

# Unigornel Console Input

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# Generic IO in Xen<sup>1</sup>

- ▶ Event channels
  - ▶ Hypercalls to notify Xen
  - ▶ Event handler to handle incoming data
- ▶ Circular buffer to share data
  - ▶ Ring buffers
  - ▶ Grant table for sharing pages between domains

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<sup>1</sup>The Definitive Guide to the Xen Hypervisor, David Chisnall

# Console IO

- ▶ Two rings
  - ▶ Input, 1024 bytes
  - ▶ Output, 2048 bytes
- ▶ Shared page reserved by Xen on guest startup
  - ▶ Console needs to be available early
  - ▶ MFN available in startup info
  - ▶ Map the page in virtual memory
- ▶ Bind event channel for incoming and outgoing notifications

# Console IO in Mini-OS

- ▶ Console automatically initialized in Xen
- ▶ `__attribute__((weak))`  
`void console_input(char *buf, unsigned len)` in `console.c`
  - ▶ Called when incoming data is available
  - ▶ Overwrite with our own input handler
- ▶ `sys_read` system call
  - ▶ Read from available data or block<sup>2</sup>

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<sup>2</sup><https://github.ugent.be/unigornel/minios/commit/e182f4f302358125ce8ee8173f35632d92fb9bc2>