

A network diagram background consisting of numerous blue lines connecting yellow circular nodes, creating a complex web-like structure. The nodes and lines are semi-transparent, allowing overlapping connections to appear darker.

LF Edge TAC Technical Advisory Council

2 December 2020

 THE **LINUX** FOUNDATION

 **LF** EDGE

Meeting Details

- › December 2, 2020 (@ 7:00am PST)
- › Meeting Info:
 - › Meeting URL and Subscription can be found at <https://lists.lfedge.org/g/TAC/calendar>

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LF Edge TAC

Project/Member	Representative	Named Alternate	Project/Member	Representative	Named Alternate
Altran	Shamik Mishra	Nilanjan Samajdar	GE Research	Joel Markham	James Ward
Arm	Reed Hinkel	Tina Tsou	HP Inc.	Henry Lau	
AT&T	Kandan Kathirvel		Huawei	JianGuo Zeng	Gabriel Yuyang
Baidu	Leding Li		IBM	Joseph Pearson	Ryan Anderson
Charter	Jeffrey Saelens	Mohammad Zebetian	Intel	Jim St. Leger (TAC Chair)	Sharad Mishra
Dell	David Lake	Trevor Conn	Inwinstack	Thor Chin	
Dianomic	Bill Hunt	Tom Arthur	MobiledgeX	Vikram Siwach	
Equinix	Justin Dustzadeh		Nokia	Tapio Tallgren	
Ericsson	Torbjörn Keisu	Andrew Wilkinson	NTT	Takeshi Kuwahara	
Fujitsu	Toshimichi Fukuda	Hatsumi Iino	OSIsoft	Daniel Lazaro	
Futurewei	Chaker Al-Hakim	Jane Shen	Radisys	Adnan Saleem	Prakash Siva

LF Edge TAC

Project/Member	Representative	Named Alternate	Project/Member	Representative	Named Alternate
Red Hat	Anil Vishnoi	Thomas Nadeau	Akraino	Tina Tsou	Oleg Berzin
Samsung	MyeongGi Jeong	Chi-Hyun Cho	EdgeX Foundry	Henry Lau	
Seagate	Matt Shumway				
Tencent	Yachen Wang	Wei Chen			
Western Digital	Jorge Campello De Souza				
Wipro	Subhas Mondal				
ZEDEDA	Erik Nordmark	Roman Shaposhnik			

Topics

1. Annual Reviews [55 minutes]
 - a. Project EVE
 - b. State of the Edge
 - c. Baetyl
2. LF Edge Lab [5 minutes]
3. Inclusive Language
4. Upcoming Events / Next Meeting

Annual Reviews
Project EVE, State of the Edge, Baetyl

Annual Reviews

1. Project Annual Reviews - Overview/Process: <https://wiki.lfedge.org/display/LE/Project+Annual+Reviews>
2. Other Projects with reviews coming up:

Project	Accepted	Last Reviewed	Next Review Due	Maturity Level
Akraino	1/24/19	12/3/19	12/3/20 (scheduled 1/13/21)	Stage 3 - Impact
Baetyl	8/5/19	8/5/19	9/12/20 (scheduled 12/2/20)	Stage 1 - At Large
EdgeX Foundry	1/24/19	8/26/20	8/26/21	Stage 3 - Impact
EVE	1/24/19	5/21/19	9/12/20 (scheduled 12/2/20)	Stage 2 - Growth
Fledge	6/27/19	7/19/20	7/19/21	Stage 2 - Growth
Home Edge	1/24/19	10/21/20	10/21/21	Stage 2 - Growth
Open Horizon	4/9/20	4/9/20	4/9/21	Stage 1 - At Large
Secure Device Onboard	6/4/20	6/4/20	6/4/21	Stage 1 - At Large
State of the Edge	1/24/19	5/21/19	9/12/20 (scheduled 12/2/20)	Stage 2 - Growth

