09/20/2022 - 09/22/2022 Akraino Fall Summit

LF Edge announcement: https://www.lfedge.org/event/akraino-fall-technical-summit/

> *Don't miss the #Akraino Fall Technical Summit, happening Sept. 20-22! We're taking a hybrid approach, hitting up 3 timezones in 3 days! Join us in California, Berlin, China, or Korea -- or online. Details and reg info here https://t.co/fnKEac3DuN pic.twitter.com/cLZb5weZ4g*
>
> *— LF Edge (@LF_Edge) 202291*

VIRTUAL SCHEDULE AT-A-GLANCE

TUESDAY, SEPTEMBER 20 (North America time zone friendly)

WEDNESDAY, SEPTEMBER 21 (APAC time zone friendly)

THURSDAY, SEPTEMBER 22 (EMEA time zone friendly)

Summary

› Agenda:- R7 planning, 2022 priorities for the community, labs, developer sync-up
› Dates: September 20th to 22nd, 2022

> All the time mentioned here is PT, California time.

> Speakers please upload the presentation before the meeting starts.

> Akraino PowerPoint/Google Slides Template

Meeting Agenda Lead:

Please submit any questions about this event to tsc@lists.akraino.org in the #akraino channel on https://slack.lfedge.org/

Meeting Recordings

- **Day 1:** TBD Kendall Perez
- **Day 2:** TBD
- **Day 3:** TBD Kendall Perez

Tuesday, Day 1

Meeting Location: Google Mountain View 'Atmosphere', Mountain View, CA, USA (Confirmed)

Address:

468 Ellis St, Mountain View, CA 94043 (Google Building QD3)

Lunch: included no charge

Requirement: Please bring vaccination card or a copy of the card.

~~**Zoom:**~~

Wednesday, Day 2

Theme: NextArch Edge

Host: Software Convergence Education Institute, Jeju National University, (Confirmed)

South Korean Standard Time:(Please note this is the South Korean Time)

- **Day:** September 22, 2022 (Thursday)
- **Duration:** 10:15 AM ~ 3:30 PM, SKT

Address:
Cheomdan Campus, Jeju National University
(1st Floor Hall) 36, Cheomdan-ro 8-gil,
Jeju-si, Jeju-do, 63243, REP. OF KOREA

Host: Y-semi Computing Co.,Ltd (Confirmed)

China Beijing Standard Time:(Please note this is the China Beijing Time)

- **Day:** September 22, 2022 (Thursday)
- **Duration:** 9:15 AM ~ 2:30 PM, (UTC+8:00)

Address:

B2-201, Kexing Science Park,Nanshan District,ShenZhen,China

Zoom:

https://zoom.us/j/94078854780?pwd=ZmYzdVBDQ0x5VnRJaWlxN2wyTjlldz09

Meeting ID: 940 7885 4780
Passcode: 195443

Meeting Recording:

Time Zone: All times below are **US Pacific Time Zone on Wed. September 21, 2022**

Time (Displayed in PST)	Topics
6:15 pm - 6:25 pm	Host Welcome

~~https://zoom.us/j/94078854780?pwd=ZmYzdVBDQ0x5VnRJaWlxN2wyTjlldz09~~

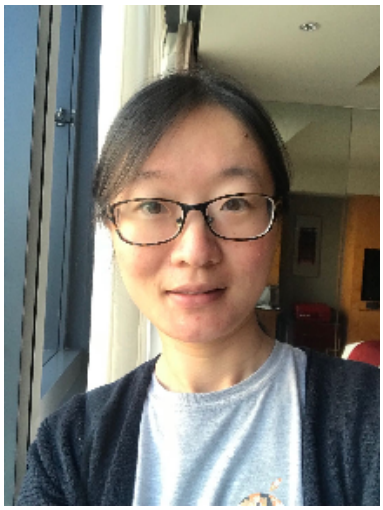
~~Meeting ID: 940 7885 4780~~
~~Passcode: 195443~~

