

Prime Guide to LF Edge For Current and New Members

Getting Started Guide





We are creating a common framework for hardware and software standards and best practices critical to sustaining current and future generations of IoT and edge devices.

LF Edge References

Key Contacts

Arpit Joshipura, Executive Sponsor

ajoshipura@linuxfoundation.org

Mike Woster, Membership

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Brett Preston, Sr. Program Manager

bpreston@linuxfoundation.org

Jill Lovato / Maemalynn Meanor, PR and Marketing

pr@lfedge.org

Eric Ball, IT Operations

helpdesk@lfedge.org

Key Resources

Web Site <https://www.lfedge.org/>

Wiki <https://www.lfedge.org>

Mail Lists <https://lists.lfedge.org>

Slack <https://slack.lfedge.org>

Technical Advisory Council (TAC):

<https://wiki.lfedge.org/pages/viewpage.action?pageId=1671298>

Outreach Committee/Marketing:

<https://lists.lfedge.org/g/outreach-committee>

LF Edge Elected Leadership



Governing Board

- › Chair: Melissa Evers-Hood, Intel
- › Treasurer: Tom Nadeau, Red Hat
- › General Member Representatives:
 - › Cole Crawford, Vapor IO
 - › Keith Steele, IOTech
 - › Rob Hirschfeld, RackN

Technical Advisory Council (TAC)

- › Chair: Jim St. Leger, Intel

Outreach / Marketing Committee

- › Chair: Balaji Ethirajulu, Ericsson

LF Edge Project Leadership



Akraino Edge Stack

- › TSC Chair: Kandan Kathirvel, AT&T

Baetyl

- › TAC Representative: Leding Li, Baidu

EdgeX Foundry

- › TSC Chair: Keith Steele, IOTech
- › TAC Voting Member: Jim White, IOTech

Fledge

- › TAC Representative: Daniel Lazaro, OSIsoft

Home Edge

- › TSC Chair: Myeonggi Jeong (MJ), Samsung

Open Glossary of Edge Computing

- › TAC Representative: Matthew Trifiro, Vapor IO

Project EVE

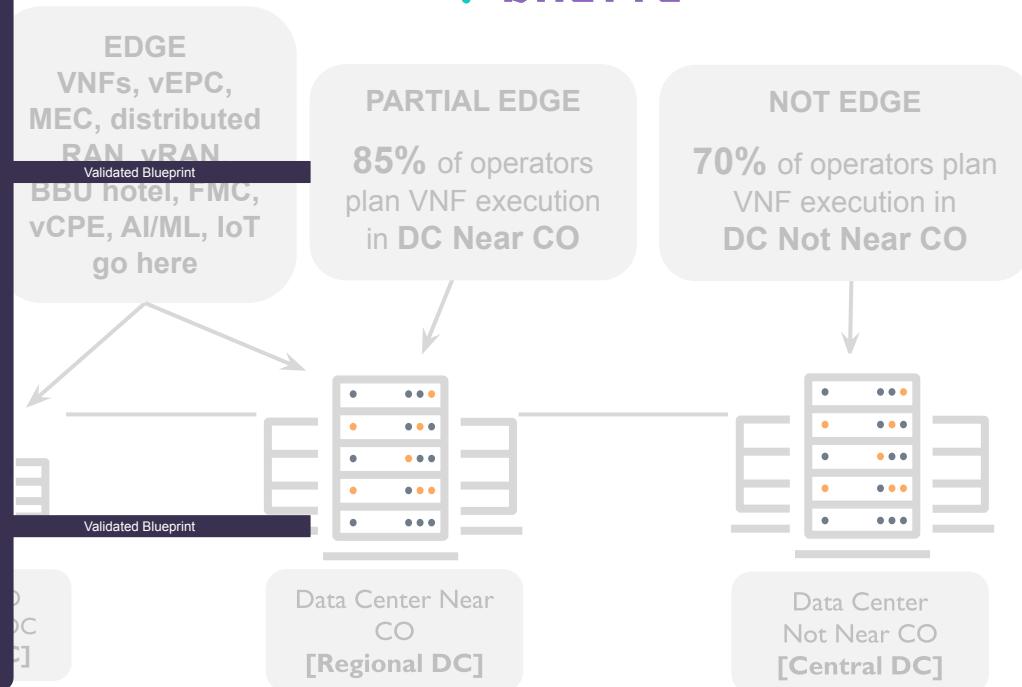
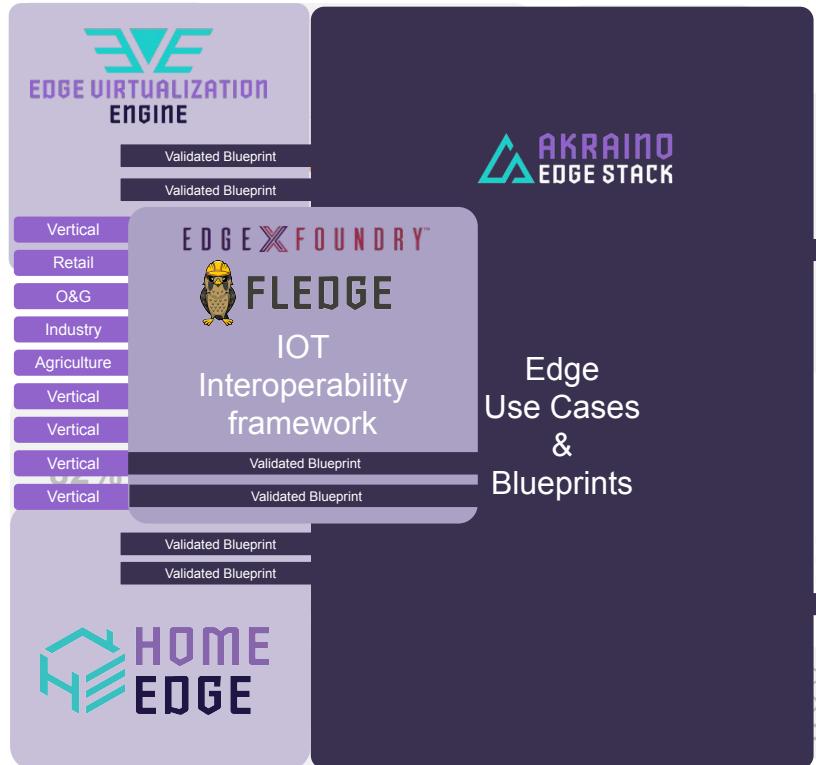
- › TAC Representative: Roman Shaposhnik, ZEDEDA

