Advanced Operating Systems:
Storage Management in OS:
Part Two

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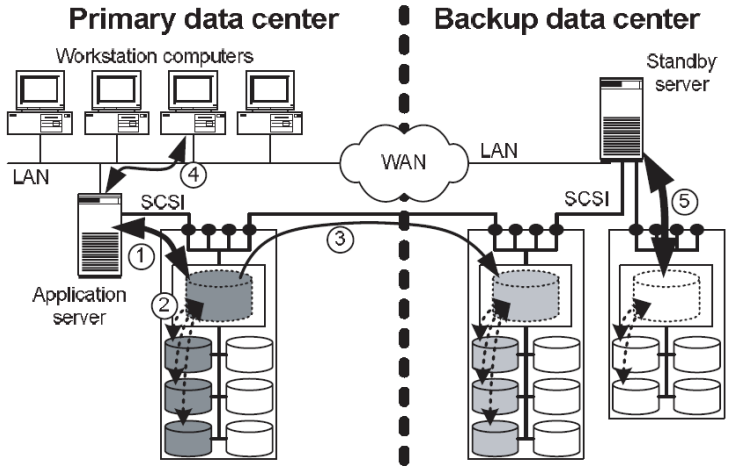
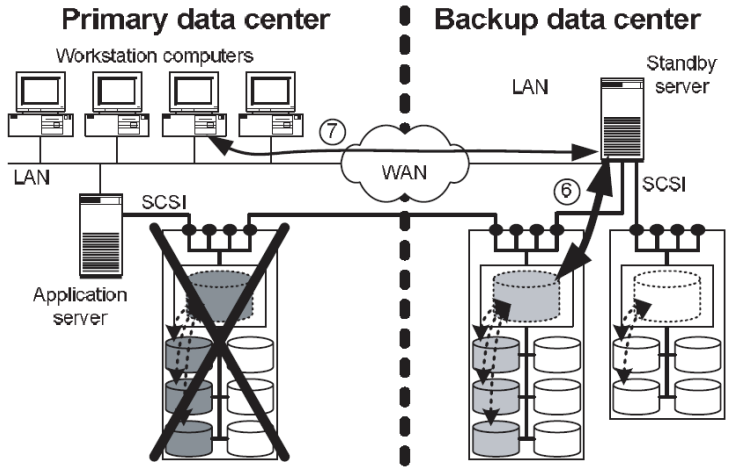
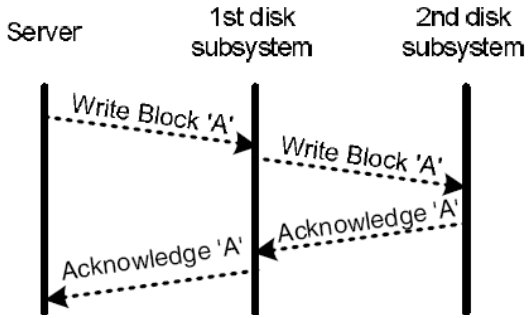
- Some Parts (text & figures) of this Lecture adopted from following:
  - A. Silberschatz, P. Galvin, and G. Gagne, “Operating System Concepts”, Ninth Edition, 2013.
  - H. Asadi, “Advanced Storage Systems”, Graduate Course, Fall 2022.

Remote Mirroring

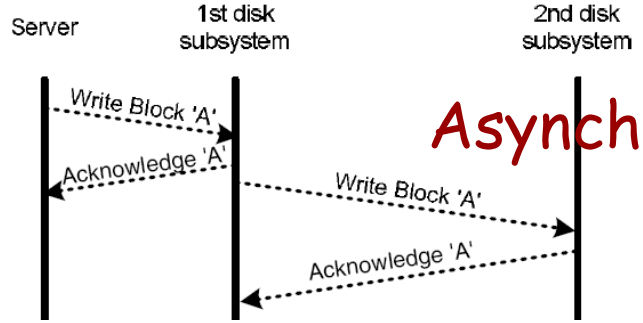
- High Availability
  - RAID combined with remote mirroring
  - Used by big corps
    - Banks, insurance corps, online travel agencies
- Types of Mirroring



