



Collaboration and Growth
of Open Source Enterprise
Computing with Open
Mainframe Project



Not this mainframe...





The modern mainframe (IBM z15)



- Up to 190, 10 core 5.2ghz processors
(read more at
[https://en.wikipedia.org/wiki/IBM_z15_\(microprocessor\)](https://en.wikipedia.org/wiki/IBM_z15_(microprocessor)))
- Up to 40TB of RAIM (random array of independent memory)
- Heavy optimization for i/o bound workloads
- Hardware based encryption
- Fault tolerant, native hot swapping of hardware components (z stands for zero downtime)
- And....runs Linux and Open Source!



How does mainframe impact me?

Banking



Insurance



Healthcare



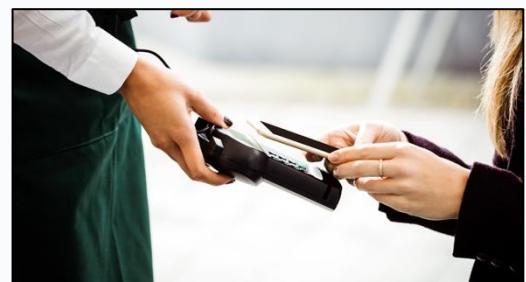
Government



Transportation



Retail





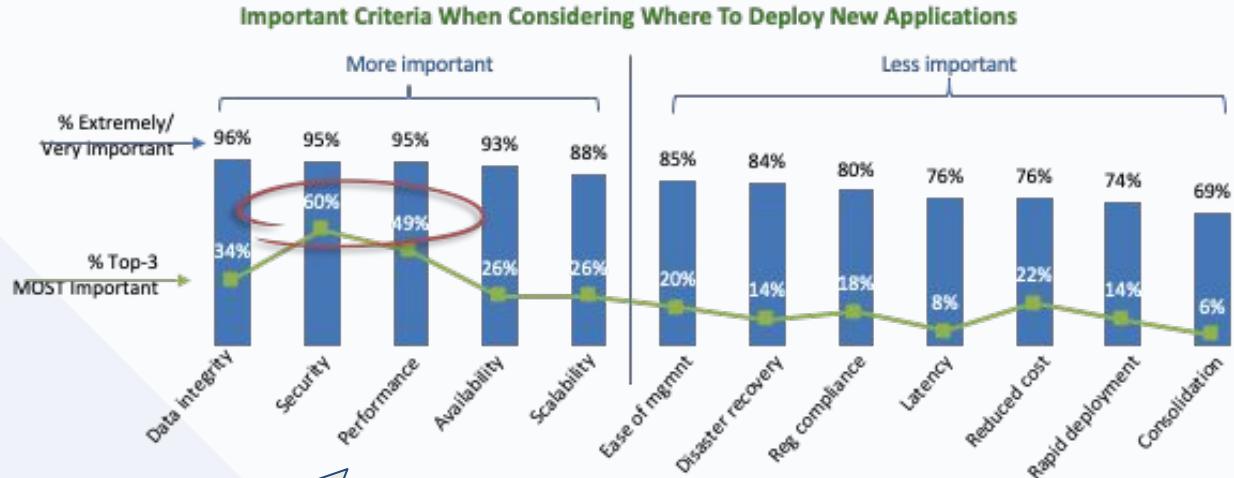
- Pays 1 in 6 U.S. workers
- Pays 1 in 4 Canadian workers
- Processed nearly 53 million W-2's in 2014

...all thanks to mainframe!



A more human resource.SM

Mainframes are here today and will be tomorrow



Mainframe's strengths align with enterprise needs of today



Why a Foundation?

Open Source on Mainframe roots



1955

SHARE established
Historical root of open source movement

1999

Linux ported to s390x by community effort from Marist University and other enthusiasts

2001

Major Linux Distros support mainframe
Initially SUSE, but followed by Red Hat and others

2006

1,700 customers using Linux on s390x in production Key apps include SAP, DB2, and Oracle DB

2013

Open Source ecosystem hits critical mass
OpenStack, KVM, PostgreSQL supported on s390x