Introducing LF Edge

THE **LINUX** FOUNDATION

LF Anchor projects for Edge

Akraino and EdgeX Foundry are complementary open source projects addressing Telecom, Enterprise and IOT edge



Scope of LF Edge



Edge Computing Glossary

Application Interoperability

EDGE X FOUNDRY™



FLEDGE

Interoperability between IoT devices and applications

OS



Zephyr™



PHOTON OS™

Hypervisor

Lightweight real-time hypervisor



Device Provisioning

Trusted device onboarding across dynamic supply chain via [Intel-Arm collaboration](#)

Infrastructure



EDGE VIRTUALIZATION ENGINE

OR



Application and network provisioning and orchestration

Device Edge

Control Edge

Gateways (Thin and Thick)

Industrial/ Telco Radio Edge/HCI

MDC Edge

On-Prem DC Edge

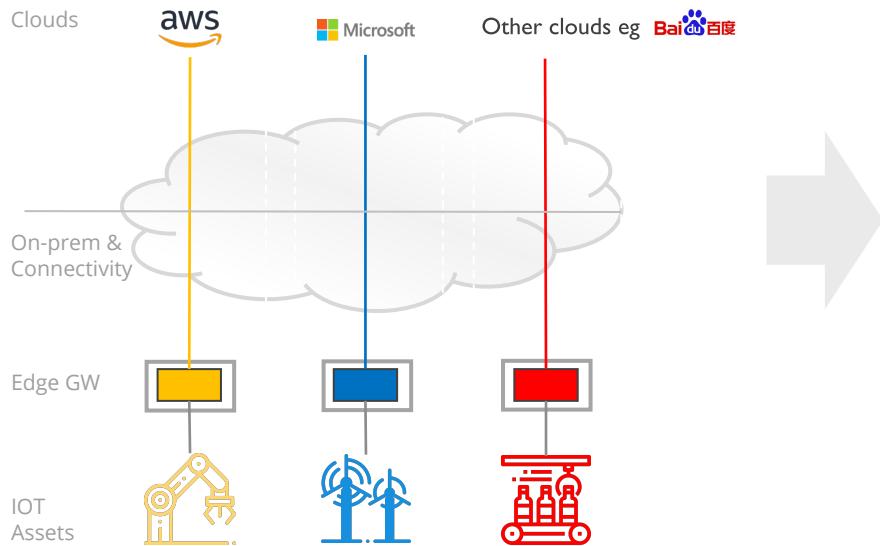
Telco/Cloud Edge

API coordination for intelligent orchestration of IoT edge workloads

Open Source LF Edge

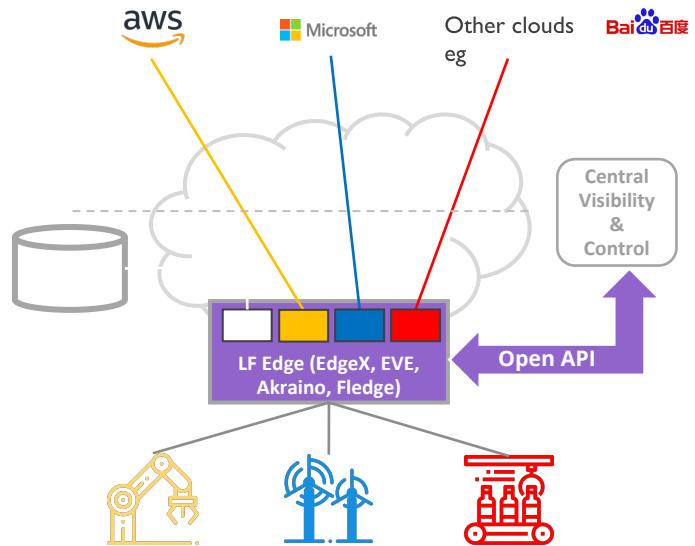
IIoT Today

Vertical data silos & platform lock-in
Data/edge sovereignty & control issues
Hardware-defined & unmanaged edge



