Fast switching between operating systems using a pass-through hypervisor

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TECHNOLOGY

Talking Points

1 Motivation

2 Approach

3 Measurements

4 Future Work

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Motivation

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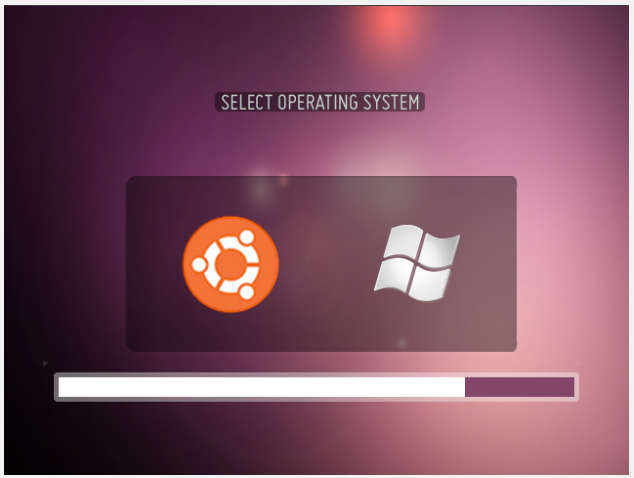

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- eliminate or mitigate performance issues
- eliminate hardware issues
- do not modify the OSes

Approach

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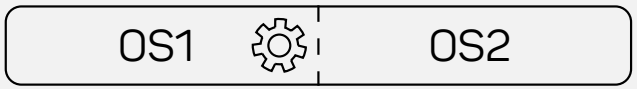

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- the OSes have to handover their devices
  - use suspend-to-RAM (S3 sleeping state)

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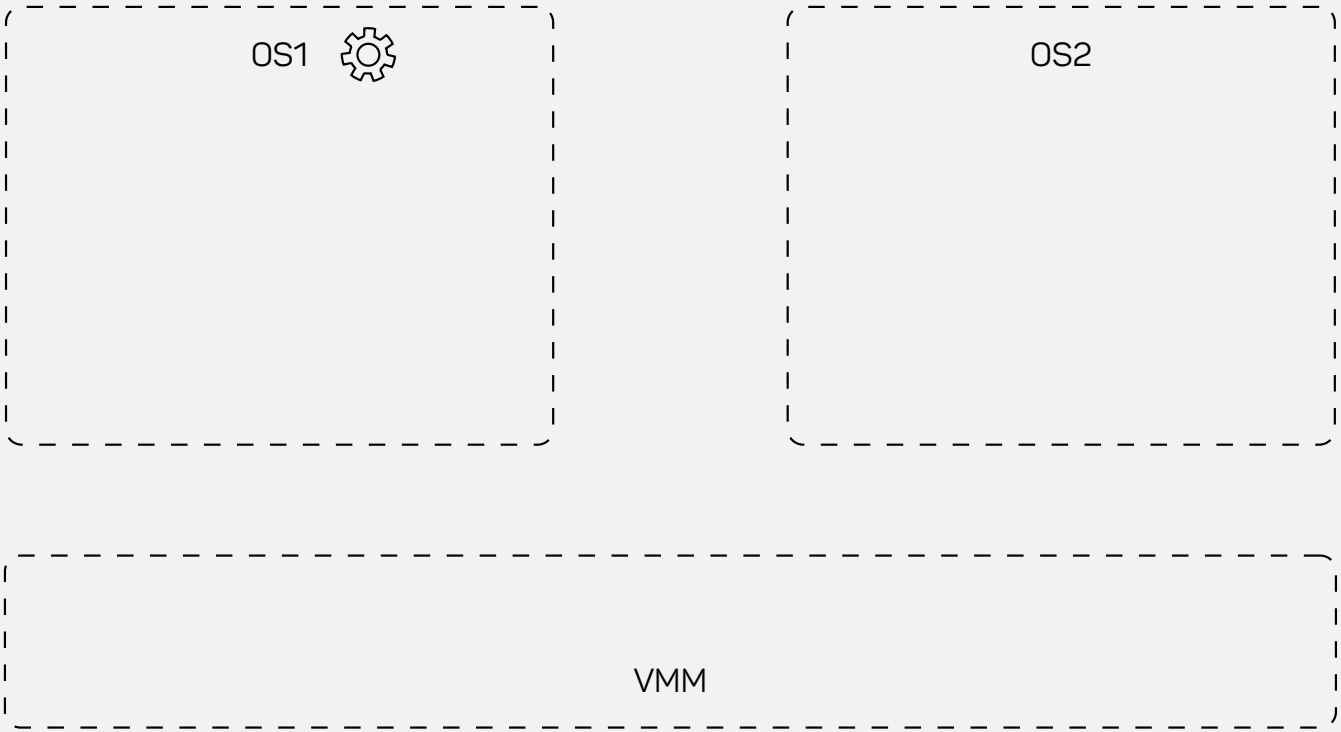

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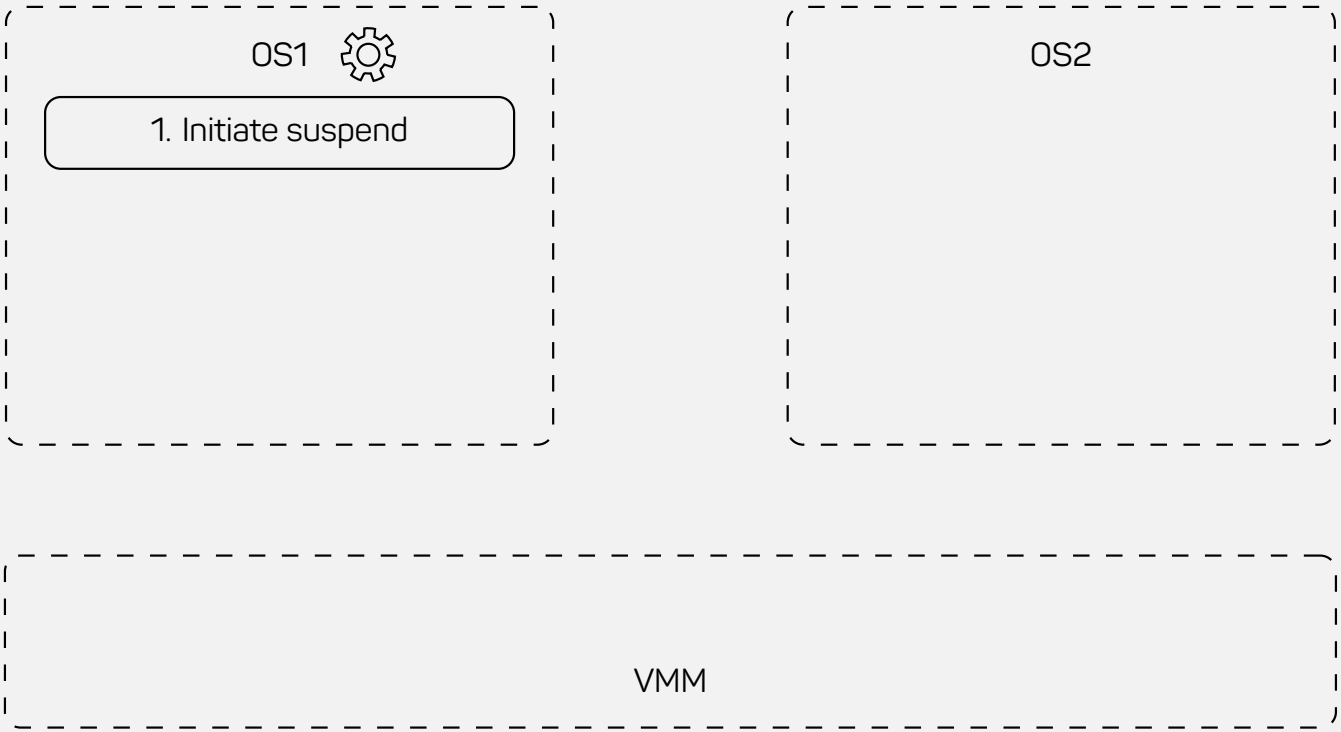

