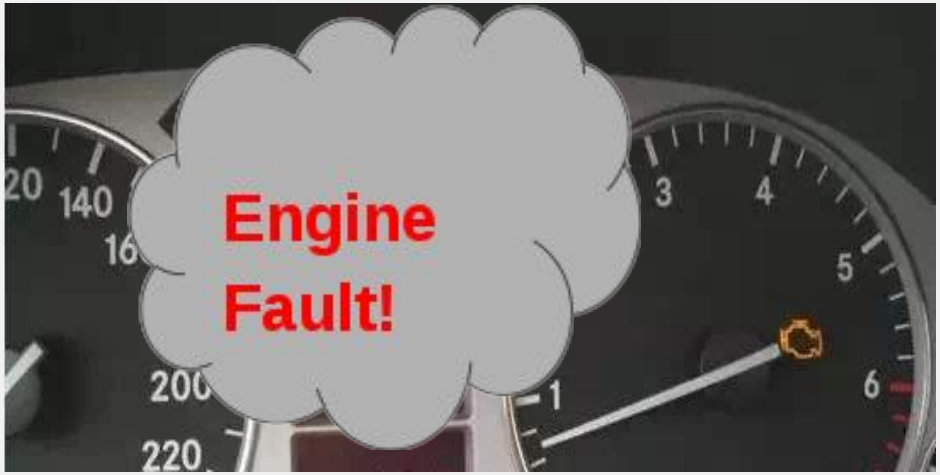
redhat.

Quickly debug VM failures in OpenStack

Chenli Hu
chhu@redhat.com



What happened ?

How do you know that ?

How to debug the failures quickly ?

Solutions:

- ★ Search engine
- ★ Research manual/ doc/ code
- ★ Attempt more times
- ★ ……

Experience

Auxiliary tools

redhat.

Agenda

- Premise
- Know more about VM start implementation
- Know more about debug logs
- Debug journey
- Call for actions

Premise

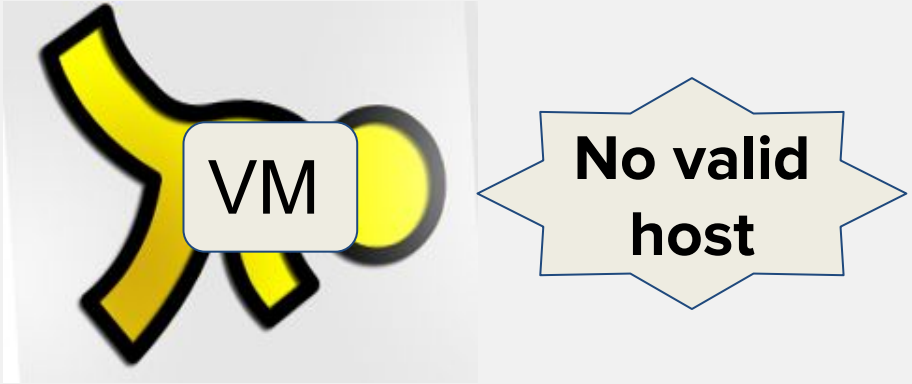
- Based on RHOS (Red Hat OpenStack)
- Compute node with libvirt driver & Qemu Hypervisor
- Focus on VM operations

OpenStack Compute (Nova) drivers:

