OpenStack on AArch64

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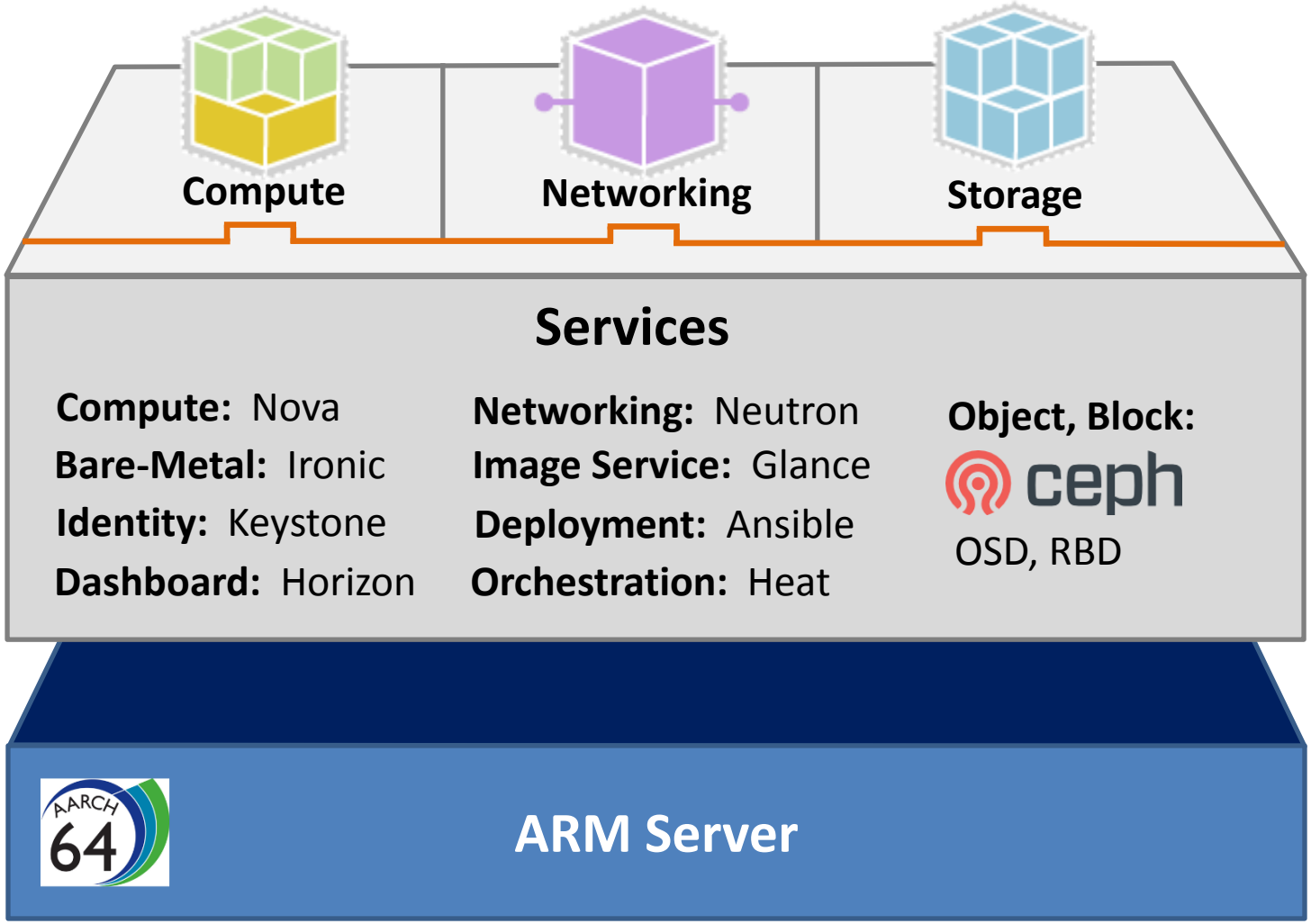
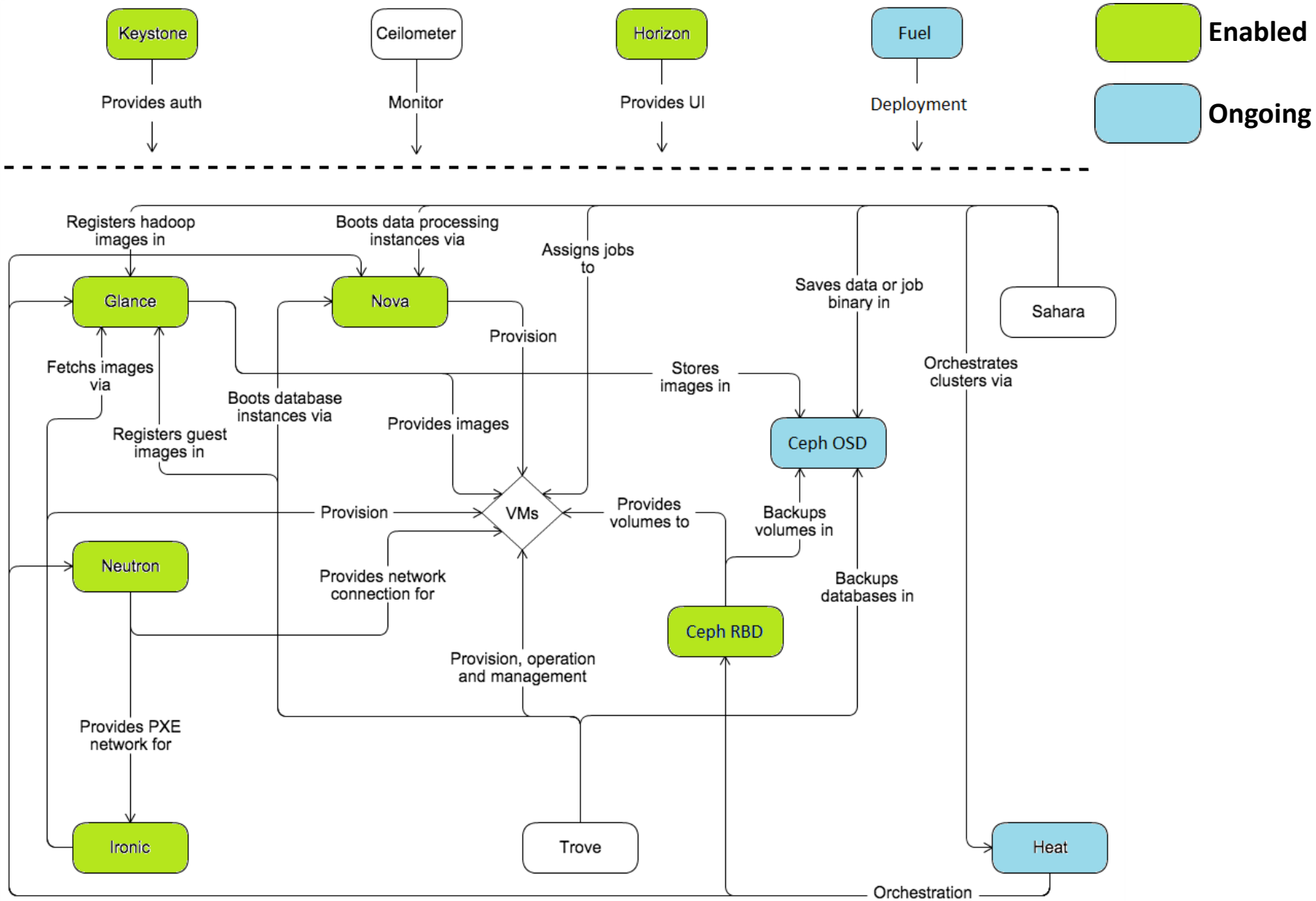
Agenda

