DB2 Flashed Session

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Refresh F5

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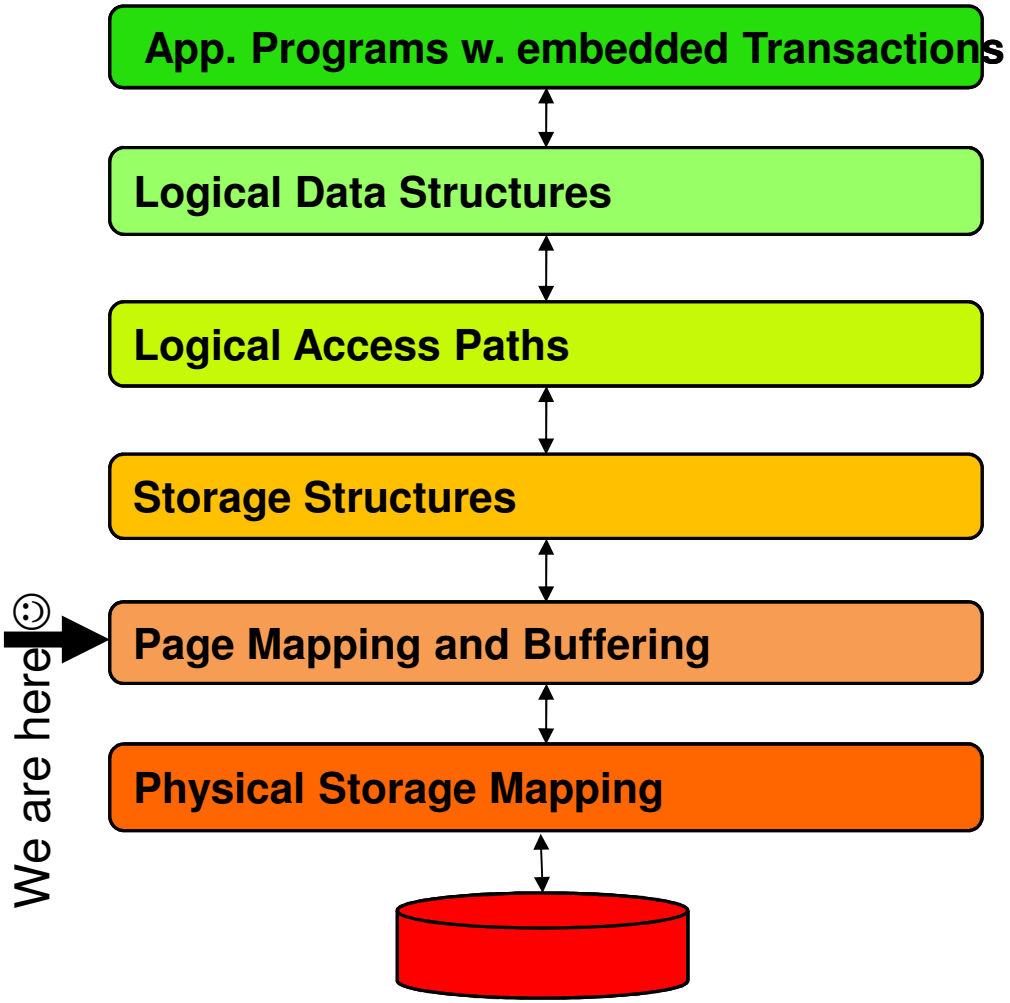
I Refreshing

- Direct/ Indirect Update Strategies
  - In-Place/ Out-of-Place
- Flash SSD Properties

