Universitatea
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bhyve – Live Migration WIP

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Authors

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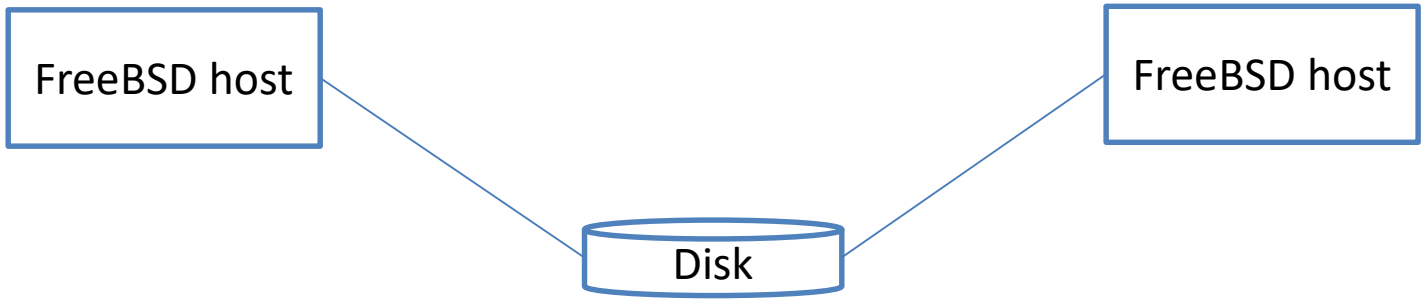
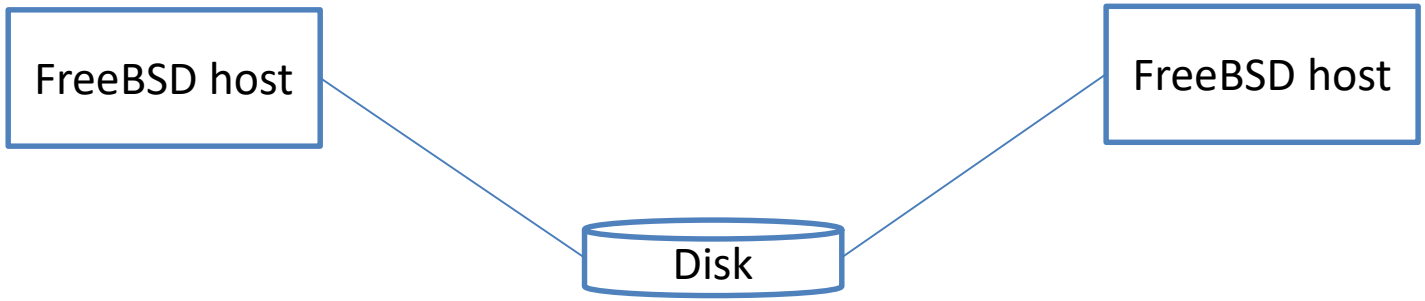
AsiaBSDCon 2018 – Last Update

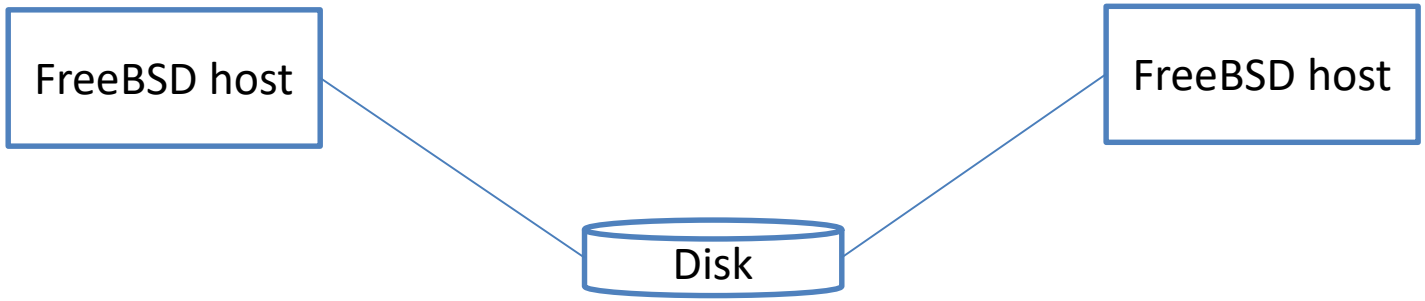


AsiaBSDCon 2018 – Last Update



run(vm)

