Open Infrastructure Project Updates

Akraino Virtual Event March 2021
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The Home of Open Infrastructure

Open Infrastructure Projects

- airship
- kata containers
- OpenInfra Labs
- openstack
- STARLINGX
- ZUUL
- magma
- opendev
- RUST-VMM
OpenStack
OpenStack Overview

➡ Current release cycle is Wallaby
  • Release planned for the week of April 12, 2021
  • https://releases.openstack.org/wallaby/schedule.html

➡ Latest stable release is OpenStack Victoria
  • Released on October 14, 2020
  • https://releases.openstack.org/victoria/highlights.html

➡ https://www.openstack.org
Nova Highlights

➡ Victoria highlights

- Support for mixed CPU pinning policy within the same Nova server
- Ability to create servers with virtual TPM devices
- Support for fast cloning of Glance images from Ceph RBD cluster

➡ Wallaby highlights

- Nova already has support for UEFI boot, the next step is to allow Secure Boot for QEMU and KVM guests
- Add support to attach a port with QoS minimum bandwidth rules to a running instance
- Overall smartNIC management involving Nova, Neutron, Cyborg and Placement
Neutron Highlights

➡ Victoria highlights
  • Distributed Virtual Routers (DVR) now support flat networks
  • Floating IP supports port forwarding for the OVN backend
  • Router availability zones are now available in OVN

➡ Wallaby highlights
  • Implement Distributed DHCP for the openvswitch agent
  • Enhance the floating IP port forwarding API to allow the use of port ranges
TripleO Highlights

- A project to install, upgrade and operate OpenStack clouds
- **Distributed Compute Node (DCN)** configuration for edge use cases
  - Deploying additional compute nodes in separate stacks
  - Routed spine and leaf networking setup for distributed deployment
- Supported failure modes
  - Loss of control plane connectivity
  - Loss of an edge site
- **Distributed Multibackend Storage**
  - Distributed image management and persistent storage
  - Available in OpenStack Ussuri and newer
Ironic Highlights

➡ Bare Metal as a Service project

➡ Victoria highlights
  • Initial support for DHCP-less deployment
  • Support for using Ironic as a standalone service

➡ Wallaby highlights
  • Add support to out-of-band (OOB) Redfish standards-based RAID configuration capability
  • Default to GPT when using a partition image to deploy a physical machine
  • https://specs.openstack.org/openstack/ironic-specs/priorities/wallaby-priorities.html

➡ Bare metal program/SIG
  • https://etherpad.openstack.org/p/bare-metal-sig
Cyborg Highlights

➡ Framework to manage and utilize hardware accelerator resources

➡ Victoria highlights
  - Role Based Access Control (RBAC) enhancements - part of the community-wide goals
  - New accelerator drivers: Inspur FPGA, Intel QAT
  - Users can program FPGAs through the Program Service API with pre-uploaded bitstream

➡ Wallaby highlights
  - Support for vGPU management by adding NVIDIA GPU driver
  - Accelerator drivers: Inspur NVMe SSD, Intel x710
  - https://specs.openstack.org/openstack/cyborg-specs/
Overview of Information Sources

➤ StoryBoard
  • Open source task tracking tool
  • Some OpenStack projects switched over already
    • https://storyboard.openstack.org
    • eg: Ironic project - https://storyboard.openstack.org/#/project_group/75
➤ Project specs folder
  • https://specs.openstack.org/openstack/<project_name>-specs/
    • eg: https://specs.openstack.org/openstack/ironic-specs/
➤ Launchpad
  • Many projects track blueprints and bugs in this tool
    • https://launchpad.net/<project_name>
    • eg: https://launchpad.net/nova
Overview of Information Sources

➡ Open reviews

• Using Gerrit for patch (code, test cases, documentation) reviews
  
  ➡ [https://review.opendev.org/](https://review.opendev.org/)

• You can filter for repositories to see open reviews

• eg: Ironic main repo - [https://review.opendev.org/#!/q/project:openstack/ironic](https://review.opendev.org/#!/q/project:openstack/ironic)