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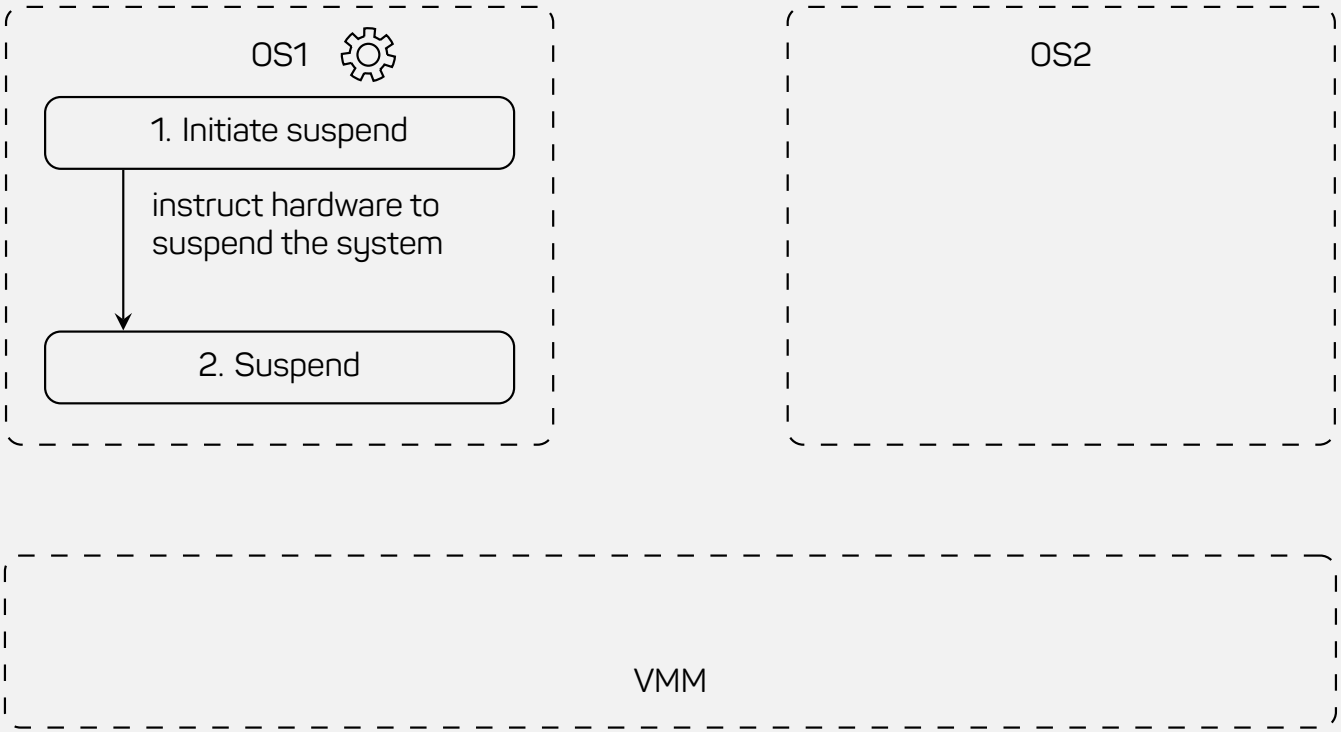

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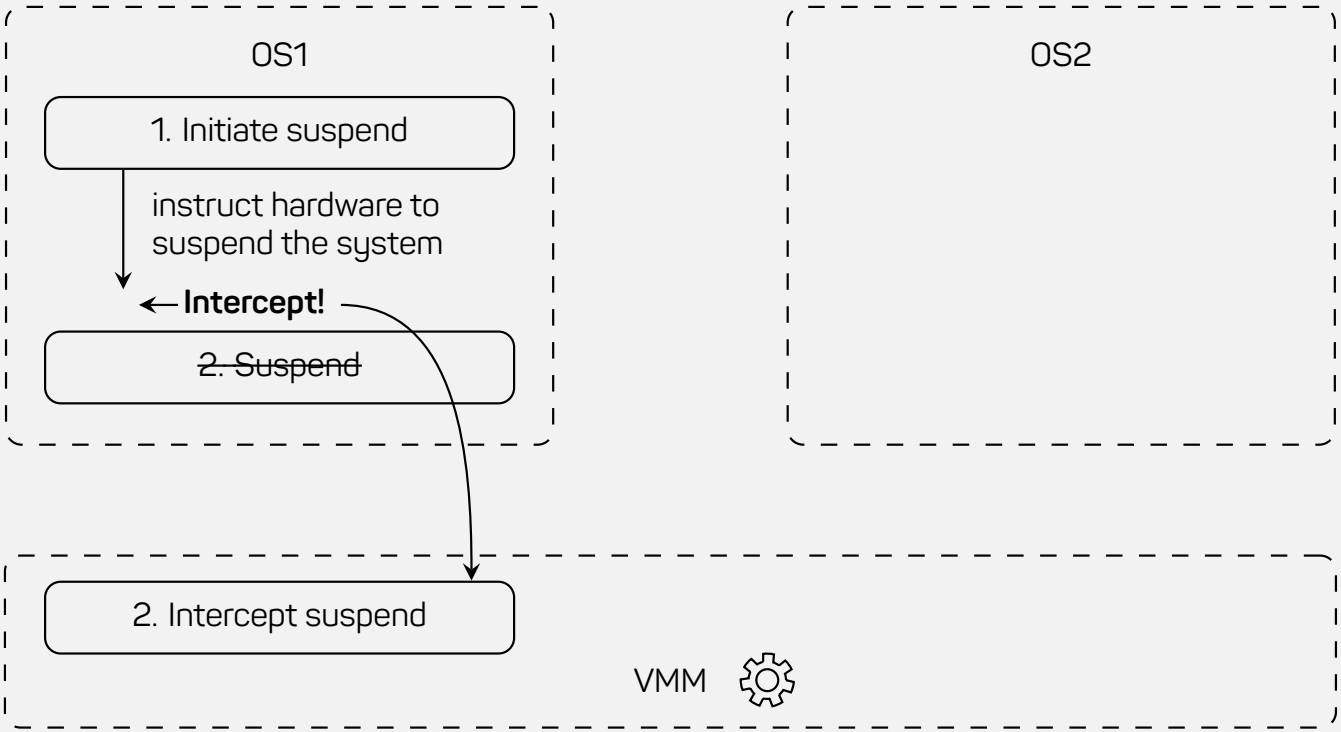