Open Source on Mainframe challenges



Disconnected, independent efforts;
no shared
“hub” of innovation

Community events are
industry specific, not vendor
agnostic

Open source on the
mainframe lacks a
neutral home for
growth

No place for students
and academic
institutions to engage

Enterprise level
engagement with
upstream projects limited



Open Source on Mainframe innovation accelerates under Open Mainframe Project

2015
Open Mainframe Project launched at LinuxCon Seattle, along with LinuxONE and IBM contributions of seed code for ADE

2016
First summer interns port Alpine Linux, contribute to open source tooling.

2017
Doubling of membership with 8 new academic partners and other industry members

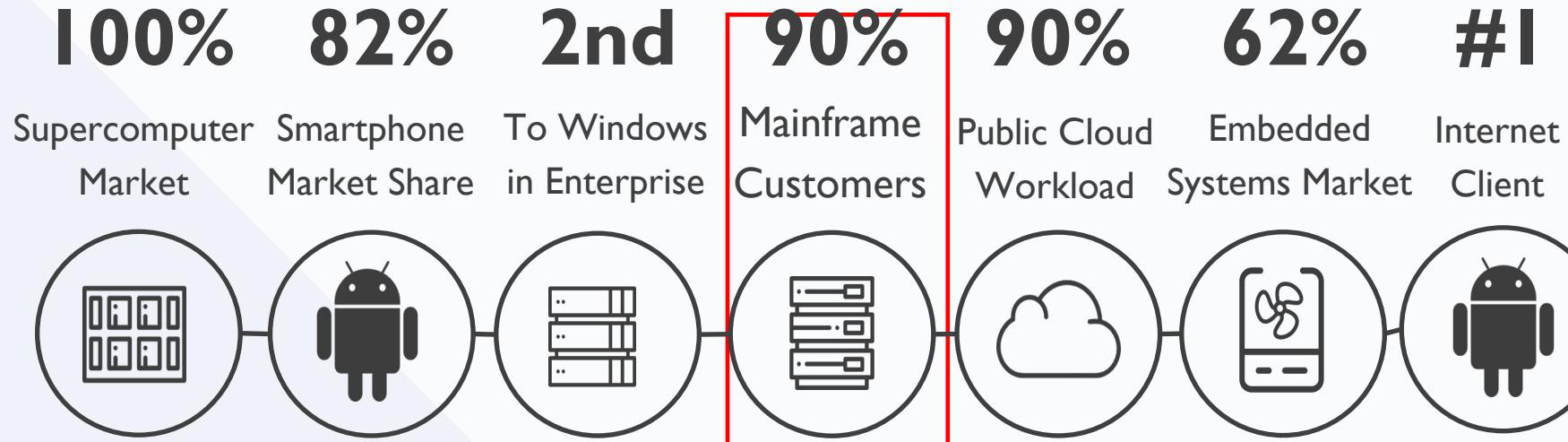
2018
Zowe launched
First ever open source project launched on z/OS

2019
Doubling of hosted projects with launch of 5 new projects





Mainframe is key part of Open Source success



Every market Linux has entered it eventually dominates

Why a Foundation? Open Ecosystems are Critical to Us All



“It’s one thing to create a great piece of software. It’s quite another to have it make a mark on the entire industry. These are the companies and organizations whose work has had a significant impact on what others build, how they build it, and ultimately, who uses it.”