IIoT with LF Edge

Open IoT data architecture, no lock-in
Data & edge belong to the enterprise
Software-defined & ubiquitous edge



LF Edge – New umbrella for Edge Projects

Drivers

- › Complementary and aligned vision on multiple LF projects
- › Fuels faster adoption and deployment
- › Edge market is fragmented and creating a larger entity provides leadership

Projects



EDGE X FOUNDRY™

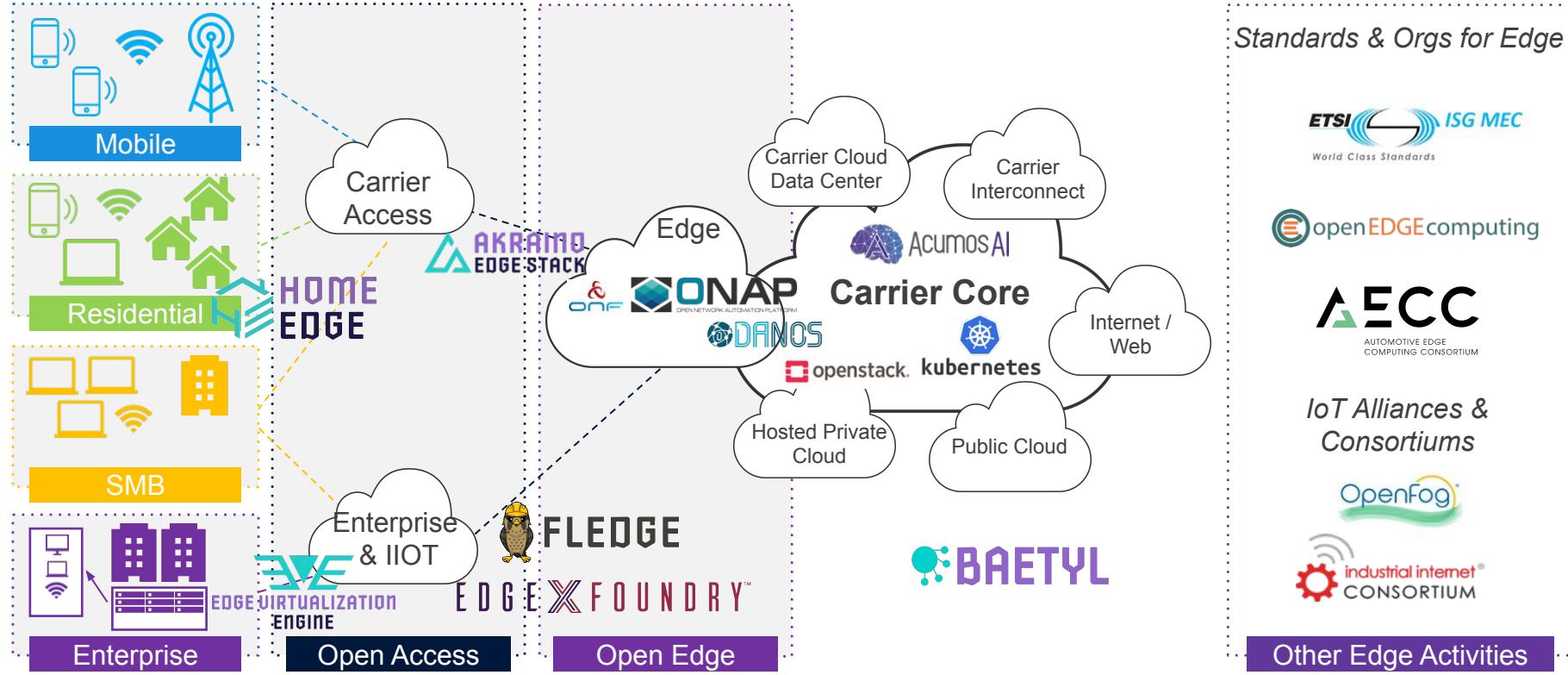


