The fourth quarter of 2019 bore the fruits of a year of hard work and dedication to our developer audience, themes of interoperability and adaptation, and our building the future storyline. We published a research report based on our tenth Global Perception Study called Climbing Up the Stack, which found that developers are taking enterprise development strategies into their own hands, adding levels of abstraction and decreasing complexity; announced the open sourcing of educational material for developer training; and launched version 1.0 of Eirini. The Meetup community grew to more than 107,000 people across over 160 groups across the world.

Please enjoy our updates from the last quarter.
CONTENT
Our blog received nearly 20,000 pageviews in the fourth quarter. We published twice as many blogs in October, and placed articles written by our leadership team on Forbes, Medium, LinkedIn, The New Stack, and elsewhere. Predictions for 2020 were published in multiple publications, including Computerworld, VMblog and translated into French and German and published in European journals. We published a report based on findings from our tenth global perception survey in October and built a content campaign around the data, leading to bylines, blogs and social content rolled out over Q4.

DIGITAL
• Website: During the final quarter of 2019, the website acquired 88k sessions. Given that we didn’t have any active campaigns during this time of year, the lower than usual number is expected. Our top pages continue to be Get Started, How to Try Cloud Foundry, and Why Cloud Foundry. The digital team spent a good portion of Q4 cleaning up the backend of the site and making SEO improvements on our top pages.

• Email: The average open rate for emails in Q4 was 22.8%, up from 21% in Q3. The unique click through rate remained around 1.7% with the promotion of the webinar “Combine the strengths of Cloud Foundry and Kubernetes” performing best with our lists.

• Webinars: In November, the Foundation hosted our most successful webinar to date with Dr. Nic of Stark and Wayne. “Combine the Strengths of Cloud Foundry and Kubernetes” received over 300 sign ups and has since had over 75 on-demand downloads.

EVENTS AND SPEAKING
Travel did not wind down during Q4, with Foundation staff traveling far and wide, from the Pacific Northwest to Latin America.
• In December, the entire team met in San Francisco for our quarterly off-site and end-of-year review. Abby attended AWS re:Invent then traveled to southern California for Fortune’s Most Powerful Women Next Gen Summit.

• During the month of November, the executive team attended Serverless Practitioners Summit at KubeCon + CloudNativeCon NA in San Diego, CA, which was co-hosted by the Foundation, and Abby attended Intercorp Innovation Fest in Lima, Peru.

• In October, Chip, Devin and Swarna traveled to Portland, Maine, for Monktoberfest where Swarna gave a talk, and Abby attended SpringOne Platform in Austin, Texas. Chip traveled to Berlin, Germany, for the Flink Forward European Conference.
INDUSTRY OPINION RESEARCH

In the fourth quarter of the year, we continued to conduct different internal and external research streams to provide members and the industry at large with insights on market trends, tracking for technology adoption, and metrics on IT decision maker satisfaction and progress in their cloud journey.

• **Global Perception Study 10:** In Q4, the Foundation published its second biannual global perception survey *Climbing Up the Stack*. The research focused on what components developers need to have the best experience using a cloud platform for application development as well as a check on recent trends regarding use, adoption, and awareness of different technologies. Top findings from the survey were that cloud is becoming a commodity and development teams are looking up the stack to adopt new technologies and more choices for app development.

MEDIA + ANALYSTS:

Global press coverage: 5,073 total articles, with 153 mentioning Cloud Foundry Foundation specifically.

**Highlights:**

• ComputerWorld, Tamlyn Magee: *Open source predictions* (12/31)
• Silicon.fr, Abby Kearns: *Technologies cloud natives : les dirigeants doivent trouver une orientation stratégique* (12/18)
• TechTarget, Tom Nolle: *Compare Red Hat OpenShift vs. Cloud Foundry in a Kubernetes faceoff* (12/18)
• JOURNAL DU NET, Abby Kearns: *La complexité du cloud encourage les développeurs à rechercher la simplification* (12/18)
• ICT Kommunikation, Herbert Koczera: *Cloud Foundry Foundation: Hype um Container schwcht sich ab* (12/4)
• Devinsider, Anna Kobylinska und Filipe Martins, Stephan Augsten *Ausfallsicherheit mit Cloud Foundry* (12/4)
• Jaxenter.de, Katharina Degenmann: *Eirini 1.0: Cloud-Foundry-Projekt ist reif die Produktion* (12/2)
• Jaxenter, Sarah Schlothauer: *Kubernetes backend Eirini hits 1.0 milestone* (12/1)
Marketing and Events