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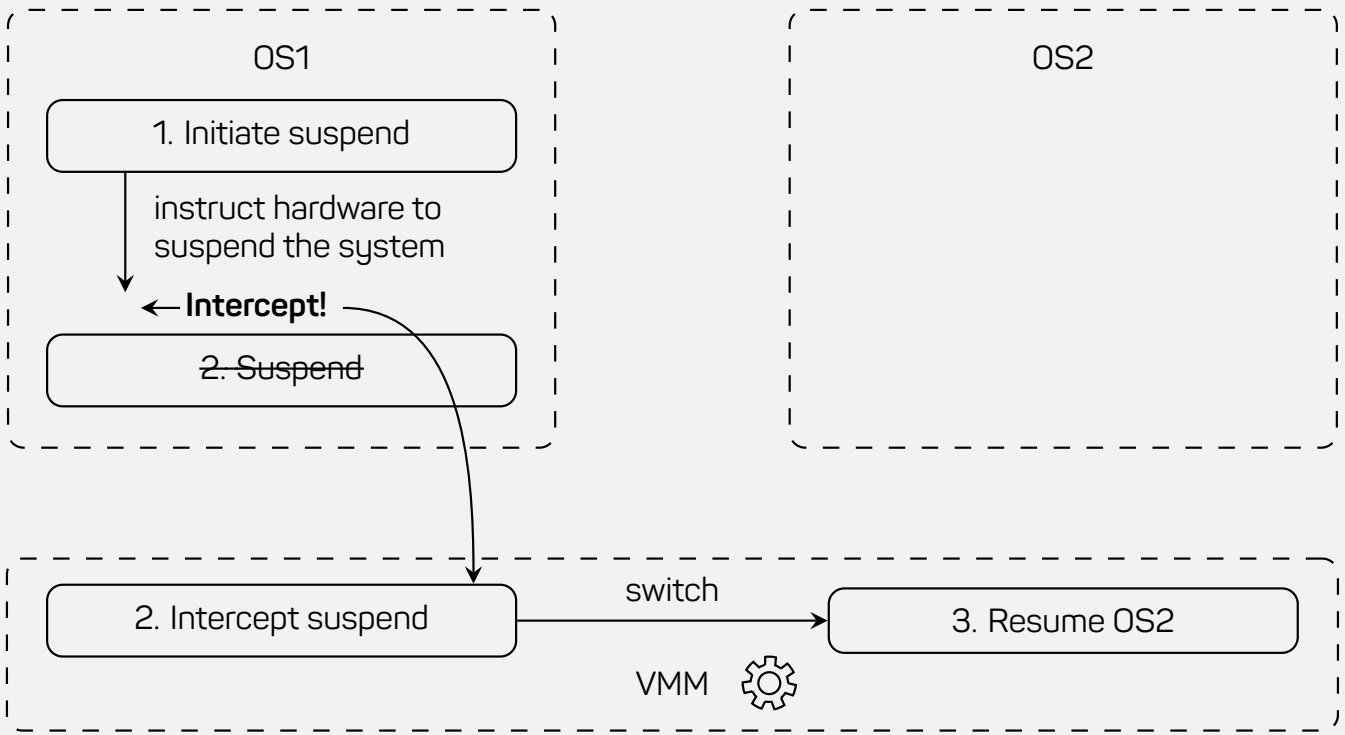

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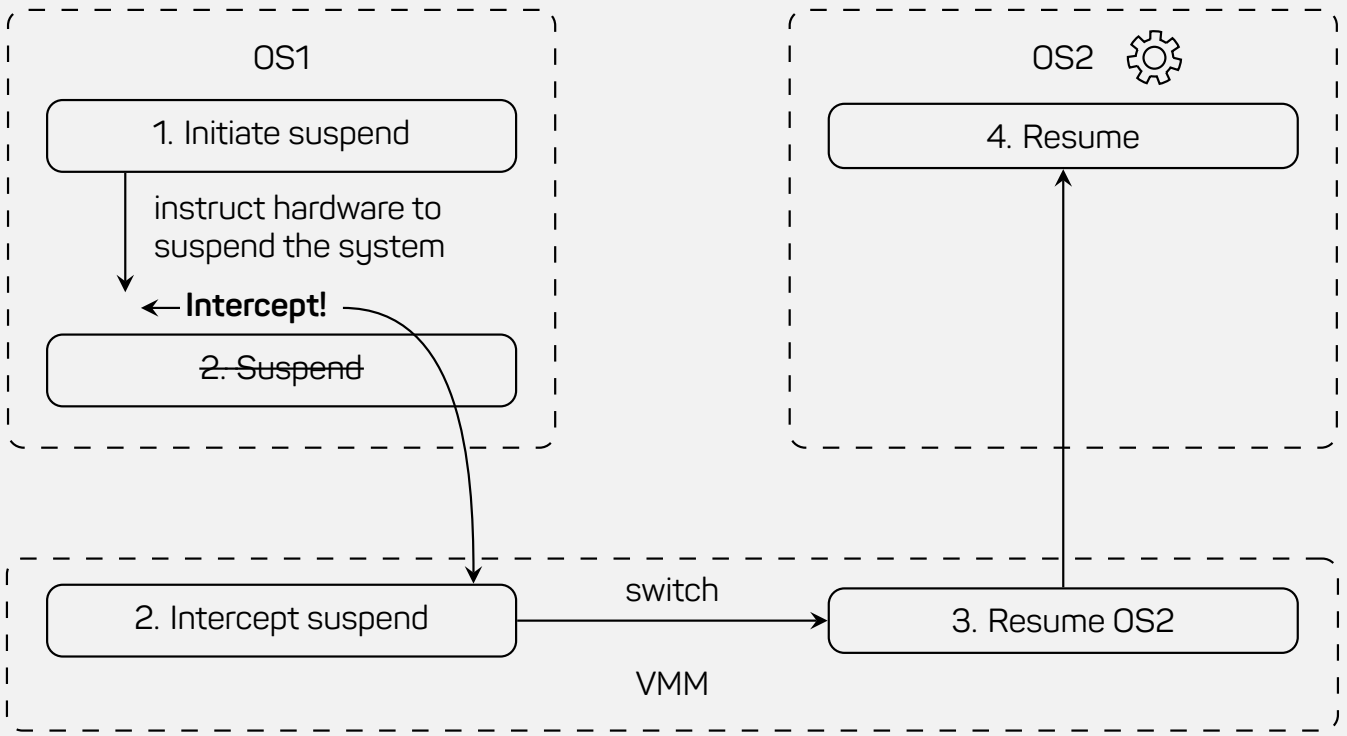