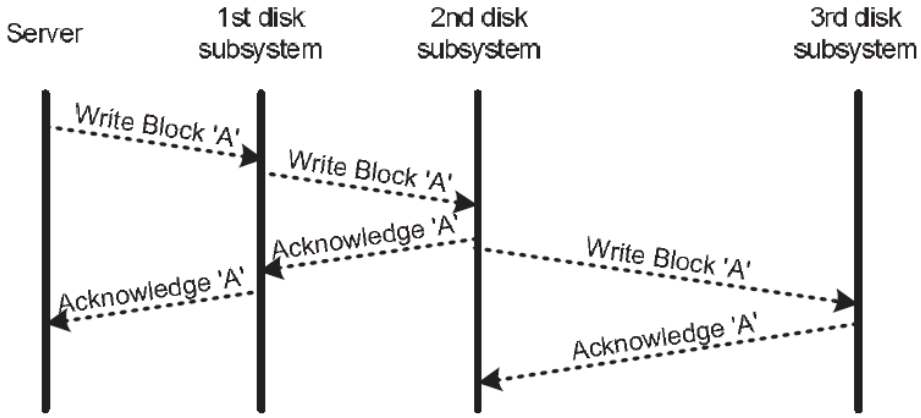




Synchronous

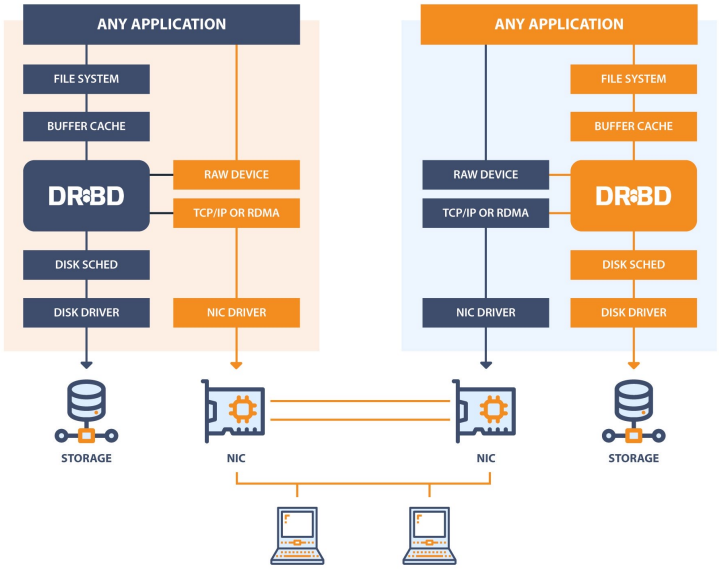


Asynchronous



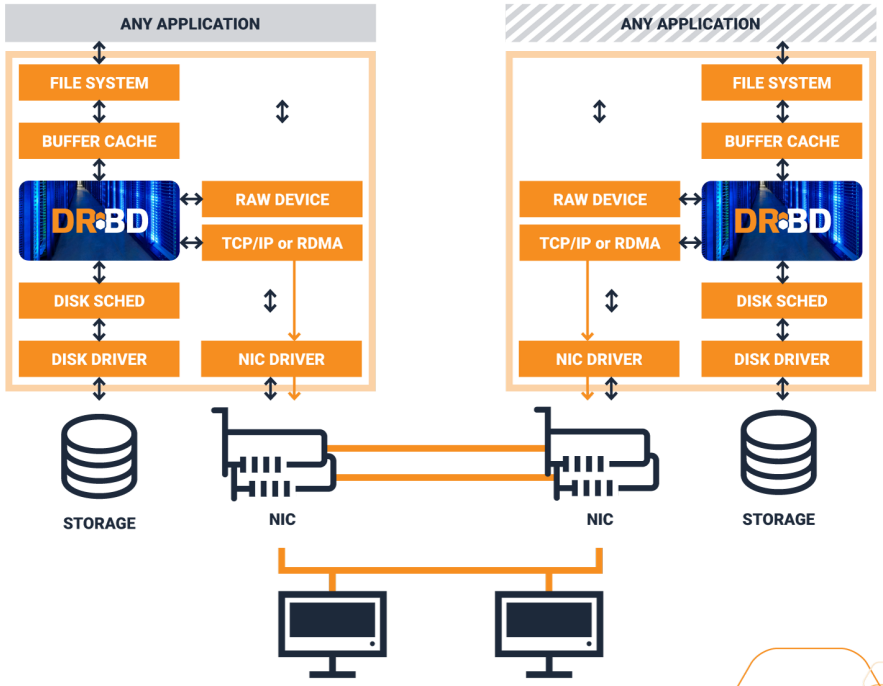
Replication in Linux

- DRBD (Distributed Replicated Block Device)
  - Distributed replicated storage system for Linux
  - Mirrors block devices between multiple hosts
  - Replication is transparent to other applications on host
  - Any block device can be mirrored
    - Disks, partitions, RAID devices, & logical volumes
  - Traditionally used in high availability (HA) clusters
  - Supports both:
    - Synch.
    - Asynch.



Replication in Linux (cont.)

- Protocol-A
  - Asynchronous replication generating some data loss if host failover is forced
- Protocol-B
  - memory synchronous (semi-sync) replication
- Protocol-C
  - Fully synchronous replication



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MAKERS OF DR·BD

Replication in Linux (cont.)

- Three-Way Replication
  - Adds a third node to an existing 2-node cluster
  - Third node usually used for backup
  - Typically combination of Type-A and Type-C