• Linuxmagazin, Julian Fischer: Wie Cloud Foundry ein Service Mesh realisiert (12/1)
• Manage IT, Chip Childers: Ein Open-Source-Business-Modell gibt es nicht (11/27)
• Inuit.at, Herbert Koczera: Cloud Foundry stellt Entwickler in den Mittelpunkt (11/26)
• TechCrunch, Frederic Lardinois: Cloud Foundry’s Kubernetes bet with Project Eirini hits 1.0 (11/22)
• SiliconAngle, Maria Deutscher: Eirini 1.0 launch brings Kubernetes and Cloud Foundry closer together (11/22)
• Dev-Insider, Filipe Martins & Anna Kobylinska, Stephan Augsten: Gründe für Cloud Foundry (11/18)
• Business Computing World, IBM: Cloud Foundry Explained (11/7)
• Linux-Magazin, Jens Christoph Brendel: Notizen vom Cloud Foundry Summit 2019 (11/5)
• ZDNet, Steven Vaughan-Nichols: Cloud Foundry open-sources its Certified Developer Exam course (10/31)
• Le Monde Informatique, Dominique Filippone: L’usage des containers se tasse selon Cloud Foundry (10/25)
• Althority: As Container Hype Levels Off, Developers Looking to Reduce Complexity, According to Latest Cloud Foundry Foundation Global Survey (10/25)
• ZDNet, Steven Vaughan-Nichols: Has container hype jumped the shark? (10/23)
• Devops.com, Mike Vizard: Survey: IT Striking Balance Between Innovation, Reliability (10/22)
• Admin magazin, Markus Heinemann: Cloud Foundry Foundation: Container-Hype schwächt sich ab (10/22)
• Medium, Virginia Backaitis: Why developers rule in a multi-cloud world – Cloud Foundry Foundation study (10/22)
• DataCenter-Insider.de, Ulrike Ostler: Cloud Foundry: Infrastrukturagnostische Bereitstellung Cloud-nativer Microservices (10/21)
Marketing and Events

- Euwid-facility.de, pratik: Globaler Markt für Containertechnologie 2019 CloudFoundry, ClusterHQ, CoreOS, Docker (10/21)
- The New Stack, B. Cameron Gain: Why SAP’s Support for Cloud Foundry Is Indefinite (10/15)
- Techzine, Floris Hulshof Pol: Pivotal ziet zich als drijvende kracht achter Cloud Foundry (10/11)
- Techzine.nl, Floris Hulshof Pol: Cloud Foundry moet navigeren op wild water (10/8)

Press Releases
- Cloud Foundry Foundation Open Sources Certified Developer Exam Preparation Course (10/31)
- As Container Hype Levels Off, Developers Looking to Reduce Complexity, According to Latest Cloud Foundry Foundation Global Survey (10/22)

Analysts
- Cloud Foundry Foundation and Cloud Foundry projects were referenced in 18 Analyst Reports and Blogs. Highlights include:
  - Ovum: Cloud Foundry expands its platform to support Kubernetes
  - 451 Research: Of kayakers and caterpillars: Cloud Foundry EU Summit 2019
  - Gartner: Cool Vendors in Cloud Computing

SOCIAL MEDIA:
- 204 New Followers on LinkedIn
- 362 New Subscribers on YouTube
- Twitter Highlights:
  - 332k impressions
  - 625 engagements
  - Top Tweet:
PROJECT LIFECYCLE AND LEAD CHANGES

- Jesse Weaver (Pivotal) is the new lead of the Loggregator project, as Allen Duet has left Pivotal. More here.

- Kartik Lunkad (Pivotal) is the new lead of the Garden Windows and BOSH Windows projects, as William Martin has moved to an internal role at Pivotal. More here.

- Subhankar Chattopadhyay (SAP) is the new project lead of the Service-Fabrik project.

- The CF-Abacus project has reached its end, and moved to the attic. Announced here. Thanks to IBM and SAP for their work on this project over the years!

NOTABLE PROJECT UPDATES

- The CF CLI team roadmap is now public on GitHub. CF CLI released cf7 CLI beta.26 - highlights here, cf7 CLI beta.27, highlights here, v6.47.2, and v6.48.0. Future binary releases of the CF CLI will be built with GoLang 1.13, which is not compatible with some older operating systems. Read more about that here.