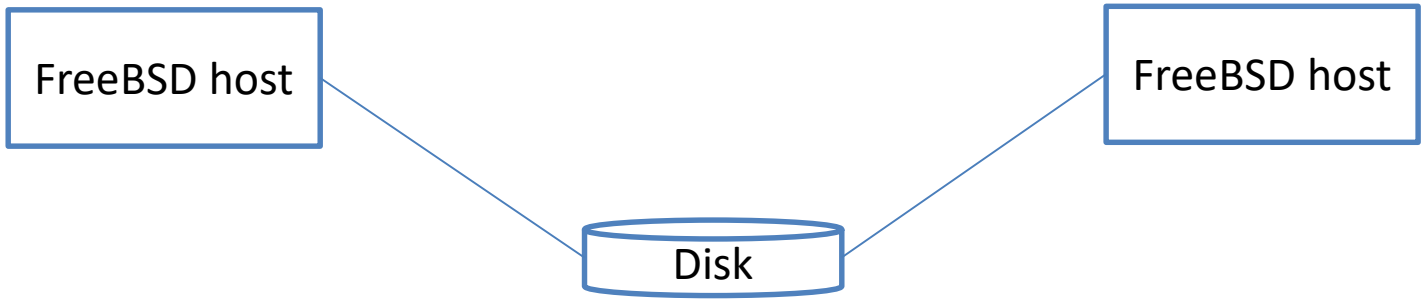
AsiaBSDCon 2018 – Last Update



run(vm)

suspend(vm)

AsiaBSDCon 2018 – Last Update

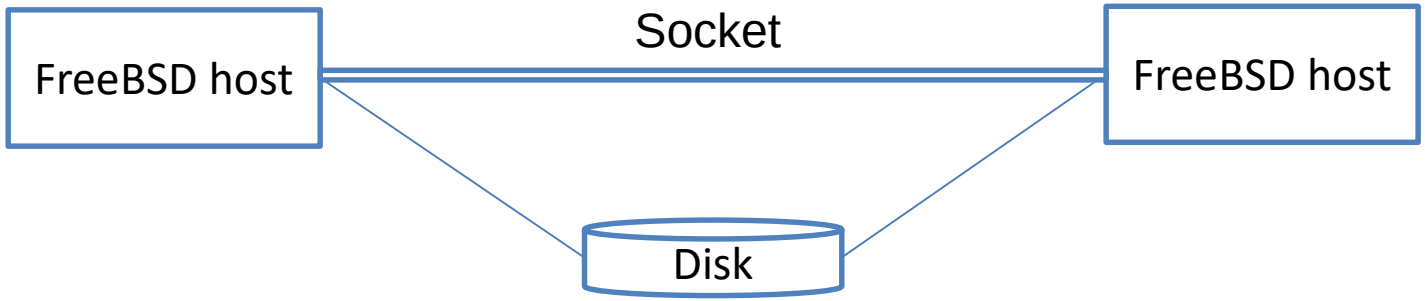


run(vm)