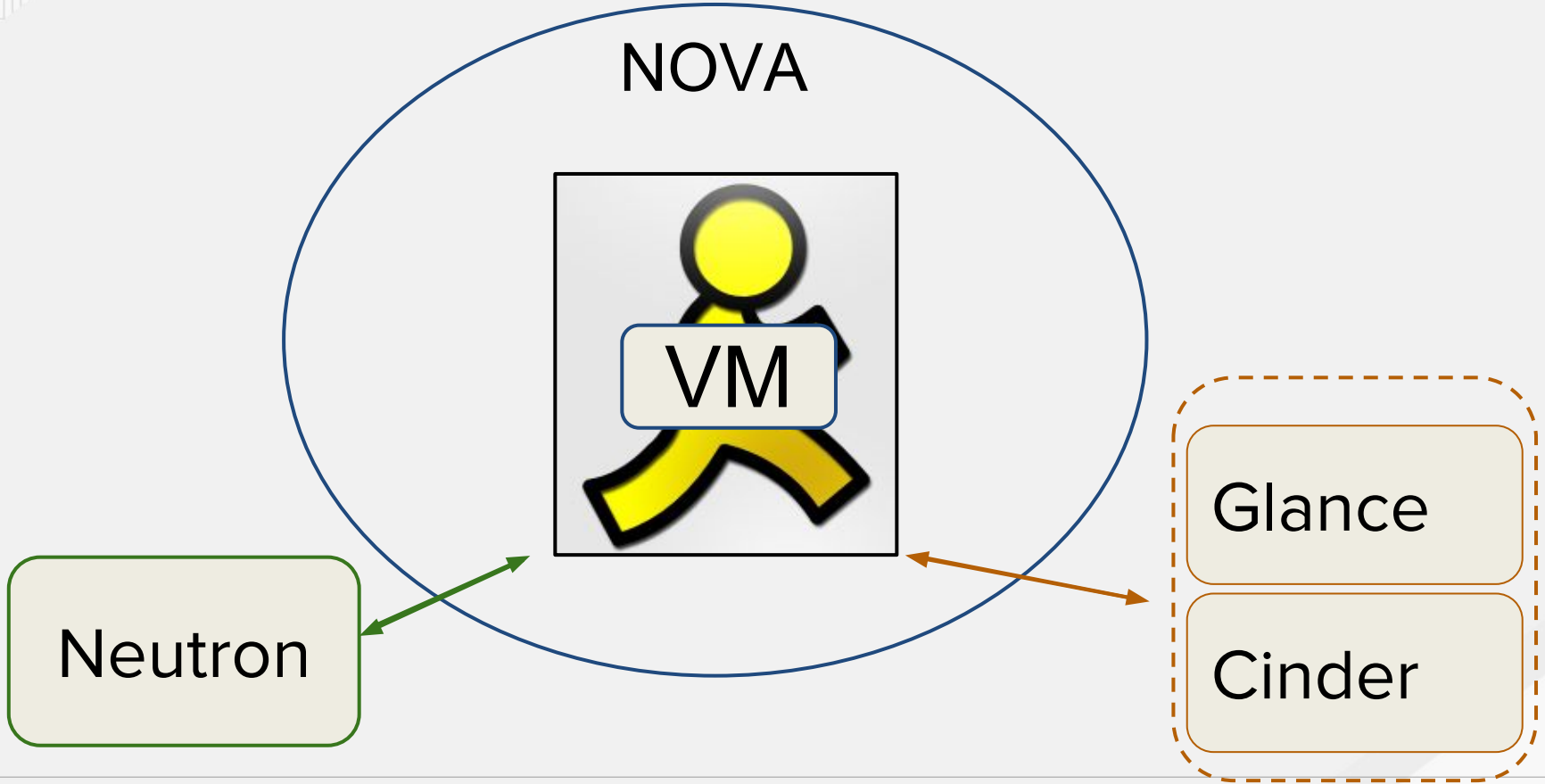
- libvirt
  - Qemu/KVM on x86 (fully supported)
- Hyper-V, VMware, XenServer, xen via libvirt
- baremetal, docker, LXC via libvirt