Project EVE Annual Review
Erik Nordmark, ZEVEDA

Project EVE Annual Review Summary

- › Annual Review [Wiki Page](#):
- › Project Highlights
 - › We have grown from 30 to 45 contributors (2019 vs. 2020)
 - › New Repos for Adam (Open Source EVE controller), Eden (Open Source testbed for Adam and EVE), runx (integration with Xen including on RPi4), edge-containers (OCI)
 - › Significant outreach at various conferences and events showing EVE and the LF edge ecosystem
 - › Enhanced EVE significantly around security (e.g., support for content-inspecting proxies, measured boot with remote attestation), and operational robustness
 - › Added support for KVM hypervisor and experimental support for the “no hypervisor”
 - › Intel contributed support for the ACRN hypervisor
 - › Reworked the volume and task support in the EVE API and support to better handle containers
 - › Xen/EVE Raspberry Pi - first and only way to run [Xen](#) on a Raspberry Pi4
 - › EVE/Windows 10- Running Windows on a RPi using EVE- Tutorial Coming Soon
 - › Working with Fledge to create a new [Akraino Blueprint Family](#) and Blueprint (s)
- › Improvements
 - › Community Releases- currently continuous releases. Need to label them at major points
 - › More diversity by company

State of the Edge Annual Review
Jacob Smith, Equinix Metal
Matt Trifiro, Vapor IO

State of the Edge Annual Review Summary

- › Annual Review Wiki Page:
<https://wiki.lfedge.org/display/LE/State+of+the+Edge+-+Stage+2+-+2020-12-02>
- › The project, grandfathered in to Stage 2, still has a few gaps in acceptance criteria
 - › We do not have official TAC mentors.
 - › We do not have a written “growth” plan
- › Project Highlights
 - › Provided editorial support for the LF Edge white paper, making sure terminology was accurate, supported by the community and back-ported into the Open Glossary.
 - › 2021 State of the Edge report to be released in Jan 2021
 - › V3.0 of the open glossary
 - › V2.0 of the landscape
 - › Successful migration of old WordPress site to new model supported by LF staff

Baetyl Annual Review

Leding Li, Baidu

Baetyl Annual Review Summary

- › Annual Review Wiki Page:
 - › <https://wiki.lfedge.org/display/LE/Baetyl+-+Stage+1+-+2020-12-02>
- › The project continues to meet LF Edge stage 1 and 2 acceptance criteria
 - › We have always tried our best to meet the criteria as put down by the LF Edge.
 - › Successfully released Baetyl 2.0 in June 2019, shared the open source remote management tool baetyl-cloud with the community, and realized the plan when joining LfEdge.
 - › Areas for improvement: connect with blueprints on Smart Home and Akraino
- › Project Highlights
 - › 2 Successful on time release within year of launch to open source community
 - › Demonstration of the platform capability within year of launch at global events like IOT SWC(2019)
 - › Forthcoming release of Home Edge - Coconut (Fall 2020)
 - › Smooth TSC election and monthly active TSC chairs with inputs from participants
 - › Collaboration with EdgeX already in progress. Items in pipeline : Open Horizon and Project Eve
 - › Adoption of CII best practices badge to adhere to better process in secure software development
 - › Continuous website(wiki) improvements in terms of project goals, roadmap and deliverables
 - › Product adoption formulas being worked out to bring the platform into use by vendors

Baetyl in 2020

- › Releases, Contributors and more
 - › Major update: 2.0, and 2.1.x as follow, with daily snapshot.
 - › Upcoming: 2.2 before Christmas.
 - › 22 contributors in total, 11 new.
 - › An active community with more than 500 people on WeChat.
- › Cloud Native integration
 - › Support Kubernetes as backend for container and orchestration.
 - › Use K3S by default with an automatic install script.
 - › All baetyl functions works as a Kubernetes service, with self-update capability.
- › More subprojects
 - › Baetyl-go: SDK for developing baetyl services.
 - › Baetyl-broker & Baetyl-remote: MQTT protocol server and client.
 - › Baetyl-function: Local Function-as-a-Service implementation with AWS Lambda compatibility.
 - › Baetyl-rule: Rule engine to link broker, function and remote together.
 - › Baetyl-adapter: More protocols.
 - › Baetyl-state: Provide KV storage for baetyl services.
 - › Baetyl-video-infer: Process video with local ML models.