http://meet.google.com/mfh-ombf-pir

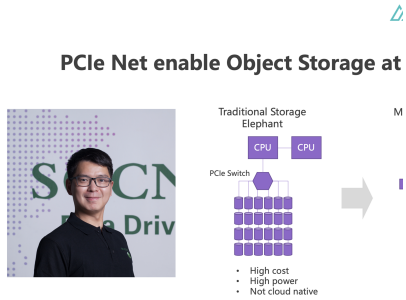
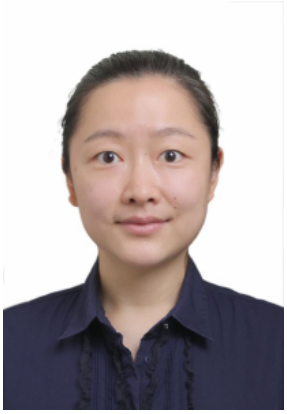
Youtube Channel:

https://youtu.be/0Q8W235fDVU

Meeting Recording :

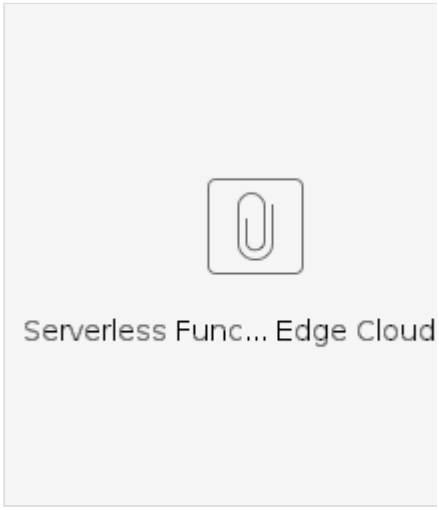
Time (PST)	Topics
8:40am - 9:00am	In person attendees to check-in.
9:00 - 9:05am	**Host Welcome** Vikram Venkataraghavan
9:05am - 9:10am	**Open Remarks** Jim Xu TSC Chair, LFEdge General Board Member Oleg Berzin TSC Co-Chair
6:25 pm - 7:00 pm	**Practice and Thinking of CFN (Computing Force Network)** Abstract: Introduces the new concept, new goal and vision of C China Mobile's research progress and practice in multi-cloud r Yanjun Chen  hanyu ding

9:10 am - 9:40 am	**Keynotes from LFEdge** Tina Tsou Board Chair, LF Edge blocked URL **BIO:** *Tina Tsou is an innovator and a visionary with far-reaching accomplishments within the technical engineering realm. As Arm's Enterprise Architect, Tina serves in the highly visible Technical Lead role for the Enterprise Open Source Enablement team, where she analyzes, designs, and implements robust strategies to establish first tier status for Arm's architecture within open source communities and projects. Tina also serves as Arm's Edge Computing Team Lead. As the company's open source thought leader, she builds powerful partnerships with and influences open source communities in support of multiple architectures.* *Tina previously served as the Digital Domain Expert (Connectivity) for Philips Lighting, where she implemented NB-IoT in an outdoor carrier project with China Mobile and Huawei. She released Bluetooth + ZigBee combo chip architecture and delivered a connectivity hardware/software platform (ZigBee 3.0, Wi-Fi). The United States Patent and Trademark Office has granted Tina 100+ patents.* 
9:40 am - 10:10 am	**K8s Edge storage with Lightbits and Sherlock** Abstract: In this talk, we will use Sherlock, an open source performance framework to run and stress databases on K8s (MySQL, PostgreSQL, SQLserver and MongoDB). The Lightbits CSI driver is utilizing NVMe/TCP as the transport. NVMe over TCP was added to the Linux kernel in version 4.10 and has been maintained by a growing community of developers from various companies. For the storage part we will use Lightbits software to create the fastest possible software defined storage solution for K8s. Sagy Volkov, Distinguished Performance Architect, Lightbits blocked URL