- Components Working on AArch64
- OpenStack Enablement on AArch64
- Status and Plan
  - Compute (Nova, Ironic)
  - Storage (Ceph Integration)
  - Networking (Neutron)
- Upstream
- Development Environment

Components Working on AArch64



OpenStack Enablement on AArch64



Nova – Mandatory Features

- All mandatory features are enabled and verified on AArch64.
  - Nova Tempest test report
- Users can launch AArch64 VM instances through Horizon Web UI or OpenStack CLI.

Mandatory Features
Launch instance
Shutdown instance
Guest instance status
Image storage support

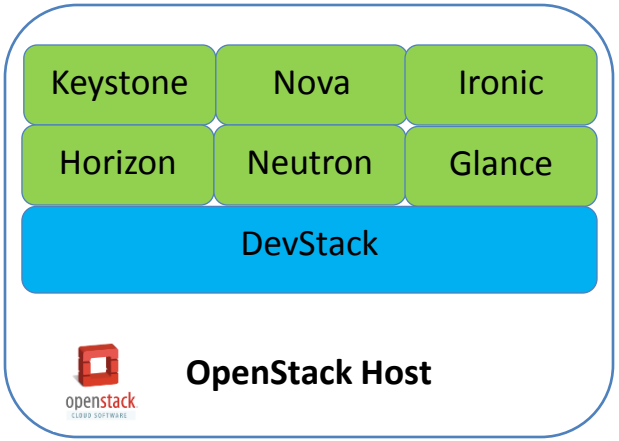
Nova – Optional Features

All frequently used optional features are enabled.

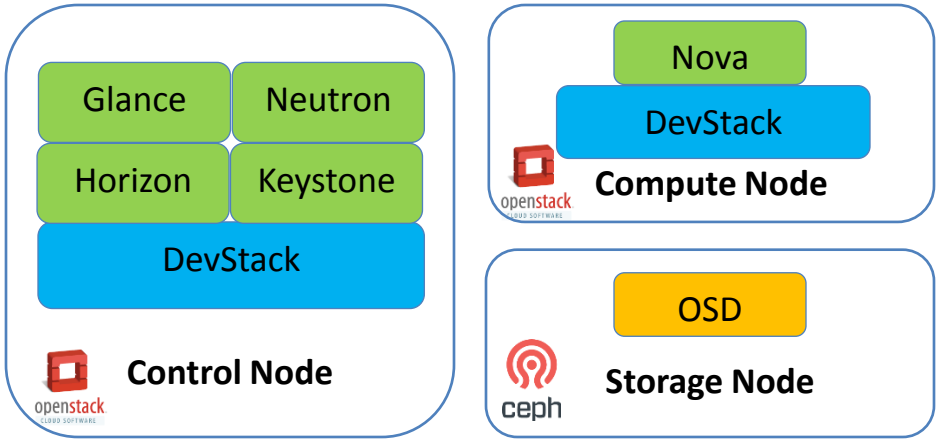
Optional Features
Live migrate instance across hosts
Attach/Detach volume to/from instance
Stop/Resume/Reboot instance CPUs
Suspend/Restore instance
Save snapshot of instance disk
Resize instance
UEFI boot
Network routing/firewall rules/security groups
Other optional features…

Nova – Test Setup

- DevStack is used for Nova and other OpenStack components development and verification.
- Most use cases can be deployed by running all OpenStack services in one host. It's convenient for development.
- Multiple nodes deployment is also required to simulate real life cases.