Baetyl-Cloud

- › Release and release cycle
 - › Stable version: 2.1
 - › Upcoming: 2.2 before Christmas, with bugfix.
 - › Independent of the release cycle of Baetyl main project, two releases per year.
 - › Keep protocol open and stable, easy to extension.
- › Cloud Native integration
 - › Could be deployed as a Kubernetes service, as well as bare process on Linux.
 - › Expose OpenAPI for edge instance operation.
 - › WIP: Integrate with K8S control panel as CRD.

Towards 2021

- › Focus
 - › A reference implementation of Edge/Cloud fusion based on Cloud Native technology.
 - › Define a protocol that can reconcile the difference between Kubernetes' flat scheduling semantics and edge mesh topology.
- › Documentation and ease of use
 - › A first local mirror site “baetylio.cn” and “gitee.com/baetyl” for users in China.
 - › Refactor the installation script to better integrate with major Linux distribution software repositories and reduce manual interaction
 - › Provide free baetyl-cloud service for developers based on public cloud.
- › Cooperate, no more subprojects
 - › Build and conforms an Akraino blueprint which focus on sync between Edge and Cloud.
 - › Introduce 3rd MQTT broker eg. mosquito, EMQ
 - › Introduce 3rd FaaS engine, eg. OpenFaaS
 - › Work with EdgeX Foundry for IoT
 - › Work with FLedge for IIoT
 - › Leverage SQLite/etc for local storage and more.

LF Edge Lab
Jim St. Leger

LF Edge Lab

- › Exploratory discussions: Moving LF Edge Lab from [CI, Blueprint Validation Lab sub-committee](#) in Akraino to LF Edge TAC
- › Lab resources available to all Projects
- › Next steps: Discussion to include Project TSC leads (and/or designated representatives)
 - › Review implications of such a move, of which shall include
 - › Need for volunteers from the TAC to manage properly
 - › Shared Resources continue under a timeshare basis (no h/w allotted to anyone on a permanent basis)
 - › ...

Inclusive Language

Jim St. Leger

Inclusive Naming Initiative

- › <https://inclusivenaming.org/>
- › Launched at KubeCon
- › The Inclusive Naming Initiative's mission is to help companies and projects remove all harmful and unclear language of any kind and replace it with an agreed-upon set of neutral terms. The initiative's goal is to define processes and tools to remove harmful language from projects. This includes creating a comprehensive list of terms with replacements, language evaluation frameworks and templates, and infrastructure to aid the transition. RedHat, IBM, LF Networking, and the Kubernetes Naming WG are all already on board.
- › <https://inclusivenaming.org/get-involved/>

Upcoming Events

Upcoming External Events

- › [Open Source Summit Japan](#): 2-4 December, 2020 - Virtual
- › [Open Source Summit North America](#): 4-6 August - Vancouver, Canada
- › [Open Source Summit Europe](#): 29 Sept - 1 Oct, 2021 - Dublin, Ireland
- › [IoT Solutions World Congress](#): 5-7 October, 2021 - Barcelona, Spain

- › Discussions around upcoming events occur in the LF Edge Outreach Committee
- › Members may subscribe at: <https://lists.lfedge.org/g/outreach-committee>