7:00 pm - 7:40 pm	**PCIe Net enable Object Storage at Edge** As the edge computing prevailing, the number of edge cluster millions servers located in one site evolve to millions of small for this architecture shift, but also for energy constrains. In this talk, we will introduce a novel PCIe-based system-level clusters more compact and energy-saving. As the practical ap the energy efficiency this architecture can achieve. Keywords: PCIe Net, object storage, micro-server cluster, edg  Bio: Dr. Fu Li (LEO) **Leo Li** the pioneer of cloud native application on PCIe-based network HPC, named-data networking and system-level architecting ar 
7:40 pm - 8:20 pm	**China Unicom's 5G MEC and Private Network Practices** Abstract: China Unicom's practices on MEC and 5G Private N Rong Huang 

10:10am - 10:50am	**Security at the Edge** Daniil Egranov System Architect, Arm  **BIO:** Daniil Egranov is a System Architect in the Arm Architecture Technology Group. He is part of the Infrastructure Security Team and working on platform and firmware security architectures. His main focus is researching security solutions for cloud and edge platforms. Imran Yusuf, Director Hardware Ecosystem, Arm SystemSecurtyEdge.pptx
8:20 pm - 8:50 pm	**OpenStack at the Edge** Ildiko Vancsa Senior Manager Community & Ecosystem, Oper blocked URL **BIO**: As a senior manager I have a strong strategic mindset wi leadership. An experienced speaker, I have been on stage in f strategic content for blogs and articles and can address both e OpenInfra_Edge...ummit_2022
8:50 pm - 9:15 pm	**Highlights of LF Edge/Akraino Cloud Game White Paper** Davy ZhangY-semi Computing Edge Cloud Gam...mance CPU. Akraino W...1122).pdf
9:15pm - 9:40pm	Break (Lunch time at APAC)
9:40pm - 11:59pm	**NextArch at the Edge** **Cloud-native infra on edge clouds** Modern computing workloads are moving to the edge (eg CDN However, traditional cloud native toolchains and architecture a performance requirements. WebAssembly is emerging as a se sandbox for edge-based microservices.

10:50-11:25	**Cilium introduction and improvement** Jiang Wang, Linux Kernel Engineer, Bytedance **Abstract:** Cilium is a eBPF based open source software for Kubernetes and Docker containers. By using eBPF, Cilium can achieve a very high scale with low overhead. I n this talk, we will first introduce eBPF and then Cilium networking functions. We will also discuss SNAT and Direct Server Return (DSR) modes and how to improve DSR.  **BIO:** Jiang Wang is a Linux Kernel Engineer of System Technologies and Engineering team at ByteDance. He has been working on Linux Kernel for more than 10 years. He works in various areas for upstreaming Linux, including security, virtualization and networking. His recent work involves eBPF and Cilium. 
11:25-12pm	Panel: ORAN at Edge, Where we are now, and will be in the future? Moderator: Sunil Chinnaraju (Synopsis) Panelists: Keesang Song (AMD), Sukhdev Kapur (Juniper), Joe Madden (Mobile Experts)
12:00pm-12:40pm	Lunch Break & Social (note - lunch is included no charge)



Streaming functions

A typical IoT edge application consists of data streams from d and analysis. A streaming function intercepts the data stream, save to DB or to raise an alert). It allows streaming data to be

Edge AI

Edge data often needs to be processed locally or on the close models for inference on heterogeneous hardware (eg GPU, N nodes.

Realtime Collaboration on Web

HTTP/3 and WebTransport protocol enables presence events collaboration features on browser.

