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commit [e28533c08023c4b319b7f2cd77f3f7c9204eb517](#) (patch)
tree [fde5b26fc1c72912afc03e288ce6a378c913d978](#)
parent [1a27c4804fa8672252339efcc7819be7b40c2ba1](#) (diff)
download [linux-e28533c08023c4b319b7f2cd77f3f7c9204eb517.tar.gz](#)

diff options

context:

3 ▼

space:

include ▼

mode:

unified ▼

KVM: VMX: Do `_all_` initialization before exposing `/dev/kvm` to userspace

[Upstream commit [e32b120071ea114efc0b4ddd439547750b85f618](#)]

Call `kvm_init()` only after `_all_` setup is complete, as `kvm_init()` exposes `/dev/kvm` to userspace and thus allows userspace to create VMs (and call other `ioctl`s). E.g. KVM will encounter a NULL pointer when attempting to add a vCPU to the per-CPU loaded `vmcss_on_cpu` list if userspace is able to create a VM before `vmx_init()` configures said list.

BUG: kernel NULL pointer dereference, address: 0000000000000008

#PF: supervisor write access in kernel mode

#PF: error_code(0x0002) - not-present page

PGD 0 P4D 0

Oops: 0002 [#1] SMP

CPU: 6 PID: 1143 Comm: stable Not tainted 6.0.0-rc7+ #988

Hardware name: QEMU Standard PC (Q35 + ICH9, 2009), BIOS 0.0.0 02/06/2015

RIP: 0010:vmx_vcpu_load_vmcs+0x68/0x230 [kvm_intel]

<TASK>

vmx_vcpu_load+0x16/0x60 [kvm_intel]

kvm_arch_vcpu_load+0x32/0x1f0 [kvm]

vcpu_load+0x2f/0x40 [kvm]

kvm_arch_vcpu_create+0x231/0x310 [kvm]

kvm_vm_ioctl+0x79f/0xe10 [kvm]

? handle_mm_fault+0xb1/0x220

__x64_sys_ioctl+0x80/0xb0

do_syscall_64+0x2b/0x50

entry_SYSCALL_64_after_hwframe+0x46/0xb0

RIP: 0033:0x7f5a6b05743b

</TASK>

Modules linked in: vhost_net vhost vhost_iotlb tap kvm_intel(+) kvm irqbypass

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Diffstat

-rw-r--r-- [arch/x86/kvm/vmx/vmx.c](#) 30

1 files changed, 19 insertions, 11 deletions

```

diff --git a/arch/x86/kvm/vmx/vmx.c b/arch/x86/kvm/vmx/vmx.c
index 74be8b9030a3b6..cb547a08338127 100644
--- a/arch/x86/kvm/vmx/vmx.c
+++ b/arch/x86/kvm/vmx/vmx.c
@@ -8521,19 +8521,23 @@ static void vmx_cleanup_lld_flush(void)
    l1tf_vmx_mitigation = VMENTER_L1D_FLUSH_AUTO;
}

-static void vmx_exit(void)
+static void __vmx_exit(void)
{
+    allow_smaller_maxphyaddr = false;
+
#ifdef CONFIG_KEXEC_CORE
    RCU_INIT_POINTER(crash_vmclean_loaded_vmcss, NULL);
    synchronize_rcu();
#endif
+    vmx_cleanup_lld_flush();
+}

+static void vmx_exit(void)
+{
    kvm_exit();
    kvm_x86_vendor_exit();

-    vmx_cleanup_lld_flush();
-
-    allow_smaller_maxphyaddr = false;
+    __vmx_exit();
}
module_exit(vmx_exit);

@@ -8578,11 +8582,6 @@ static int __init vmx_init(void)
    if (r)
        return r;

-    r = kvm_init(&vmx_init_ops, sizeof(struct vcpu_vmx),
-                __alignof__(struct vcpu_vmx), THIS_MODULE);
-    if (r)
-        goto err_kvm_init;
-
    /*
     * Must be called after common x86 init so enable_ept is properly set
     * up. Hand the parameter mitigation value in which was stored in
@@ -8616,11 +8615,20 @@ static int __init vmx_init(void)
    if (!enable_ept)
        allow_smaller_maxphyaddr = true;

+    /*
+     * Common KVM initialization _must_ come last, after this, /dev/kvm is
+     * exposed to userspace!
+     */
+    r = kvm_init(&vmx_init_ops, sizeof(struct vcpu_vmx),
+                __alignof__(struct vcpu_vmx), THIS_MODULE);
+    if (r)
+        goto err_kvm_init;
+
    return 0;

-err_lld_flush:
-    vmx_exit();

```

```
err_kvm_init:
+     __vmx_exit();
+err_lld_flush:
    kvm_x86_vendor_exit();
    return r;
}
```