OpenStack in One Host



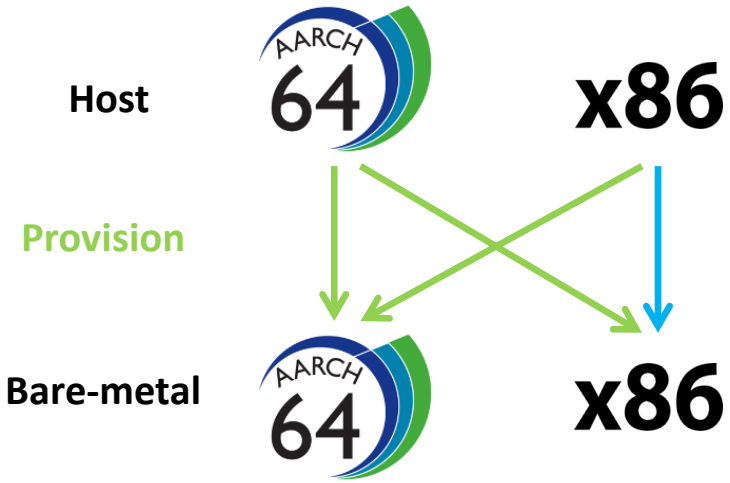
OpenStack in Separated Nodes

Nova – Patches for AArch64

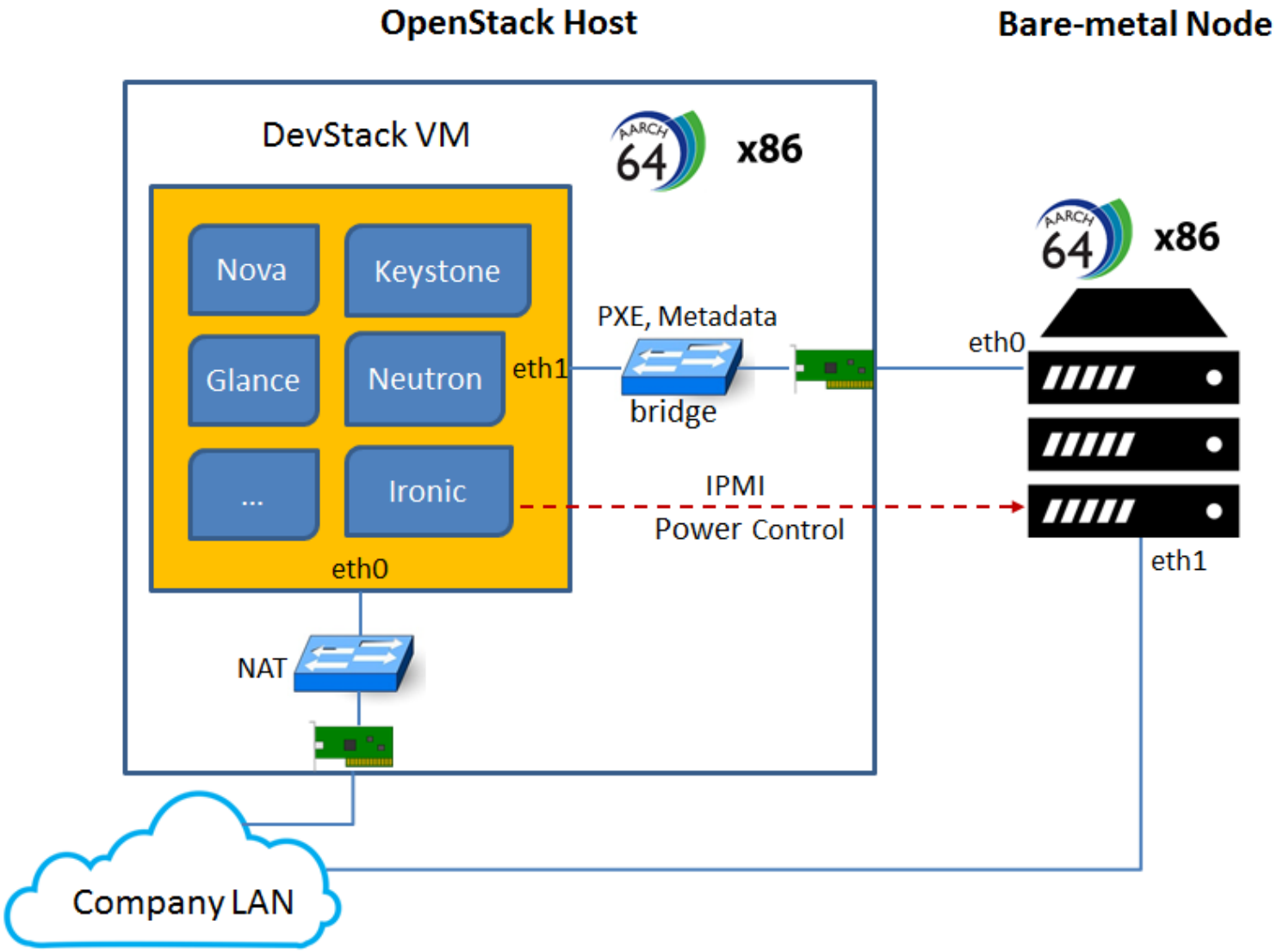
- Critical patches for Nova enablement on AArch64
  - Set SCSI as the default disk controller on AArch64 (Merged)
  - Add support for libvirt virtio-mmio address type (Merged)
  - Set cpu-mode to host-passthrough on AArch64 (Merged)
  - Set virtio-scsi as the default CDROM bus for AArch64 (Merged)
- Others
  - Fix Nova unit tests on AArch64 (Merged)
  - Fixup Magnum deployment manual (Merged)
  - Pick the first available disk as configure drive
  - Fix default console type name for AArch64
  - Un-define libvirt domain with "--nvram" parameter
  - Fix deletion failure of NVRAM enabled VM