➡ Source code

• Available on Gitea

• [https://opendev.org](https://opendev.org)

• eg: Ironic related repositories - [https://opendev.org/explore/repos?q=ironic&tab=&sort=recentupdate](https://opendev.org/explore/repos?q=ironic&tab=&sort=recentupdate)
Overview of Information Sources

- **Launchpad**
  - Many projects track blueprints and bugs in this tool
  - [https://launchpad.net/<project_name>](https://launchpad.net/<project_name>)
  - eg: [https://launchpad.net/nova](https://launchpad.net/nova)

- **Storyboard**
  - Open source task tracking tool
  - Some OpenStack projects switched over already
  - [https://storyboard.openstack.org](https://storyboard.openstack.org)
  - eg: Ironic project - [https://storyboard.openstack.org/#!/project_group/75](https://storyboard.openstack.org/#!/project_group/75)
OpenInfra Edge Computing Group
OpenInfra Edge Computing Group

- A top level working group supported by the Open Infrastructure Foundation
- Focusing mainly on the IaaS layer
- Collecting use cases and requirements in the edge computing area
- Working on reference models and architectures
  - Building blocks from the wide open source ecosystem
- Not limited to any technology or industry segment
- Testing the reference architectures to identify gaps and areas to improve
- Group resources: https://wiki.openstack.org/wiki/Edge_Computing_Group
- White papers
  - https://www.openstack.org/edge-computing/edge-computing-next-steps-in-architecture-design-and-testing
There is no one-size-fits-all solution
- Various workloads have very different requirements
  - New industry segments with dependency on IT
- Infrastructures are organically growing
- Focus is on the connection

Current solutions need to evolve
- Centralized Control Plane
- Distributed Control Plane

Do you have one that doesn’t fit any of the above?
  - Share it with us!

https://wiki.openstack.org/wiki/Edge_Computing_Group#Minimal_Reference_Architectures
Airship
Overview

- Deployment and lifecycle management tool
- Collection of loosely coupled but interoperable open source tools
- Using containers to deliver infrastructure software

https://www.airshipit.org
Airship 2

- Currently at Beta, release is planned for Q2 2021
- Certified Kubernetes Distribution (v1.18)
- Rearchitecting
  - Utilize more projects from the CNCF ecosystem
    - Drydock \(\rightarrow\) Kubernetes Cluster API (CAPI)
    - Armada \(\rightarrow\) Flux Helm Operator
    - and more
  - Smaller YAML footprint
- Improved upgrade process
- Public cloud support: OpenStack, Azure, AWS and GCP
StarlingX
StarlingX Overview

• Top-level Open Infrastructure Foundation project
• Software stack providing high performance, low latency, and high availability for Edge Cloud applications
• Latest release is StarlingX 4.0 (released in August, 2020)
• Frequent releases
  • https://opendev.org/starlingx
  • http://mirror.starlingx.cengn.ca/mirror/starlingx/release/
• Growing community
  • Inviting users, operators and developers to try out the software and participate in the community
StarlingX 4.0

- Released in August, 2020
- Certified Kubernetes Distribution (v1.18)
- Support for Kata Containers
  - One of the supported container runtimes
  - Support for Time Sensitive Networking (TSN) with Kata
    - Provides support for determinism in delivering time-sensitive traffic
- Support for Redfish Virtual Media Controller
- Certification Manager
  - Automated certification issuance
  - Monitoring of certification expiration dates
- More information in the release notes and project documentation
StarlingX 5.0

- Release planned for May, 2021
- Adding support for ‘edgeworker’ nodes
  - Targeting industrial use cases
  - Lightweight approach with deploying only a few agents on the nodes
- **Vault integration** for secret management
- **SNMPv3 support** for the Fault Management service
- Improvements to certification management
- Support for FPGA image update orchestration
Events
Join the Communities for the Next PTG

Project Teams Gathering

April 19-23, 2021

Register now

https://www.openstack.org/ptg/
Open Infrastructure Foundation

Questions?

openinfra.dev