12:40-1:20pm	**ORAN** **Abstract:** By disaggregating RAN deployments, 5G presents great opportunities as well challenges to build disaggregated multi-vendor solutions. ORAN Alliance is standardizing the orchestration and management of RAN networks so that vendors can comply with these standards to build standardized multi-vendor solutions. In this talk I will give a brief overview of activities in ORAN working groups and somewhat details about the Service Management Orchestration (SMO) and ORAN Cloud (O-Cloud) Sukhdev Kapur Senior Distinguished Engineer, Juniper  **BIO:** Sukhdev Kapur is Distinguished Engineer at Juniper Networks. He is part of CTO organization and is driving the Contrail architecture, 5G, Edge, and Cloud Native initiatives. Sukhdev is a networking veteran with over 20 years experience in highly available distributed systems, cloud computing, virtualization, disaster recovery, policy based mobile workloads management, and software defined networks. He has held architectural positions in Arista Networks, F5, Cisco, Alteon, and others. He holds several patents in cloud computing, hierarchical data center deployments, cloud based disaster recovery, high availability, data center fabric automation, etc. Akraino-ORAN.pptx
	Realtime-Web-20...no-NextArch Speakers: Michael Yuan, Founder & CEO of SecondState, Maintainer of  C.C. Fan, Founder & CEO of AllegroCloud, Maintainer of YoM

Thursday, Day 3,

Theme: LFEdge Day Sponsored by Akraino

Meeting Location: Zededa Berlin (confirmed)

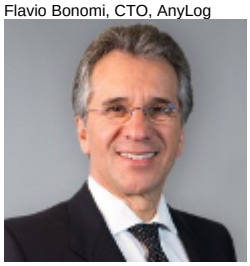
Address:

Edison Höfe Invalidenstraße 117, Building 2, BT 303
Berlin, 10115 Germany

Meeting Location: ARM San Jose (confirmed)

Address:

Meeting Room Sequoia, 1st floor, 120 Rose Orchard Way, San Jose, CA 95134, USA

1:20 - 1:25 pm	**AnyLog: A Micro-services based Data Fabric for Decentralized Data and Applications** **Abstract:** AnyLog's platform is an open, virtual data fabric that unifies the vast amounts of Edge data and makes it appear like it is stored in a centralized cloud database. By keeping data decentralized and at the Edge, real-time applications and Edge AI become possible; and companies can derive meaningful insights from their data. AnyLog's software architecture inherently supports horizontal scaling and virtualization to provide a unified view of the distributed data. AnyLog's fully automated solution and standard APIs eliminate the need for proprietary solutions and professional services at the Edge. Flavio Bonomi, CTO, AnyLog  **Bio:** Flavio Bonomi is a visionary entrepreneur and an innovator with expertise spanning from low level silicon to the broad level of distributed and cyber-physical systems. Until recently, Flavio Bonomi was Board Advisor to Lynx Software Technologies. Prior to Lynx, he was the Founder and CEO/CTO at Nebbiolo Technologies, a startup delivering the first complete Fog/Edge Computing software platform for the Industrial Automation market. Flavio spent 14 years at Cisco Systems and, as a Cisco Fellow and VP, he led the vision and technology initiatives for Cisco's forward looking work.
1:25 - 1:55 pm	**Vehicle Computing: Vision and Challenges** **Abstract**: Vehicles have been majorly used for transportation in the last century. With the proliferation of onboard computing and communication capabilities, we envision that future connected vehicle (CVs) will be serving as a mobile computing platform in addition to their conventional transportation role for the next century. In this article, we present the vision of Vehicle Computing, i.e., CVs are the perfect computation platforms, and connected devices/things with limited computation capacities can rely on surrounding CVs to perform complex computational tasks. We also discuss Vehicle Computing from several aspects, including several key and enabling technologies, case studies, open challenges, and the potential business model. Weisong Shi, Professor, IEEE Fellow blocked URL **BIO**: Dr. Weisong Shi is the Chair (Interim) of the Department of Computer Science, Wayne State University after serving as the Associate Dean for Research and Graduate Studies at the College of Engineering from 2019 to 2022. He is a Charles H. Gershenson Distinguished Faculty Fellow and a Professor of Computer Science, and leads the Wayne Mobility Initiative (WMI) and directs the Center of Excellence in Mobility and Connected and Autonomous Research Laboratory, investigating performance, reliability, power- and energy-efficiency, trust and privacy issues of networked computer systems and applications. He is an IEEE Fellow and a Distinguished Scientist of ACM. 