Ironic – AArch64 Provisioning

New Features Enabled On AArch64
Deploy AArch64 Node by AArch64 Server
Deploy x86 Node by AArch64 Server
Deploy AArch64 Node by x86 Server



Ironic – Test Setup

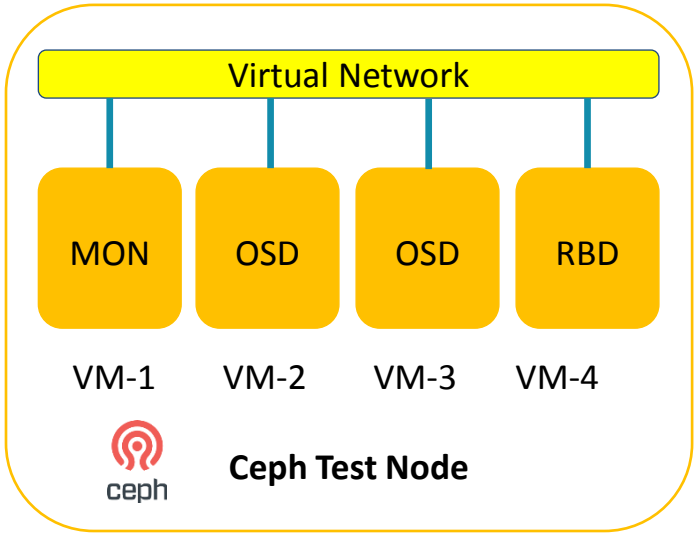


Storage – Status

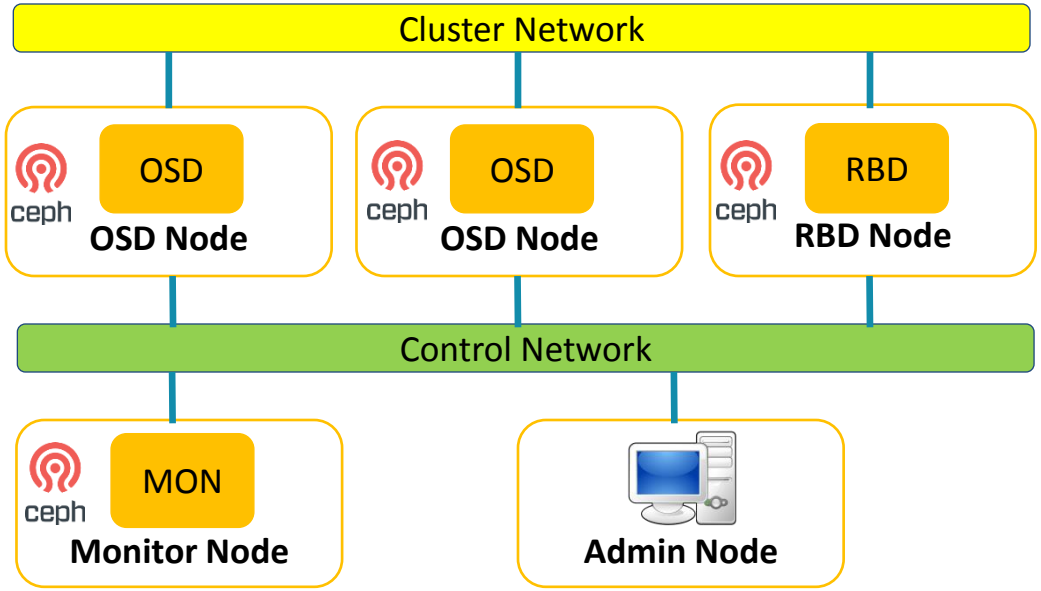
- Block storage (RBD) and Object storage (OSD) are enabled on AArch64.
  - Features verified by Ceph unit tests.
- Ceph integration with OpenStack.
  - Ceph RBD integration with OpenStack is enabled.
  - Ceph OSD integration with OpenStack is ongoing.
- Ceph benchmark and profiling is ongoing.

