A Dozen Things about the z/Architecture

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- Descendent of System/360 (1964)

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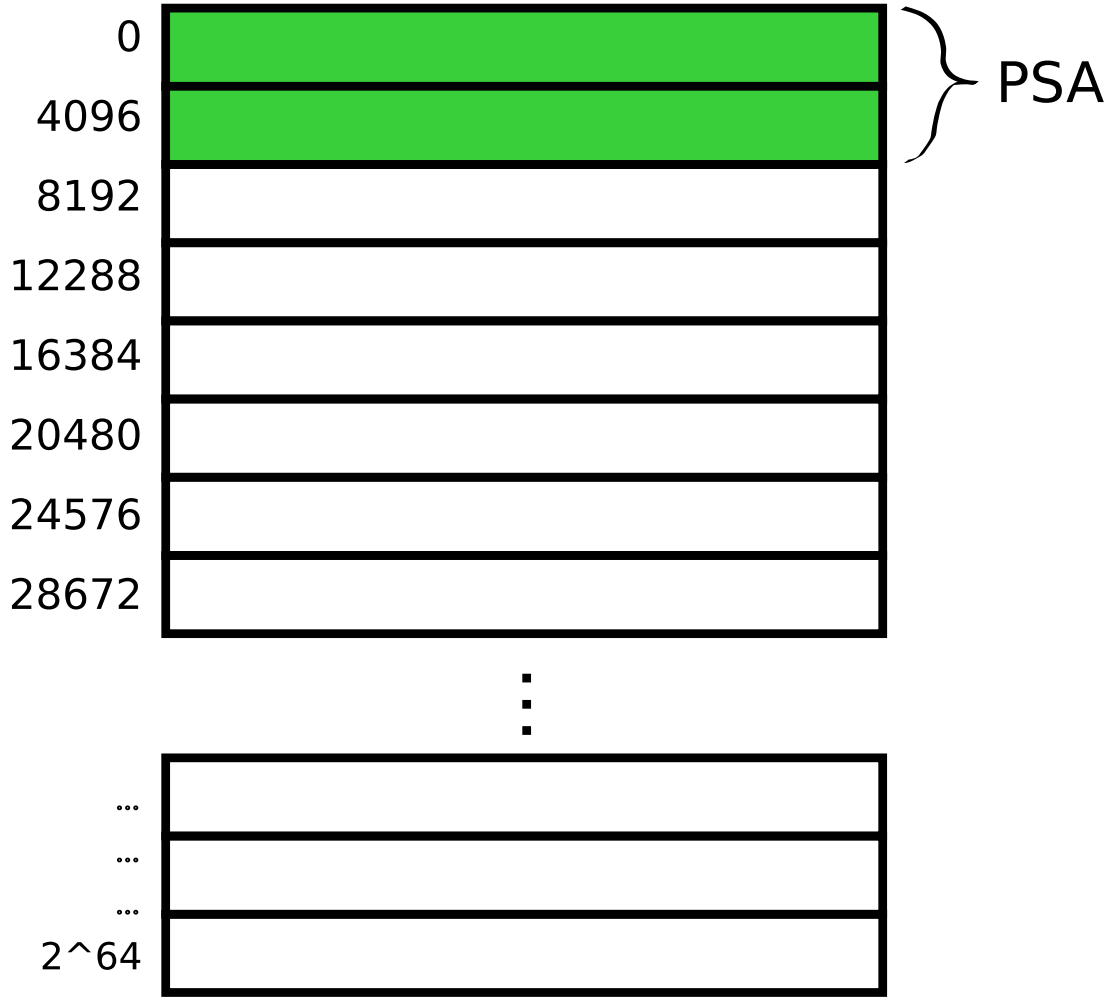

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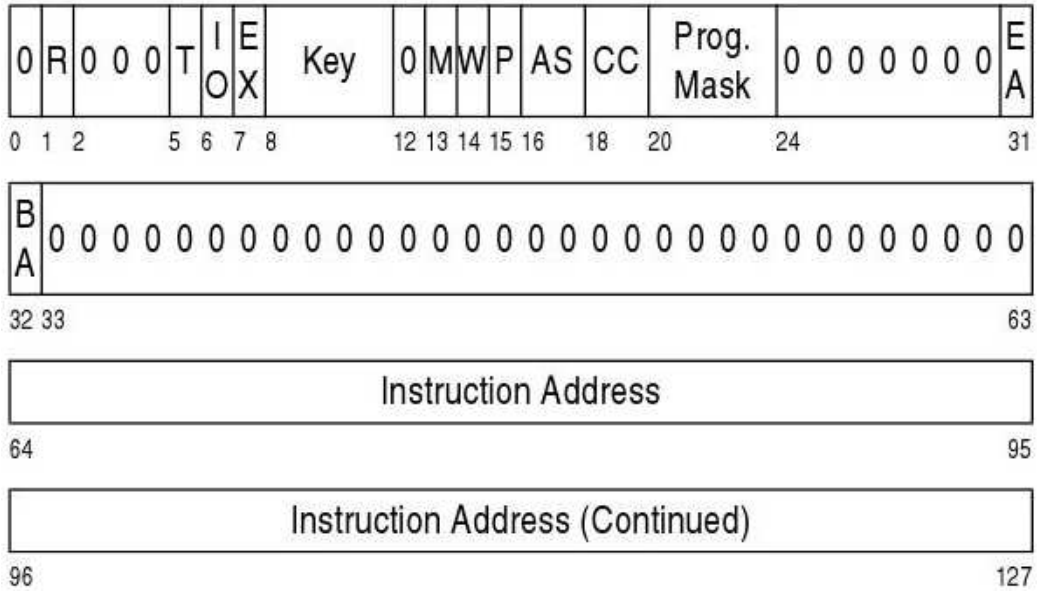

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- Many instructions reference storage

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- A number of them can be masked out

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- Similar to DMA, but *way* more advanced