OPEN GLOSSARY
OF EDGE COMPUTING

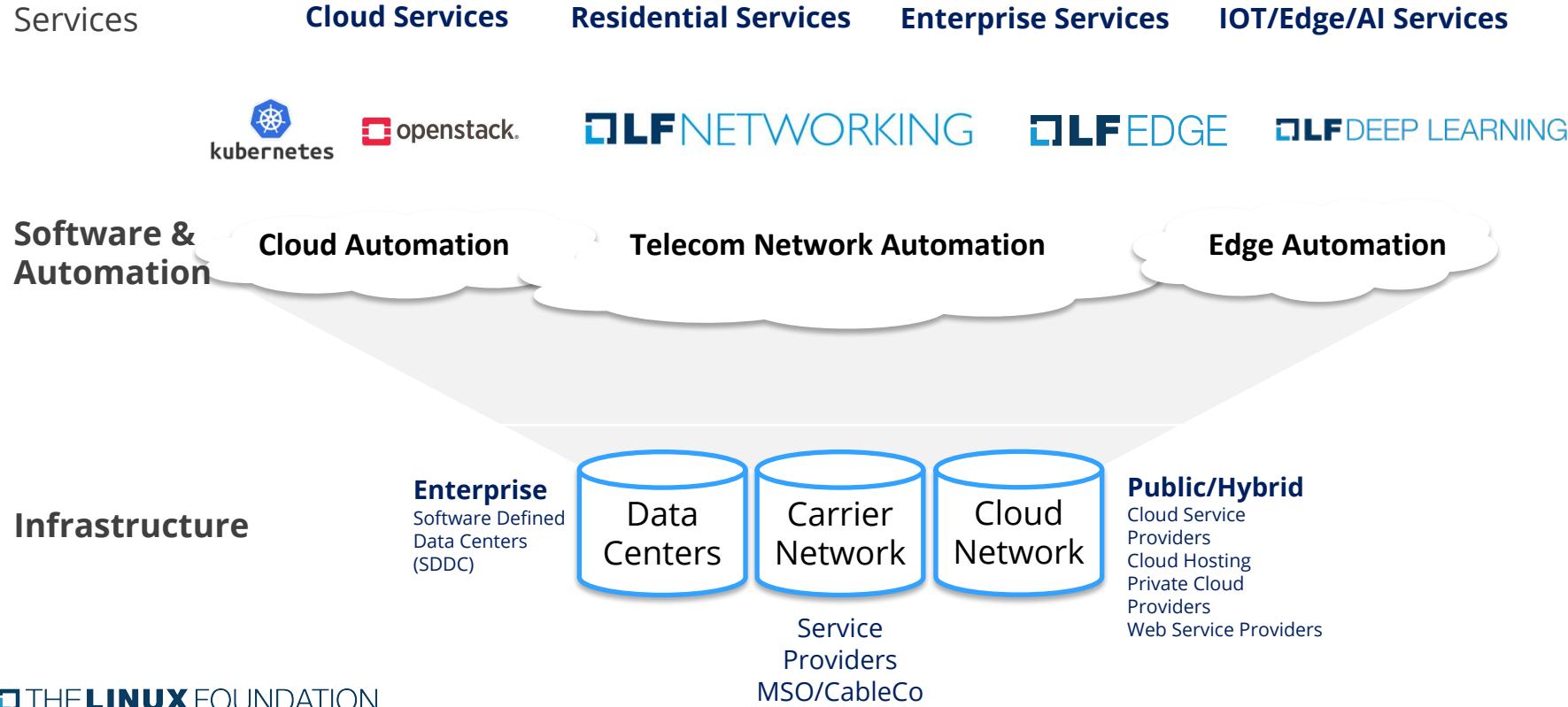


Bringing It All Together – LF Open Source Edge

With Complementary Standards, Ref Arch and Ref Implementations



Automating Cloud, Network & IOT/Edge Services



Premier Members



General Members



MARVELL®



Associate Members and Liaisons



INFRASTRUCTURE
MASONS



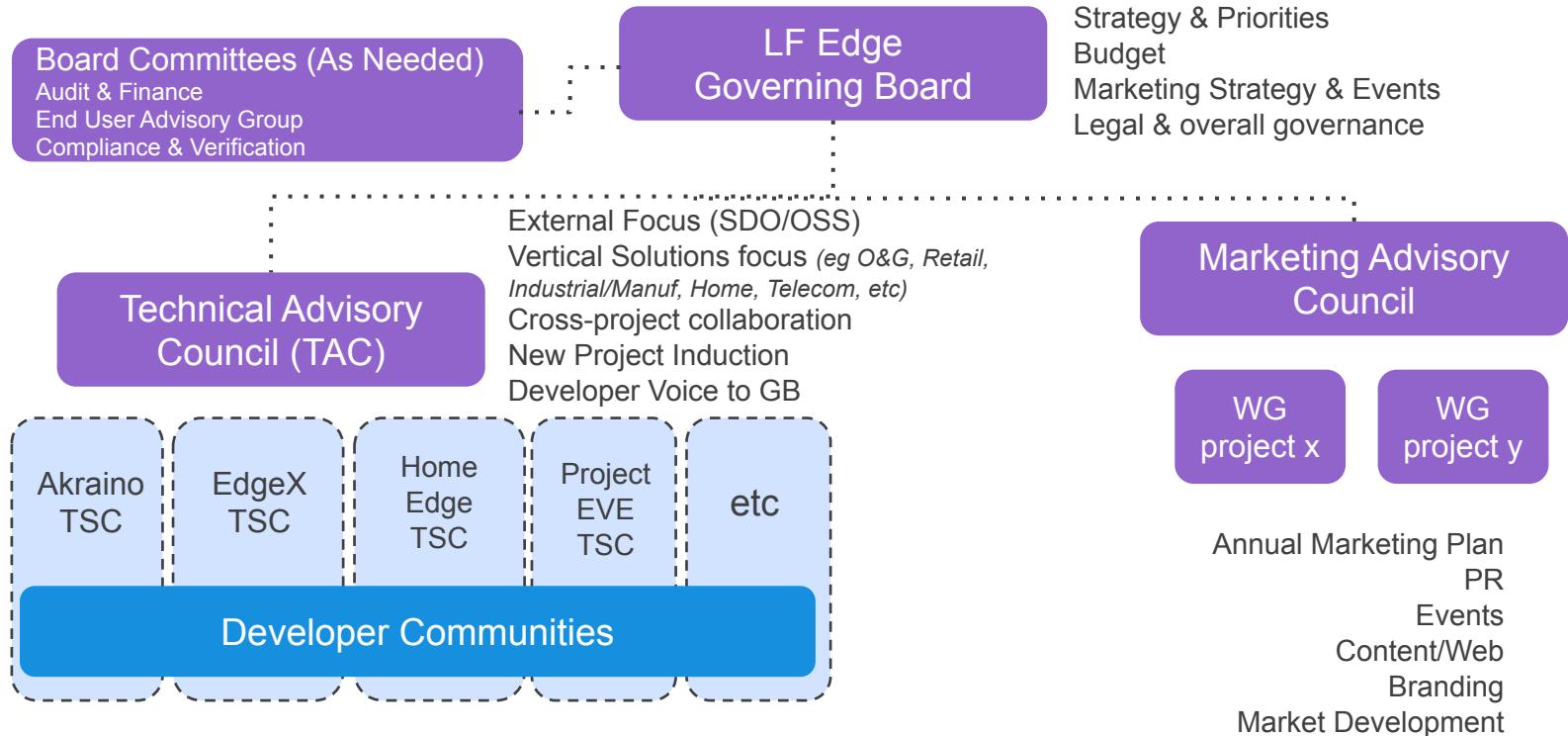
University of New Hampshire
InterOperability
Laboratory



