



Universitatea
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bhyve – Snapshot Save/Restore

bhyvecon 2019, Tokyo, Japan

Authors

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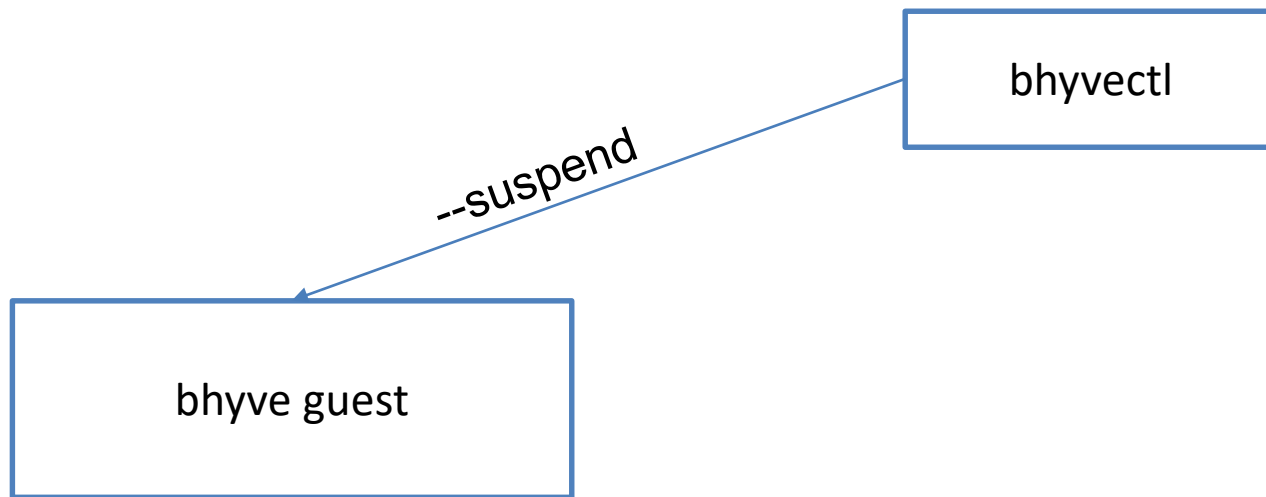
Sergiu Weisz

Architecture - Save

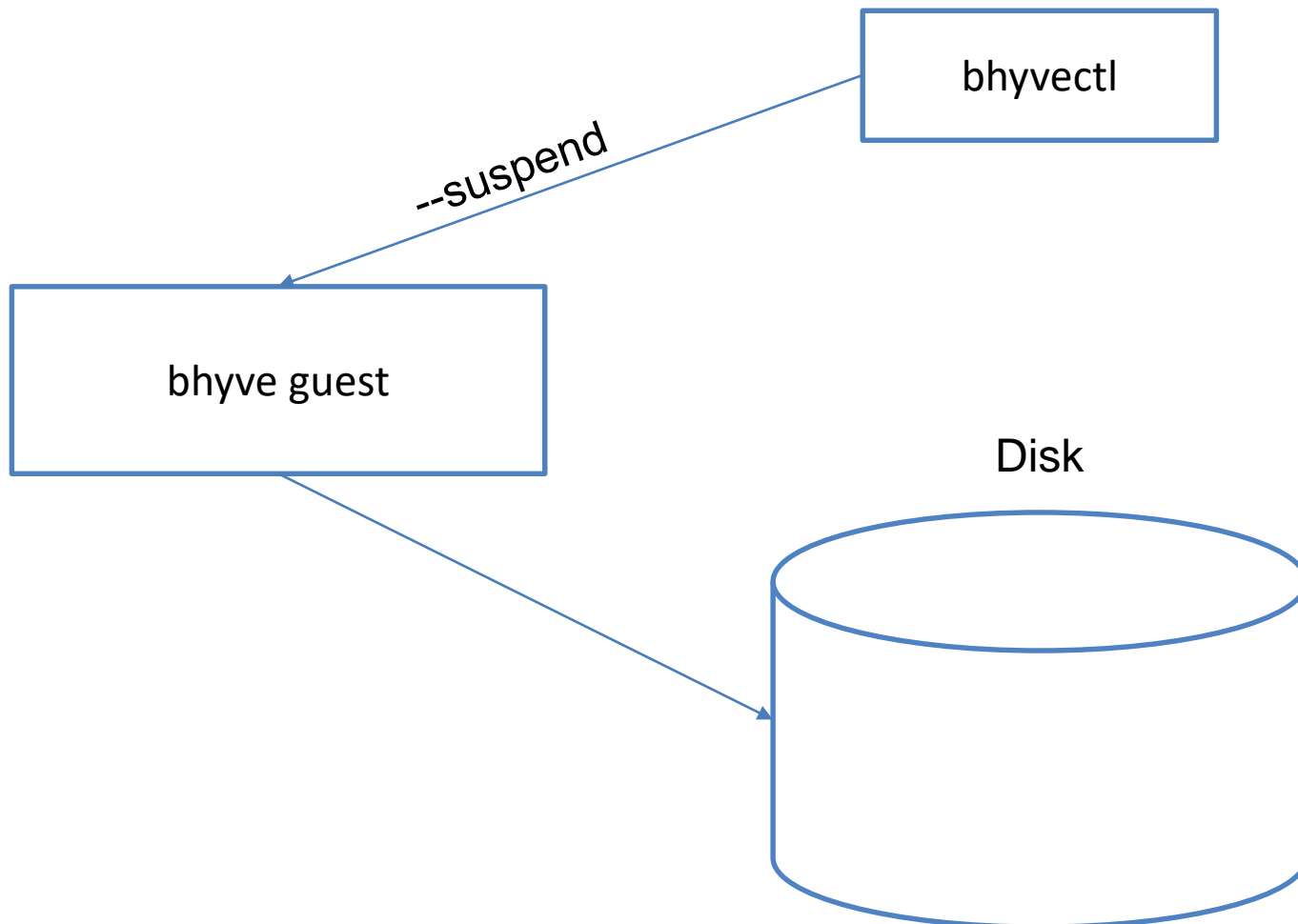
```
bhyve <options> <vm_name>
```

```
bhyve guest
```

