



Volume Management Basics

What is a Volume?

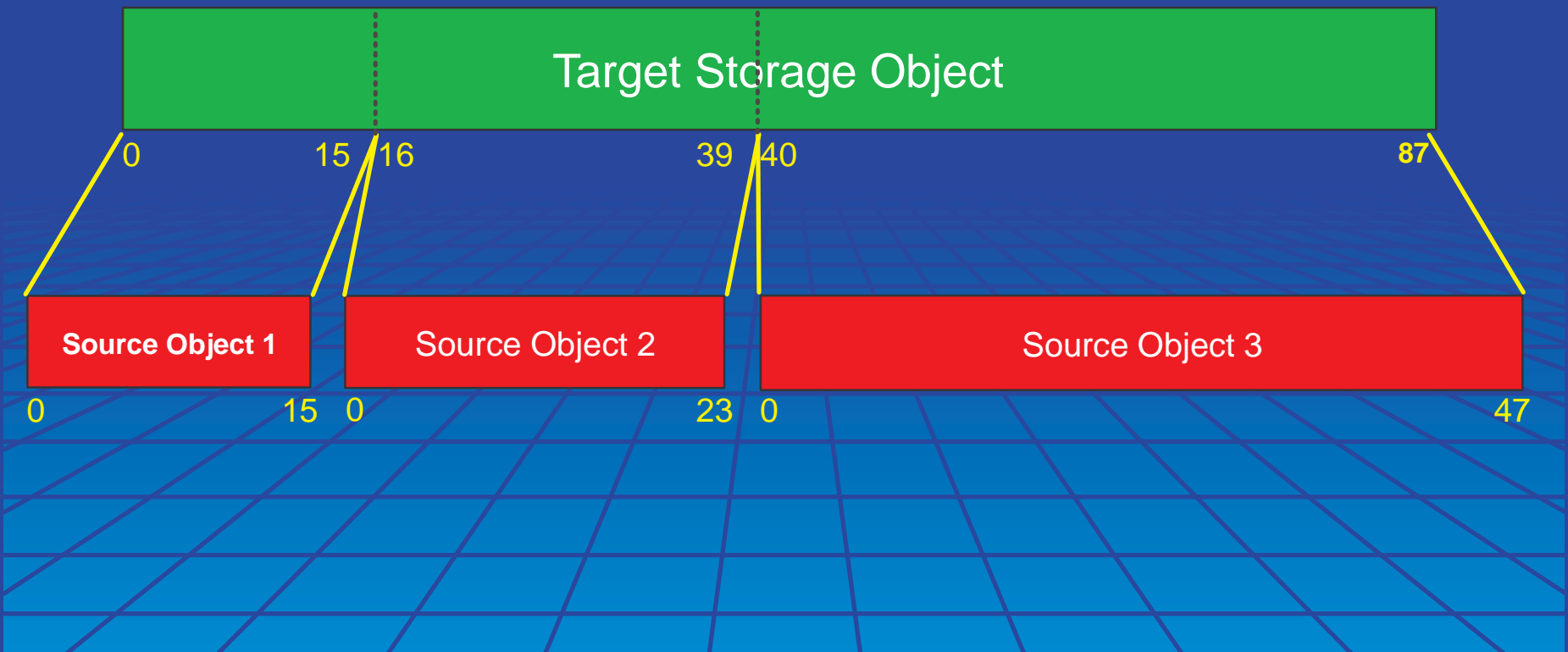
- ▶ Volumes are part of an abstraction which allows us to have a logical view of storage as opposed to the traditional physical view of storage. This makes it possible to isolate most software from the characteristics and limitations of the actual physical storage devices used in a system.
- ▶ A Volume represents a block of logically contiguous storage which can be accessed through existing standard mechanisms.
- ▶ Most systems see volumes as if they were disk drives.
- ▶ Volumes are created and maintained by Volume Management Software.

Volume Management Schemes

- ▶ What is a Volume Management Scheme?
 - The method used to construct the logical view of storage from the physical view of storage.
- ▶ Common Techniques used by Volume Management Schemes:
 - Linear Chaining/Drive Linking
 - Striping
 - Striping with parity
 - Mirroring