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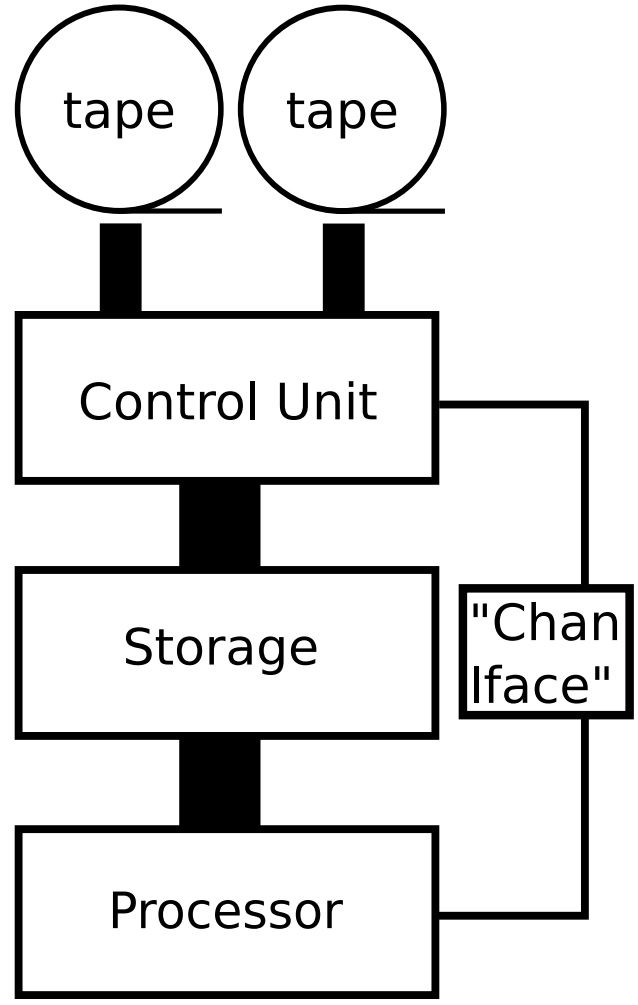
- A device is attached to a Control Unit



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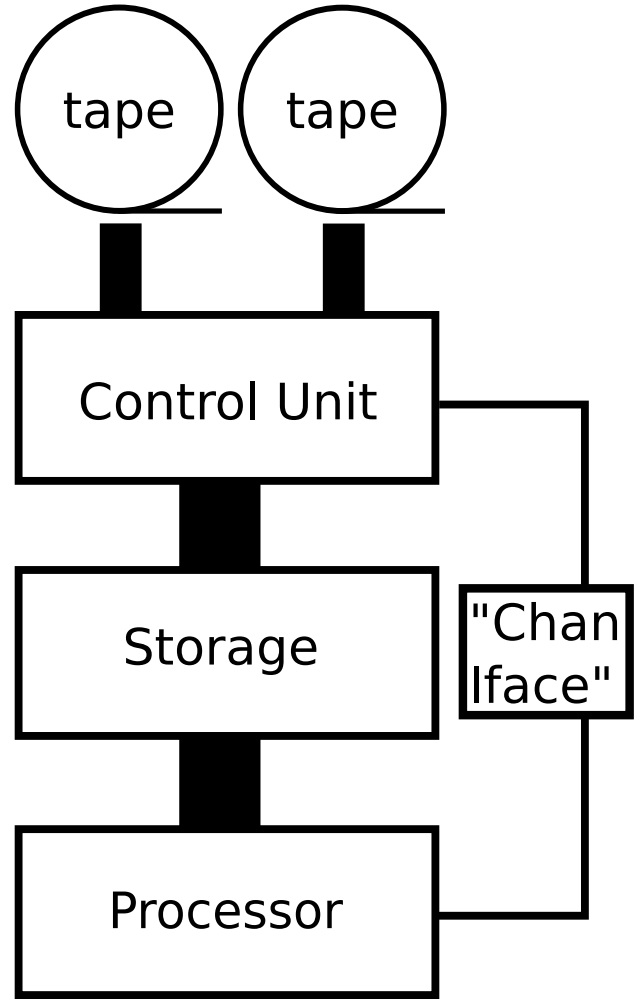

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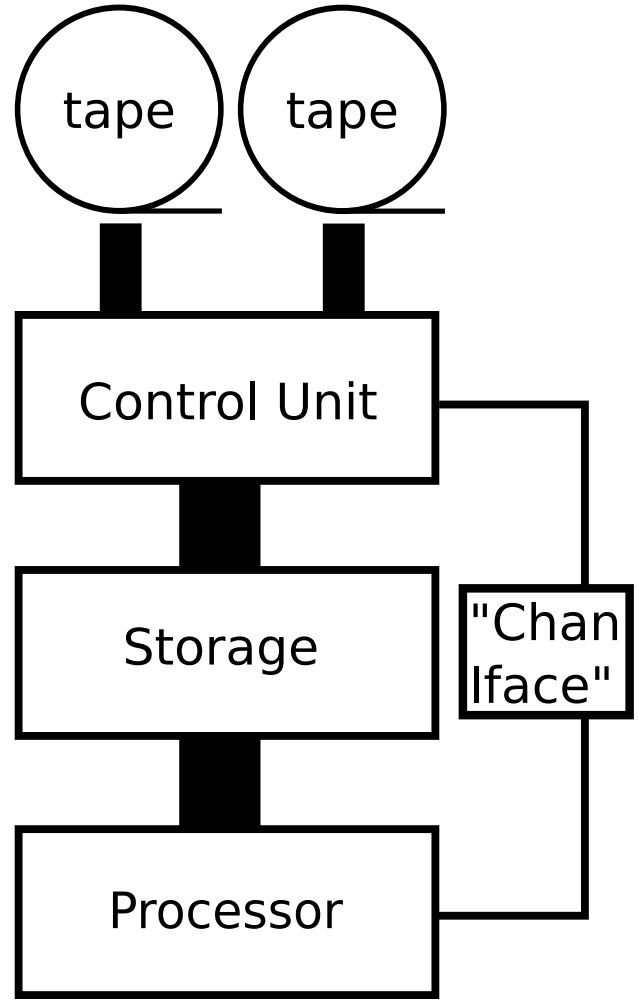

