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DA-1 (Virtualization - CSE4011)

QEMU

QEMU is a free and open-source emulator and virtualizer that can run on multiple platforms, including Linux, Windows and macOS. It allows you to run virtual machines, which are essentially environments that emulate the hardware of a different physical computer, on the host machine. QEMU can be used to run operating systems and applications in a variety of environments, including on different architectures and in the cloud. It is often used for testing and development purpose, as well as for running legacy software on modern

systems.

QEMU configuration

QEMU can be configured in a number of ways, such as

1. CPU and memory : one can specify the number of CPU cores and the amount of memory allocated to the virtual machine.

2. Storage : One can specify the location of the virtual hard drive which can be a file on the host system or a block device such as a physical hard drive. One can also specify the type of storage device, such as IDE or SCSI device.

3. Networking : one can specify the type of network connection to use, such as a bridged or NAT connection, and configure the virtual network device.

4. Graphics : You can specify the type of graphics adapter to use, such as a VGA or Cirrus adapter, and configure the graphics settings.

Sound :

5. One can specify the type of ~~graphics~~ Sound adapter card to use and configure the audio settings.

6. Other hardware : one can specify other ~~hardware~~ hardware devices, such as USB devices, serial ports and parallel ports

Commands

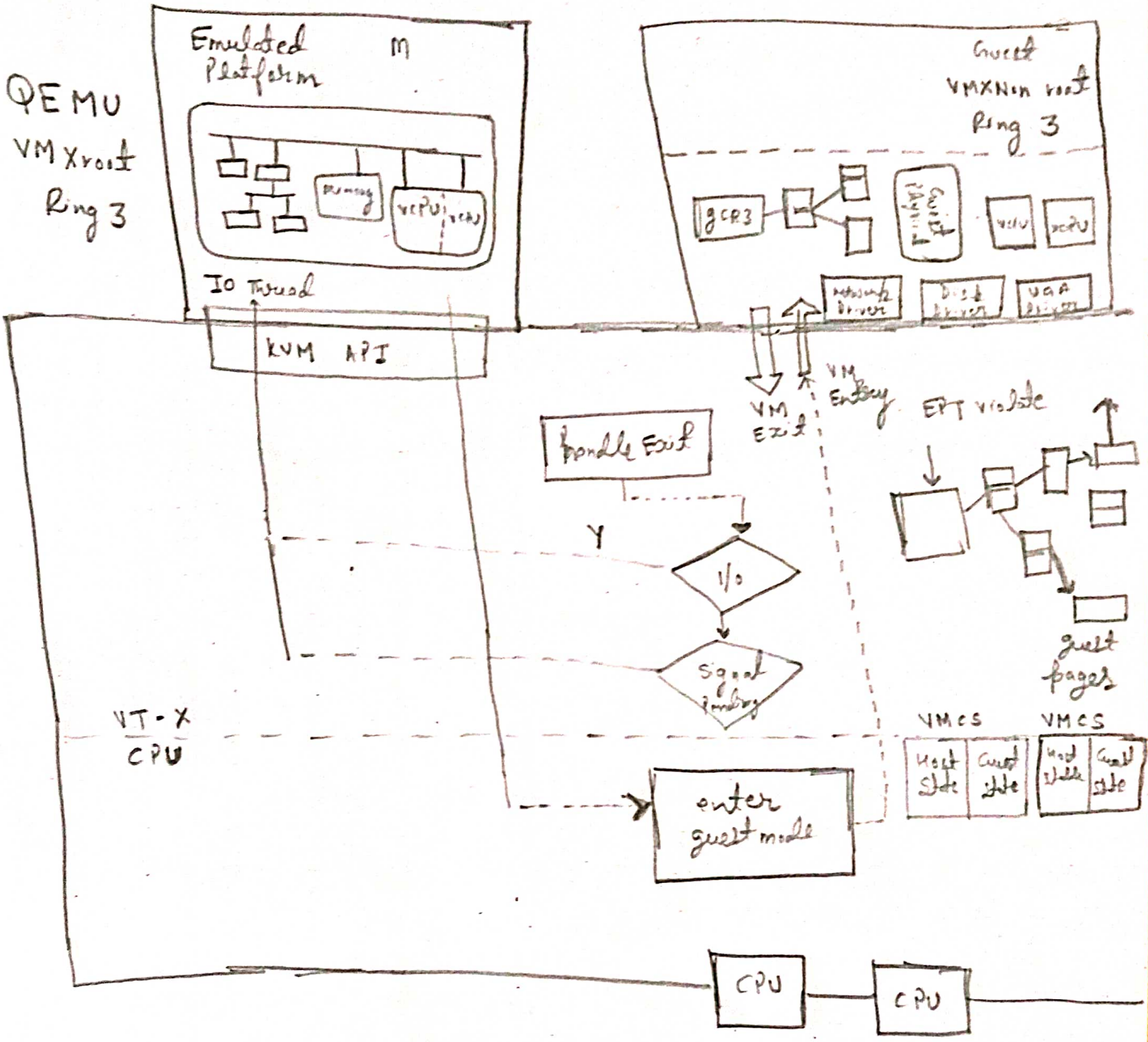
Here are some commands to configure QEMU

1. '-m' : Specify the amount of memory in MB to allocate to the virtual machine. For example '-m 2048' specifies 2048 MB of memory.

2. '-smp' : Specifies the number of CPU cores to allocate to the virtual machine.

3. '-hda' : Specify the location of the virtual drive.
eg : -hda /path/to/disk.img

4. -net' : Specify the network configuration.
eg : -net nic -net user



QEMU Architecture

Microsoft Hyper-V

Microsoft Hyper-V is a technology from Microsoft that allows user to create virtual computing environments and run and manage multiple operating system on a single physical server.

Hyper-V is a hardware virtualization product from Microsoft. Each virtual machine works like a computer with an operating system and running programs. When we need computing resources, virtual machines offer more flexibility, save time and money.

How to use Microsoft Hyper-V

Administrators can create Hyper-V failover groups using Manager. A failover group (or high availability group) is a group of two or more nodes. Additionally it operates in cluster-mode,

providing high availability and failover for virtual machines with only seconds of down time.

The virtual machine will be unavailable for a few seconds while the failover service takes over and moves the virtual machine between nodes. Hyper-V failover clusters are managed by the Failover cluster-Manager.

Hyper-V Architecture

Hyper-V features a Type-1 hypervisor-based architecture. The hypervisor virtualizes processors and memory and provides mechanisms for the virtualization stack in the root partition to manage child partitions (virtual machines) and expose services such as I/O devices to the virtual machines.

The root partition owns and has direct access to the physical I/O devices. The virtualization stack in the root partition provides a memory manager for virtual

machines, management APIs and virtualization ~~stack in the root~~ I/O devices. It also implements emulated devices such as the integrated device electronics (IDE) disk controller and PS/2 input device port, and it supports Hyper-V-specific synthetic devices for increased performance and reduced overhead.