

Storage Array-Based Replication

WHAT IS STORAGE ARRAY-BASED REPLICATION?

- ▶ **In this technique, the array operating environment performs the local replication technique by using the built-in software to automatically copy the data from one storage array to the other.**
- ▶ **The host resources, such as CPU and memory, do not participate in the storage array-based replication process.**
- ▶ **This enables the host to stay aloof from the replication operations**
- ▶ **minimizing the burden on the host.**
- ▶ **In this replication, the required number of replica devices must be chosen on the same array and then the replication of data can take place between the source-replica pairs.**

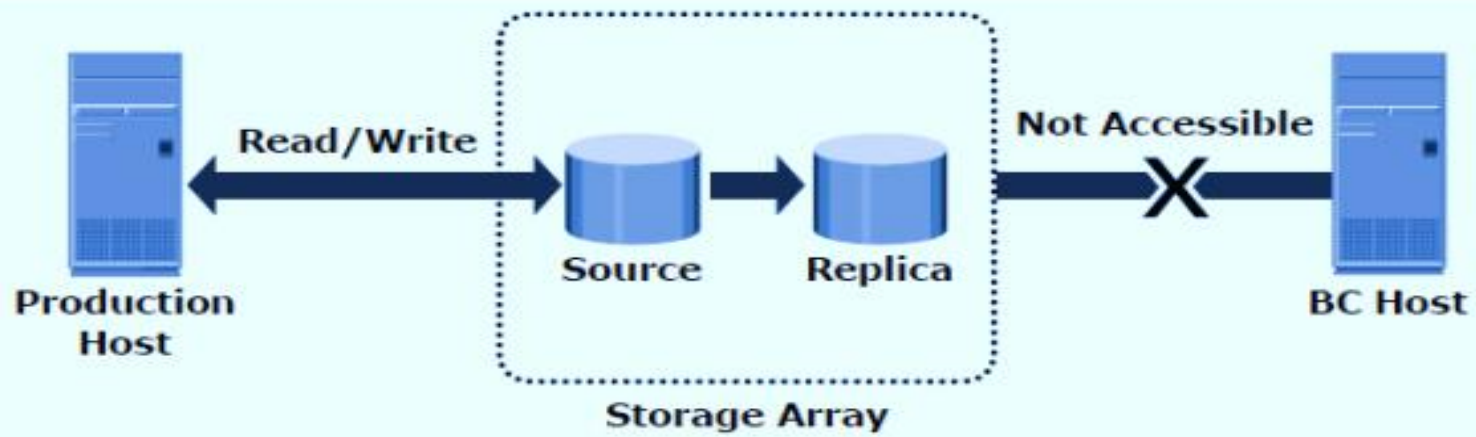
TYPES Of Storage Array-Based Replication?

Storage array-based replication can be categorized as:

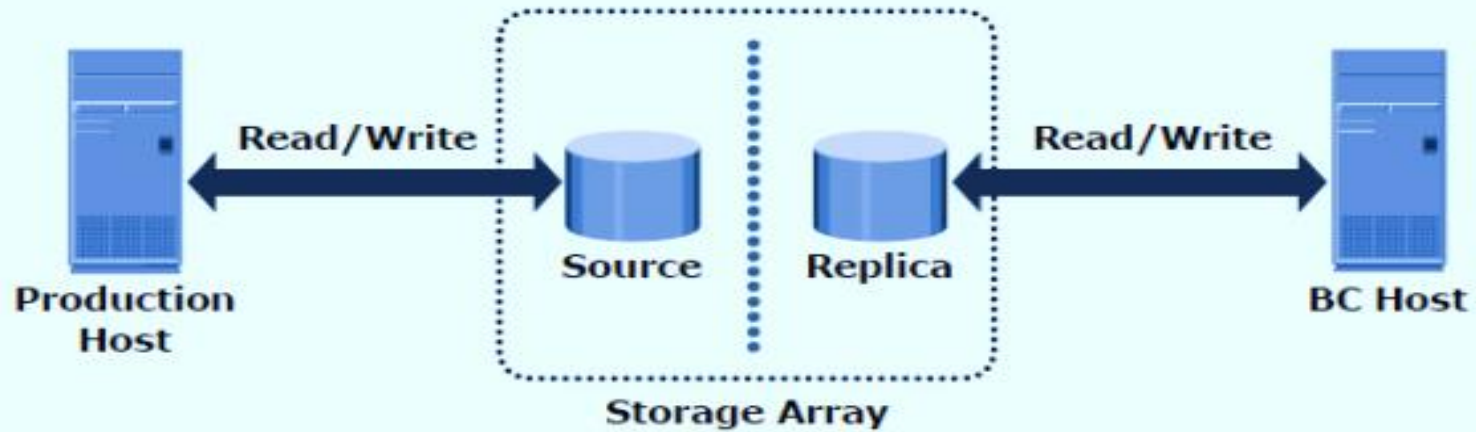
- **full volume mirroring**
- **Pointer-based full volume replication**
- **Pointer-based virtual replication.**