LF Edge: Key Takeaways

1. Harmonizing Open Source Edge Communities across IOT, Enterprise, Cloud & Telecom
2. Keeping LF Edge Open & Interoperable with
 - › Hardware, Silicon, Cloud, OS, Protocol independence
 - › Bringing the best of telecom, cloud and enterprise – location, latency & mobility
 - › In collaboration with Consortiums/SDO (IIC, AECC, OEC, ETSI)
3. Hosted by the Linux Foundation similar to other Open Source Communities like CNCF (Kubernetes), LF Networking (ONAP) and many more.

LF Edge Governance



LF Edge Membership Structure, broad base – lower dues

Summary

1. Premier Member, Annual cost for LF Edge \$50,000 (similar to Akraino)
2. Simplified EdgeX general category to match LF levels
3. Dues for existing projects will be credited towards LF Edge or any LF projects.

Level	Not Yet LF Member	Already LF Member
Premier	\$70,000	\$50,000
General	\$45,000 (USD) 5,000 and above	\$25,000 (USD) 5,000 and above
	\$30,000 (USD) From 500 to 4,999	\$15,000 (USD) From 500 to 4,999
	\$20,000 (USD) From 100 to 499	\$10,000 (USD) From 100 to 499
	\$7,500 (USD) Up to 99	\$2,500 (USD) Up to 99

LF Edge membership also requires companies to be corporate members of The Linux Foundation (similar to Akraino and EdgeX Foundry). A discount of \$5,000 to \$20,000 is available for existing Linux Foundation members who join LF Edge.

LF Edge Membership – the benefits

Premier

Influence Strategic Direction of LF Edge & its projects (as a Voting GB member)

- › Budget Influence/approval, how and where the project spends money.
- › Direct Influence on messaging, developer events, training
- › Influence the marketing, messaging, and positioning to best represent the project for your uses
- › **Marketing Committee Voting Seat**

Direct Interaction with Leadership – within LF and across peers

- › Premium access to the project ED/VP to understand business goals
- › Premium access to the Operations staff. IT, Marketing, Operations, Leadership
- › Participate in any Cross project strategy discussions on harmonization and future direction of Edge
- › LF Leadership support to Keynote member events, participate in outreach (eg roadshows, events, conference meet ups etc..)

Technical and Roadmap Direction Influence (through the technical community)

- › **TAC (Technical Advisory Council) voting seat**
- › Find like-minded companies/developers to build a coalition to get an idea accepted and prioritized by the community
- › Aid the developers in actions they can take to improve their standing, position, and influence in the community., etc.

Brand Momentum – ability to show Leadership in Open Source which drives end user adoption and talent.

- › Open Source Brand Affinity, prove to your customers that you are a leader in the project, hire talented software engineers

General

Learning and Engaging to create the largest Open Source Edge shared technology roadmap

- › Work together across company lines and industries
- › Participate in elected board seat process

Marketing & Thought Leadership

- › Logo on the website once your membership has been announced. LF will support with quotes on Press releases related to the project
- › Marketing Committee comprised of a representative from each Member company. General Members may appoint a representative as an observer of the Marketing Committee meetings on a non-voting basis. The objective of this Committee is shaping the marketing direction for edge. The Linux Foundation will do the heavy lifting, so this is more to oversee and shape the discussion/direction with the other Members for the Marketing efforts. This person can also funnel all Marketing information back to your organization so that the key stakeholders are in the loop.
- › Participate in our hosted projects and attend our events, meetups, and roadshows

Technical Steering Committee & Technical Community

- › TSC meetings are open to the public and we encourage all members of the technical community to participate in the discussion moving forward.