Zoom:

https://zoom.us/j/94078854780?pwd=ZmYzdVBDQ0x5VnRJaWlxN2wyTjlldz09

Meeting ID: 940 7885 4780
Passcode: 195443

Meeting Recording:

Time Zone: All times below are US Pacific Time Zone

Time (Displayed in PST)	Topics
6:00 am - 7:30 am	**LF Edge Day Sponsored by Akraino** **EVE Overview Presentations** * How to Modernize the Edge and Stay Secure - Renê de Souza Pinto  * Security Advantages - Erik Nordmark  * Interesting EVE Deployment Use Case - Kathy Giori

1:55 - 2:15 pm	**CPS Robot Blueprint family** https://wiki.akraino.org/display/AK/Edge+Service+Enabling+Platform Robotics is an important tool for achieving the SDGs. Workers will be able to focus on decent work and new innovation by improvement of labor productivity , as a result, they can move toward new economic growth. However, there are industries where it is difficult to apply current robotics. For example, agriculture, restaurant, food factory, etc.. The biggest challenge current robotics faces in the industry is how to control elastic and non-uniform object under variable circumstance. To apply robotics to any industry easily, this blueprint family develop and provide open software stack which can achieve the challenge. Fukano Haruhisa Fujitsu  Introduction_to...y_20220919.pptx
	LF-EDGE-DAY3-2022.pdf BIO: Kathy Giori manages the EVE/ZEDEDA Developer Program Free Trial. She has been a fan of open source throughout her technology career and is actively using and promoting LF Edge project EVE. 
7:30- 8:00am	**Live Demo of Project EVE + ZEDEDA's SaaS Orchestration** Kathy Giori Kathy Giori
8:00-9:00am	Break, Resume at 9am PST

2:15-2:30	**Robotics Edge HPC** - Human safety and emergency commands are utmost priority for robot operation. Achieving reliable voice command response in mobile / SWaP-constrained robots – in the presence of servo motor noise, background conversations and sounds, and intermittent Internet dropout – requires high performance computing under severe size and power constraints. Noise removal, false positive resilience, variability in human commands, and personnel / proprietary sound privacy requirements pose difficult challenges. At the same time robots must utilize cloud connectivity for essential microservices (e.g. non-real-time such as location, coordination with other robots), containerization, orchestration, and maintenance telemetry. For the **CPS Robot SSES Blueprint**, Signalogic is adding 20,000 word vocabulary onboard ASR (automatic speech recognition) to demonstrate the onboard HPC approach Akraino_Fall_Sum...022_Robotics.pdf Jeff Brower, Signalogic 

9:00 am - 9:40 am	**"5G Advanced" Release Enhancements for Commissioning of Services at "the Edge"** with respect to latest enhancments on "equivalent" NPNs/SNPNs (Private 5G) single registration to NPN/SNPN (enabling UE in "idle" and CM" mode to stay connected to NPNs/SNPNs without the need for new registration while connected to another "equivalent" NPN/SNPN) and support for Localized Services at NPNs/SNPNs, including the early 3GPP Rel.19 specification for Localized Mobile Metaverse Services, updates on the deployment of EAS information, analytics on the CN and Application Layer enabling Predictions and Statistics for fulfilling Services QoS, alignment between EAS in 3GPP Architecture enabling development of Applications on the Edge and ETSI MEC MEA (as GSMA proposed in June 2021 Solution for E2E Applications development on the Edge), 3GPP proposed IoT - PCS (Platform Common Services), O-RAN Alliance (v. 6.0) related to Slicing and latest enhancements on Slicing as part of the 3GPP "5G Advanced" Release. **Link to the presentation: https://www.slideshare.net/IkeAlisson/ike-al-pres-on-5g-and-5g-advanced-selected-capabilities-to-lf-edge-akraino-summit-fall-2022-rev-pa10-sept-22-2022pdf** Ike Alisson  **BIO:** Ike Alisson has competence and experience from Sales of complete Cellular Network and Mobile Internet Platform, Telecom Data Platforms, New Account Management, Deployment of New/Pioneering Technologies/ Platforms, Strategic Partnerships, Solution Management of New Services running on 5G (SBA & NSA /LTE), CIoT with ETSI SAREF), IIoT, Global Standard oneM2M IoT SL (Service Layer) Platform with ETSI SAREF and SmartM2M, ETSI MEC, TM Forum ODA (Open Digital Architecture), AI/ML on the Edge Services, Digital Twin/Cybertwin. He has 3GPP approval from November 10th, 2021 to use the "5G Advanced" logo on his presentations covering "5G Advanced" standard specifications.
9:40 am - 10:15 am	**Break. Resume only in Virtual**
10:15 am - 10:35 am	**Akraino Release 7 Planning** **Jim Xu** Akraino TSC Chair, LFEdge Board Member Principal Engineer, Zenlayer Inc. **blocked URL** **Oleg Berzin** Akraino_Release7.pptx

