

PCIe Link

Write Buffer

FTL
Instance

FTL
Instance

FTL
Instance

Channel

Die

Die

Die

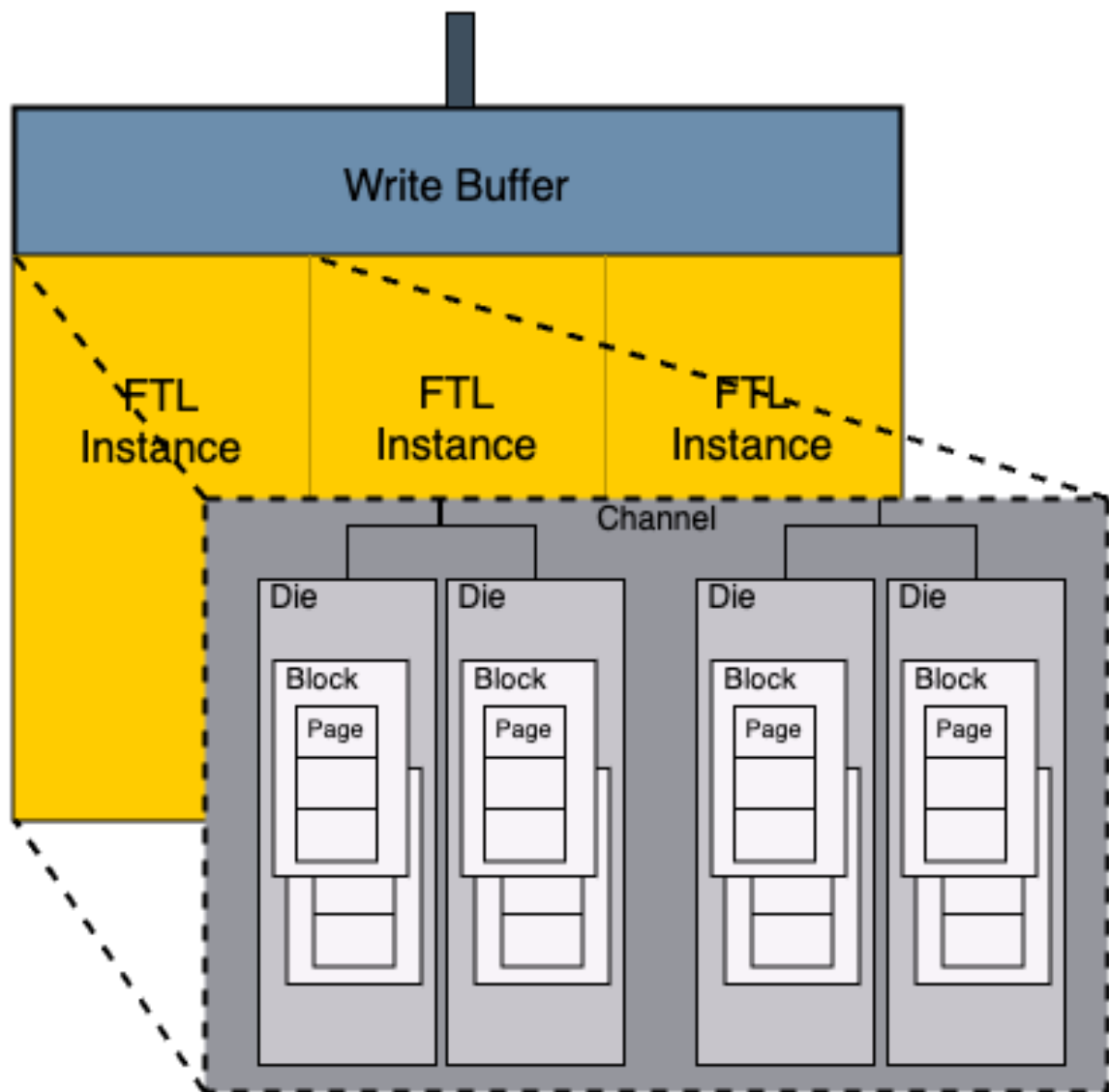
Die

Block
Page

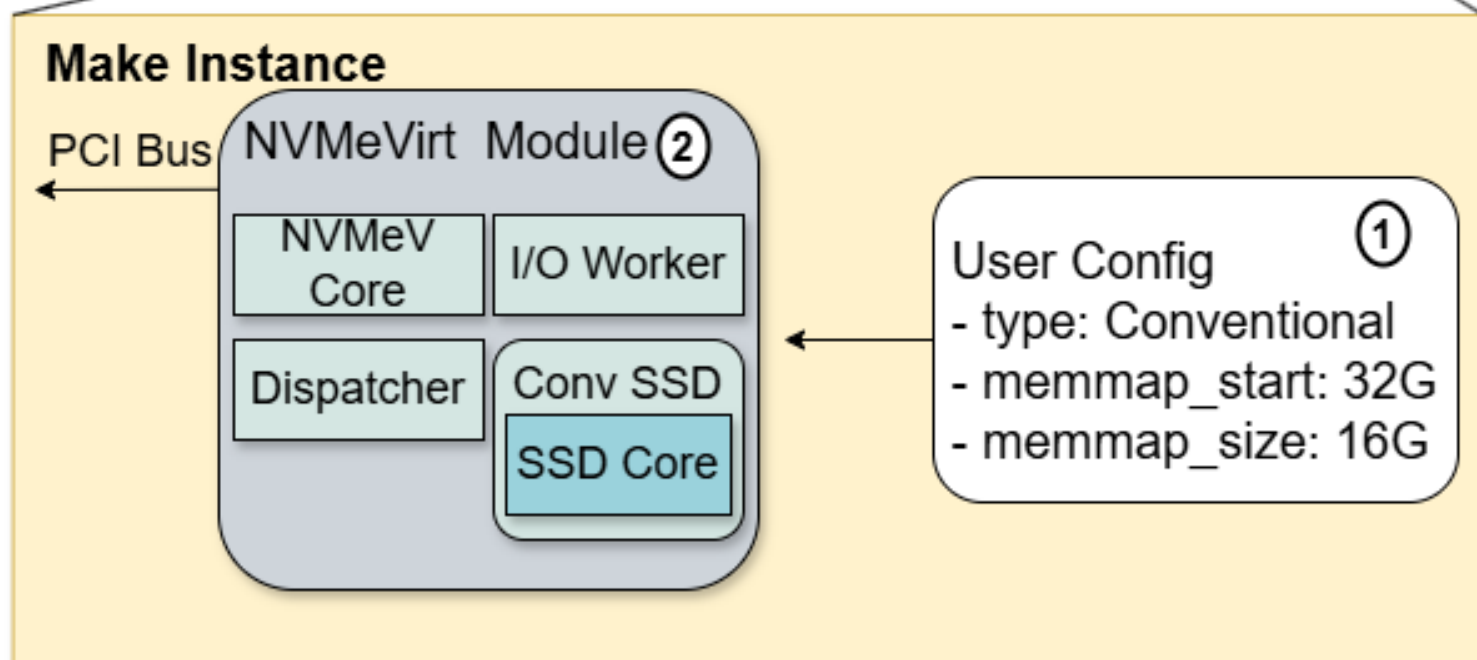
Block
Page

Block
Page

Block
Page

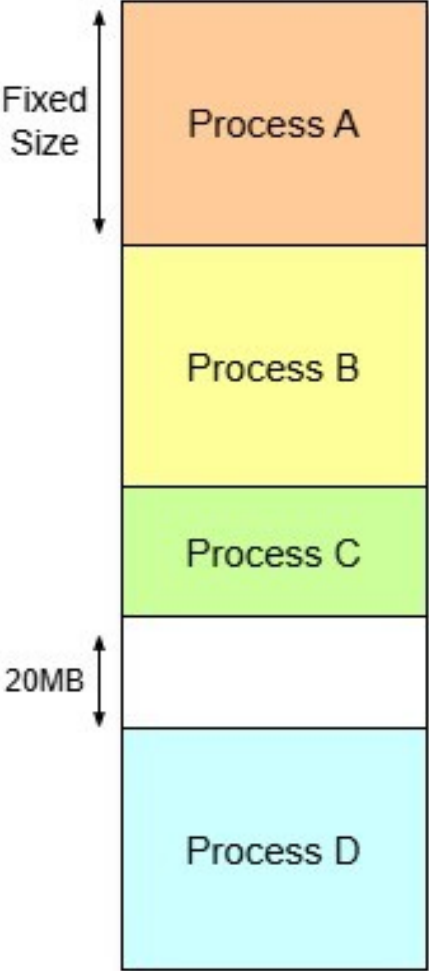


Memory Address

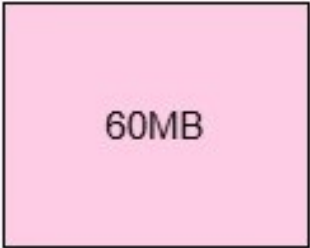