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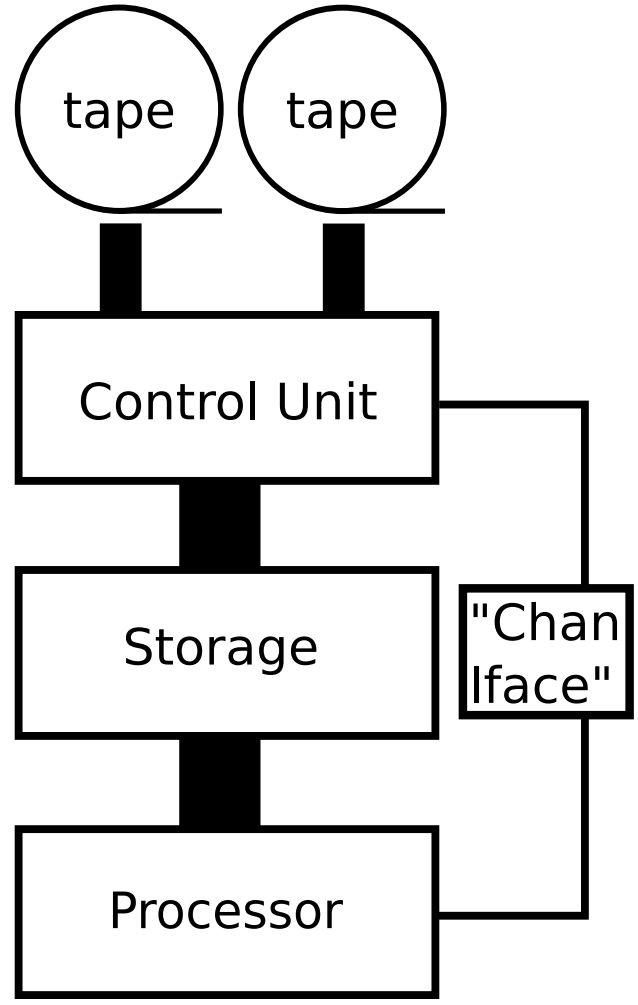

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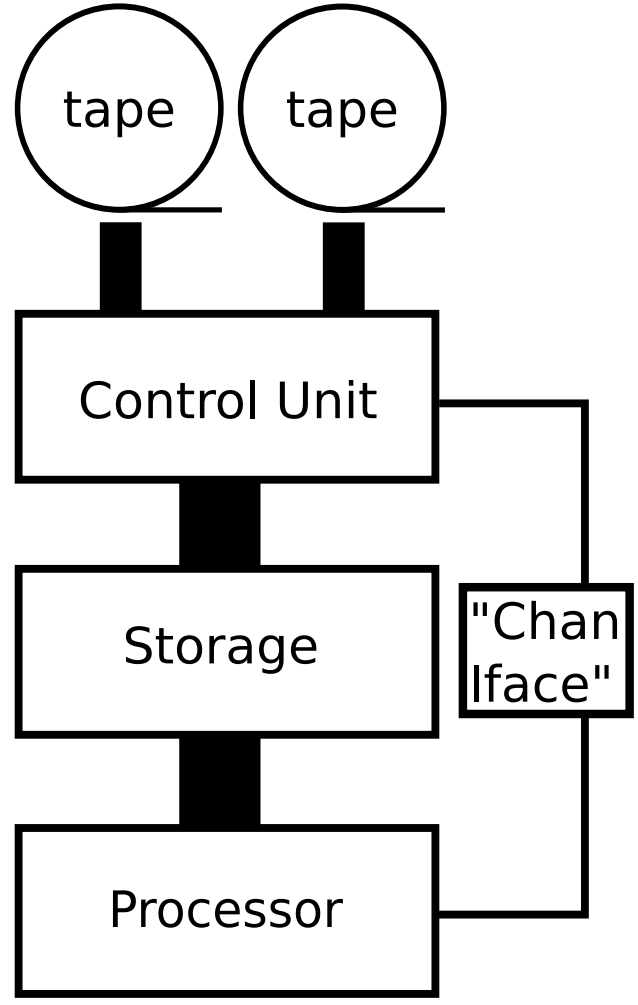

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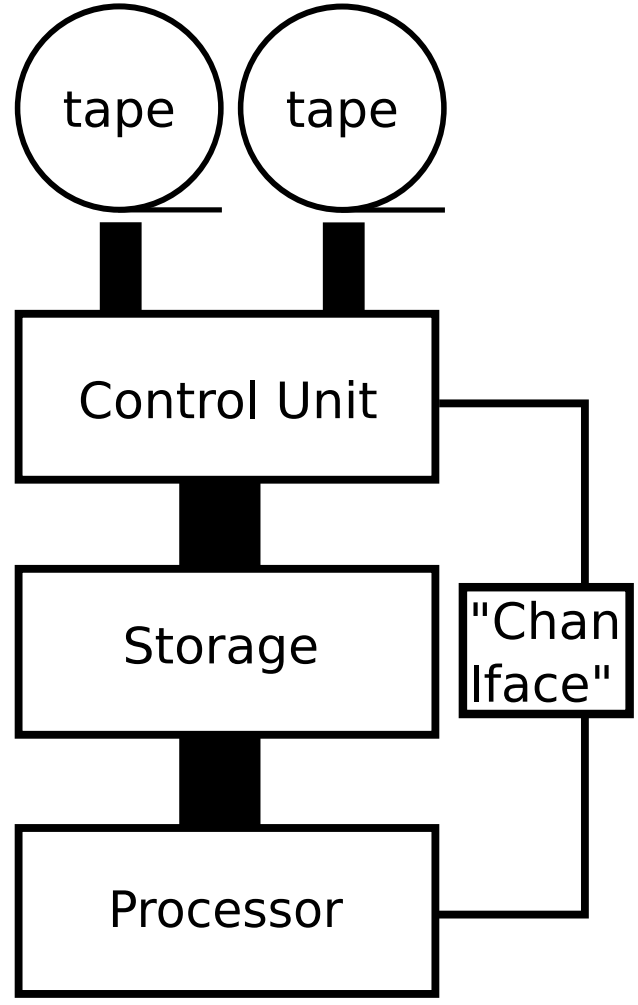