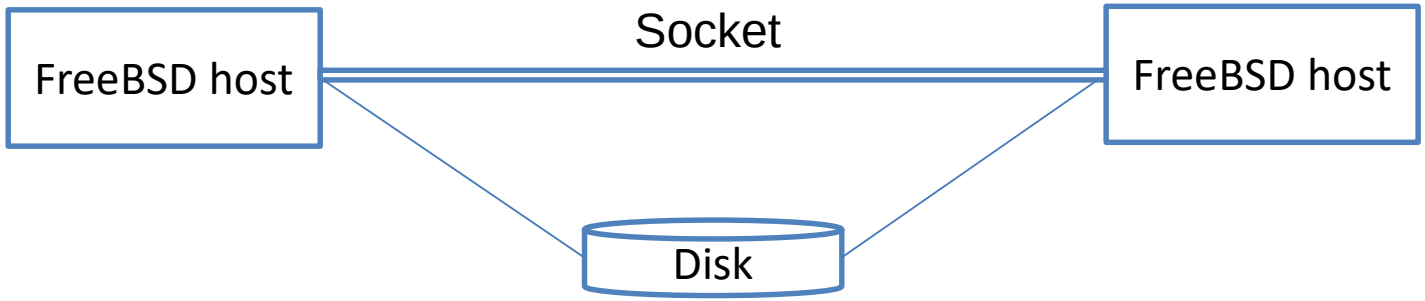
suspend(vm)

resume(vm)

Warm Migration

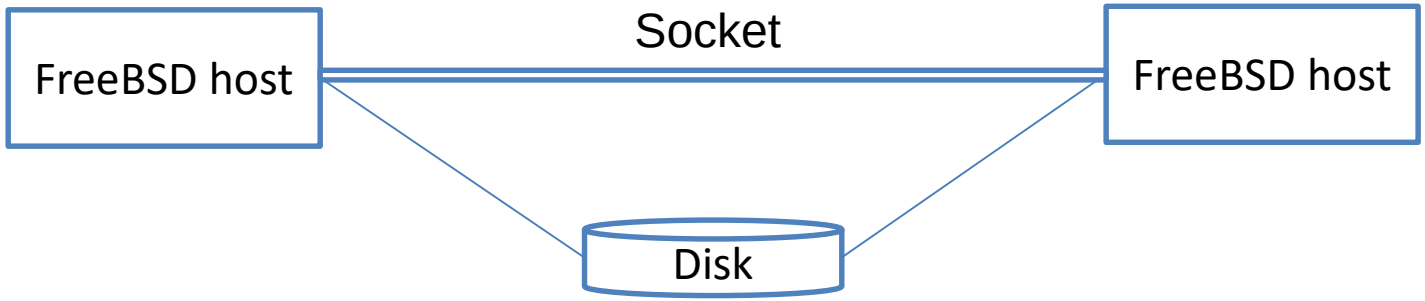


Warm Migration



run(vm)

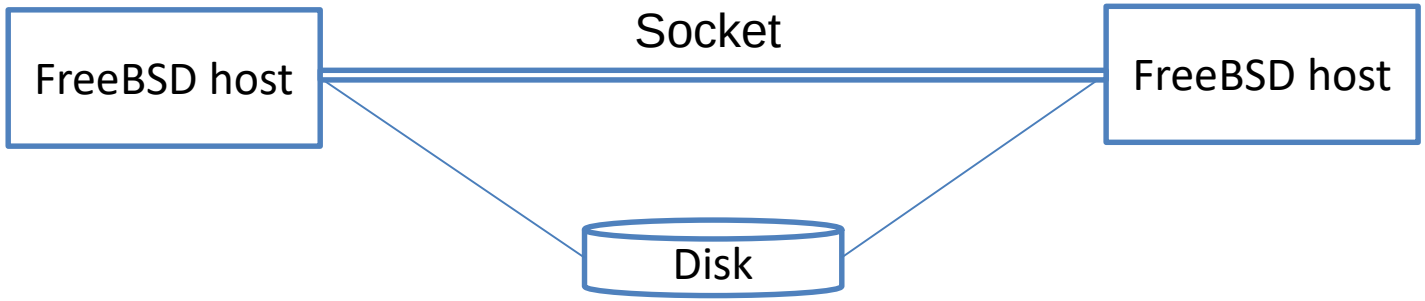
Warm Migration



run(vm)

send(socket, state)