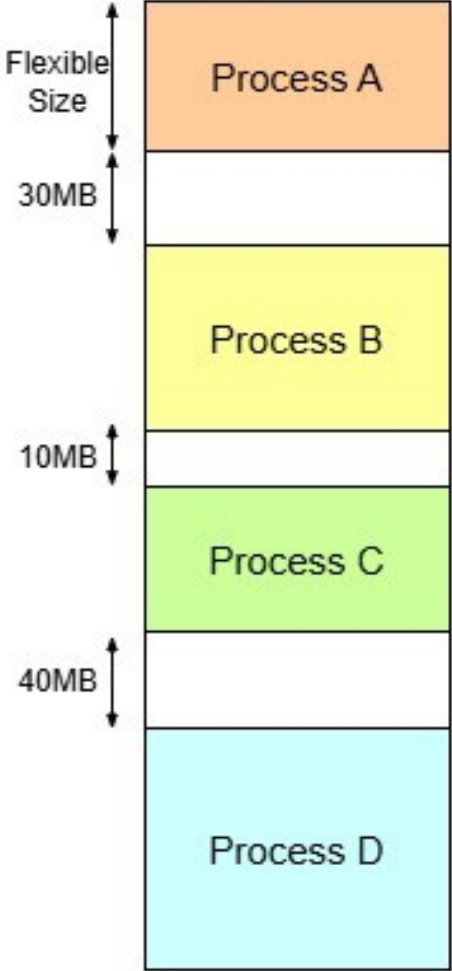


Free Space Fragmentation

Internal Fragmentation



External Fragmentation



Data Fragmentation

Logical Fragmentation

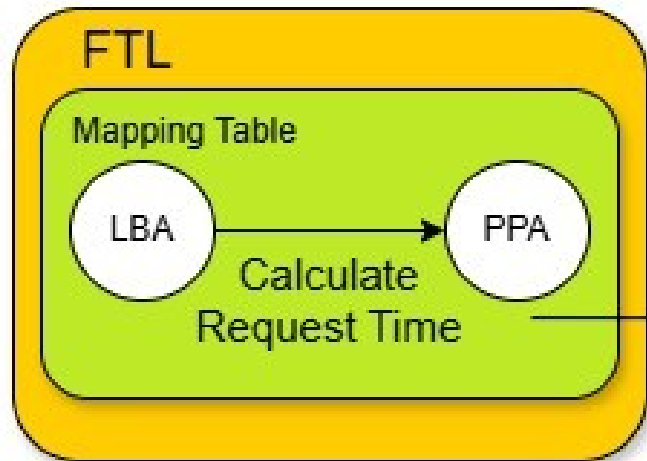
Total 3 I/O
Request

LBN1	1 I/O	PBN1
LBN2		PBN2
LBN3		PBN3
FREE	2 I/O	PBN4
LBN4		PBN5
LBN5		PBN6
LBN6	3 I/O	PBN7
FREE		FREE
LBN7		FREE
FREE		FREE
FREE		FREE