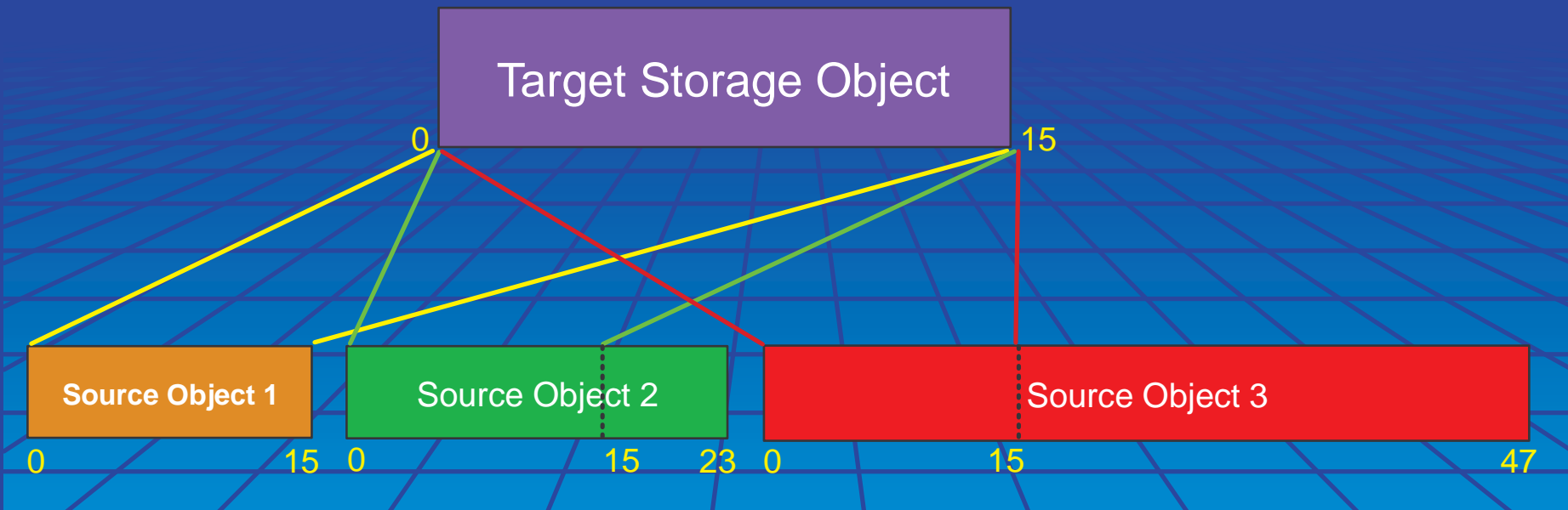
Linear Chaining/Drive Linking

- ▶ The address space of the resulting storage object is constructed by concatenating the address spaces of the source objects.



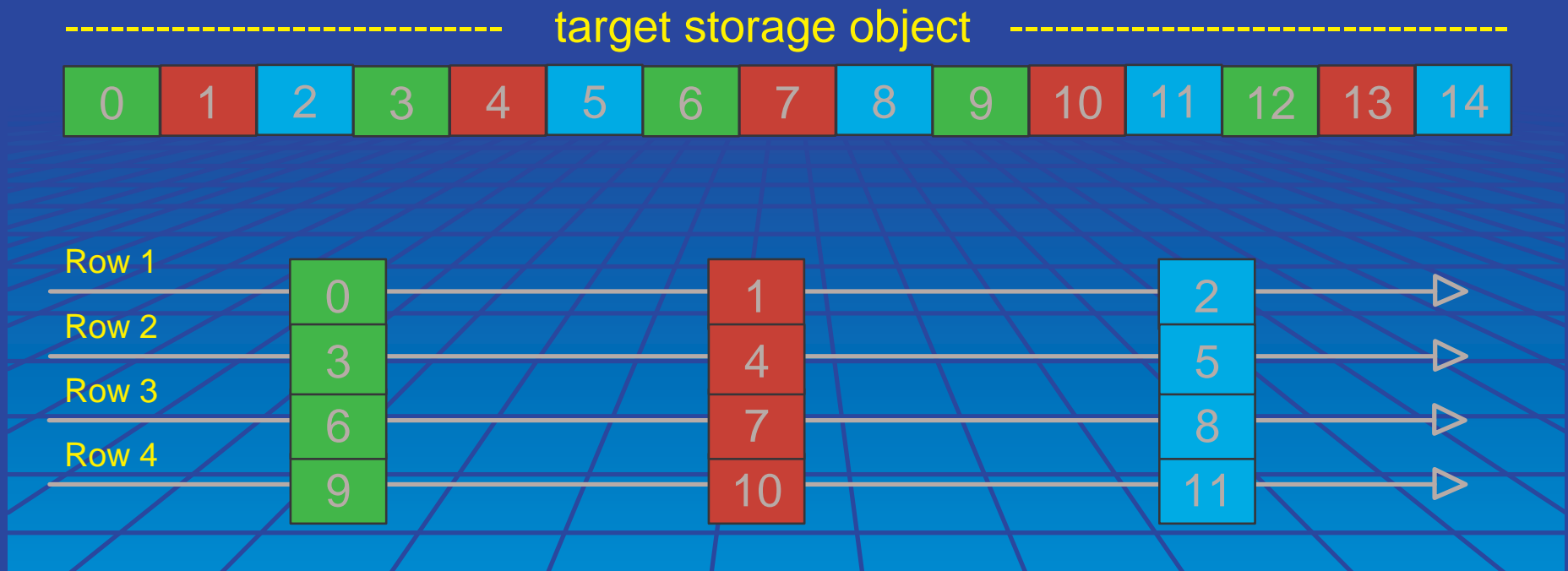
Mirroring

- ▶ The address space of the resulting storage object is equal to the address space of the smallest source object, and the address spaces of the source objects are overlaid on the address space of the resulting source object. Thus, there is a 1 to N mapping for each address in the resulting storage object, where N is the number of source objects.



