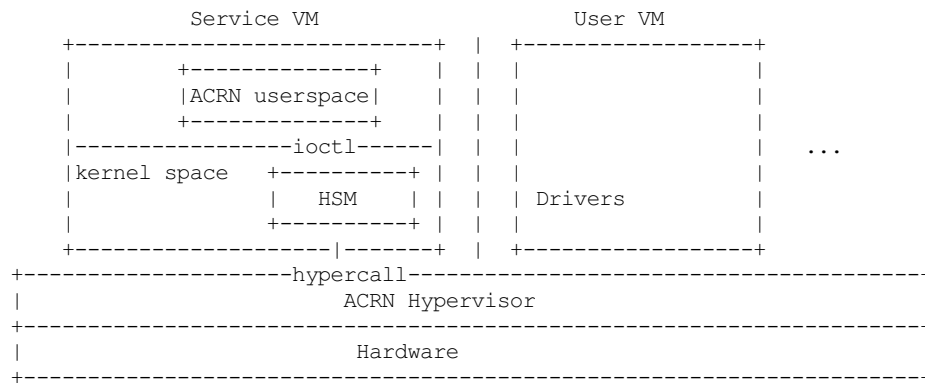# ACRN Hypervisor Introduction

The ACRN Hypervisor is a Type 1 hypervisor, running directly on bare-metal hardware. It has a privileged management VM, called Service VM, to manage User VMs and do I/O emulation.

ACRN userspace is an application running in the Service VM that emulates devices for a User VM based on command line configurations. ACRN Hypervisor Service Module (HSM) is a kernel module in the Service VM which provides hypervisor services to the ACRN userspace.

Below figure shows the architecture.

```
              Service VM                    User VM
     +-----------------------------+  |  +------------------+
     |         +-------------+     |  |  |                  |
     |         |ACRN userspace|    |  |  |                  |
     |         +-------------+     |  |  |                  |
     |----------------ioctl------|  |  |                  |     ...
     |kernel space   +----------+ |  |  |                  |
     |               |   HSM    | |  |  | Drivers          |
     |               +----------+ |  |  |                  |
     +-------------------|------+  |  +------------------+
   +--------------------hypercall------------------------------------+
   |                    ACRN Hypervisor                             |
   +----------------------------------------------------------------+
   |                      Hardware                                  |
   +----------------------------------------------------------------+
```

ACRN userspace allocates memory for the User VM, configures and initializes the devices used by the User VM, loads the virtual bootloader, initializes the virtual CPU state and handles I/O request accesses from the User VM. It uses ioctls to communicate with the HSM. HSM implements hypervisor services by interacting with the ACRN Hypervisor via hypercalls. HSM exports a char device interface (/dev/acrn_hsm) to userspace.

The ACRN hypervisor is open for contribution from anyone. The source repo is available at https://github.com/projectacrn/acrn-hypervisor.