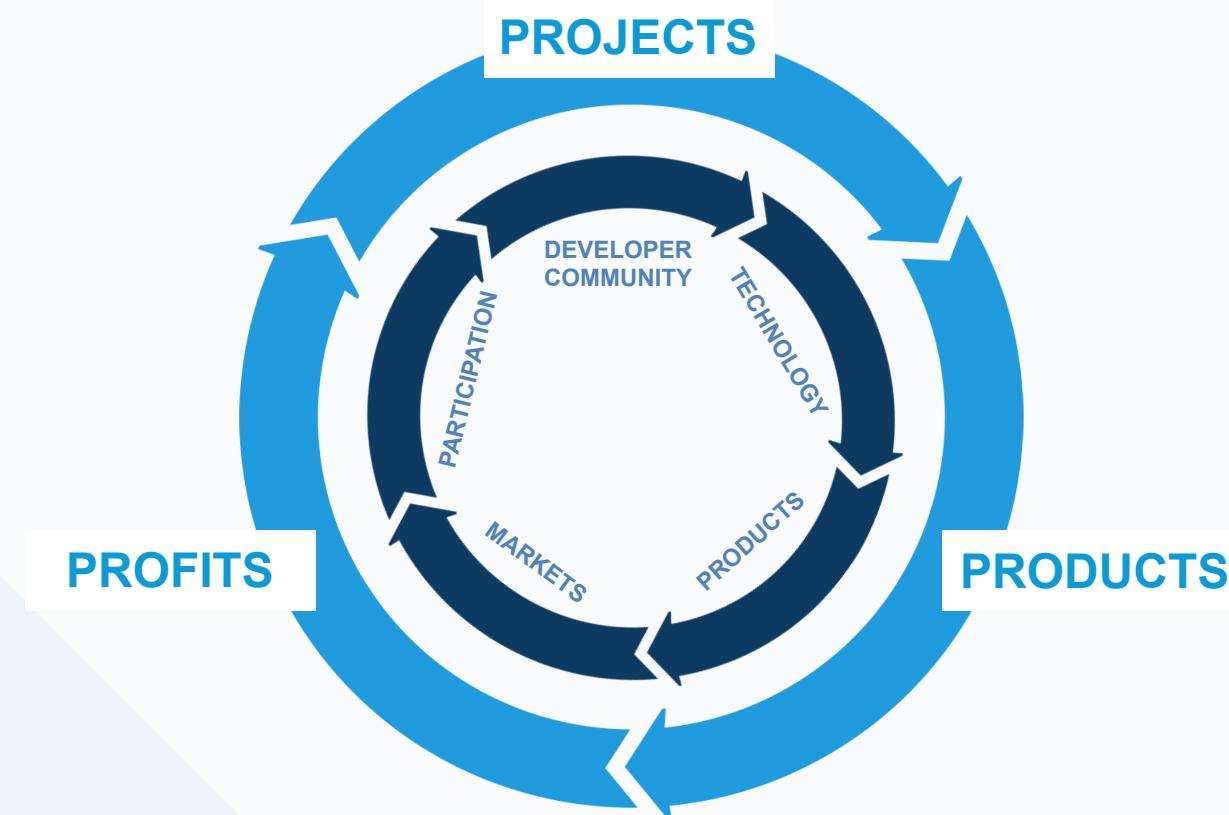
SD Times Influencers: Apple, Facebook, Google, IBM, Intel, Microsoft, GitHub, Netflix, Red Hat, Slack, *The Linux Foundation*



The Linux Foundation focuses on creating innovation engines



Successful projects depend on members, developers, standards and infrastructure to develop products that the market will adopt



Foundations enable the gears of innovation to spin faster





**One Developer at a Time and
One Industry at a Time**



Mission of the Open Mainframe Project:

Build community and adoption of Open Source on the mainframe

- **Eliminating barriers** to Open Source adoption on the mainframe
- **Demonstrating value** of the mainframe on technical and business levels
- **Strengthening collaboration** points and resources for the community to thrive

Eliminating barriers to Open Source adoption on the mainframe



- Engaged as central expert in demonstrating the mainframe as a viable open source platform, with compelling advantage.
- Promotion of modern application and workload examples on the mainframe
- Growing career opportunities and academic community engagement
- Hosting and participating in local programming and promotion of Open Source on the mainframe
- Sponsorship of global initiatives and contests to grow enthusiasm for the platform

Demonstrating value of the mainframe on technical and business levels



- Showcase of technical and business case studies through blogs, white papers, and other media.
- Champion software and hardware solutions with clients

Strengthening collaboration points and resources for the community to thrive



- Engagement through Technical Steering Committee projects and independent projects by members
- Visibility to tools, resources, and community forums to tackle technical challenges
- Career opportunities from internships through retirement



How does the project do this?

Creating spaces for mainframe community open source collaboration



Active Projects



Incubation Projects



Learn about all Open Mainframe projects at <https://www.openmainframeproject.org/projects>

