Higher Ed Cloud Community

The higher education cloud computing community is an active, thriving, sharing conversation between schools, community partners and individuals. This community focuses on the infrastructure (IaaS) and platform as a service (PaaS) ecosystems. It is built for higher ed, by higher ed. We welcome all to participate with an understanding that the goal is to promote the most secure and efficient use of cloud computing in support of the mission of our institutions. While we welcome the cloud vendors to participate in the debate and sharing of information it is never to be used for sales.

As the use of hyper-scale computing at community colleges, colleges and universities grows, so do the questions, challenges and lessons learned by each of us. Efforts to share those challenges and lessons and to ask those questions are also growing. This site attempts to bring together those conversations and the resources they produce in the hope that you will engage and encourage your colleagues to engage. Together we will raise our institutions’ collective CloudIQ.

Community Cloud Conversations

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<th>Conversation</th>
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<tr>
<td><strong>EDUCAUSE Cloud Computing Community Group (CCCG)</strong></td>
<td>The Cloud Computing Community Group provides participants with the opportunity to learn about and discuss the challenges and opportunities associated with the adoption of cloud computing in colleges and universities. Examples of discussion topics include cloud contract negotiation and management, cloud vendor relationship management, IT service management practices, compliance and legal issues, data privacy and security considerations, cloud identity and access management, cloud service integration (cloud to cloud and cloud to on-premise), skills and staffing implications, and cloud use cases to enable institutional agility, efficiency, and innovation. This group meets virtually every month, in person at the EDUCAUSE Annual Conference and uses its list and Slack workspace to discuss issues throughout the year. The Cloud Computing Community Group and Internet2 have long partnered to cultivate the cloud computing conversation in higher education. Beginning with the EDUCAUSE/Internet2 Joint Cloud Working Group, Internet2 has provided infrastructure and logistical support to the CCCG. Internet2 hosts the CCCG monthly calls and their meeting artifacts as well as the Higher Ed Cloud Wiki. <strong>Monthly meetings</strong></td>
<td>CCCG co-chairs: <a href="mailto:cccgleads@lists.berkeley.edu">cccgleads@lists.berkeley.edu</a> (term ends)</td>
<td>CCCG EDUCAUSE Page</td>
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<tr>
<td><strong>CCCG co-chairs</strong></td>
<td>Kari Robert - UCOP <a href="mailto:kari.robertson@ucop.edu">kari.robertson@ucop.edu</a> (2024) Niranj Davray - Colgate <a href="mailto:ndavray@colgate.edu">ndavray@colgate.edu</a> (2025) Phil Fenstermacher - William &amp; Mary <a href="mailto:pfenst@wm.edu">pfenst@wm.edu</a> (2026)</td>
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<td><strong>Internet2 staff support</strong></td>
<td>Bob Flynn <a href="mailto:bflynn@internet2.edu">bflynn@internet2.edu</a> Sean O’Brien <a href="mailto:sobrien@internet2.edu">sobrien@internet2.edu</a></td>
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**Monthly meetings**
- **Format:** Alternate between presentations one month to open discussion the next
- **When:** Occurs the fourth Wednesday of the month at 9am PT/12pm ET.
- **Where:** https://internet2.zoom.us/j/91519802344
- **Running Agenda/Notes:** https://tinyurl.com/EDUCAUSE-CCCG
- **Download calendar invitation:** https://drive.google.com/file/d/1NufrKDAc5s7vdudAzTgwXiCnykEbTxwG/view?usp=sharing (Note for Google Calendar Users: Download the .ics file. Go into the Settings inside Google Calendar. Select Import and navigate to the downloaded .ics file. It should import it into your calendar.)
The Cloud Forum is an annual gathering hosted by the higher ed cloud crowd that began at Cornell University in 2015. This event brings together the IT professionals who manage cloud computing at many of the top research and education institutions around the country. Attendance is strictly limited because we gather in a single auditorium-style classroom. Thanks to the intimate setting and higher education IT’s history of sharing, the conversations are candid, productive and often quite entertaining. We share successes, failures and lessons. We challenge our peers with the problems we are facing in hopes of tapping the wisdom of the crowd.

The event is for higher education, by higher education. We invite the cloud computing vendors most widely used by higher education to send representatives, but they do present. They are there to listen and learn about higher ed’s cloud challenges.

After 2021 the Cloud Forum left its nest and hit the road with the assistance of Internet2. The 2022 Cloud Forum was held at Washington University in St. Louis and 2023 will be at Emory University in Atlanta. For details see: https://internet2.edu/cloud-forum.