2:30 - 3:00 pm	**Introduction of Nephio** Kandan Kathirvel Product Lead - Telco Cloud & Orchestration, Google blocked URL **BIO**: An established industry leader in delivering results in Product development, technology & telecommunications solutions, across strategy, and research & innovation with 20+ years of Telecommunications, Cloud & Datacenter experience. Former Akraino TSC Chair. 
3:00 - 3:05 pm	First Day Wrap-Up

10:35 am - 11:05 am	**Akraino Subcommittee Annual Report**  **Jeff Brower**, Signalogic Akraino API subcommittee chair, TSC member 

11:05 am -11:45 am	**Where the Edges Meet, Infra Forms, Apps Land and Work Flows:** Overview of the Public Cloud Edge Interface (PCEI) blueprint and the MEC Federation solution based on PCEI for ETSI - LF Edge Hackathon 2022. The PCEI blueprint provides the multi-domain orchestrator to enable infrastructure orchestration and cloud native application deployment across public clouds (core and edge), edge clouds, interconnection providers and network operators. The notable innovations in PCEI are the integration of Terraform as a microservice to enable DevOps driven Infrastructure-as-Code provisioning, integration of Ansible as a microservice to enable automation of configuration of infrastructure resources (e.g., servers) and deployment of Kubernetes and its critical components (e.g., CNIs) on the edge cloud, and introduction of a workflow engine to manage the stages and parameter exchange for infrastructure orchestration and application deployment as part of a composable workflow. PCEI can help simplify the process of multi-domain orchestration by enabling uniform representation of diverse services, features, attributes, and APIs used in individual domains as resources and data in the code that can be written by developers and executed by the orchestrator, effectively making the infrastructure orchestration across multiple domains DevOps-driven.  Oleg Berzin Distinguished Engineer, Office of the CTO, Equinix blocked URL **BIO**: Oleg Berzin received his Ph.D. from Drexel University in Philadelphia, PA. Dr. Berzin worked at Verizon for 20 years, where he held technology leadership roles, including development of the 4G LTE network and capabilities for enterprise mobile and Machine-to-Machine (M2M) services. Oleg is currently a Distinguished Engineer, Technology and Architecture at the Office of the CTO at Equinix, where he is responsible for development of innovation strategies and architectures and prototypes in the areas of Mobile and Fixed Edge Infrastructures, Internet of Things, Next Generation Interconnection and Networking, Virtualization, and Network Automation. Oleg is proud to hold Lifetime Emeritus status for his three CCIE certifications (R&S, WAN Switching, SP). He is honored to be serving as Co-chair of the Linux Foundation Edge Akraino Technical Steering Committee and as Project Technical Lead of the Linux Foundation Akraino Public Cloud Edge Interface blueprint.
11:45 am - 11:50 am	Close Remarks