Full list of LF events available at:
<https://events.linuxfoundation.org/>

Additional LF Edge events available at:
<https://www.lfedge.org/events/>

LF Edge Webinar Series

- › Akraino Edge Stack
 - › Held Thursday, April 2 - [Your Path to Edge Computing with Akraino Edge Stack](#)
 - › On-demand recording available at: https://zoom.us/webinar/register/WN_Zjdo4-5fTOSlqH7pL8iHrO
- › EdgeX Foundry
 - › Held Thursday, April 23 - [EdgeX Foundry 101: Intro, Roadmap and Use Cases](#)
 - › On-demand recording available at: https://zoom.us/webinar/register/4515850788014/WN_xCd6YPjEOrcwLiFhBWPkug
- › Project EVE
 - › Held Friday, May 29 - [Building the “Android of the IoT Edge”](#)
 - › On-demand recording available at: https://zoom.us/webinar/register/6415888722675/WN_35oZl3hrOE69snMailUTPg
- › White Paper
 - › Held Thursday, July 9 - [Demystifying the Edge with the new LF Edge Taxonomy and Framework](#)
 - › On-demand recording available at: https://zoom.us/webinar/register/WN_icv5h6wFTcuw9O0xvMpgLw
- › Fledge
 - › Held Thursday, August 13 - [How Google, OSIssoft, FLIR and Dianomic use Fledge to implement Industrial 4.0](#)
 - › Recording available at: <https://www.youtube.com/watch?v=6jXNv3AIWog>
- › State of the Edge
 - › Held Thursday, September 17 - [State of the Edge: Exploring the Intersection of IoT, AI, 5G and Edge Computing](#)
 - › On-demand recording available at: https://zoom.us/webinar/register/8115959695936/WN_4rt-MmP1RI6Vkn3ULpiAA
- › Home Edge
 - › Held Thursday, October 15 - [Home Edge: How Your Home Devices Get Deployed in An Edge Computing Services Ecosystem](#)
 - › On-demand recording available at: https://zoom.us/webinar/register/WN_uSlgb-R5O4etkDhxoSXISO
- › Open Horizon
 - › Held Thursday, November 19 - [Secure Application Management for Machine Learning & Constrained Devices](#)
 - › On-demand recording available at: https://zoom.us/webinar/register/WN_tYli1IZ1RWq1pml8FuPRPw

- › More to follow...

Upcoming Project Events

- › To be added...
- › Projects can add their events to this list by sending the Wiki page listing the information to info@lfedge.org

Next Meeting

Next Meeting

- › Next Meeting: Wednesday, December 16 @ 7am PST
 - › Project Annual Reviews - TBD
 - › Akraino (scheduled 01/13/21)
 - › Other Topics?

Thank You

Backup/Resources

Upcoming Release Calendar

- › Reminder to Projects to please review and update as needed
- › <https://wiki.lfedge.org/display/LE/Upcoming+Release+Calendar>

Release dates are subject to change.

For the latest information on each Project's upcoming releases, or access to prior releases, please visit:

- Akraino - <https://wiki.akraino.org/display/AK/Releases>
- Baetyl - <https://github.com/baetyl/baetyl/releases>
- EdgeX Foundry - <https://wiki.edgexfoundry.org/display/FA/Releases> / <https://wiki.edgexfoundry.org/display/FA/Roadmap>
- EVE - <https://github.com/lf-edge/eve/releases> > waterfall release model
- Fledge - <https://github.com/lfedge-iot/fledge/releases>
- Home Edge - <https://wiki.lfedge.org/display/HOME/Roadmap+and+Release+Notes>
- Open Horizon - Coming Soon
- Secure Device Onboard - <https://github.com/secure-device-onboard/release/releases>
- State of the Edge - <https://github.com/lf-edge/glossary/blob/master/edge-glossary.md>



TAC - Focus Areas for 2020 (what to emphasize / de-emphasize in 2021?)

Target areas identified for the TAC to direct focus, beyond PLD/Project Review

- 1. Architecture (Tech > LF Edge) - Output: TBD (*White paper?*)**
2. APIs Document, Align and Publish
3. SDO/Consortiums expansion
- 4. Forcing function - Use Case or Deployment > Demo across all projects**
5. Technical overlap/unification
6. Cross Project Collaboration
7. IT Efficiencies

Out of Scope for the TAC (for now)

1. Vertical Solutions (End User / SIG Program)
 - a. At Board/SPC level

LF Edge TAC - Focus Areas for 2021: Continued Discussion

- › One idea raised was for deeper (technical) solution briefs around Use Cases and Deployments
 - › Would require commitment (volunteers) from the TAC, Projects, as well as the SPC
- › (from prior discussion) White Papers
 - › LF Edge level or Project level?
 - › General (2020 introduced taxonomy/Projects) or Specific? (e.g. Security, Telemetry)
 - › Who would be the audience?
 - › Post publishing, vehicle for feedback? Success metrics?
- › Other initiatives?
 - › Open Edge Services Catalog - creation and cross-project support
 - › Common way to document APIs for all the projects