Storage – Test Setup

- For function verification, it's convenient to deploy storage services in VMs running in one AArch64 machine.
- For performance test, separated AArch64 nodes are used.



Storage in One Host

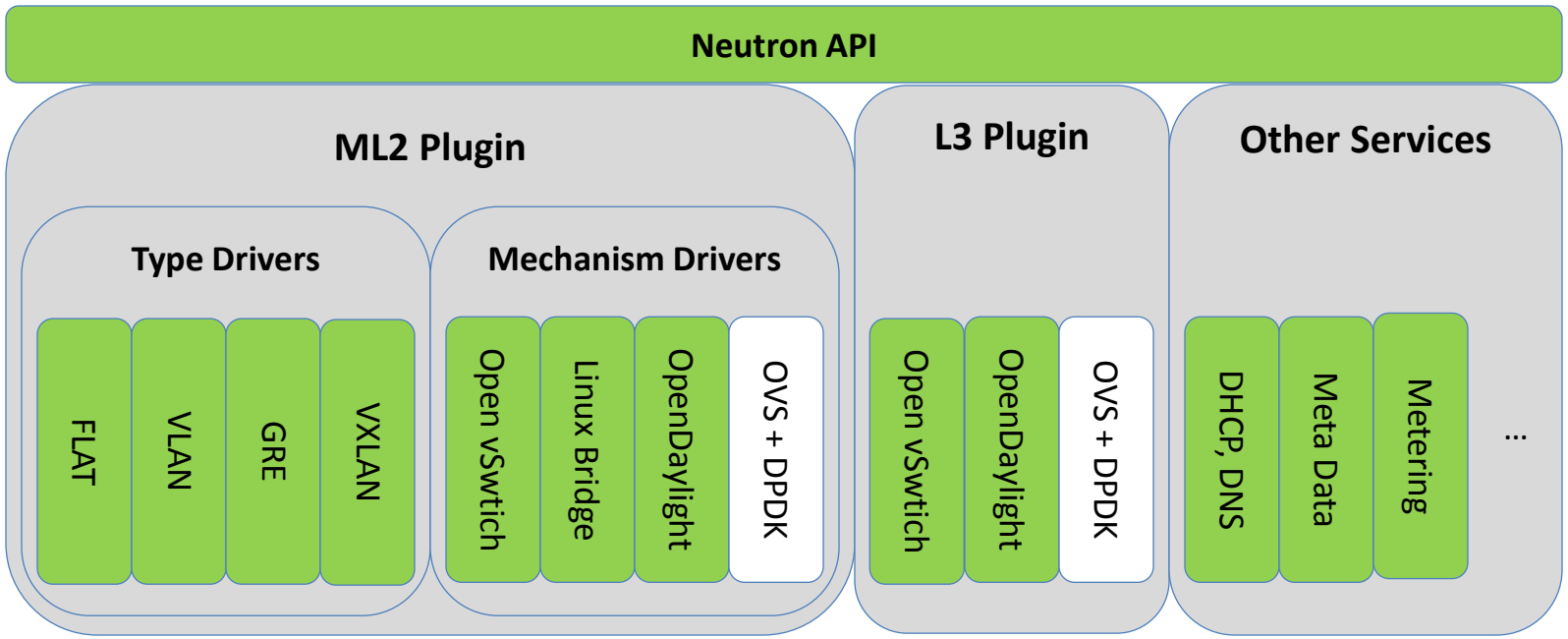


Storage in Separated Nodes

Neutron

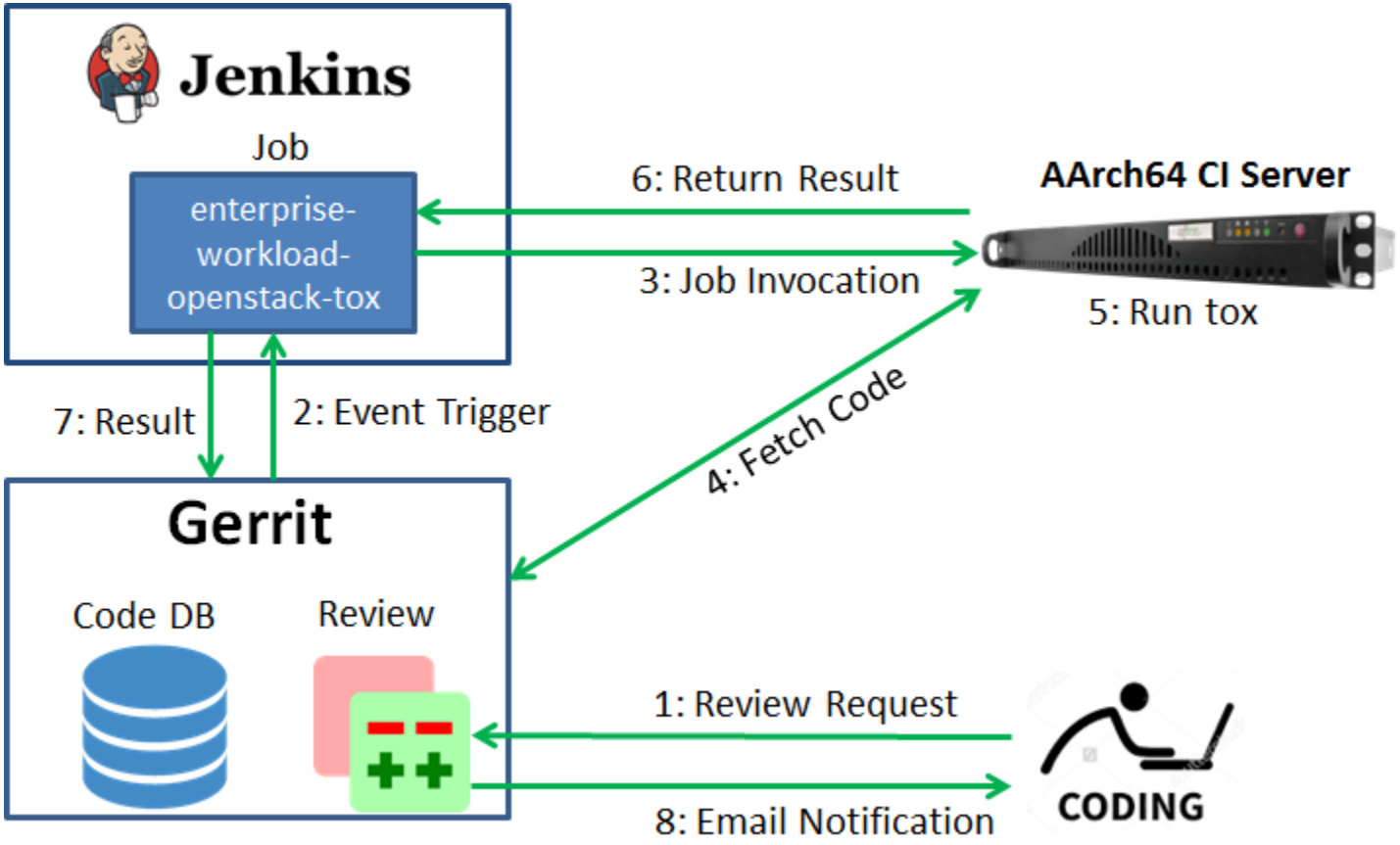
Neutron core services and agents, OpenDaylight plugin and DPDK are enabled and verified on AArch64.