https://wiki.openstack.org/wiki/HypervisorSupportMatrix

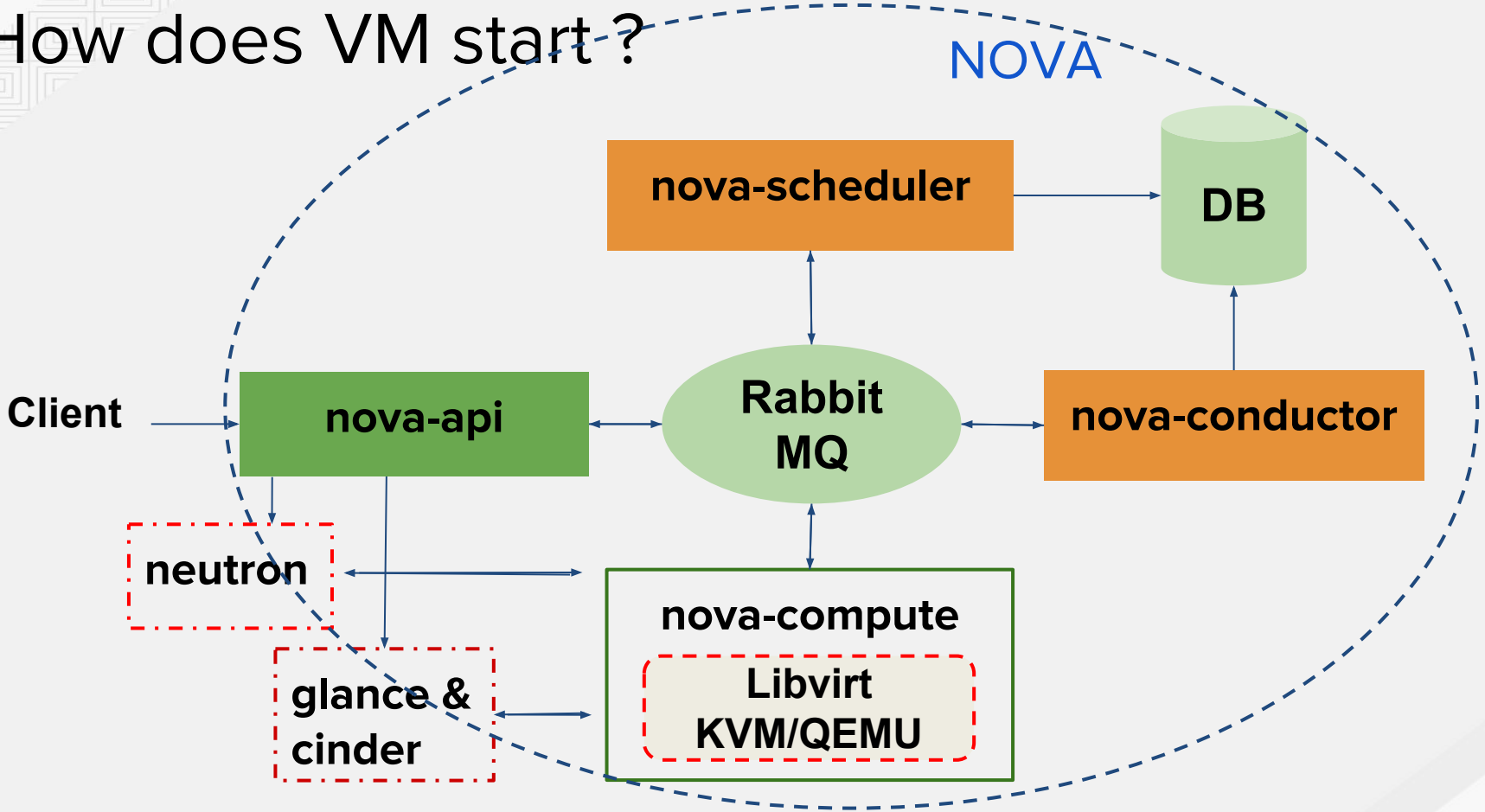
VM start failure