II NoFTL

III Multi Versioning on SSDs

Segments and Pages, Addressing and Update Strategies



Set-oriented interface, declarative QL

Record-oriented interface

Internal interface

DB-buffer interface

File interface

Device interface

Segments and Pages, Addressing and Update Strategies

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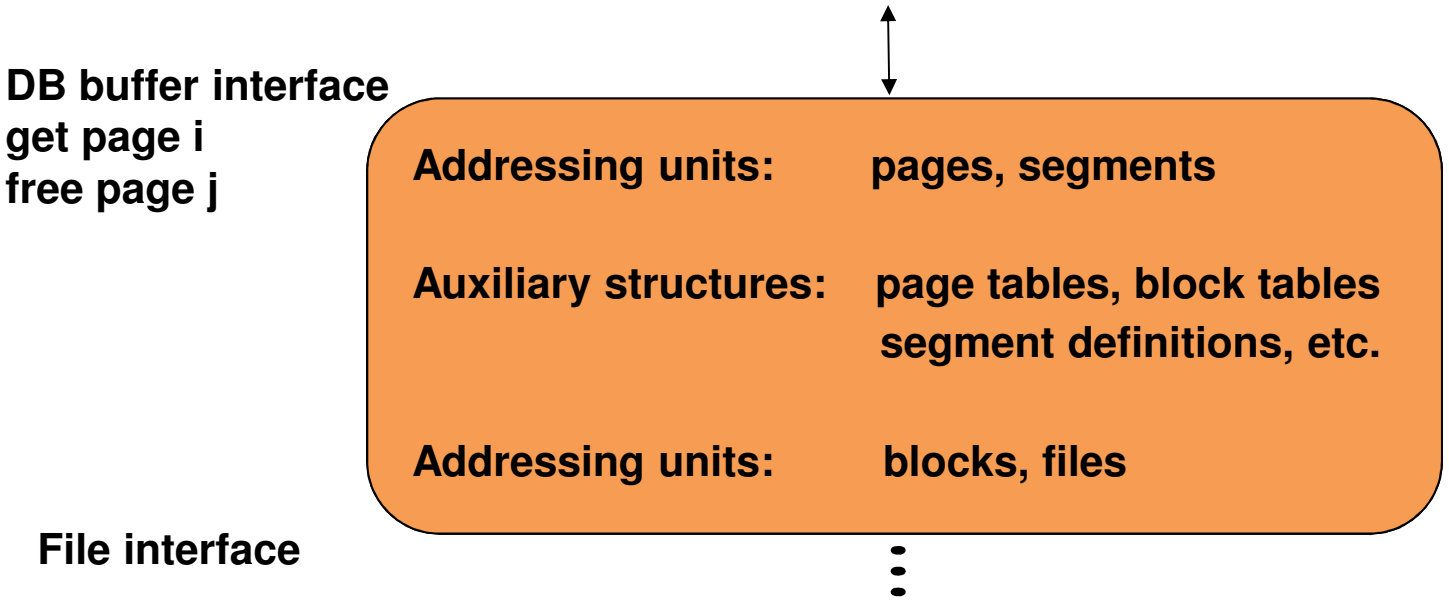
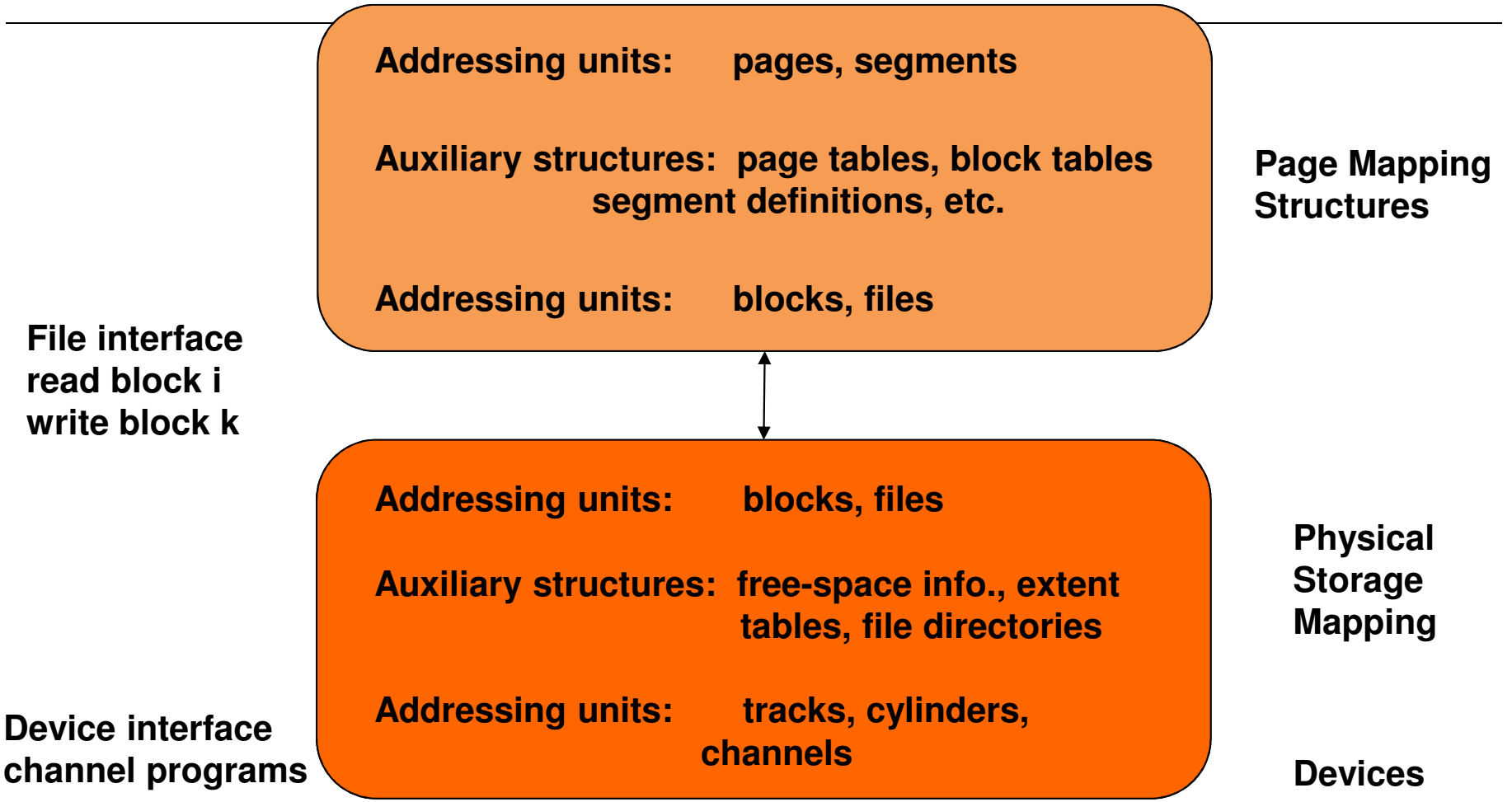