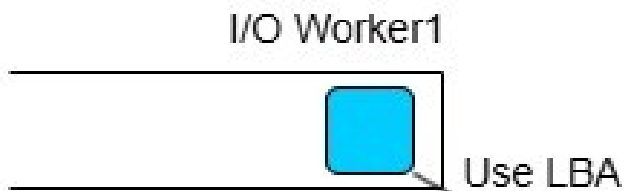
Physical Fragmentation

Only 1 I/O Request
But ...

LBN1		PBN1
LBN2		PBN2
LBN3		FREE
LBN4		FREE
FREE		PBN3
FREE		PBN4
FREE		FREE
FREE		FREE
FREE		FREE
FREE		FREE
FREE		FREE

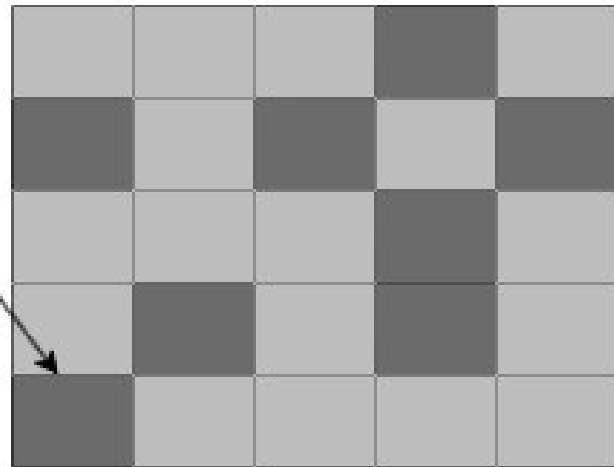


Have many the I/O Worker...



Use Calculated Request Time

Reserved Memory



Conventional FTL