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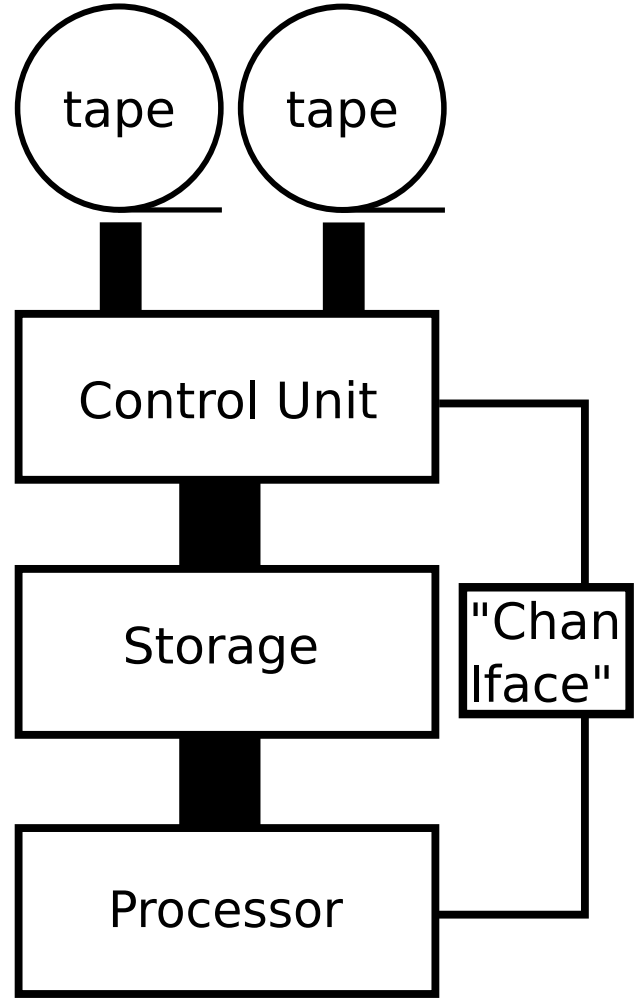

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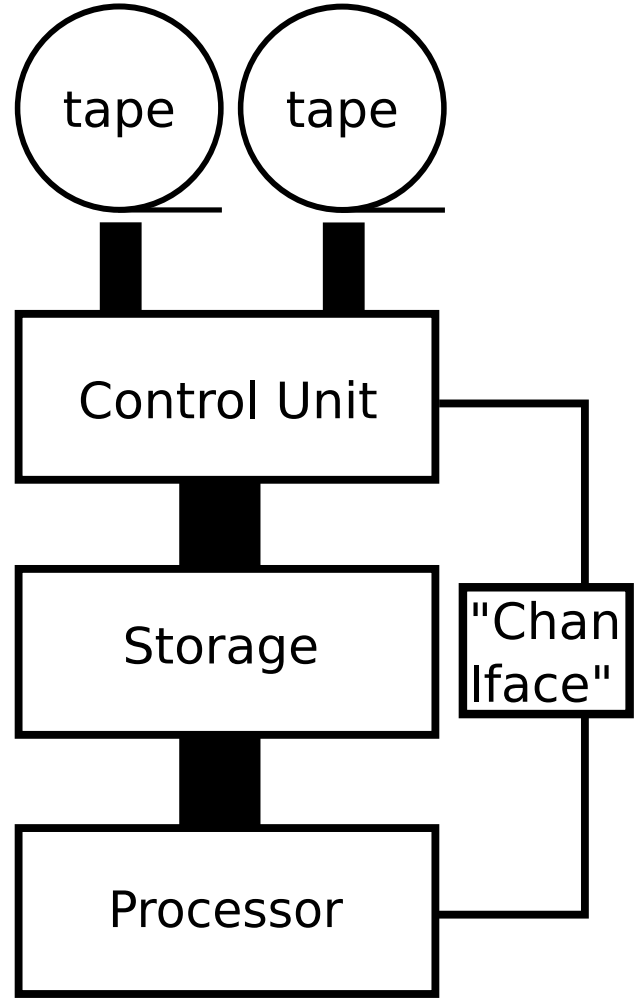