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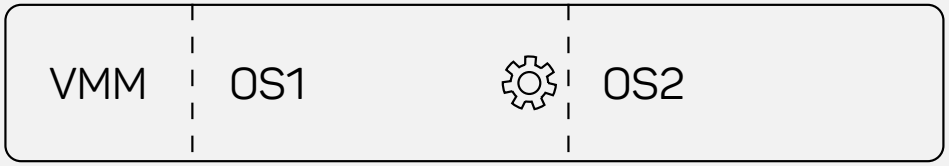

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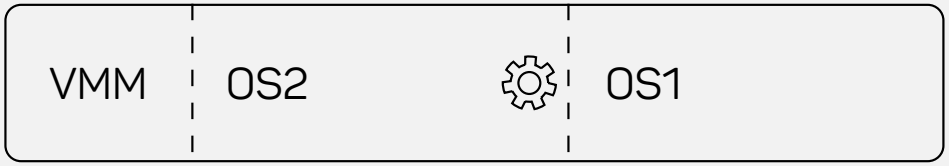

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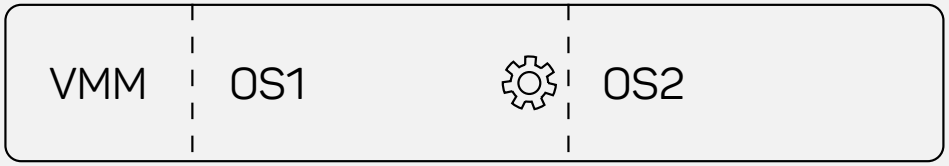

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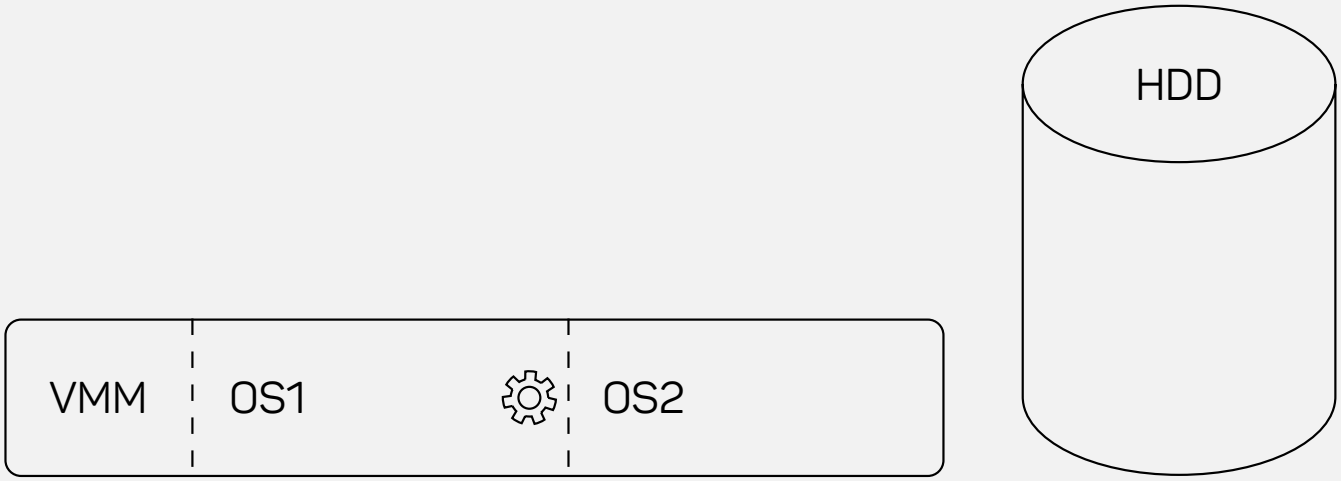

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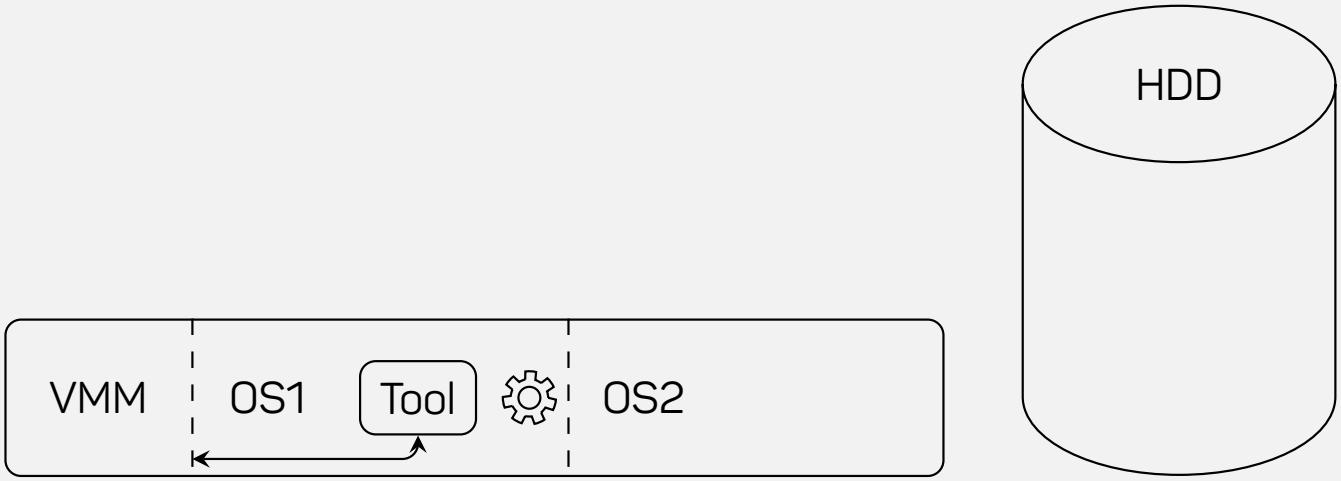