Additional level of abstraction above blocks and files

One Layer further to the Device

Segments and Pages, Addressing and Update Strategies



Update Strategies

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- ***Direct update strategy*** *(also called "Update in Place")*
  page written into the same block from which it was read.

- ***Indirect (delayed) update strategy***
  page written into a newly allocated block, old block not changed.

Segments and Pages, Addressing and Update Strategies

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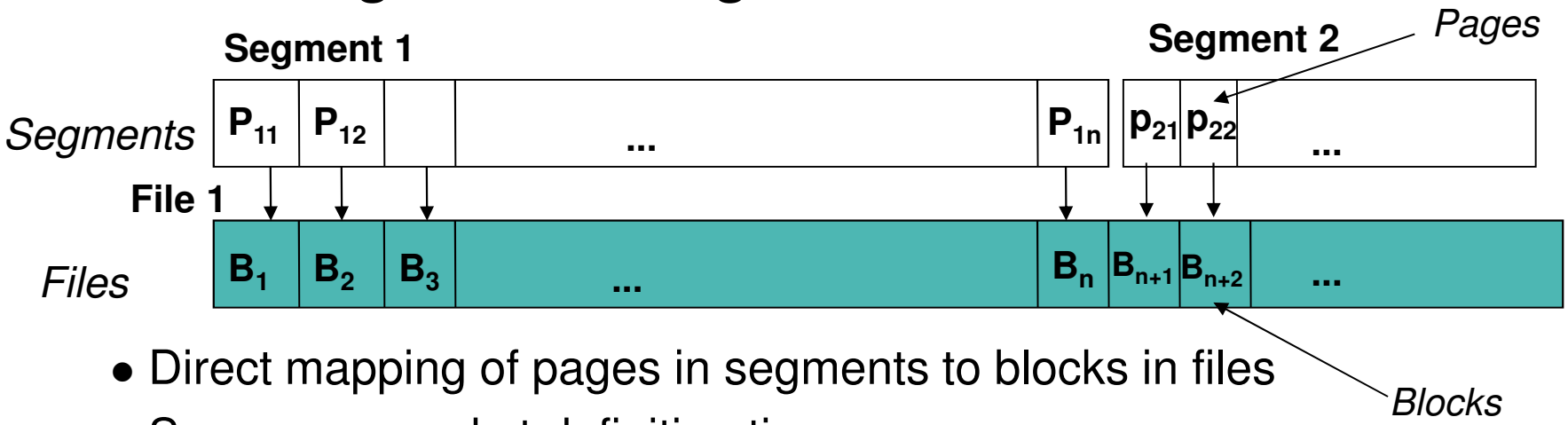
Direct Page Addressing