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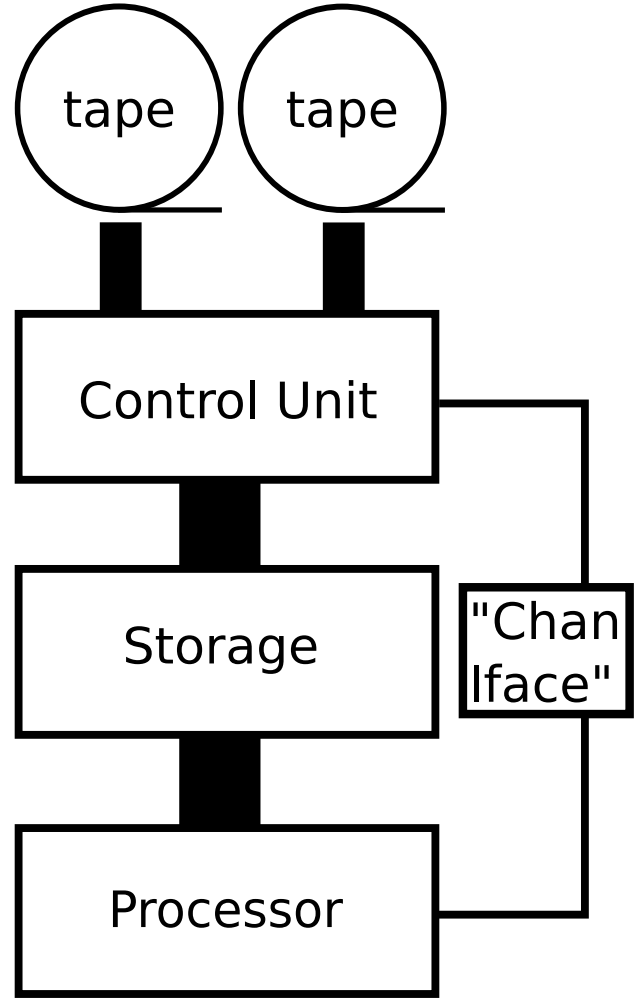
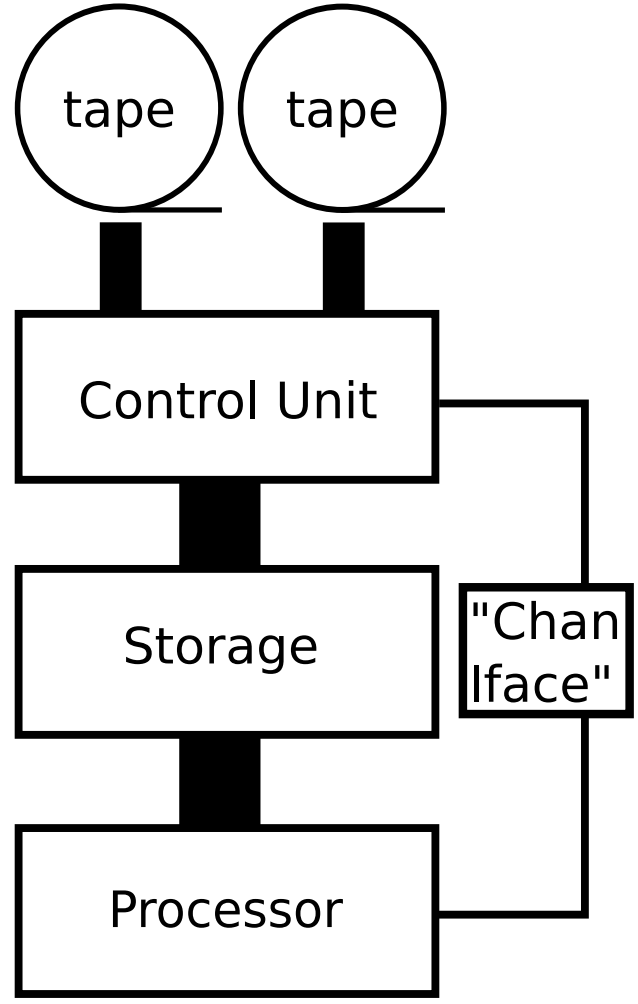
- Signal CU to execute stored commands
- CU generates an IO interrupt when...



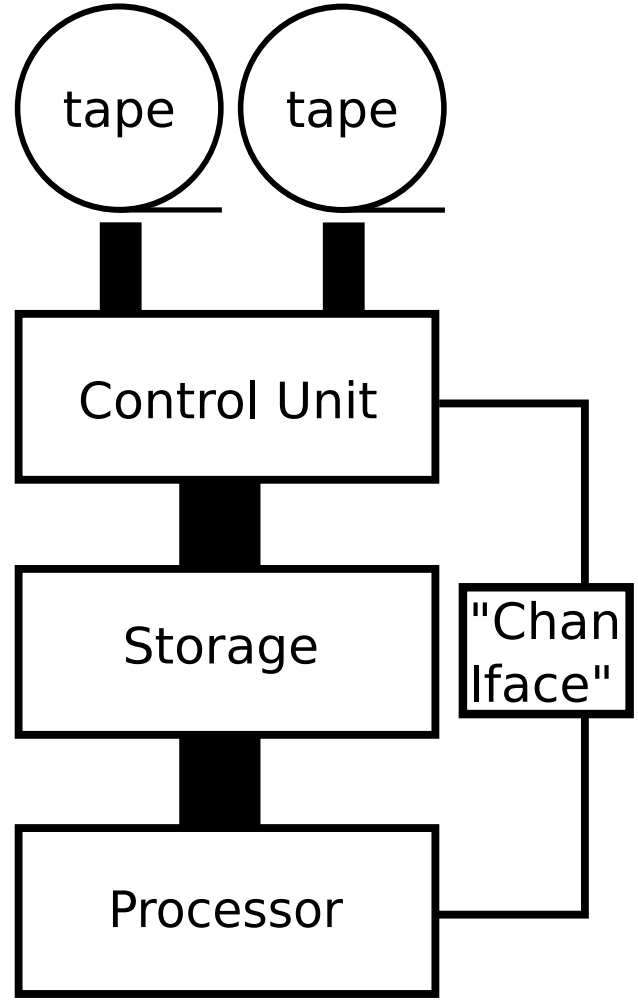
12. Channels - Issuing I/O

- Save Channel Command Words (CCWs) in storage
- Signal CU to execute stored commands
- CU generates an IO interrupt when...
  - IO completes



12. Channels - Issuing I/O

- Save Channel Command Words (CCWs) in storage
- Signal CU to execute stored commands
- CU generates an IO interrupt when...
  - IO completes
  - Error occurs