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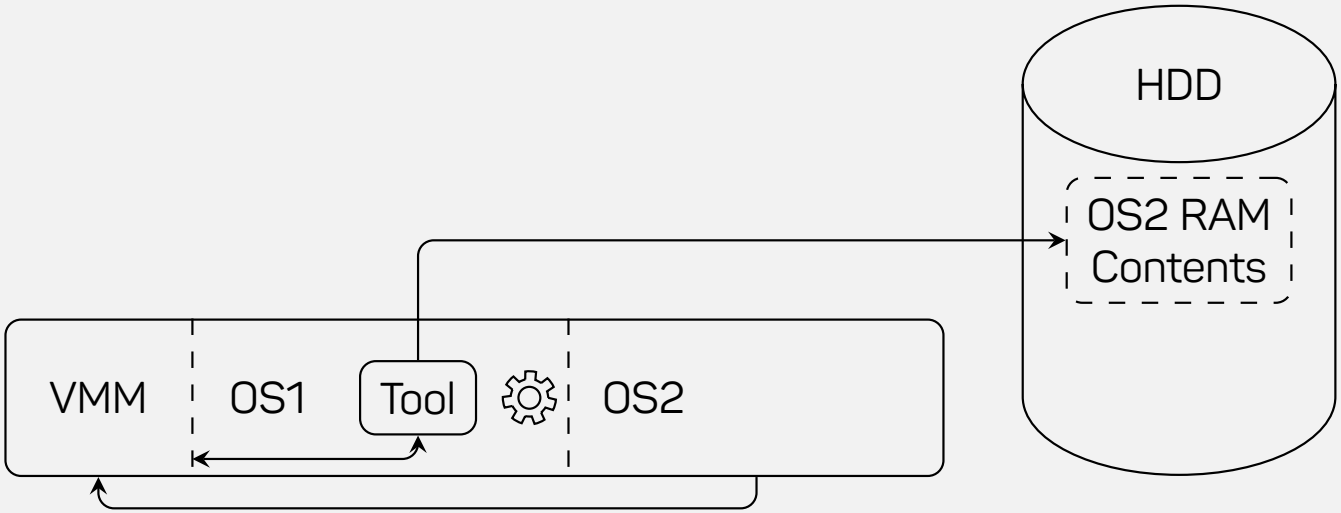

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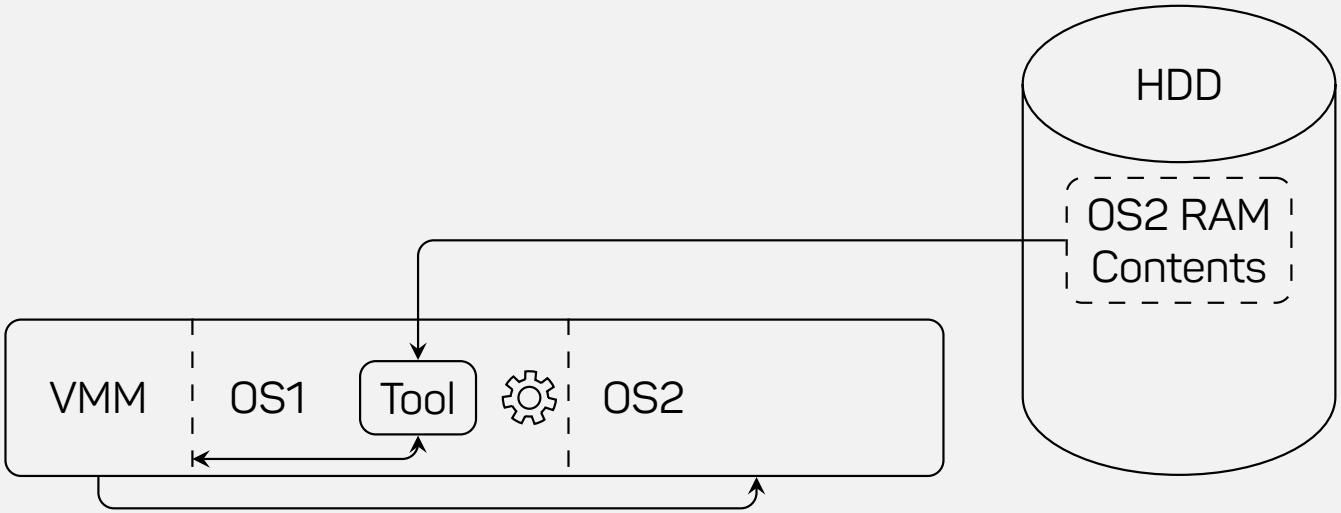
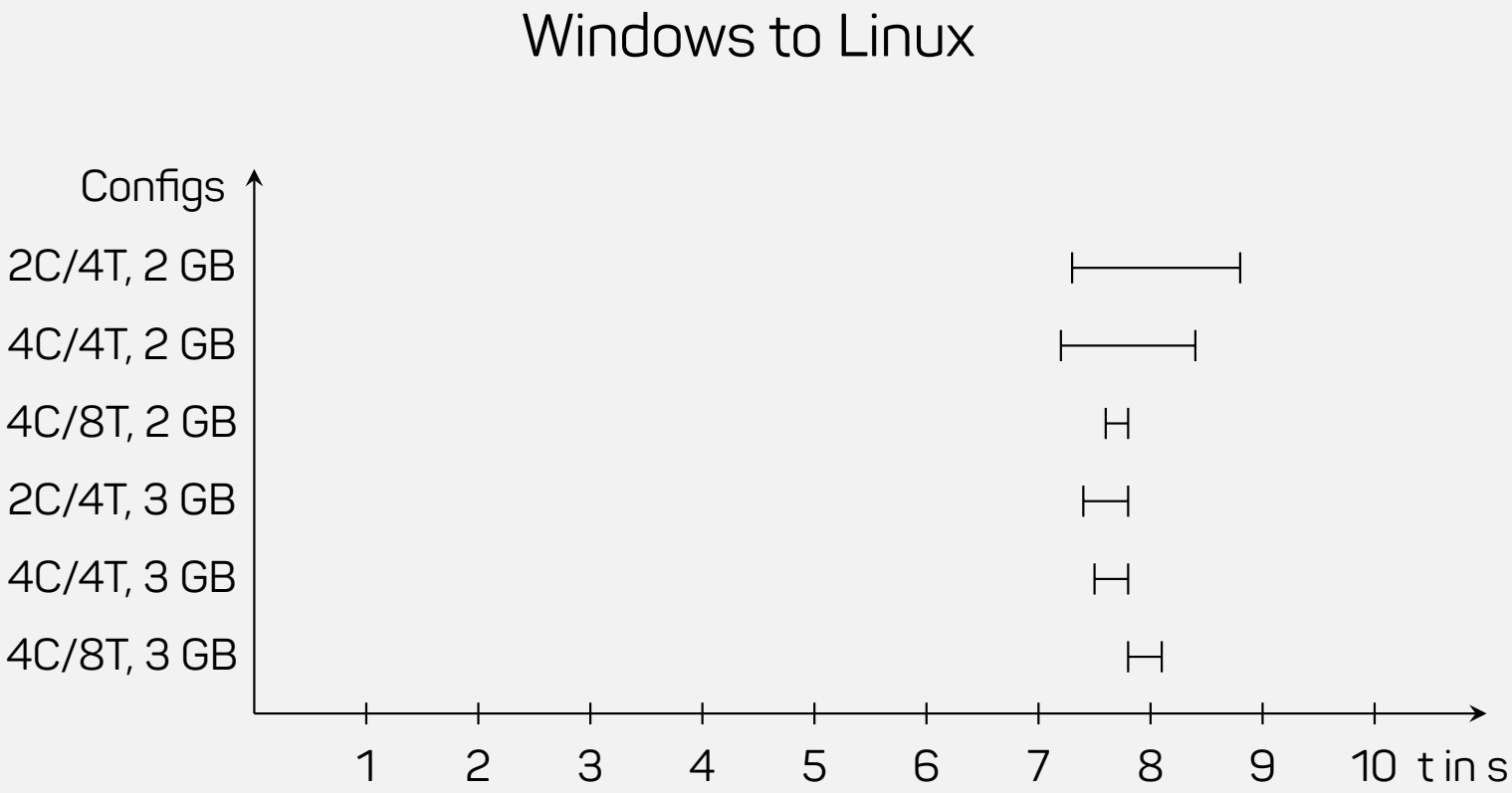