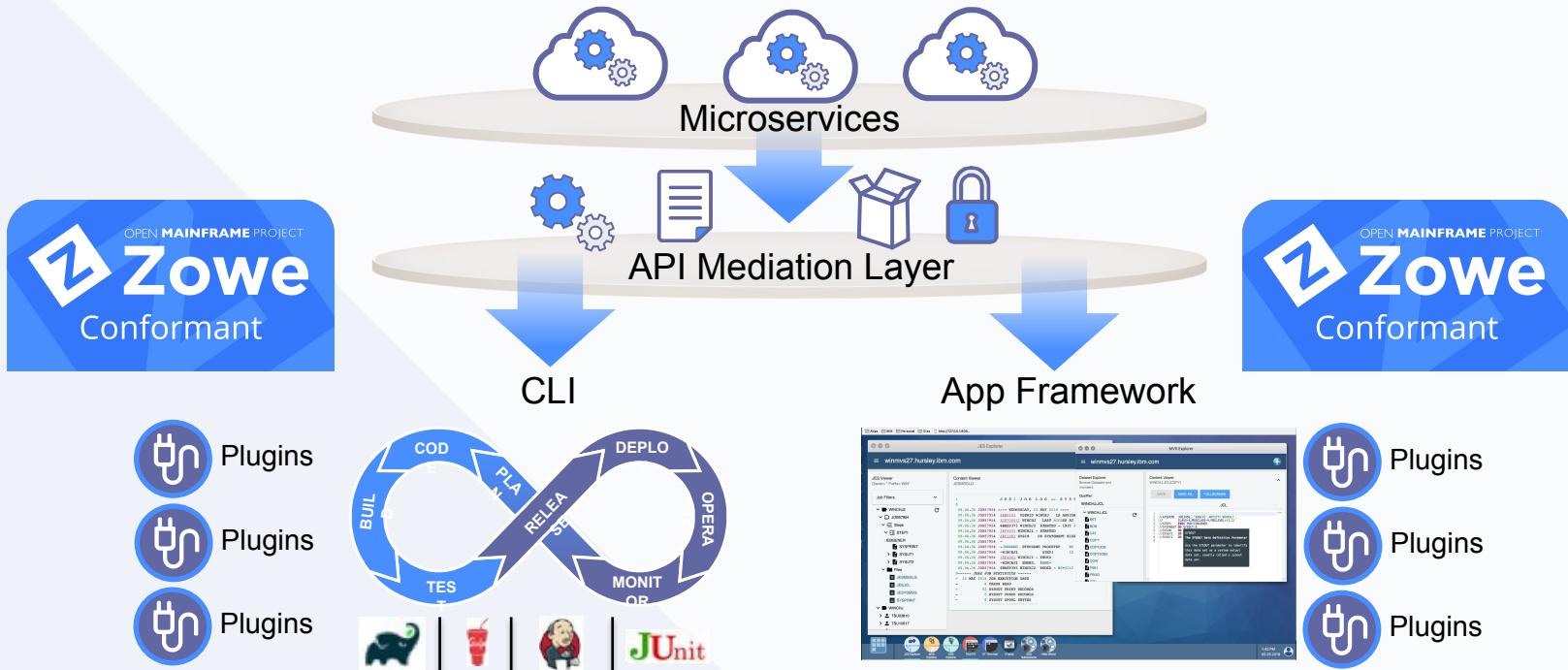
Connecting z/OS to enterprise devops with Zowe



- Zowe is an extensible framework for connecting applications and tools to z/OS mainframe data and applications.
- Its aim is to make the z/OS mainframe an integrated and agile platform within the changing IT architectural landscape.
- Zowe is the first open source project launched on z/OS. All code is licensed under the Eclipse Public License version 2.0



Zowe framework and ecosystem at a glance



Driving the next gen of tools connect cloud tools to mainframe through Feilong



- Users want to manage their mainframes with the same modern cloud technologies used across the enterprise.
- z/VM integration with technologies such as OpenStack have long been a challenge.
- Feilong is the vendor-neutral project that extends from z/VM Cloud Connector to enable a broad community to build this technology out further.
- Initial contributing organizations include IBM and SUSE.
- More details at <https://github.com/openmainframeproject/python-zvm-sdk>



OPEN **MAINFRAME** PROJECT
Feilong

Bringing together the COBOL community



- COBOL talent is critical to our society, and the need has amplified in the COVID-19 pandemic
- Creating course content as open source, along with a larger community of practitioners to support, enables sustainability and creates a larger talent pool
- Learn more at
[https://www.openmainframeproject.org/
projects/coboltrainingcourse](https://www.openmainframeproject.org/projects/coboltrainingcourse)



ADE: Bringing mainframe innovation to Open Source



- Anomaly detection Engine for Linux Logs (ADE) project brings innovation that has long been on the mainframe to the larger Linux world
- ADE detects anomalous time slices and messages in Linux logs (either RFC3164 or RFC5424 format) using statistical learning.
- Learn more at
<http://openmainframeproject.github.io/ade/>