Join Us!

Contact Mike Woster, mwoster@linuxfoundation.org

LF Edge, bringing Edge initiatives together

IOT+Telecom+Cloud+Enterprise

LF Edge Projects



EDGE X FOUNDRY™



FLEDGE

EVE
EDGE VIRTUALIZATION
ENGINE

OPEN GLOSSARY
OF EDGE COMPUTING

HOME
EDGE

THE **LINUX** FOUNDATION
LF EDGE

Akraino Edge Stack



Brief Description

Akraino Edge Stack aims to create an open source software stack that supports high-availability cloud services optimized for edge computing systems and applications.

Contributed by

AT&T in February 2018

Key Contacts

Kandan Kathirvel, AT&T, TSC Chair

Tina Tsou, Arm, TSC Vice-Chair

Key Links

Web Site	https://www.lfedge.org/projects/akraino
Wiki	https://wiki.akraino.org/
Gerrit	https://gerrit.akraino.org/r/#/q/status:open
Documentation	https://wiki.akraino.org/display/AK/Documentation
Mail Lists	https://lists.akraino.org/g/main
Slack	https://slack.lfedge.org/ (#akraino / #akraino-blueprints / #akraino-devprojects / #akraino-help / #akraino-tsc)
Technical Steering Committee (TSC)	https://wiki.akraino.org/pages/viewpage.action?pagId=4456453
Blueprints	https://wiki.akraino.org/pages/viewpage.action?pagId=1147243
Calendar	https://wiki.akraino.org/pages/viewpage.action?pagId=6128052

Brief Description

Baetyl seamlessly extends cloud computing, data and services to edge devices, enabling developers to build light, secure and scalable edge applications. Baetyl offers a general-purpose platform for edge computing that manipulates different types of hardware facilities and device capabilities into a standardized container runtime environment and API, enabling efficient management of application, service, and data flow through a remote console both on cloud and on prem.

Contributed by

Baidu in August 2019

Key Contacts

Leding Li, Baidu, TAC Representative

Key Links

Web Site <https://baetyl.io/>

GitHub <https://github.com/baetyl/baetyl>

Documentation <https://baetyl.io/en/docs/overview/What-is-Baetyl>

Mail Lists <https://lists.lfedge.org/g/main/subgroups>

Slack <https://slack.lfedge.org/> (#baetyl / #baetyl-tsc)

WeChat <https://baetyl.cdn.bcebos.com/Wechat/Wechat-Baetyl.png>

EdgeX Foundry



Brief Description

EdgeX is a vendor-neutral, open source, loosely-coupled microservices framework that provides the choice to plug and play from a growing ecosystem of available 3rd party offerings or augment with your own proprietary innovations. With a focus on the IoT Edge, EdgeX simplifies the process to design, develop and deploy solutions across industrial, enterprise, and consumer applications.

Contributed by

Dell in April 2017

Key Contacts

Keith Steele, IOTech, TSC Chair

Jim White, IOTech, TSC Vice-Chair

Key Links

Web Site <https://www.lfedge.org/projects/edgexfoundry/>

Wiki <https://wiki.edgexfoundry.org/>

GitHub <https://github.com/edgexfoundry>

Documentation <https://docs.edgexfoundry.org/>

Mail Lists <https://lists.edgexfoundry.org/g/main/subgroups>

Slack <https://slack.edgexfoundry.org/>

Technical Steering Committee (TSC)

<https://wiki.edgexfoundry.org/pages/viewpage.action?pageId=329436>

Getting Started Guide

<https://docs.edgexfoundry.org/Ch-GettingStarted.html>

Calendar

<https://wiki.edgexfoundry.org/pages/viewpage.action?pageId=21824127>

Fledge



Brief Description

Fledge is an open source framework for the industrial edge focused on critical operations. Fledge is architected to integrate Industrial Internet of Things (IIoT), sensors and modern machines all sharing a common set of administration and application APIs with industrial “brown field” systems.

Contributed by

Dianomic and OSIsoft in September 2019

Key Contacts

Daniel Lazaro, OSIsoft, TAC Representative

Key Links

Mail Lists

<https://lists.lfedge.org/g/fledge>

<https://lists.lfedge.org/g/fledge-tsc>

Slack

<https://slack.lfedge.org/>

(#fledge / #fledge-help / #fledge-tsc)

Project EVE



Brief Description

Project EVE (Edge Virtualization Engine) aims to develop an open, agnostic and standardized architecture unifying the approach to developing and orchestrating cloud-native applications across the enterprise on-premises edge.

Contributed by

ZEDEDA in January 2019

Key Contacts

Roman Shaposhnik, ZEDEDA, TAC Representative

Key Links

Web Site	https://www.lfedge.org/projects/eve/
Wiki	https://wiki.lfedge.org/display/EVE/Project+EVE
GitHub	https://github.com/lf-edge/eve
Documentation	https://github.com/lf-edge/eve/tree/master/docs
Mail Lists	https://lists.lfedge.org/g/eve-tsc https://lists.lfedge.org/g/eve
Slack	https://slack.lfedge.org/ (#eve / #eve-help)

Open Glossary of Edge Computing

OPEN GLOSSARY
OF EDGE COMPUTING

Brief Description

The Open Glossary of Edge Computing project provides a concise collection of terms related to the field of edge computing.