Measurements



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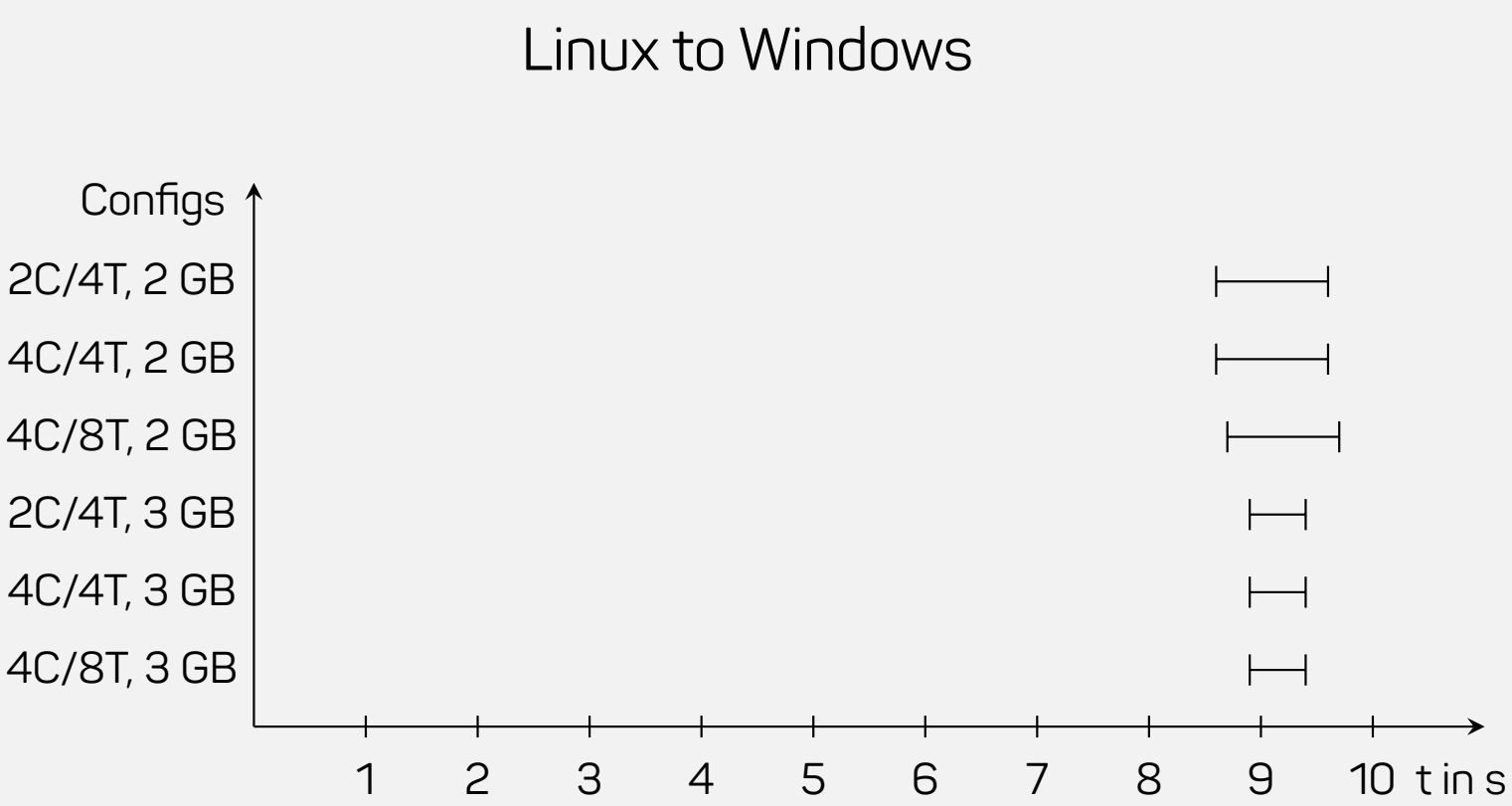

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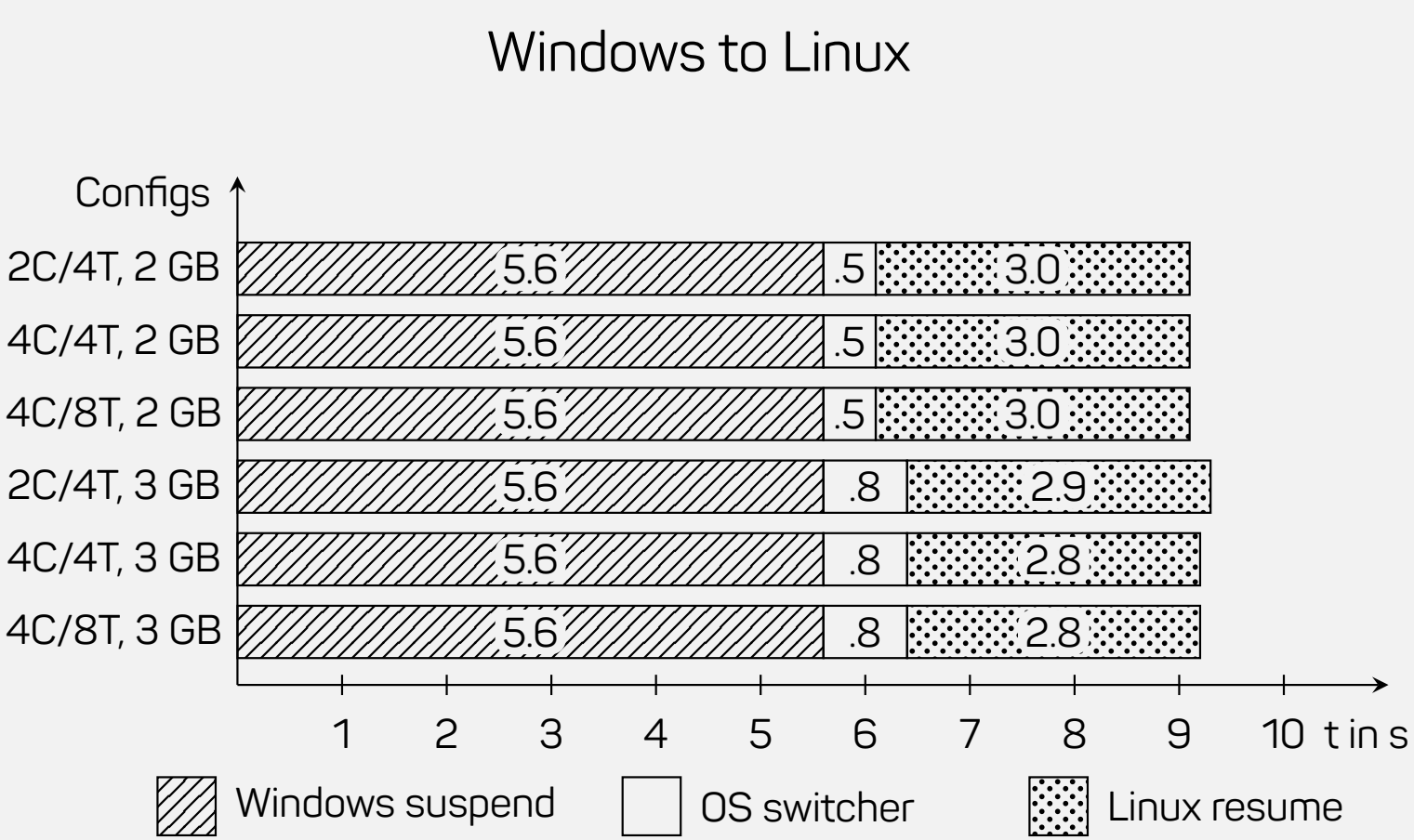