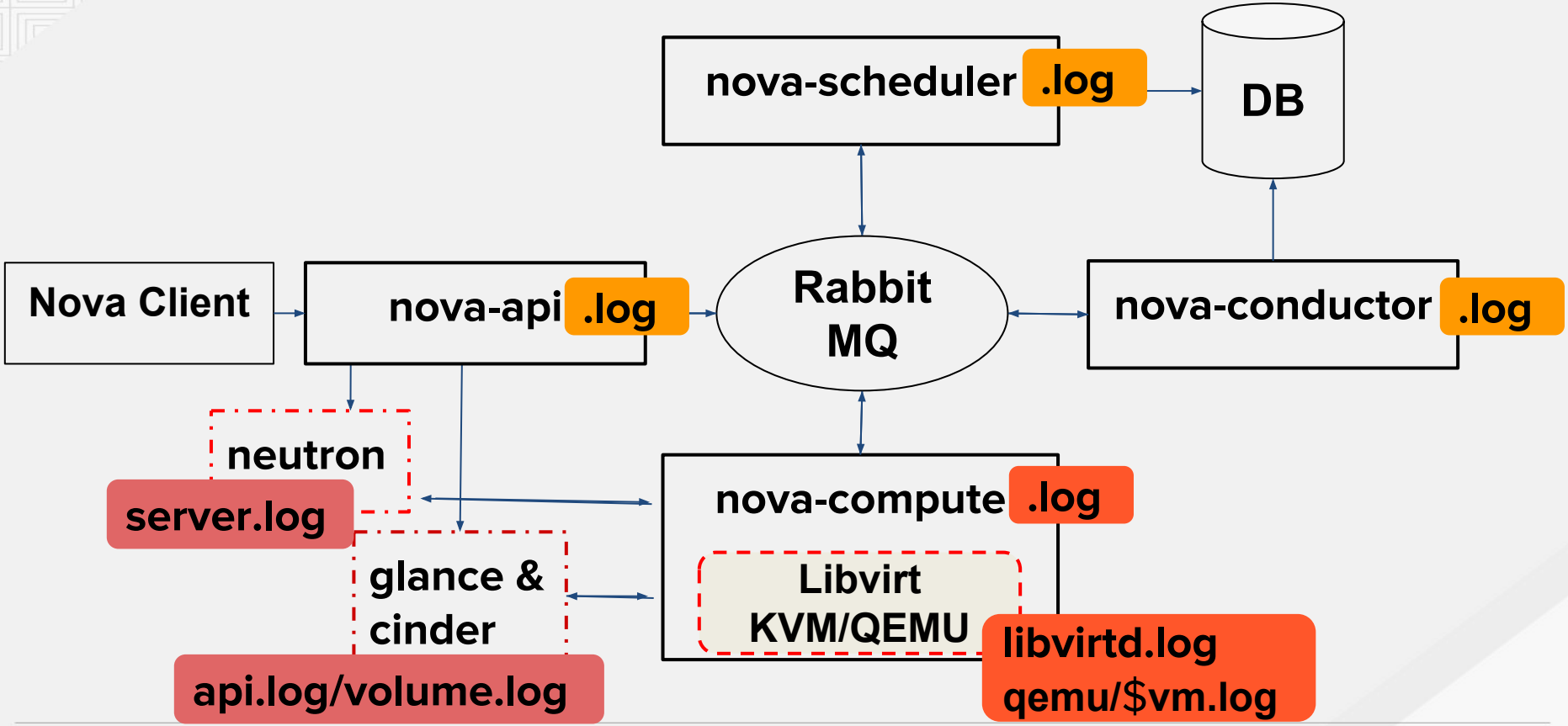
Where is VM running in OpenStack ?



How does VM start ?



VM start - Debug logs



redhat.