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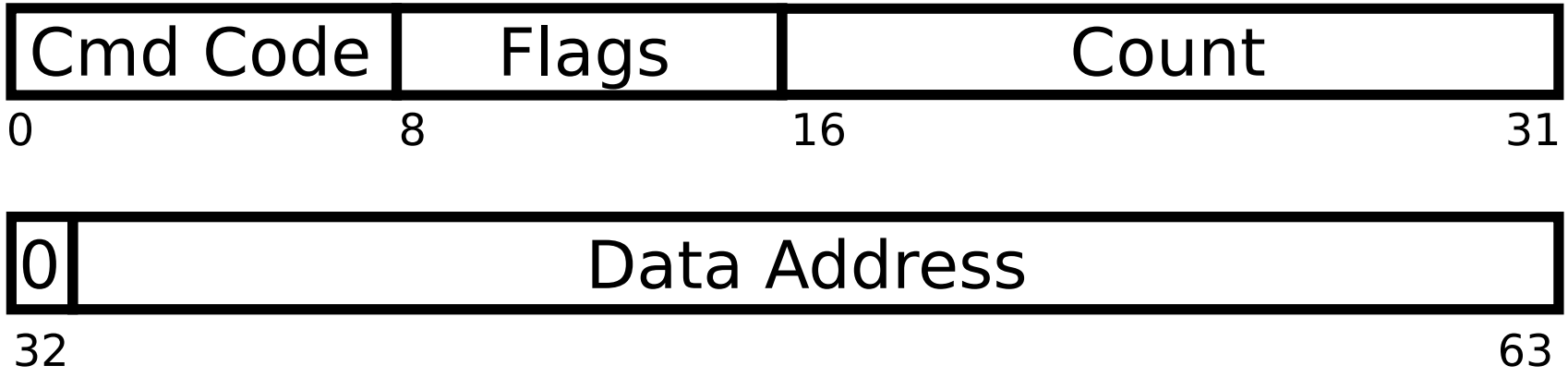

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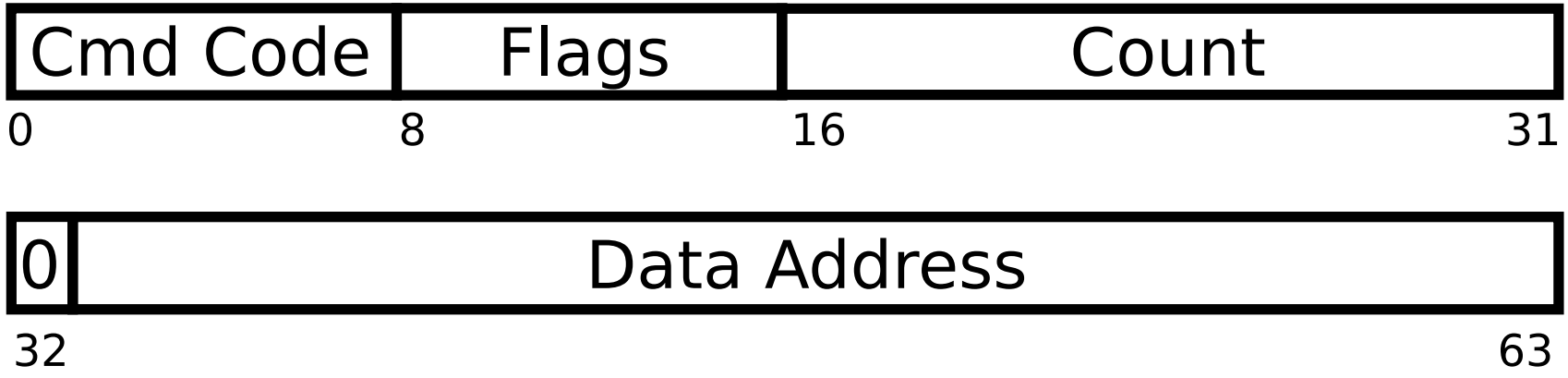
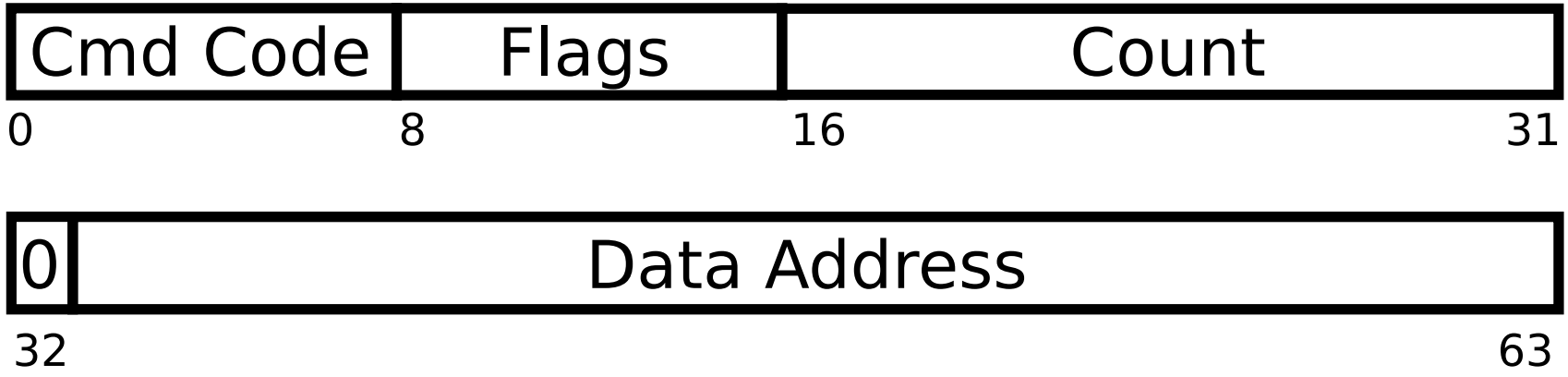