Anomaly Detection Engine Log Investigation Tool

2015-12-11T19:00:00.000-05:00

Dates: 2015-12-11T19:00:00.000-05:00 -- 2015-12-12T19:00:00.000-05:00
Number of intervals: 144
Interval Size : 10 minutes

System ID	Anomaly scores							
sys1.openmainframe.org								
Score	Meaning							
101	Very rare							
95-100	Quite rare							
80-94	Unusual							
0-79	Normal							
Interval Index	Interval Time	Anomaly Score	Number of Unique Messages	Num of New Msgs	Num of Never Seen Before Msgs	Missing	Reason for Missing	Interval, V2
0	0:00 - 0:10	99.5	32	7	0	false		XML
1	0:10 - 0:20	98.9	26	6	0	false		XML
2	0:20 - 0:30	98.9	28	5	0	false		XML

Mentorship and academic engagement programs are putting mainframe in the hands of the next generation



40+

Mentees
sponsored

18

Supporting
academic
institutions

100+

Students
impacted



Open Mainframe innovation thrives here



- OMP provides a vendor-neutral home for mainframe-centric open source projects
 - Code hosting/infrastructure
 - Governance
 - Legal/Trademark defense
 - Ecosystem development
- LF staff support project communities establishing guidelines and best practices to enable diverse community growth and adoption
- Our philosophy creates natural collaboration opportunities between mainframe-centric open source projects

Project lifecycle, guidance, and proposal process openly defined at
<https://github.com/openmainframeproject/tsc/tree/master/process>



Supporting open source
on mainframe beyond
hosted projects

Sustained mainframe support in the broad open source community through the Supported Projects program



Infrastructure	Developer support	Market awareness	Governance/IP Home
A photograph of a modern building with a glass and steel frame, viewed from below looking up at the sky.	Three people in a office setting, one standing and two seated, looking at a laptop screen displaying a chart or graph.	A close-up of a person's hands writing on a piece of paper with a pen, with a laptop visible in the background.	Three people in a meeting room, one standing and two seated, looking at a whiteboard or document on a table.

Participating Open Source Projects include

alpine Linux	Cleos	CLOUD FOUNDRY	debian	Eigen	fedora	gentoo linux™	GCC	LLVM	Lua	[Op BL] ^T \times [en AS]	PostgreSQL
Alpine Linux	Sine Nomine Associates	Cloud Foundry Foundation	Debian	INRIA	The Fedora Project	Gentoo	Free Software Foundation	LLVM Foundation	Linaro	OpenBLAS	PostgreSQL

Telling the “mainframer” story



- Monthly interview series that highlights both new and old in mainframe
- Goal is to showcase why people have mainframe in their careers and their views of the technology and career field
- Read and listen at
<https://www.openmainframeproject.org/category/blog/i-am-a-mainframer>



Bringing together the open source and mainframe conversation



Sponsored Meetup Program

<https://www.openmainframeproject.org/meetup-program>



Slack Channel

<https://slack.openmainframeproject.org>

The screenshot shows a forum interface with a dark blue header bar containing the text "OPEN MAINFRAME PROJECT COMMUNITY FORUM", a search icon, and a menu icon. Below the header, there is a list of posts with titles, categories, user icons, and engagement metrics (likes and comments). Some posts include small images or icons next to their titles.

Post Title	Category	User Icons	Likes	Comments
Calling SMPI from Linux	Compatibility	6 user icons	266	6
What Open Source tools are missing from OS/390 and need to be ported?	Compatibility	5 user icons	506	13
Welcome to the Open Mainframe Project Discourse Forum	General Knowledgebase	5 user icons	942	8
Open Mainframe Academic Committee	General Knowledgebase	1 user icon	51	0
Cloudstack for z/VM Meeting July 21, 2017	General Knowledgebase	1 user icon	123	1
Anyone doing Big Data on z?	Compatibility	5 user icons	370	9
Cloudstack for z/VM Meeting July 14, 2017	General Knowledgebase	1 user icon	108	1
What can Mainframers do to best capture all of its capabilities?	General Knowledgebase	1 user icon	63	0
Cloudstack for z/VM Meeting June 28, 2017	General Knowledgebase	2 user icons	136	2
Blockchain and the Mainframe	General Knowledgebase	2 user icons	89	1
Cloudstack for z/VM Meeting June 16, 2017	General Knowledgebase	1 user icon	162	5
Open Mainframe Project Summer 2017 Interns	Academic Communications	2 user icons	116	2