Warm Migration

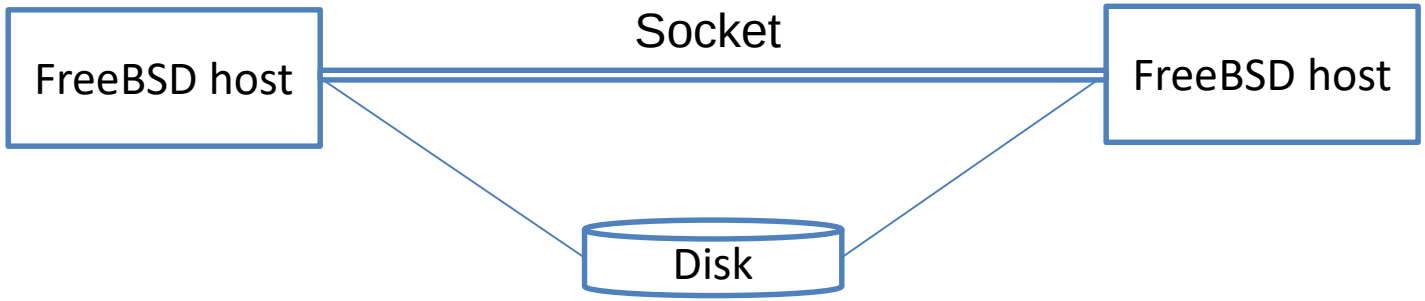


run(vm)

send(socket, state)

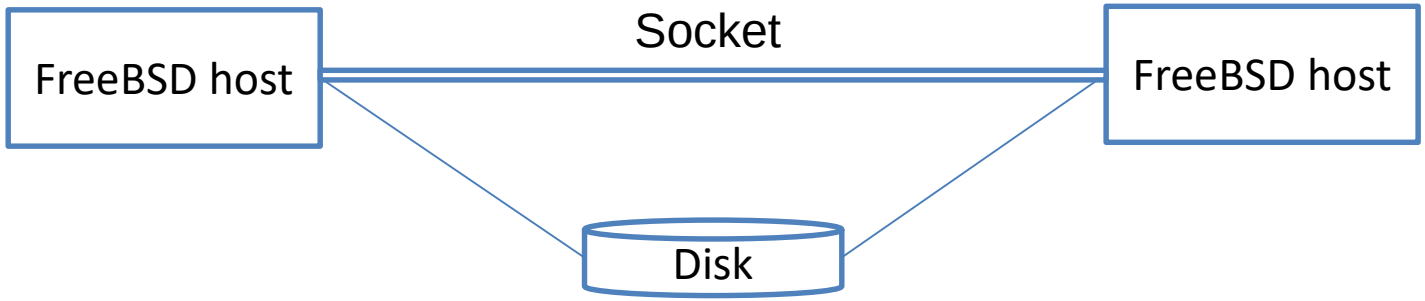
recv(socket, state)

Live Migration



- ✓ State save & restore mechanism

Live Migration



- ✓ State save & restore mechanism
- ✘ Memory migration mechanism

Memory Live Migration

- ✘ Copy-on-Write Approach
- ✓ Dirty-bit Approach

Memory Live Migration

- Copy-on-Write Approach
  - Mark guest's memory as COW
  - Migrate shadow object's pages
  - Approach failed due to guest memory dual view

Memory Live Migration

- ✓ Dirty-bit Approach
  - Mark dirty the pages that were modified between rounds
  - Only copy the “dirty” pages and clear the dirty flag

Current Status

- Live Migration works in the following coditions:
  - guest memory is wired
  - guest has less that 3GB of memory
  - dirty bit is not cleaned
- Working on cleaning the dirty bit

Future Work

- Clear dirty bit for migrated pages
- Extend migration to highmem segment (>3GB memory)
- Extend migration to non-wired guests
- Detect the number of rounds dynamically

Special Thanks

- Matthew Grooms
- John Baldwin, Mark Johnston