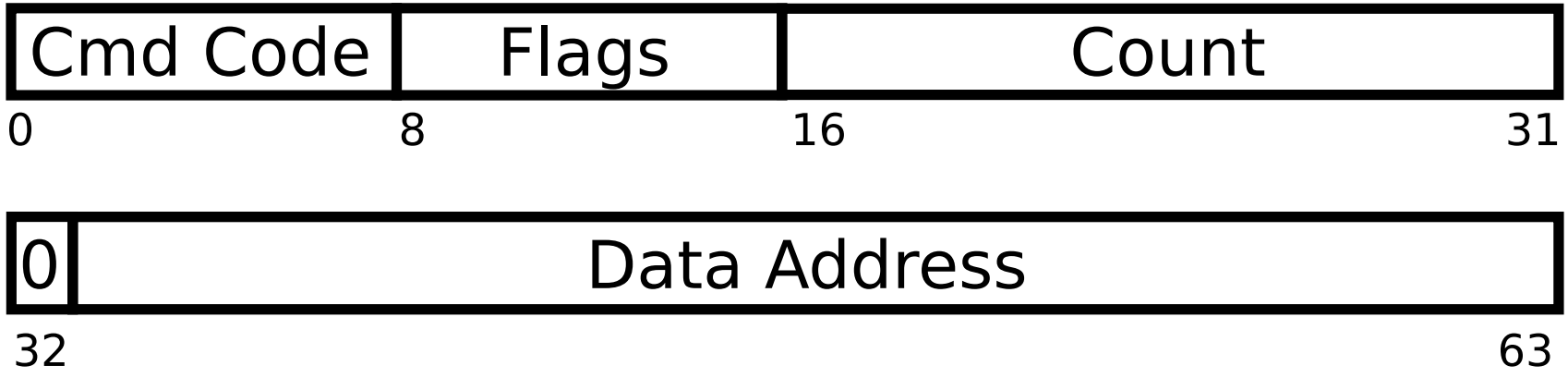
- Command

12. Channels - CCWs



- Command
  - Write
  - Read
  - Read Backward
  - Control
  - Sense
  - Sense ID
  - Transfer in Control (branch!)

12. Channels - CCWs



- Command
- Flags

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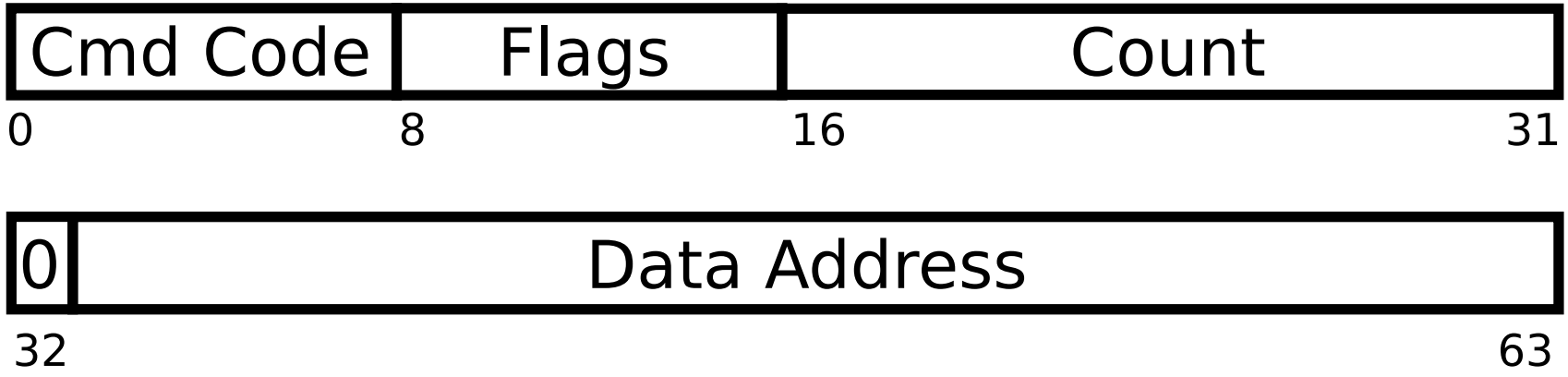
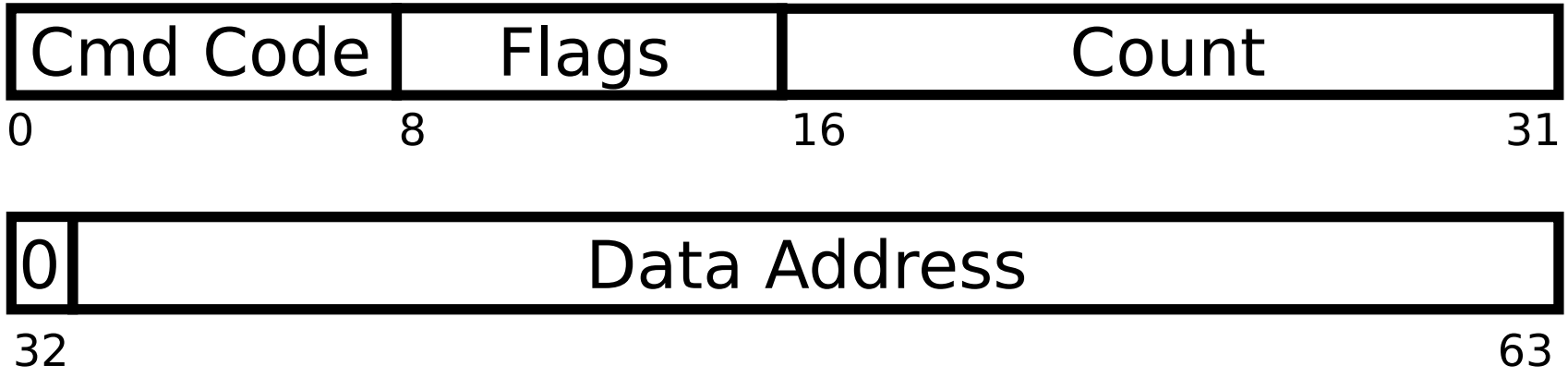


- Command
- Flags
  - CCWs chaining
  - Skip (do not read)
  - Indirect addressing (2 modes: IDA, MIDA)
  - Suspend execution
  - ...