- The Networking team detailed their plan to integrate Istio into CF-on-K8s efforts, announced here. They also shipped a new feature leveraging Istio and Envoy to provide http ingress routing for CF-on-K8s. Routing-release v0.195.0 and v0.196.0 were released.

- Loggregator proposed a new shared-nothing infrastructure to improve the scalability of syslog drains and to enable whole-platform syslog egress. The firehose endpoint has been deprecated.

- Release Integration will now automatically release minor versions of CF Deployment for every new minor stemcell version bump, announced here.

- Credhub proposed an update to Credhub encryption to use Key Encryption Key encryption scheme.

- The CAPI team released a proposal for CF + Multi-cluster K8s, continued work on KPACK and making CAPI easier to deploy on K8s as a standalone OCI image.

- The Services API team announced plans for CAPI V3 service offerings and service plans.

- UAA released v74.2.0 - v74.12.0, which changed the UAA source and runtime target to Java version 11, and included several bug fixes and new features. New features include:
  - Added option to enable basic auth uri encoding compatibility mode
  - No-sniff header on login page to prevent MIME-type sniffing.
• Improved logging when credentials are submitted via browser URL.
• Reporting health to bosh-dns, matching UAA’s health reporting to route_registrar.

- HAProxy released v9.8.0.
- Diego released v2.38.0, v2.39.0, v2.40.0, and v2.41.0 with quite a few updates in each.
- The Buildpack team announced a new Node.js Buildpack which implements the Cloud Native Buildpack API, and the end of support for the following Buildpack dependencies:
  - Python Buildpack v3.4.x and v2.7x
  - PHP Buildpack v7.1.x
  - .NET Core Buildpack v2.2.x
  - Node.js Buildpack v8.0x
- The BOSH team announced upcoming changes to the bosh-linux-stemcell-builder.
- Eirini released v1.0! Announced here, to much rejoicing.
- Project Quarks cut Alpha release v0.4.2, announced here. And cf-operator released v1.0, announced here, to much rejoicing. SUSE also announced that KubeCF released v1.0 (announced here) and is proposing to make this an upstream project. More on this here.
- SIG on CF-for-K8s bi-monthly meetings began in October, and now runs on the 1st and 3rd Tuesdays of each month. CF Community Calendar. More info here and agenda/notes doc is here.

SECURITY ADVISORIES FROM OCTOBER 1, 2019 TO DECEMBER 31, 2019
• 37 Security Advisories were published by the Cloud Foundry Vulnerability Management Team during this time period. Advisories are published here: https://www.cloudfoundry.org/foundryblog/security-advisory/
• 13 of these notices were Cloud Foundry CVEs, with the remaining 24 from upstream projects.
Developer Training and Certification

- Feedback from the Cloud Foundry Certified Developer Version 2 has been positive since launch in the fall of 2019. The exam is easier to complete and a friendlier experience.
- Our team is working on a revamp of the Cloud Foundry for Developers eLearning course for launch in early 2020.
- We will be experimenting with a program around shorter training modules, giving the community the ability to participate in the creation of courseware by making the content (and delivery platform) open source.
With Cloud Foundry Europe closing in September, the community came together stronger in 2019 with increased engagement and energy in organizing meetups across the globe or at industry conferences or in SIG discussions. The discussions continued actively in the special interest group (SIG) discussions around “Cloud Foundry for Kubernetes” and “Cloud Foundry Operators.”

MEETUPS
The global Cloud Foundry meetup member community has grown to more than 107,000 people across 160+ groups across the world. These meetup groups provide regional events for everyone across the world to join the community conversations every month.
• **Cloud Foundry NA Summit 2020:** The 2020 North American Summit will be co-located with the Linux Foundation’s Open Source Summit in Austin, Texas, on June 25, 2020.

• **Membership:** Cloud Foundry Foundation has 51 members as of December 31, 2019. Allianz, Atomist, Capgemini, Dynatrace, Ford, InfluxDB, and Royal Bank of Canada left the Foundation during Q4. The acquisition of Pivotal by VMware was also completed on December 30, 2019, and as such membership of both in the Foundation was consolidated.

• **Certified Providers:** The Foundation ended the year with seven Certified Providers: Atos, Cloud.gov, IBM, Pivotal, SAP, SUSE and Swisscom.