Striping

- ▶ The address space of the resulting storage object is formed by dividing the address space of the source objects into evenly sized units, called stripes, and then combining the stripes using a fixed pattern (1 stripe from each source object using a fixed order for the source objects).

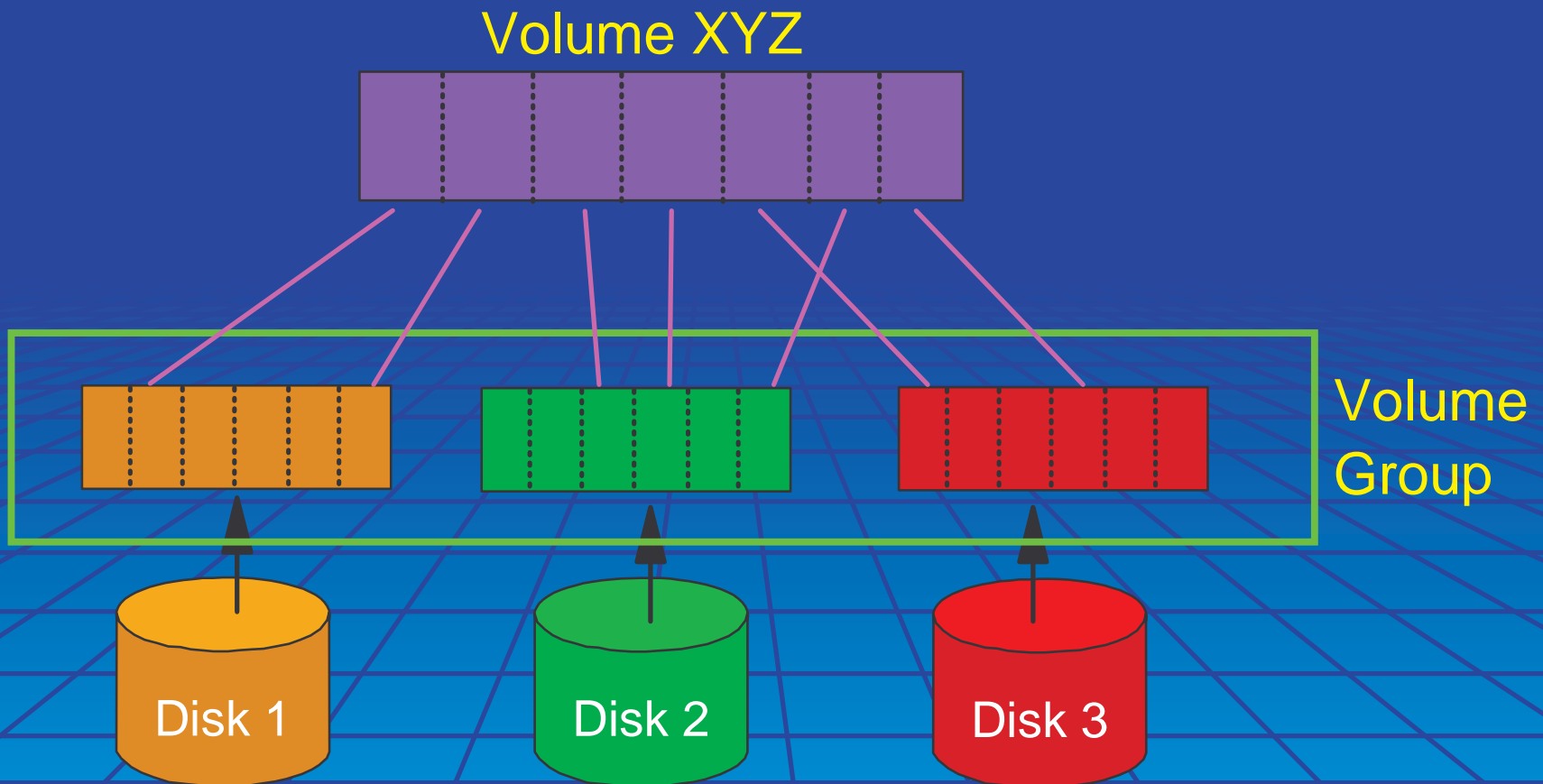


Common Volume Management Schemes

- ▶ Disks (i.e. - No Volume Management)
 - Logical View = Physical View
 - UNIX® systems without a volume manager
- ▶ Partitions
 - Simple Volume Management
 - DOS, OS/2®, Windows®, some UNIX systems
- ▶ Volume Groups
 - some UNIX systems
- ▶ Others
 - VERITAS®

Volume Groups

- ▶ Can be made from partitions or disks
- ▶ Divided into evenly sized units called physical extents
- ▶ A Volume is an ordered set of physical extents



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