- Direct mapping of pages in segments to blocks in files
- Space reserved at definition time

Problem on Flash:
In-Place Updates!

Segments and Pages, Addressing and Update Strategies

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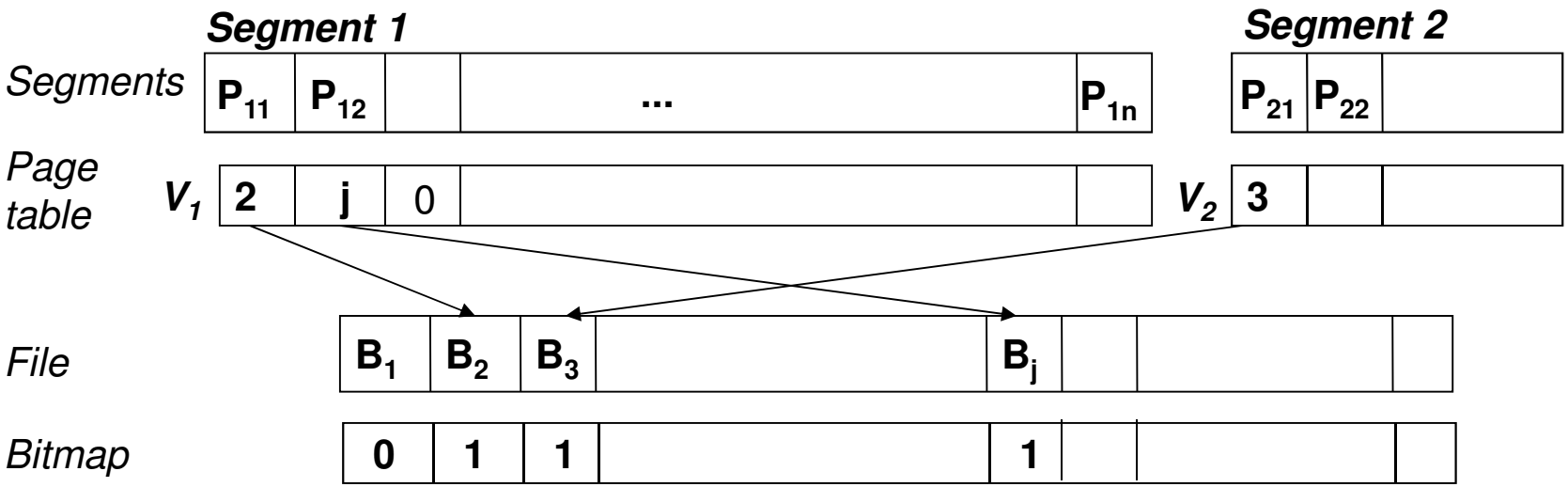
Indirect Page Addressing



- Space reserved on demand➔**Better space utilization**
- ***Additional Mapping Table*** *(Page Table, Page Faults…)*
- *Good for Flash: Out of Place Updates*

Flash Properties in a Nutshell

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- ***Asymmetric Read/Write Performance***
  - Reads faster than writes
- ***No Overwrites***
  - Erase-Cycles
- ***High Parallelism***
- ***No Mechanical Latency***

But:

- Hidden behind ***Legacy Interface***
  - ***Additional Mapping & Backround Processes***
  - ***Black Box Abstraction***

→ NoFTL…

NoFTL

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See NoFTL Slides

End Part 1

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