TLB Page Lookup Physical Memory Virtual Address offset page TLB Physical Address TLB hit frame offset PTE TLB miss Page Directory/Table(s) page frame

Page lookup

Process is executing on the CPU, and it issues a read to an address. The read goes to the TLB in the MMU

- I. TLB does a lookup using the page number of the address
- 2. Common case is that the page number matches, returning a page table entry (PTE) for the mapping for this address
- 3. TLB validates that the PTE protection allows reads (in this example)
- 4. PTE specifies which physical frame holds the page
- 5. MMU combines the physical frame and offset into a physical address
- 6. MMU then reads from that physical address, returns value to CPU
- → This is all done by the hardware