Full Volume Mirroring

- ▶ In this technique, the target gets attached to the source and establishes itself as a mirror of the source. Existing data as well as new updates on the source gets copied to the target.
- ▶ After the copying of data is complete, the source and the target becomes identical the target is then considered as the mirror of the source data.
- ▶ During this process, the target remains unavailable to be accessed by any other host. however, both the target and source can be accessed by the production host.
- ▶ After the synchronization process gets complete, the target gets detached from the source and is made available for the business continuity operations.



(a) Full volume mirroring with source attached to replica



(b) Full volume mirroring with source detached from replica

Pointer-Based full Volume Replication

- ▶ This technique is similar to full volume mirroring and can provide full copies of the source data on the target.
- ▶ However, unlike full volume mirroring, one does not need to wait for data synchronization to target and detachment of the target from the source in order to access the target.
- ▶ The target is made immediately accessible when the replication session is activated.
- ▶ The pointer-based full volume replication can be activated in either Full copy mode or in the Copy on First Access (CoFA) mode.

CoFA MODE IN Pointer-Based full Volume Replication

- ▶ In the CoFA mode, when the replication operation is initiated, the source data gets copied to the target at the trigger of the following:
 - When a write operation gets issued to a specific address on the source for the first time.
 - When a read or write operation gets issued to a specific address on the target for the first time.

When a write operation gets issued to a specific address on the source for the first time :