VM start - nova-compute.log

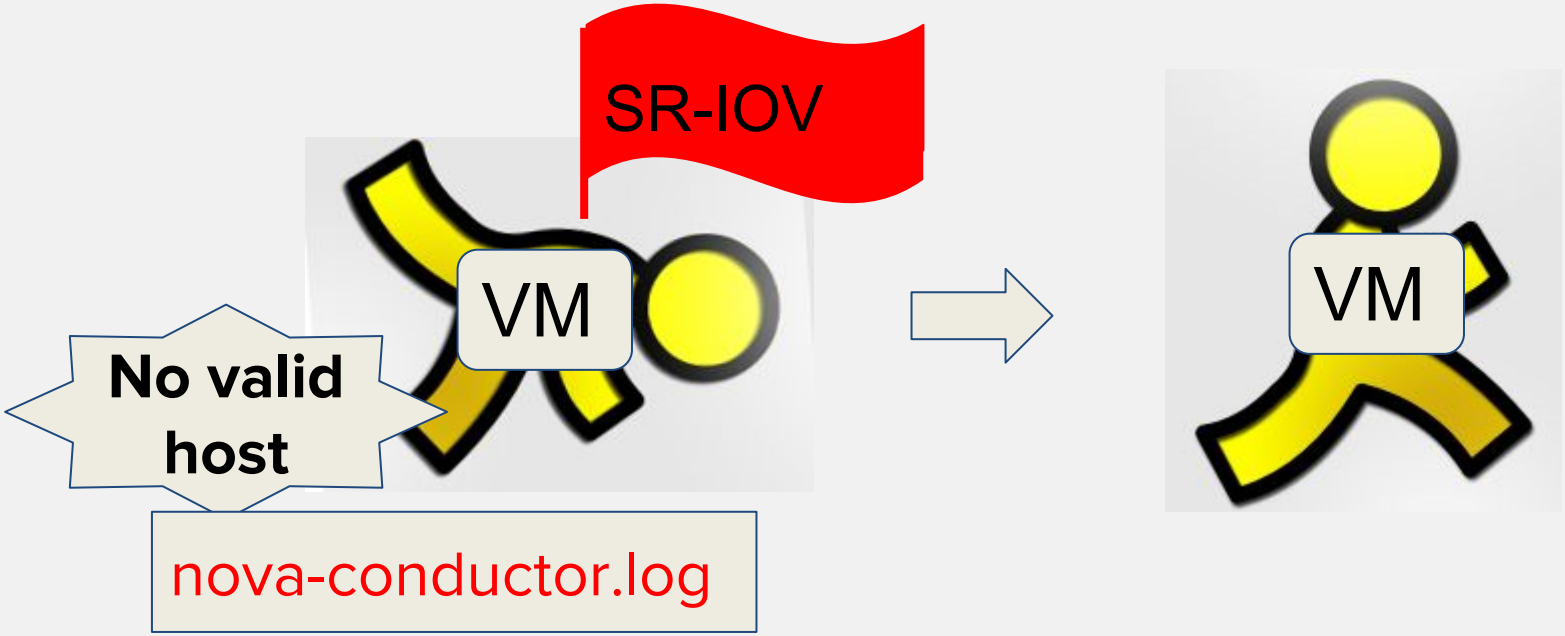
- start VM successfully:

nova.compute.claims ...Attempting claim: memory 1024 MB, disk 12 GB, vcpus 2 CPU.....
nova.compute.claims...Claim successful
nova.**virt.libvirt.driver**...Creating image
os_vif ...Successfully plugged vif VIFBridge (...network=Network(...),plugin='ovs',port_profile=VIFPortProfileBase, preserve_on_delete=False,vif_name='tap00d8fa62-3f')
nova.compute.manager...VM Started (Lifecycle Event)
nova.**virt.libvirt.driver** [-] [instance:...] Instance spawned successfully

VM failure types:

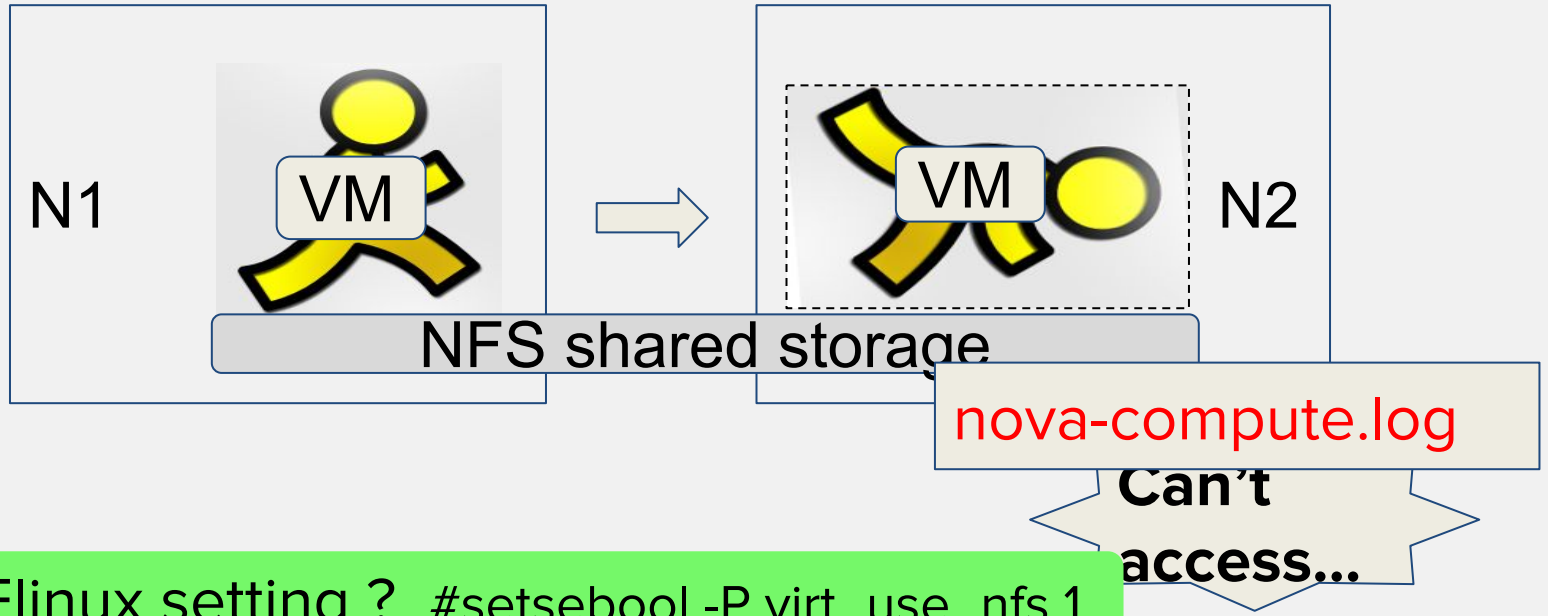
- Lack of resource
- Configuration problem
- Not support
- Product issue
  - Qemu/ libvirtd service crash => ABRT