12. Channels - CCWs



- Command
- Flags
- Byte count

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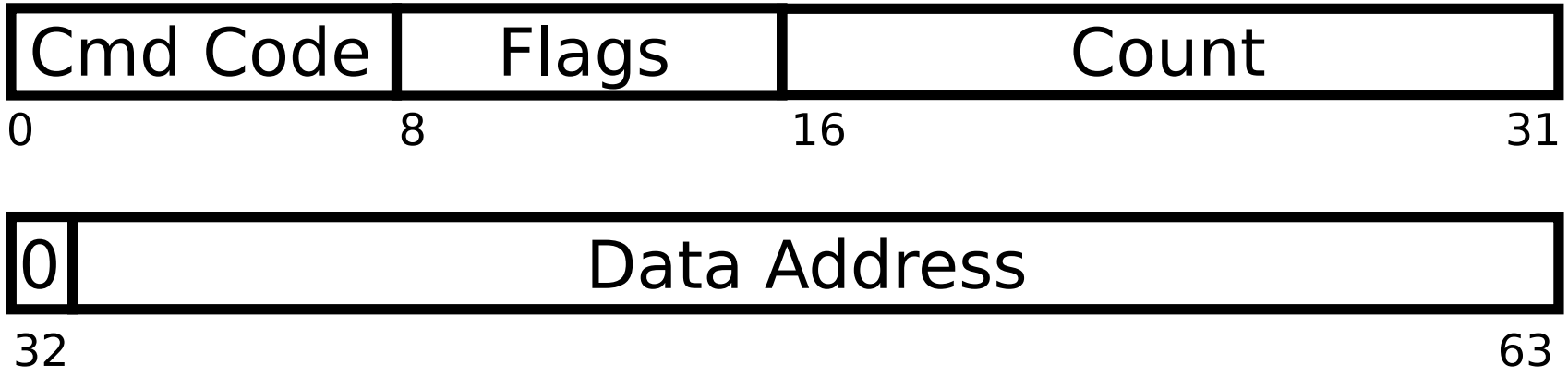

- Command
- Flags
- Byte count
- Buffer address

My thoughts exactly...

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  - Funny you should ask...

HVF

- OS/Hypervisor

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- z/Architecture

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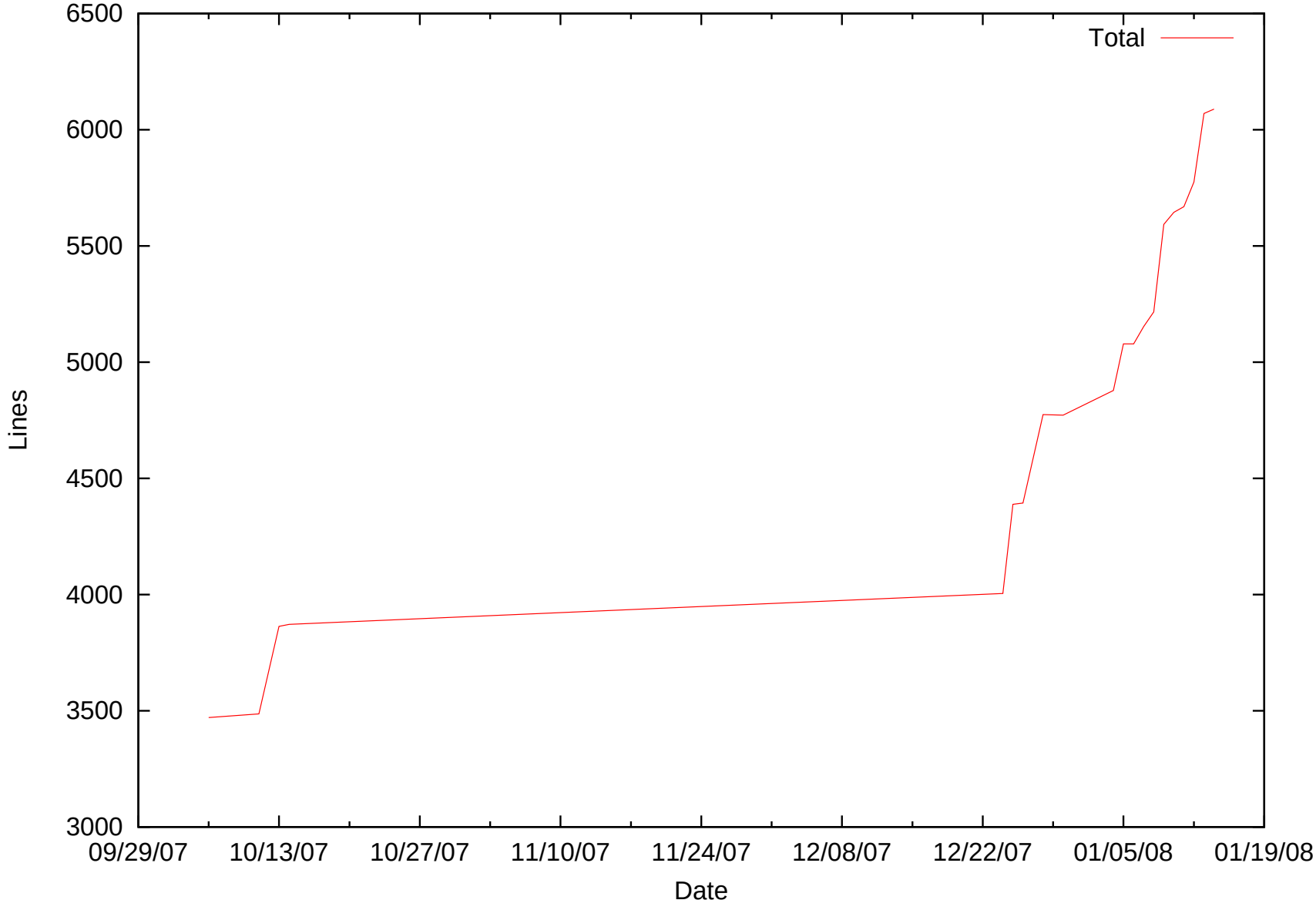
HVF - Repository Size



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  - **`#hvf`** on OFTC

Questions?

References

- z/Architecture Principles of Operation (SA22-7832-05)
- System z Architecture Course
- System/370 XA — Interpretive Execution (SA22-7095-1)
- Hercules Emulator
  `www.hercules-390.org`
- Installing Debian under Hercules
  `www.josefsipek.net/docs/s390-linux/`

- Diagram of PSW taken from SA22-7832-05
- Image of z9 from infoworld.com's website