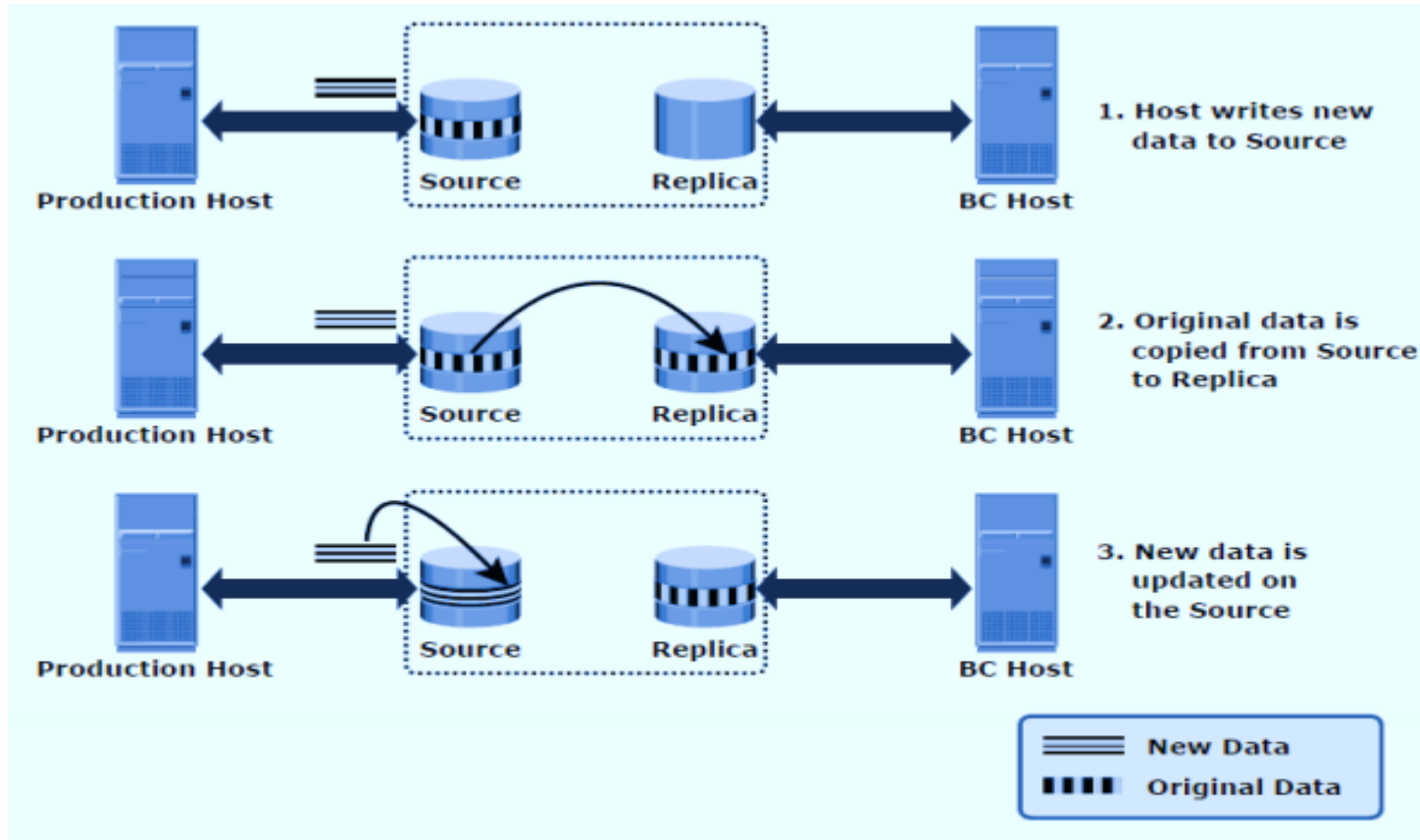


Figure 4.1.8: CoFA - Write to Source

- When a read or write operation gets issued to a specific address on the target for the first time.

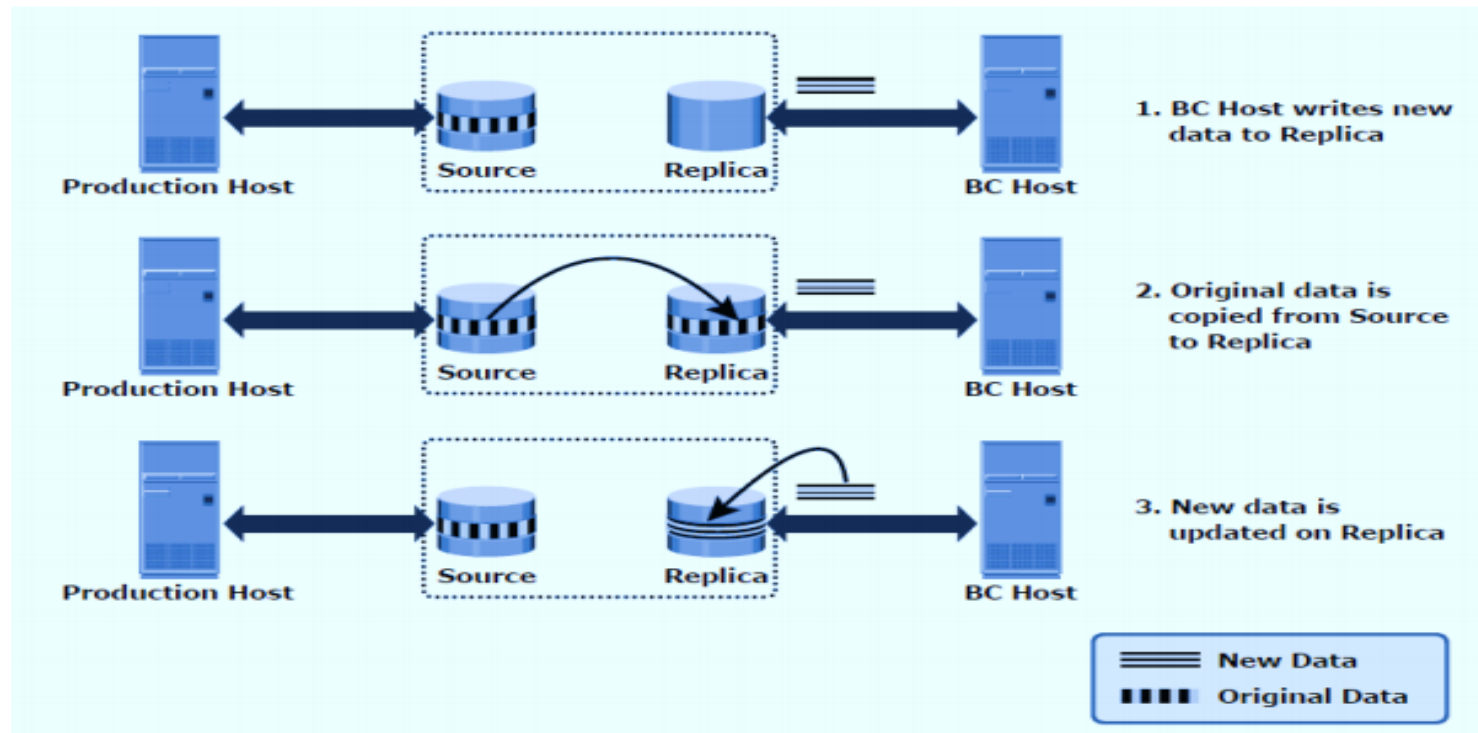


Figure 4.1.9: CoFA - Write to Target

Pointer-Based Virtual Replication

- ▶ In this technique, when the backup session is activated, the target contains the pointers to the location of data on the source.
- ▶ At any time, the target does not contain the actual data but only contains the pointer to the data on the source. Hence, the target is also known as a virtual replica.
- ▶ Similar to a file system snapshot, a pointer-based virtual replication also uses the CoFW technology.