Contributed by

Vapor IO and Packet in June 2018

Key Contacts

Matthew Trifiro, Vapor IO, TAC Representative

Key Links

- | | |
|------------|---|
| Web Site | https://www.lfedge.org/projects/openglossary/ |
| GitHub | https://github.com/lf-edge/glossary |
| Mail Lists | https://lists.lfedge.org/g/glossary-tsc
https://lists.lfedge.org/g/glossary-wg-landscape |
| Slack | https://slack.lfedge.org/
(#glossary / #glossary-landscape / #glossary-taxonomy /
#glossary-tsc) |
| Landscape | https://www.stateoftheedge.com/projects/landscape/
Open Glossary of Edge Computing [v0.9.0-Beta]
https://edge.docsend.com/view/7rm4d3d |
| Calendar | https://lists.lfedge.org/g/glossary-wg-landscape/calendar |

Home Edge



Brief Description

Home Edge Project concentrates on driving and enabling a robust, reliable, and intelligent home edge computing open source framework, platform and ecosystem running on a variety of devices in our daily lives.

Contributed by

Samsung Electronics in June 2019

Key Contacts

Myeonggi Jeong (MJ), Samsung, TSC Chair

Key Links

Web Site <https://www.lfedge.org/projects/homeedge/>

Wiki <https://wiki.lfedge.org/display/HOME/Home+Edge+Project>

GitHub <https://github.com/lf-edge/edge-home-orchestration-go>

Mail Lists <https://lists.lfedge.org/g/homeedge-tsc>

Slack <https://slack.lfedge.org/> (#homeedge / #homeedge-tsc)

Technical Steering Committee (TSC)

<https://wiki.lfedge.org/pages/viewpage.action?pageId=1671336>

Getting Involved with LF Edge Projects and Committees

Ways to Get Involved with the LF Edge Projects

<p>Participate in the development efforts: Review and submit code patches, report bugs, request new features, etc.</p>	<p>Attend developer events for LF Edge projects</p>	<p>Contribute to documentation</p>	<p>Provide your testing and deployment feedback via appropriate project channels</p>
<p>Join the projects' mailing lists and participate in the discussions</p>	<p>Start a local User Group Meetup</p>	<p>Join the LF Edge Technical Advisory Council (TAC) calls and subscribe to the TAC mailing list</p>	<p>Contribute to the Open Glossary of Edge Computing</p>

Ways to Engage with LF Edge Marketing and PR

<p>Co-promotion of project related updates, releases, and news via LF Edge social media accounts</p>	<p>Attend Outreach Committee meetings and participate in LF Edge driven marketing and outreach activities</p>	<p>Publish use cases, case studies, white papers, and deployment insights</p>	<p>Marketing and PR support for demos at meetups and events</p>
<p>Host vendor neutral content via LF Edge blog site</p>	<p>Get support for artwork, web site, content creation, etc., related to LF Edge and its projects</p>	<p>Contribute to the LF Edge Landscape Project</p>	<p>Coordination at events – speaking proposals, booth attendance, demos, etc.</p>
<p>Volunteer for planning initiatives such as developing annual marketing plan, preparing for major event, etc.</p>	<p>Identify LF Edge speaking opportunities in your region and help secure speakers from the LF Edge community</p>	<p>Help secure user stories about LF Edge based deployments.</p>	<p>Volunteer to host LF Edge Day</p>

Ways to Get Involved with the TAC

<p>Support TAC leadership in inviting speakers</p>	<p>Attend TAC Bi-weekly calls, participate in the discussion, volunteer</p>	<p>Share success stories, opportunities and challenges with the broader technical community to seek input from peers</p>	<p>Identify opportunities for collaboration on common interests and initiatives</p>
<p>Support technical leadership for harmonization efforts with other open source communities within and beyond LF Edge</p>	<p>Support TAC in hosting and sponsors intra-project and inter-project in-person developer events for LF Edge projects</p>	<p>Support TAC in evaluating new projects for inclusion in LF Edge</p>	<p>Support TAC Chair who works with the Governing Board to highlight the Projects' collective opportunities and any resource needs</p>

Display Your LF Edge Membership Badge

These badges are available (svg and png) from the LF Edge GitHub:

<https://github.com/lf-edge/artwork>



Members can display membership badges on booth collateral and on their website.