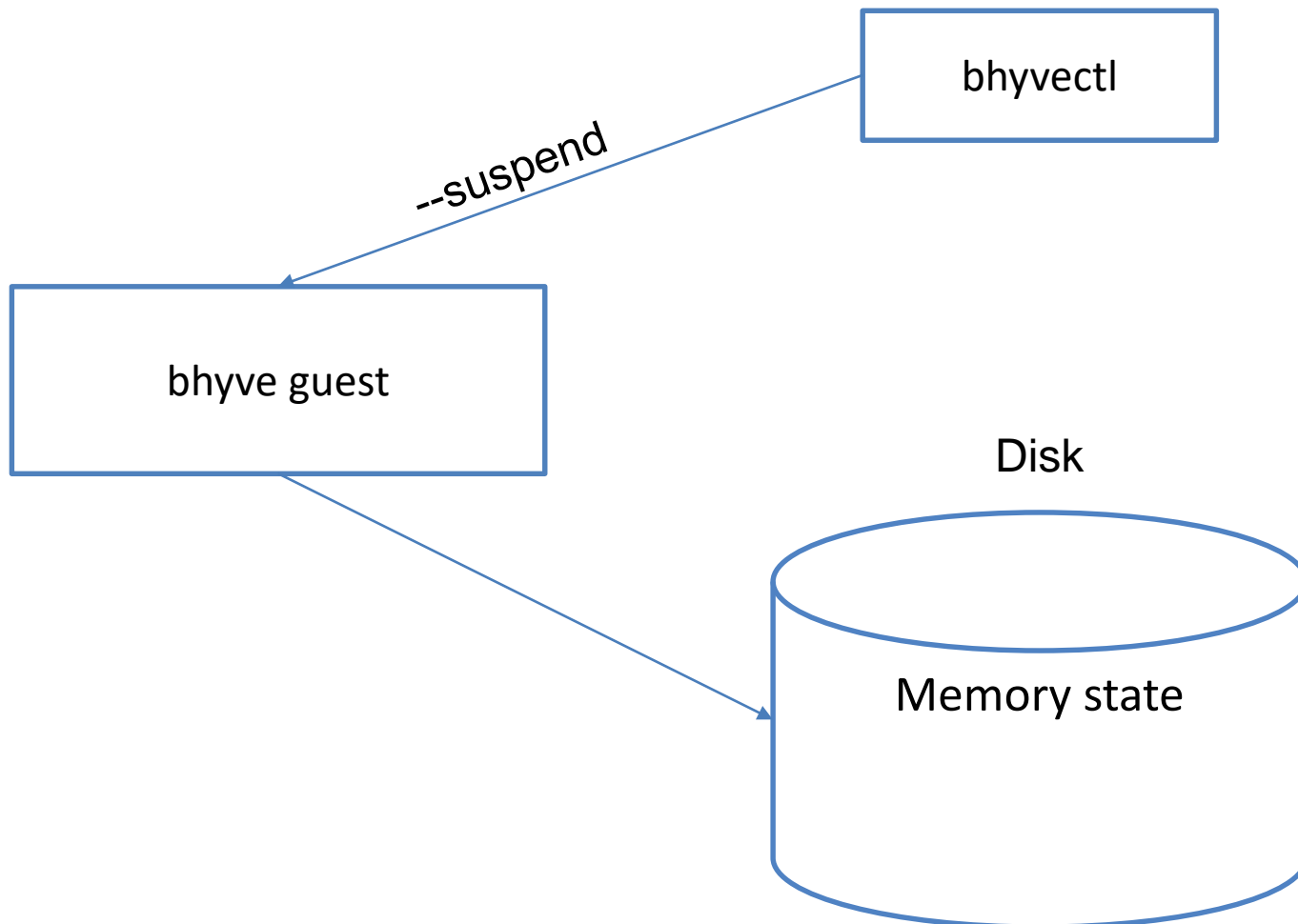
Architecture - Save



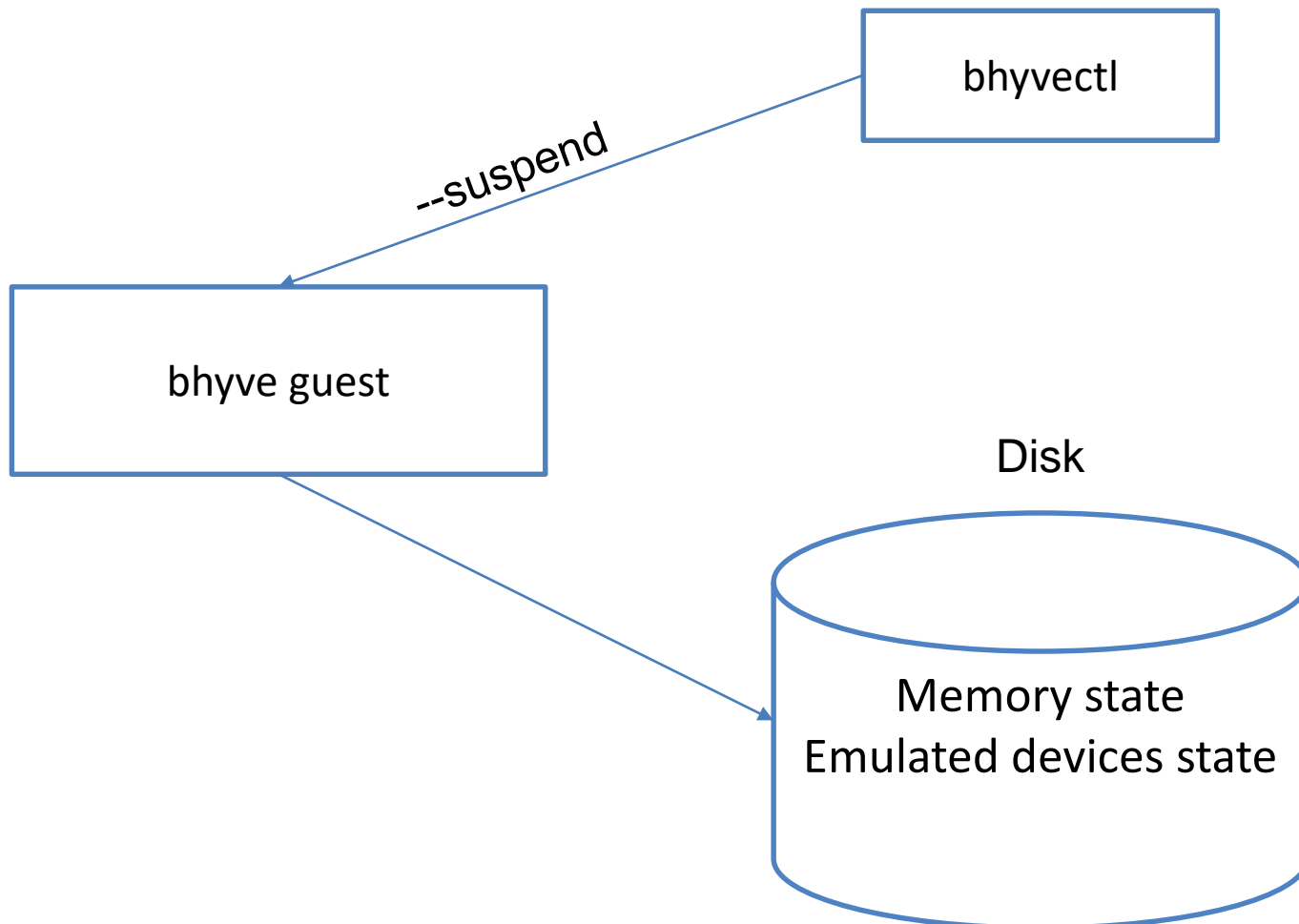
Architecture - Save



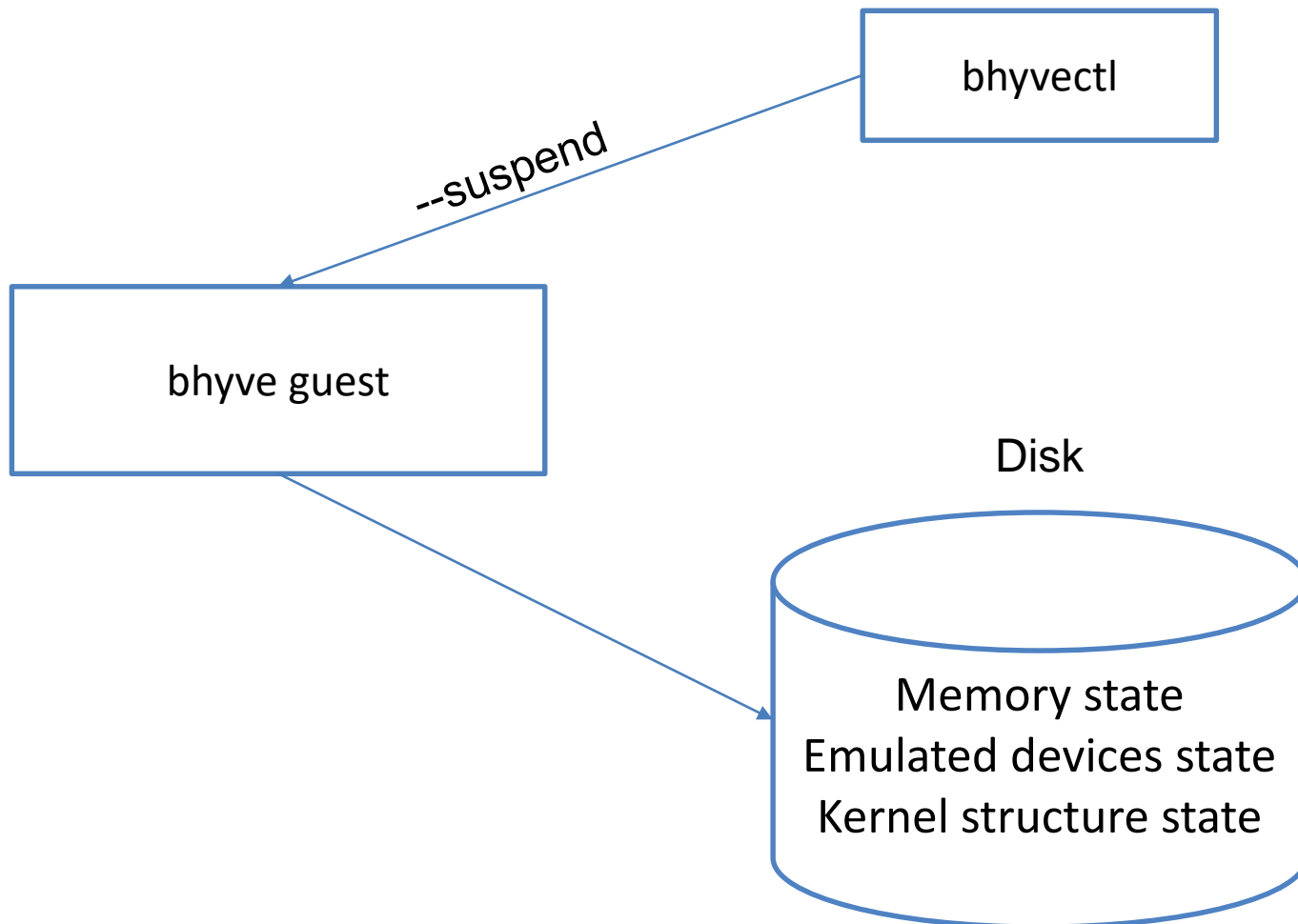
Architecture - Save



Architecture - Save

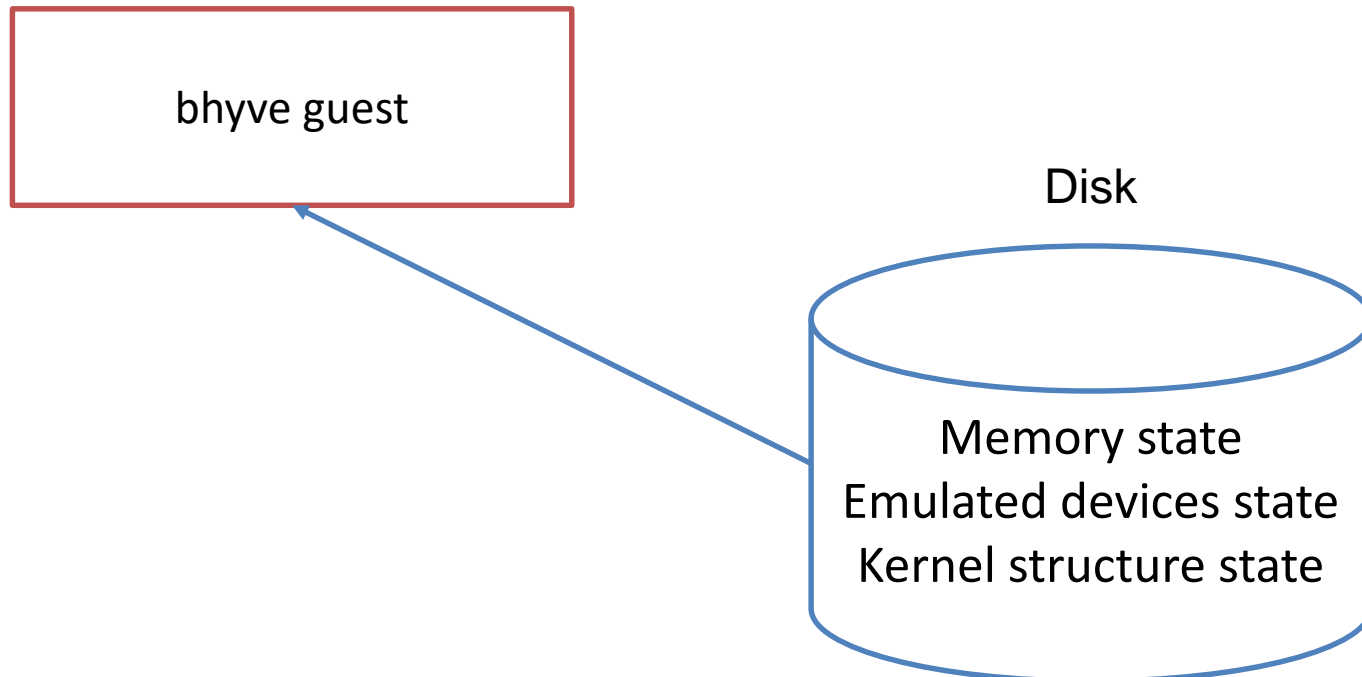


Architecture - Save



Architecture - Restore

```
bhyve <options> -r <filename> <vm_name>
```



Architecture - Restore

bhyve guest

Algorithm

```
1. lock_all_vcpus();
```

Algorithm

1. `lock_all_vcpus();`
2. `save_memory_to_file();`
3. `save_emulated_devices_state();`
4. `save_kernel_struct_state();`

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5. `save_metadata();`

Algorithm

```
1. lock_all_vcpus();
2. save_memory_to_file();
3. save_emulated_devices_state();
4. save_kernel_struct_state();
5. save_metadata();
6. unlock_all_vcpus();
7. destroy_vm();
```

Emulated Devices

- paravirtualized devices (virtio-net, virtio-blk)
- e1000
- ahci{-cd,-hd}
- lpc / uart
- atkbdc / xhci / usb_mouse
- framebuffer

Kernel Devices

- CPU related state (VMX/VMCB; SVM/VMCS)
- VHPET
- VLAPIC / VIOAPIC
- VRTC
- TSC
- VATPIT, VATPIC, VPMTMR

Current Status

Open Ticket on Phabricator for Review:

<https://reviews.freebsd.org/D19495>

Please give us feedback!

Special Thanks

- Matthew Grooms
- iXsystems
- Marcelo Araujo