

Nested KVM

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Intel CPU

AMD CPU

VM

Nested IOMMU

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Nested KVM

가 가 가 .

가 가 가 .

- Intel CPU : vmx
- AMD CPU : svm

```
cat /proc/cpuinfo |grep vmx
flags      : fpu vme de pse tsc msr pae mce cx8 apic sep mtrr pge mca cmov
pat pse36 clflush dts acpi mmx fxsr sse sse2 ss ht tm pbe syscall nx pdpe1gb
rdtscp lm constant_tsc art arch_perfmon pebs bts rep_good nopl xtopology
nonstop_tsc aperfmperf eagerfpu pni pclmulqdq dtes64 monitor ds_cpl vmx smx
est tm2 ssse3 sdbg fma cx16 xtpr pdcm pcid sse4_1 sse4_2 x2apic movbe popcnt
tsc_deadline_timer aes xsave avx f16c rdrand lahf_lm abm 3dnowprefetch epb
intel_pt ssbd ibrs ibpb stibp tpr_shadow vnmi flexpriority ept vpid fsgsbase
tsc_adjust bmi1 hle avx2 smep bmi2 erms invpcid rtm mpx rdseed adx smap
clflushopt xsaveopt xsavec xgetbv1 dtherm ida arat pln pts hwp hwp_notify
hwp_act_window hwp_epp md_clear spec_ctrl intel_stibp flush_lld
```

svm vmx svm 가 가 가 . vmx
svm 가

가 .

Intel CPU

```
$ cat /sys/module/kvm_intel/parameters/nested
Y 1
```

AMD CPU

```
$ cat /sys/module/kvm_amd/parameters/nested
Y 1
```

Y 1 가 . N 0

Intel

```
# vi /etc/modprobe.d/kvm.conf
options kvm_intel nested=1
options kvm_intel enable_shadow_vmcs=1
options kvm_intel enable_apicv=1
options kvm_intel ept=1
```

AMD

```
# vi /etc/modprobe.d/kvm.conf
options kvm_amd nested=1
```

```
# modprobe -r kvm
# modprobe -a kvm
```

가 'Y'

VM

가 VM 가

VM 'test' VM

```
# virsh edit test
```

KVM

```
<domain type='kvm'>
  <name>test</name>
  <uuid>458241a2-cd87-46a8-bd48-92722459d92d</uuid>
  <memory unit='KiB'>8388608</memory>
  <currentMemory unit='KiB'>8388608</currentMemory>

  <
  >

  <cpu mode='host-passthrough'> # <- cpu mode 'host-passthrough'
```

<

>

VM

vmx

가

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Nested IOMMU

iommu

VM

nested

host

iommu

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virt-manager

xml

virsh edit

vm

가

.

```
<features>
  <acpi/>
  <apic/>
  <vmport state="off"/>
  <ioapic driver="qemu"/>      ## <-- features      ioapic      가
.
</features>
...
<devices>
... ##      iommu      가      .      intel(Q35      )
smmuv3(5.5.0      , ARM 가      )      virtio(8.3.0      , Q35      ARM 가
)
  <iommu model="intel">
    <driver intremap="on" caching_mode="on"/>
  </iommu>
  ...
</devices>
```

- <https://libvirt.org/formatdomain.html>
- <https://gist.github.com/mcastelino/08f6e49f2faba295eb690a3a8ee44c70>

From:

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Last update:

2023/02/21 23:33