Community Forums

<https://community.openmainframeproject.org/>

Open Mainframe Project Momentum



5

years since
launch

36

Supporting
Organizations

12

Hosted
Projects

40+

Mentees
Sponsored

100+

Students
Impacted

200+

Project
Contributors

 Academic Mainframe Consortium		 Albany State University				 hochschule coburg university of applied sciences	 East Carolina University	 EPSI L'École d'ingénierie informatique
 European Mainframe Academy	 Guide Share Europe	 Guide Share Europe - UK Region				 Goethe University Frankfurt	 Marist College	 North Carolina Agricultural and Technical State University
 Phoenix Software International		 SHARE EDUCATE • NETWORK • INFLUENCE		 South China University of Technology			 University of Bedfordshire	 University of Washington
 University of Wolverhampton	 Leipzig University	 Vicom Infinity		 Western University - CANADA	 WILLIAM PATERSON UNIVERSITY	 XIDIAN UNIVERSITY	 YADRO	Zoss Team LLC
						Xidian University		Zoss Team



How to participate in Open Mainframe Project



Open participation for all interested in Mainframe and Open Source

Community discussion and collaboration - both virtually and at regional events.

9 Shared R&D open source projects - or bring your project to be hosted here

Corporate sponsorship for showing stewardship in the community



Learn more about the Open Mainframe Project

- Find out more and subscribe to our newsletter at www.openmainframeproject.org
- Organizational membership opportunities at
<https://www.openmainframeproject.org/about/join> or email at
membership@openmainframeproject.com
 - If you are ready to pursue corporate members, complete the paperwork at
<https://www.openmainframeproject.org/about/join/now>
- Talk to me after this talk!



Questions?



Thank you!



Membership



Membership Benefits (I)

Industry Leadership

- Shape the Open Source Mainframe market
- Network with other members of Open Mainframe Project
- Participate in Open Mainframe Project event and speaking opportunities
- Join Open Mainframe Project Projects
- Serve on the the Governing Board to help shape investments of Linux and Open Source on Mainframe (Platinum only)

Marketing Opportunities

- Benefit from and participate in Open Mainframe Project marketing efforts
- Engage with your peers on the marketing committee
- Feature your products and applications that leverage Linux and Open Source on Mainframe at key industry events, website and marketing collateral
- Use Open Mainframe Project branding assets in promotion of your product
- Discounted sponsorship opportunities for Open Mainframe Project



Membership Benefits (2)

Technology Leadership

- Contribute to and influence the direction of Open Mainframe Project technical investments
- Drive leadership for future enhancements and extensions that matter for your business
- Ability to guide feature sets in requirements documents and future technology roadmaps
- Support and drive community work by being a voting member of the Technical Steering Committee (Platinum only)

Learning and Engaging

- Engage and collaborate with the membership community to enhance your Open Source/Linux on Mainframe roadmap.
- Work together across company lines and industries.
- Create products & apps secure in the knowledge that they will be interoperable in across enterprise class architectures.
- Ability to serve as an Open Mainframe Project Advocate at events and in the community.

Corporate, Academic, Associate Membership Levels



Level	Annual Fee	Board Seat	TSC Seat	Marketing Committee	Notes
Platinum	\$120,000	Yes	Voting	Yes	Initial 2-year participant commitment
Platinum End-User	\$30,000	Yes	Voting	Yes	Initial 2-year participant commitment
Silver	5,000 employees or more = \$35,000 3,000 < 5,000 employees = \$30,000 1,000 < 3,000 employees = \$25,000 500 < 1,000 employees = \$20,000 100 < 500 employees = \$12,000 < 100 employees = \$7,000	1 per 10	Non Voting	Yes	
Academic	Free	1 per 10	Non Voting	Yes	Restricted to academic institutions
Associate	Free	No	Non Voting	Yes	Non-profits, open source projects

To join Open Mainframe Project, go to <https://www.openmainframeproject.org/about/join> or email at membership@openmainframeproject.com

Listed fees include Linux Foundation Silver membership. If you are already a Linux Foundation Member, reduced pricing is available.