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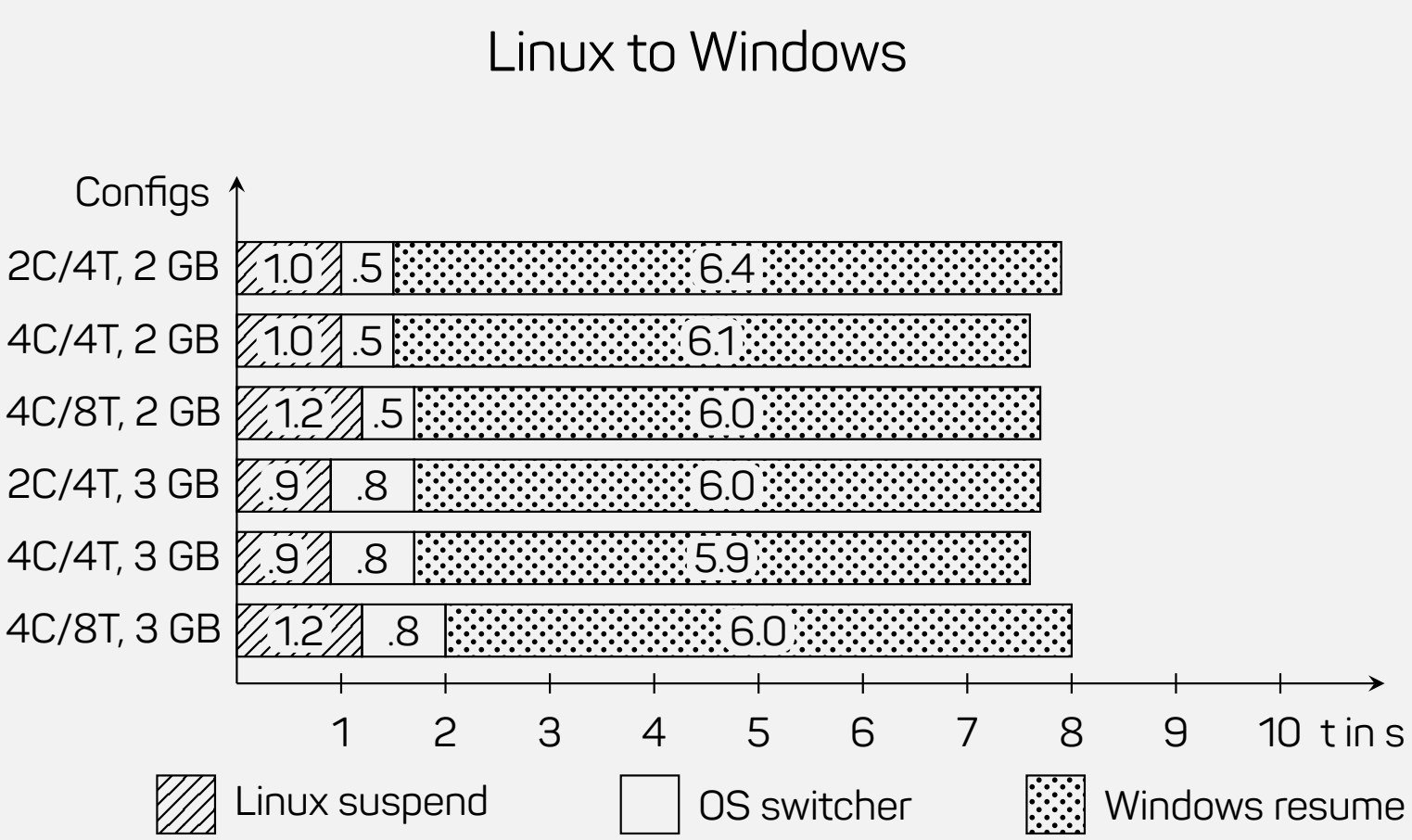