1 - VM start failure - Lack of resource



nova-conductor.log

2 - VM live migration - Configuration problem

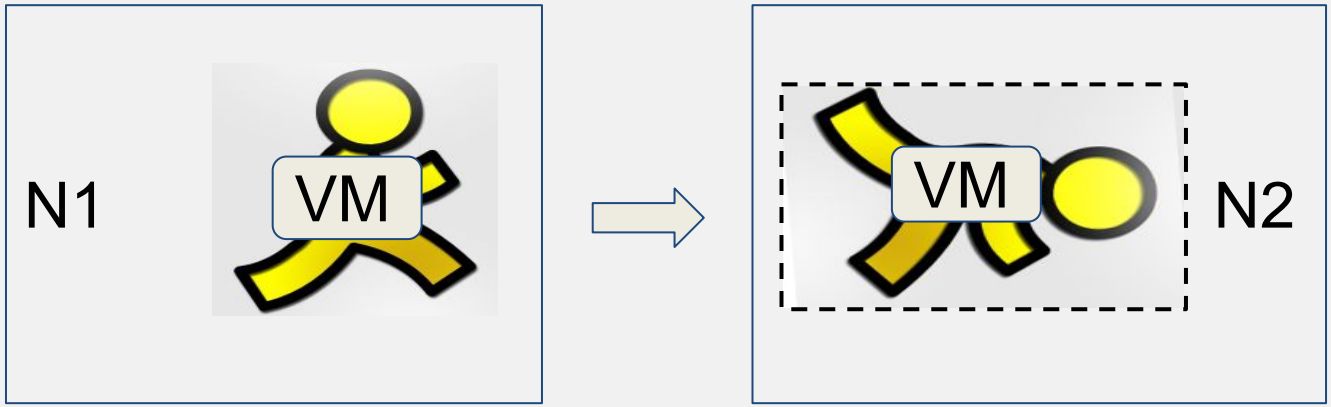


SElinux setting ? #setsebool -P virt_use_nfs 1

VM dir permision ?

NFS problem ?