- Neutron Tempest test report



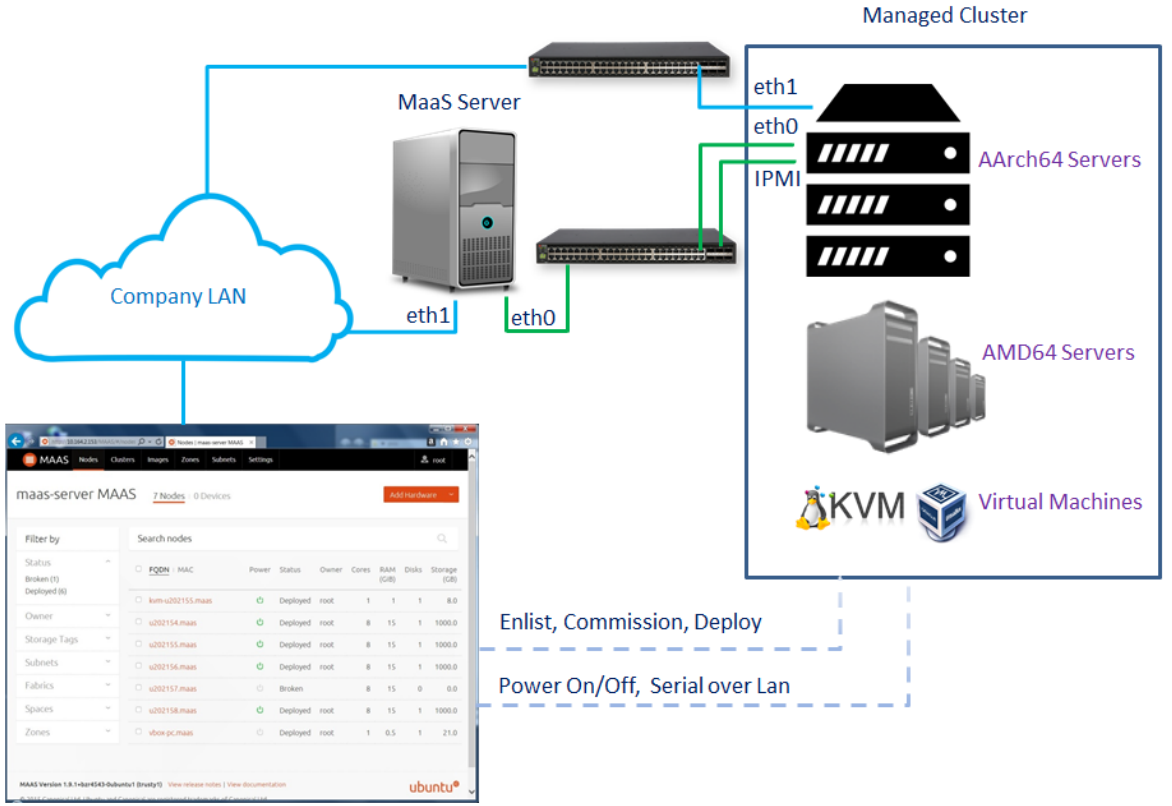
Upstream

- All patches must pass internally review before upstream.
- All patches must pass AArch64 CI tests. Currently, only project specific unit tests (tox) are included.



AArch64 Development Environment

- Five pieces of Overdrive 3000 servers are used for AArch64 workloads deployment and development.
- They are provisioned and managed by MaaS.



References

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  - http://docs.ceph.com/docs/master/rbd/rbd/