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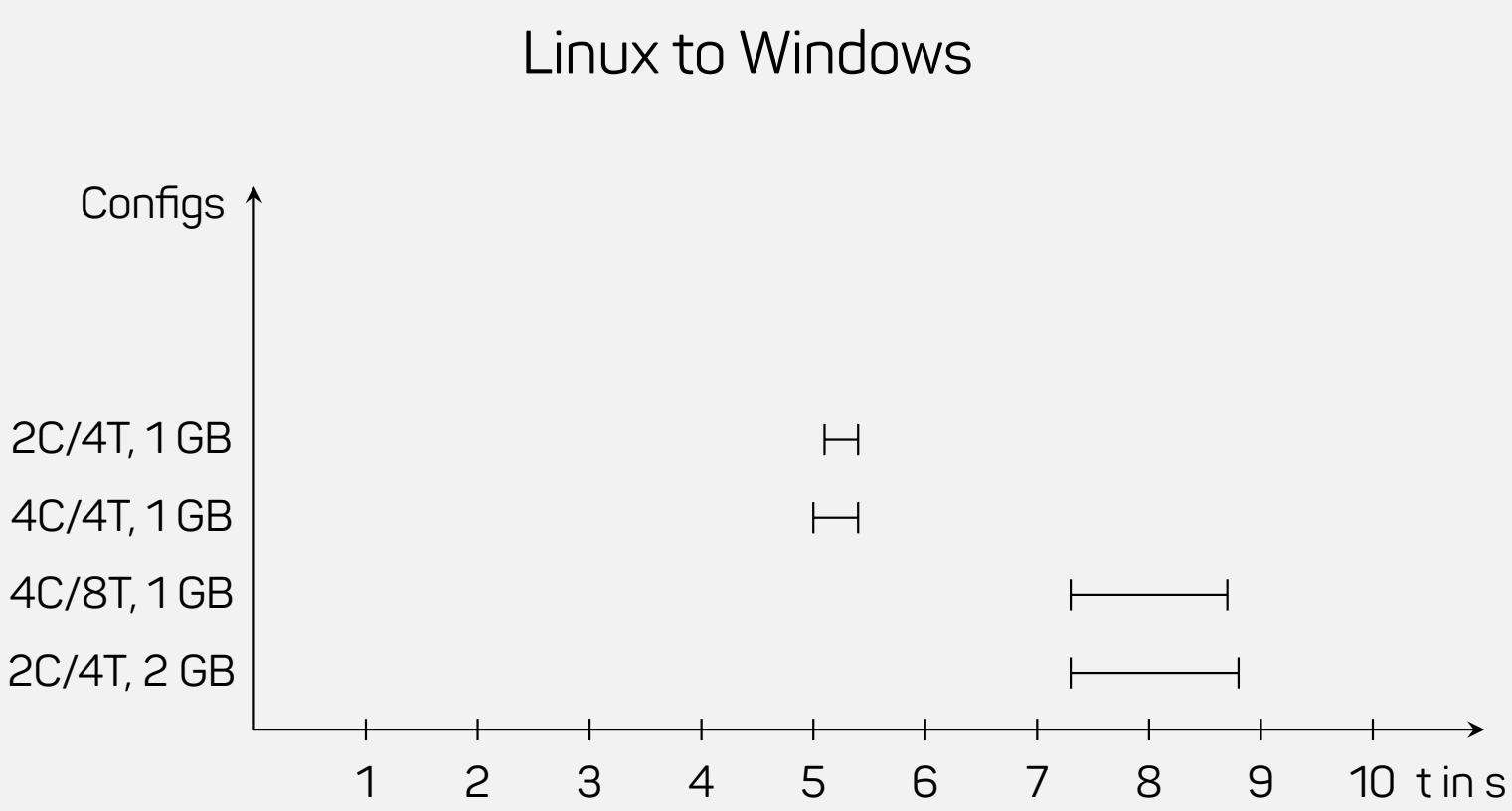

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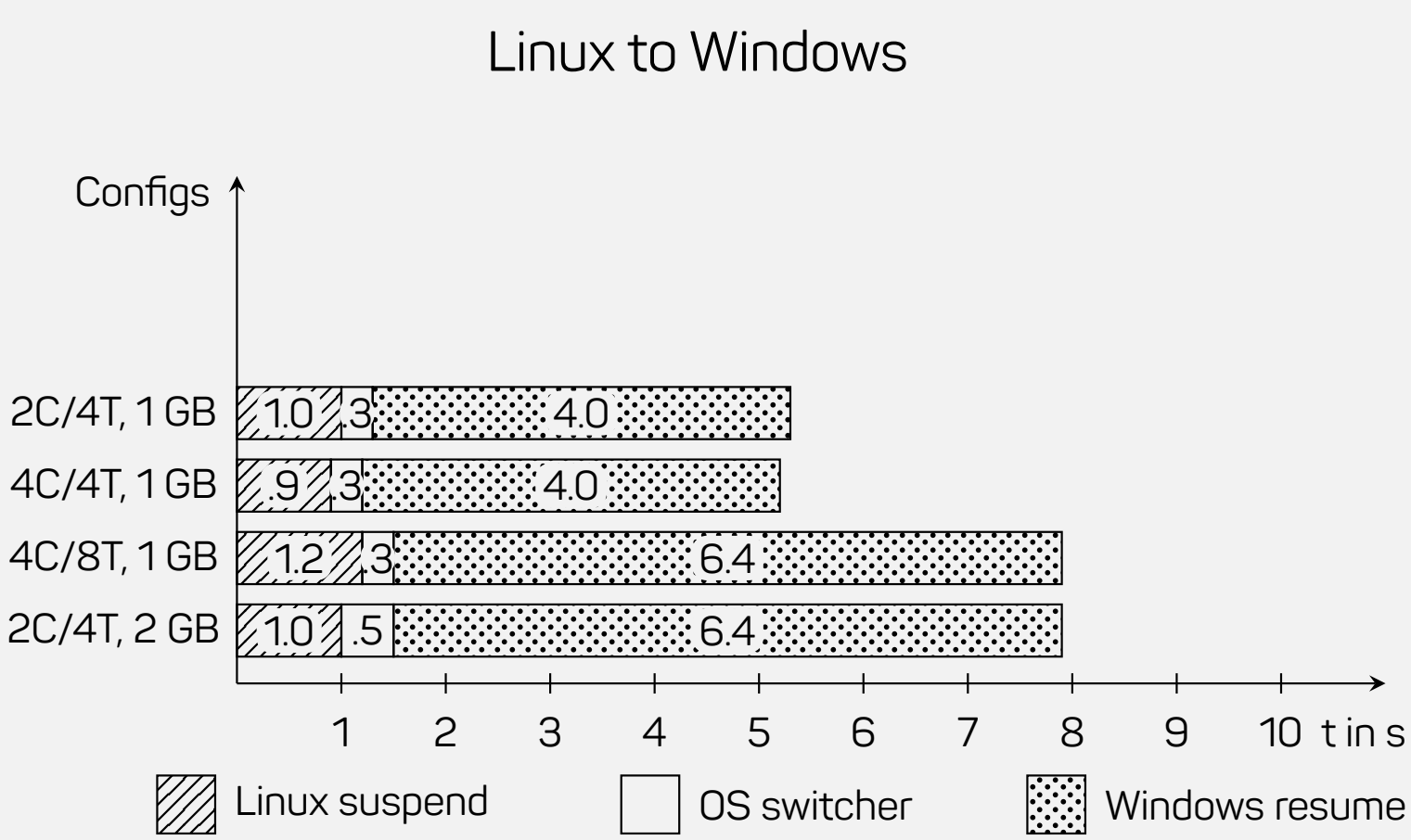

Future Work

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- suggestions for future hardware
  - **each** device needs two functions that can be invoked using MMIO
    - `store_configuration`
    - `read_configuration`

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Summary

- developed and implemented the OS switcher
  - use ACPI to avoid issues with device state management
  - use NOVA and SuperNOVA to intercept and control the guests

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- developed and implemented the OS switcher
  - use ACPI to avoid issues with device state management
  - use NOVA and SuperNOVA to intercept and control the guests
- switch between OSes in under 10 seconds
- switching works reliably on the tested hardware