3 - VM block migration - Not support



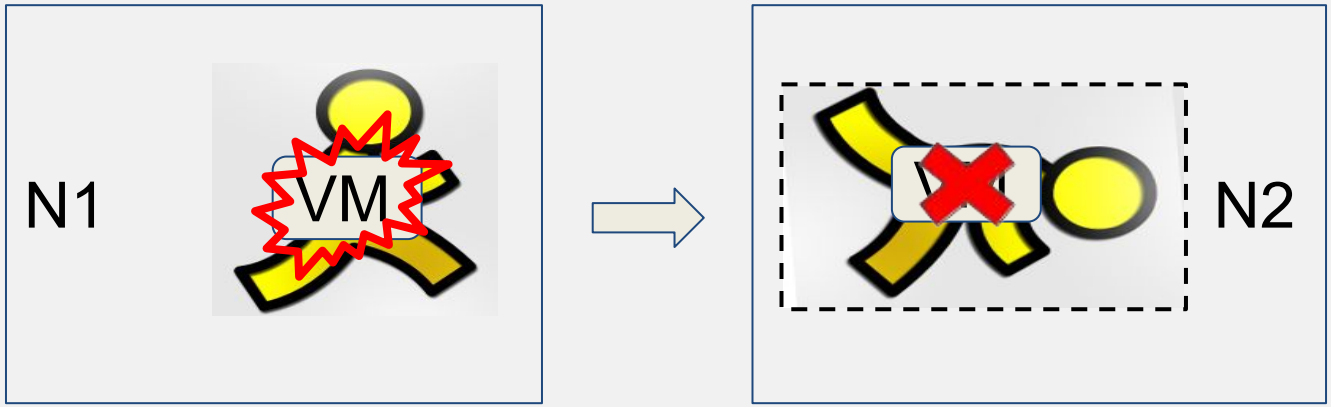
nova-compute.log

virsh command

Live Migration failure: internal error: unable to execute QEMU command 'migrate': this feature or command is not currently supported

redhat.

4 - VM block migration - libvirtd/qemu crash



libvirtd.log | virsh command | ABRT

debug : qemuProcessHandleMonitorEOF:.....assuming the domain crashed

redhat.

Debug journey

nova
neutron, glance, cinder

Libvirt/ Qemu-kvm

Bug ?

Debug journey - settings in OpenStack

- VM related settings:

  /etc/nova/nova.conf; image-update/create; flavor settings

images_type (raw, qcow2, lvm, rbd, default)	cpu_mode vcpu_pin_set reserved_huge_pages	max_concurrent_live_migrations live_migration_uri live_migration_tunnelled live_migration_permit_post_copy .....
glance image-update flavor settings: hw_disk_bus hw_qemu_guest hw_scsi_model hw_vif_model	glance image-update flavor settings: hw_numa_nodes hw_numa_memory hw_numa_cpus.0/1 hw_numa_mem.0/1	

Debug journey - logs in OpenStack

- Debug settings:
  log_dir=/var/log/nova
- Debug logs:
  - VM life-cycle, migration
    - nova-api.log, nova-compute.log,
    - nova-conductor.log, nova-scheduler.log
  - Images
    - glance/api.log
  - Volume
    - cinder/api.log, cinder/volume.log
  - Network
    - neutron/server.log

redhat.

Debug journey - logs in Libvirt/Qemu

- Set the filters, log prorities for libvirtd
  - Add to file: /etc/libvirt/libvirtd.conf
    - log_level = 1
    - log_filters = "1:qemu 1:libvirt 1:json 1:monitor 3:event 1:util 1:security"
    - log_outputs = "1:file:/var/log/libvirt/libvirtd.log"
  - Restart libvirtd service
- Check the /var/log/libvirt/qemu/$*vm*.log

  libvirt-generated QEMU command-line arguments

  QEMU error messages; libvirt stderr

Debug journey - auxiliary tools

- Virsh commands
  - virsh start, virsh migrate, virsh list --all, virsh dumpxml
  - service libvirtd status
- SR-IOV related commands
  - ethtool, lsmod, modprobe, lspci -nnn, ip l set # up
- Numa/ hugepage related commands
  - numactl --hardware, grep Huge /proc/meminfo
    cat /sys/devices/system/node/node$i/hugepages/...
- ABRT/ GDB

  augtool, abrt-cli ls

What's next ……

- Get the alarm and proposed solution after the failures in OpenStack

Stack Tach ?

openstack.

redhat.

Call for actions ……

- Collect and analyze possible scenarios of VM failure and related OpenStack/ libvirt logs
- Propose solutions implementation in StackTach
- Raise more good ideas……

Reference

- https://access.redhat.com/documentation/en/red-hat-openstack-platform/
- https://docs.openstack.org/
- https://my.oschina.net/u/1179767/blog/752233
- https://access.redhat.com/documentation/en-US/Red_Hat_Enterprise_Linux/6/html/Deployment_Guide/ch-abrt.html

Questions?

Thank you!

Chenli Hu
chhu@redhat.com