume is created. The grain size can be 32 KiB, 64 KiB, 128 KiB, or 256 KiB. The default grain size is 256 KiB, which is the preferred option. If you select 32 KiB for the grain size, the volume size cannot exceed 260 TiB. The grain size cannot be changed after the thin-provisioned volume is created. Generally, smaller grain sizes save space, but they require more metadata access, which can adversely affect performance.

When using thin-provisioned volume as a FlashCopy source or target volume, use 256 KiB to maximize performance. When using thin-provisioned volume as a FlashCopy source or target volume, specify the same grain size for the volume and for the FlashCopy function.

Figure 6-6 shows the thin-provisioning concept.

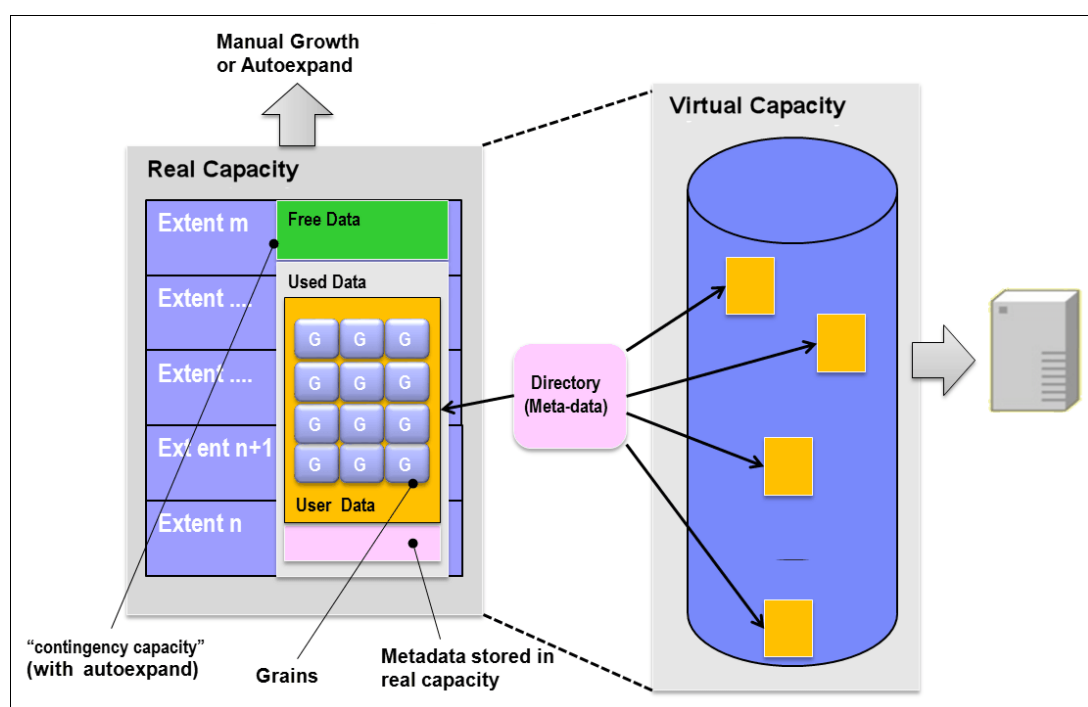


Figure 6-6 Conceptual diagram of thin-provisioned volume

Thin-provisioned volumes store user data and metadata. Each grain of data requires metadata to be stored. Therefore, the I/O rates that are obtained from thin-provisioned volumes are less than the I/O rates that are obtained from fully allocated volumes.

The metadata storage used is never greater than 0.1% of the user data. The resource usage is independent of the virtual capacity of the volume. If you are using the thin-provisioned volume directly with a host system, use a small grain size.