StarlingX OPNFV Nokia Paris-Saclay
Pilot Project Supported by the OpenStack Foundation

A fully featured Cloud for the distributed Edge
Project Overview
StarlingX is a project under the governance of the OpenStack Foundation with an Apache 2.0 license

• Released two times per year
  • The first StarlingX release is stx.2018.10
  • Next release is scheduled on May 20-24 2019 (2019.05.0)

• https://wiki.openstack.org/wiki/StarlingX all-in-one StarlingX wikipage

• CENGN Mirror: https://www.cengn.ca/starlingx-mirror-site/
What Is Edge Computing?

A. Latency
B. Bandwidth
C. Security
D. Connectivity

“WHERE” Matters!

Source: Cloud Edge Computing: Beyond the Data Center
Edge Computing Use Cases

vRAN == virtual Radio Access Network

uCPE == Universal Customer Premises Equipment

MEC == Multi-access Edge Computing
StarlingX Technology
StarlingX – Edge Virtualization Platform

StarlingX provides a deployment-ready, scalable, highly reliable Edge infrastructure software platform

Services from the StarlingX virtualization platform provide:

• Easy deployment
• Low touch manageability
• Rapid response to events
• Fast recovery

Think control at the Edge, control between IoT and Cloud, control over your virtual machines.

*Other names and brands may be claimed as the property of others*
StarlingX Scalability

- **Single Server**
  - Runs all functions

- **Dual Server**
  - Redundant design

- **Multiple Server**
  - Fully resilient and geographically distributable
Distributed Cloud - Solution Overview

- Based on OpenStack Regions,
- Central SystemController Region:
  - Hosting Shared Services
  - System-wide Infrastructure Orchestration functions:
    - Deployment and Management of Subclouds,
    - Configuration portal for shared configuration across all Subclouds,
    - Fault aggregation,
    - Patching orchestration.
- Remote Edge / Subcloud Regions:
  - Geographically dispersed,
  - Connected via L3 network,
  - Running reduced Control Plane.
- Inter-Region Communications strictly REST APIs / L3.
StarlingX – Configuration Management

- Manages Installation
  - Auto-discover new nodes
  - Manage installation parameters (i.e. console, root disks)
  - Bulk provisioning of nodes through XML file

- Nodal Configuration
  - Node role, role profiles
  - Core, memory (including huge page) assignments
  - Network Interfaces and storage assignments

- Inventory Discovery
  - CPU/cores, SMT, processors, memory, huge pages
  - Storage, ports
  - GPUs, storage, Crypto/compression H/W
StarlingX – Host Management

- Full life-cycle management of the host
- Detects and automatically handles host failures and initiates recovery
- Monitoring and alarms for:
  - Cluster connectivity, critical process failures
  - Resource utilization thresholds, interface states
  - H/W fault / sensors, host watchdog
  - Activity progress reporting
- Interfaces with board management (BMC)
  - For out of band reset
  - Power-on/off
  - H/W sensor monitoring
- Manage the host via REST API

Vendor Neutral Host Management
StarlingX – Software Management

- Automated deploy of software updates for security and/or new functionality
- Integrated end-to-end rolling upgrade solution
  - Automated, low number of steps
  - No additional hardware required for upgrade
  - Rolling Upgrade across Nodes
- In-service and reboot required patches supported
  - Reboot required for kernel replacement etc.
  - For patches that require a reboot, VM’s are live migrated off of node
- Manages Upgrades of all Software
  - Host OS changes,
  - New / upgraded StarlingX Service Software,
  - New / Upgraded OpenStack Software.
StarlingX OVP (Verified Program)

- Intel PHAROS POD-14
  - https://wiki.opnfv.org/display/pharos/Intel+POD14
- Intel PHAROS POD-20
  - https://wiki.opnfv.org/display/pharos/Intel+POD20

- PHAROS VPN Access: https://wiki.opnfv.org/display/INF/Infra+Lab+Support
Community and Contributing
Get Involved

• Code and documentation are available through git
  • [git.starlingx.io](git.starlingx.io)
• Apache 2 license
• IRC: #starlingx@Freenode
• Mailing List for daily discussions
  • [http://lists.starlingx.io/cgi-bin/mailman/listinfo/starlingx-discuss](http://lists.starlingx.io/cgi-bin/mailman/listinfo/starlingx-discuss)
• Weekly meetings:
  • Zoom calls
  • [https://wiki.openstack.org/wiki/Starlingx/Meetings](https://wiki.openstack.org/wiki/Starlingx/Meetings)
Where to Contribute?

• Bugs are tracked in Launchpad
  • https://bugs.launchpad.net/starlingx

• New ideas are introduced in the specs repository
  • https://git.openstack.org/cgit/openstack/stx-specs/

• Design and implementation work is tracked in StoryBoard
  • https://storyboard.openstack.org/#!/project_group/86
Invitation to Join the Community

• We cordially invite you to join the StarlingX community
  • Please try out the code and read the documents on StarlingX.io
  • Please sign up for the mailing list
  • Please attend community meetings
  • Please consider joining as a member
Thank you!