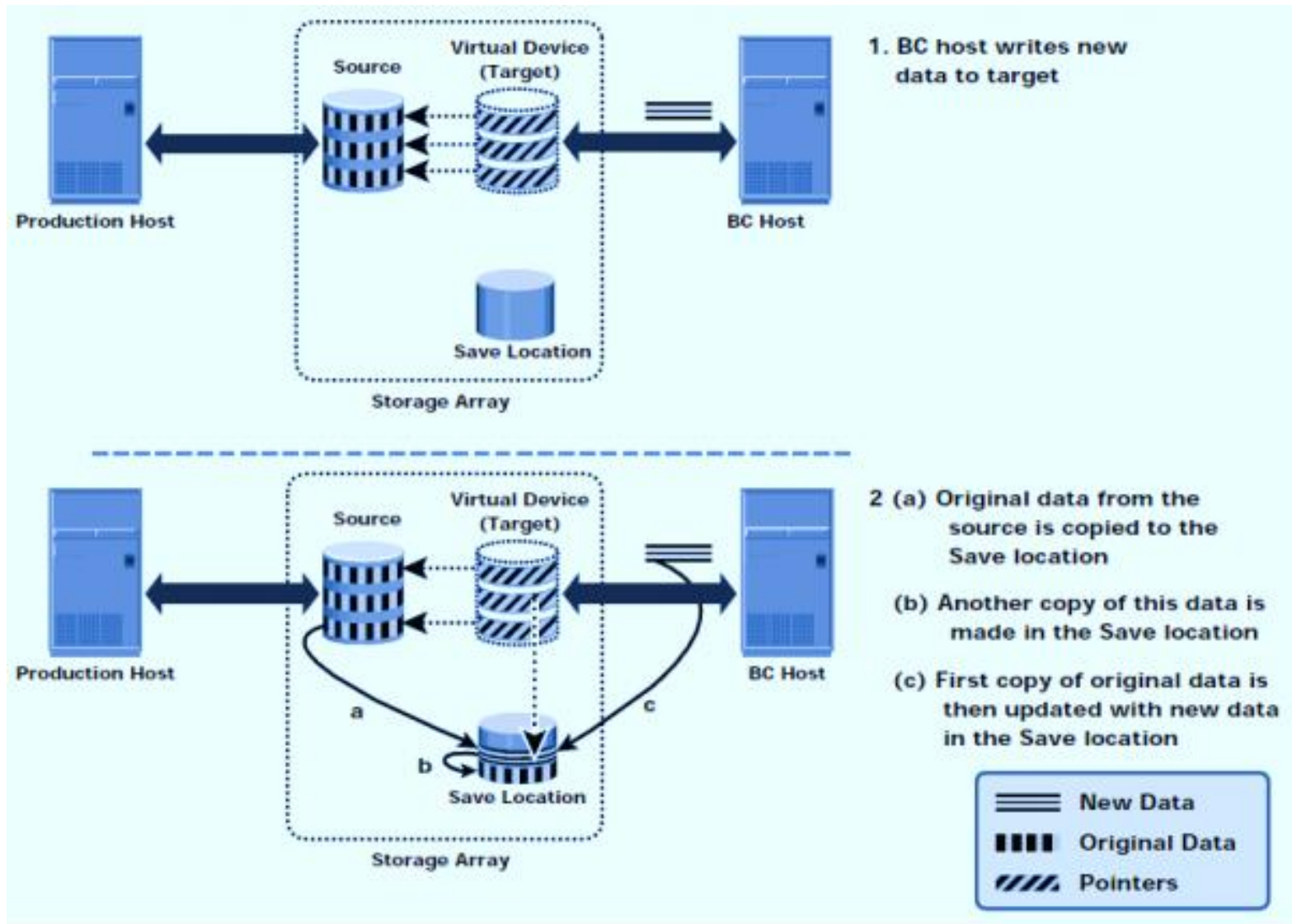


Figure 4.1.10: Pointer-Based Virtual Replication – Write to Target

THANK YOU