Project Resources: Getting Started Checklist

1. <https://wiki.lfedge.org/display/LE/Technical+Project+Getting+Started+Checklist>
2. Best Practices Guide for new, and existing, LF Edge Projects to define/refine/enhance their Project Management
3. Will be sent to Project TSC Leads for additional input / examples
4. Welcome feedback in the TAC as well

CII Best Practices Badge

- › Identifies a set of best practices for OSS projects, focusing on security
- › Provides a mechanism for projects to self-certify that they meet these criteria
 - › Automation helps & prevents some false answers
- › Full presentation here:
 - › <https://github.com/coreinfrastructure/best-practices-badge/blob/master/doc/cii-bp-badge-intro.pptx>
- › Website where projects can receive a badge here:
 - › <https://bestpractices.coreinfrastructure.org>
- › EdgeX Foundry and Open Horizon badging already in progress!
 - › <https://bestpractices.coreinfrastructure.org/en/projects/1226>
 - › <https://bestpractices.coreinfrastructure.org/en/projects/4300>
- › LF Edge Wiki tracks badge progress here: <https://wiki.lfedge.org/>
- › Proposal: All LF Edge projects be encouraged to get a CII Best Practices badge

State of the Edge - 2021 Report - Postcards from the Edge

And Now, The Time Has Come: 5G and the Edge

We're at a watershed moment in the evolution 5G, the "put-up or shut-up" moment when operators are assessing the commercial value to justify their investment in a 5G buildout. This is what always happens in the marketing and investment dance of a new cellular generation.

Recent research concludes that the full value of 5G is still being discovered, with select operators like [SK Telecom](#) aggressively exploring edge services that can deliver outsized value and demand a premium.



Geoff Hollingworth
CMO, MobileEdgeX

Add Your Voice: info@stateoftheedge.com

Who Will Build and Pay for the Edge ?



Monica Paolini
Principal at Senza Fili

The Data Layer Challenge at the Rapidly Evolving Edge

In the early days of the cloud, visionaries predicted that enterprise infrastructure would quickly migrate to few large cloud providers. Unfortunately, the early cloud hype got ahead of reality—because public cloud faces a huge issue it can't solve on its own: latency. The edge is developing quickly, but the initial emphasis has been on providing compute capabilities, with little thought given to storage.



Ellen Rubin
CEO, Clear Sky Data

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State of the Edge - 2021 Report

LF Edge Project Asks

1. Designate a Liaison

- a. It would be ideal if each Project could assign a volunteer to be the primary liaison with State of the Edge. This would not require much work, just a conduit for info and coordination. Intro to me directly via email.

2. Align with the Glossary

- a. Now that LF Edge has adopted clear terminology at the top level, we want to work towards aligning the project publications and documentation. Ideally, each Project would formally adopt the [Open Glossary of Edge Computing](#) and ask all its writers and contributors to use it as a style guide.

3. Landscape.

- a. There are probably many LF Edge contributing and supporting companies who have not yet been added to the [LF Edge Landscape](#). I can help with this process, but I need .SVG logos. This is free advertising so it should be easy to incent folks.

4. Postcards from the Edge

- a. Like last year, the 2021 State of the Edge will include outside contributions of 500-1000 words. These need to be educational and not advertorial, but the author and their company will get credit. We will publish an abstract in the 2021 report and run the full essay on the blog.

5. Project Update for State of the Edge

- a. We plan to include a 2-3 paragraph "state of" for each of the LF Edge projects. Please assign somebody to this. We will want to see drafts in early November.

6. Consider fielding and editor

- a. If a Project/Member wishes to have input on the 2021 State of the Edge report, the best way is to find someone willing to be a section editor. This requires reading and commenting on at least one chapter of the 2021 guide, and this will need to be done under fairly tight deadline in November.

Linux Foundation edX and Training Courses

- › Business Considerations for Edge Computing:
<https://www.edx.org/course/business-considerations-for-edge-computing>
- › Getting Started with EdgeX Foundry (LFD213):
<https://training.linuxfoundation.org/training/getting-started-with-edgex-foundry-lfd213/>

Pushed to Next Meeting