Enhance Your Open Source Knowledge

Free Courses

- › [A Beginner's Guide to Open Source Software Development](#)
- › [Compliance Basics for Developers](#)
- › [Fundamentals of Professional Open Source Management](#)

Paid Courses

- › [Introduction to Open Source Development, Git, and Linux](#)
- › [DevOps for Network Engineers](#)

Upcoming External Events

- › [IoT World Conference](#): 17-18 September, 2019 - Tokyo
 - › September 18: Noriaki Fukuyasu, LF - LF Edge: An Open Source Project to Accelerate the Edge/IoT Business
- › [Edge Computing Congress](#): 17-19 September, 2019 - London
 - › Discount code - LF20
 - › September 19: Melissa Evers-Hood, Intel - LF Edge: Building an Open Source Framework for the Edge

Upcoming External Events continued

- › [Open Networking Summit EU](#): 23-25 September, 2019 - Antwerp, Belgium
 - › LF Edge Members receive a 20% discount on registration. Email info@lfedge.org for code.
 - › LF Edge will have a booth at ONS EU
 - › September 23: Tiejun Chen, VMware: Integrate ROS into EdgeX - Startover of Edge Computing System
 - › September 23: Panel Discussion - Akraino (Ericsson, Nokia, Arm, AT&T, Juniper Networks)
 - › September 24: Kandan Kathirvel, AT&T & Tina Tsou, Arm - Your Path to Edge Computing
 - › September 24: Richard Beeson, OSisoft & Bill Hunt, Dianomic - Success at the Edge - Leveraging Open Source at the Edge as a Bridge to Critical Operations in Industry
 - › September 24: Erik Nordmark, Zededa - Project EVE - Enterprise/On-Prem Edge Virtualization
 - › September 24: Melissa Evers-Hood, Intel - Android at the Edge
 - › September 24: Ricardo Noriega & Yolanda Robla Mota, Red Hat - Akraino KNI: Project Update
 - › September 24: Sukhdev Kapur, Juniper Networks & Rolf Muralt, MobiledgeX - Aggregating Mobile Operator Edge Compute Infrastructure with End to End Network Slicing
 - › September 25: Tapio Tallgren, Nokia - Multi-Edge Access with Akraino
 - › September 25: Rags Srinivaan, Seagate Technologies - Smart Manufacturing: How Identifying Anomalies can Improve Your Bottom Line
 - › September 25: Panel Discussion - Autonomous Smart Slices at the Edge (China Mobile, Huawei, Tencent)
 - › September 25: Jim White, Dell: Addressing IoT Protocol Soup - Leveraging a Highly Interoperable, Flexible and Open Source Edge Platform
 - › September 25: Xuan Jia, China Mobile & Tiejun Chen, VMware - Use Case: The Policeman's Camera is on Duty with Akraino + EdgeX Technology Embedded

Upcoming External Events continued

- › [Mobile World Congress](#): 22-24 October, 2019 - Los Angeles, CA
 - › October 23: Arpit Joshipura, LF - Enabling Next Generation 5G Experiences with Network-AI
 - › [Open Source Summit EU / ELC](#): 28-30 October, 2019 - Lyon, France
 - › October 31: [LF Edge Mini-Summit](#) - Half-day, single-track event on the topic of IoT and Edge Computing
 - › [IoT Solutions World Congress](#): 29-31 October, 2019 - Barcelona, Spain
 - › LF Edge will have a booth at IOT SWC (Confirmed sponsors/projects in the booth: Dell, IOTech, Akraino, EdgeX Foundry, Home Edge, Project EVE)
 - › October 29: Jason Shepherd, Dell and Keith Steele, IOTech - Leveraging EdgeX Foundry as an Open, Trusted Data Framework for Smart Meter Monitoring
 - › [KubeCon / CloudNativeCon NA](#): 17-21 November, 2019 - San Diego, CA
 - › LF Edge will have a booth at KubeCon/CloudNativeCon NA
 - › [Internet of Manufacturing Southwest](#): 19-20 November, 2019 - Dallas, TX
 - › Mike Woster, Edge Computing Keynote and panel
 - › Rob Hirschfeld, connectivity and security panel
 - › [IoT For India: Open Source IoT Day 2019](#): 7 December, 2019
 - › Arpit Joshipura, LF
-
- › Discussions around upcoming events occur in the LF Edge Outreach Committee
 - › Members may subscribe at: <https://lists.lfedge.org/g/outreach-committee>

Upcoming Project Events

- › [EdgeX Open \(Hackathon\)](#): 7-8 October, 2019 - Chicago, IL
 - › Open to the community
 - › The event will focus on the retail market and work stemmed from the Commerce (e.g. Retail) Working Group within the EdgeX Foundry project and the related [Open Retail Initiative \(ORI\)](#).
 - › Participating developers (from students to retail end users) will use their talents and creativity combined with the EdgeX framework, commercial content from sponsoring companies and the rules of the event to develop a solution for either one of the specified customer-valued retail use-cases or an additional open category.
 - › Details about the competition, link to register and more will be available in the next few weeks. Stay tuned here or connect with us on the EdgeX Foundry Vertical-Solutions Slack Channel:
<https://slack.edgexfoundry.org/>
- › [EdgeX Phoenix Technical Meeting](#): 4-7 November, 2019 - Phoenix, AZ
 - › Open to the community
 - › RSVP at <http://www.cvent.com/d/b6qcr0>

Stay Connected for the Latest Updates



@LF_Edge

https://twitter.com/lf_edge

LF Edge
(www.lfedge.org)

Bringing Edge Initiatives Together

IOT | Telecom | Cloud | Enterprise