<table>
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<th>Upcoming/Past Events</th>
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<tr>
<td><strong>Higher Education Cloud Forum (CF)</strong> The Cloud Forum is an annual gathering hosted by the higher ed cloud crowd that began at Cornell University in 2015. This event brings together the IT professionals who manage cloud computing at many of the top research and education institutions around the country. Attendance is strictly limited because we gather in a single auditorium-style classroom. Thanks to the intimate setting and higher education IT’s history of sharing, the conversations are candid, productive and often quite entertaining. We share successes, failures and lessons. We challenge our peers with the problems we are facing in hopes of tapping the wisdom of the crowd. The event is for higher education, by higher education. We invite the cloud computing vendors most widely used by higher education to send representatives, but they do present. They are there to listen and learn about higher ed’s cloud challenges. After 2021 the Cloud Forum left its nest and hit the road with the assistance of Internet2. The 2022 Cloud Forum was held at Washington University in St. Louis and 2023 will be at Emory University in Atlanta. For details see: <a href="https://internet2.edu/cloud-forum.">https://internet2.edu/cloud-forum.</a></td>
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| **Internet2 Events (I2)** Webinars, workshops, training sessions, and community gatherings all fit within our mission of supporting and expanding the community. Internet2 works to convene the community to help institutions and colleagues share solutions and best practices. These include:
- **I2 Online (I2O)** - A series of webinars to showcase the community’s work and share knowledge around cloud technologies to help facilitate their use in the research and education community.
- **Internet2 Community Building (I2) - Community convening with the goal of tackling cloud technology challenges together.**
- **NET+ (I2 NET+) - Meetings, Town Halls, and other discussions that take place as part of the Internet2 NET+ program for subscribers that are opened up for the broader community or have the recordings posted afterwards.**
| **Organic Community Topics (COMM)** Anytime a conversation is taking place that would benefit from the involvement of that organization's peers in the higher ed cloud community, we will try to share it here. That could be a request from a number of schools to have another school share what they are doing or one school might have invited a cloud provider in for a demonstration. Whatever the case, if it is information sharing and collaboration at its core (rather than sales) we welcome its inclusion here. Click here to view the assets (slides, recordings, etc.) in the right column for meeting assets. |

### Upcoming Events - September 2023

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<tr>
<th>Date</th>
<th>Title</th>
<th>Description</th>
<th>Speaker</th>
<th>Meeting Assets</th>
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<tr>
<td>10/10 /2023</td>
<td>CCCG Annual In-person Meeting</td>
<td>CCCG October Meeting to be held at EDUCAUSE Annual Conference 2023</td>
<td><a href="https://internet2.edu/cloud-forum">CCCG</a></td>
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<td>Cloud Computing Community Group (CG) Meeting (Open to All)</td>
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<td>Tuesday, October 10</td>
<td>11:15AM–12:00PM CT</td>
<td>W192A, LEVEL 1</td>
<td><a href="https://internet2.edu/cloud-forum">CCCG</a></td>
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<td>Join this discussion on the challenges and opportunities associated with cloud computing. Topics will include contract negotiations, vendor relationship management, compliance and legal issues, data privacy and security considerations, identity and access management, service integration, skills and staffing implications, and cloud use cases that enable institutional agility, efficiency, and innovation.</td>
<td><a href="https://events.educause.edu/annual-conference/2023/agenda/cloud-computing-community-group-meeting">https://events.educause.edu/annual-conference/2023/agenda/cloud-computing-community-group-meeting</a></td>
<td><a href="https://internet2.edu/cloud-forum">CCCG</a></td>
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<td>9/27 /2023</td>
<td>CCCG Monthly Call - Supporting Researchers in the Commercial Cloud</td>
<td>This month's meeting will be a joint meeting between the Cloud Computing Community Group and Research and Data Community Group. Both communities will join the call to learn about supporting researchers in the commercial cloud. We have 3 panelists lined up to discuss their experiences, challenges, and success in assisting researchers using the cloud for their research. Community members will have a chance to ask questions or share their experiences as well.</td>
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<td><a href="https://www.cs.ucsd.edu/~cyd">Cyd Burrows-Schilling - University of California San Diego</a></td>
<td><a href="https://www.cs.pitt.edu/~pasquini">Brian Pasquini - University of Pittsburgh</a></td>
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<td><a href="https://www.cs.emory.edu/~tsui">Circe Tsui - Emory University</a></td>
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<td>8/23 /2023</td>
<td>CCCG Monthly Call - End-of-Summer /Back-to-School Open Discussion</td>
<td>This month’s Cloud Computing Community Group will be an open discussion session. As we begin to welcome students back to campus and wrap up our summer projects, let's hold an open discussion session. Talk about exciting projects you did over the summer with cloud computing, what's on the horizon for the fall semester, and anything interesting with cloud computing you want to speak about. Bring your challenges and your problems, well, only your cloud problems. Most importantly, be there and ready to talk. Our co-chairs will be there to help coordinate the discussions, take notes, and keep the conversations flowing.</td>
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<td>7/26/2023</td>
<td>CCCG Monthly Call - Automated Transcription for Social Science Researchers</td>
<td>Social science researchers frequently need audio recordings transcribed for analysis. However, third-party software and services often present both technical and security challenges. In this session a team from Indiana University will discuss the motivation and the technical implementation of the Automated Transcription Service (ATS). This simple and 100% serverless solution leverages cloud machine learning (ML) APIs and other cloud services to provide convenient and secure transcription capabilities for social scientists. <strong>Speakers:</strong> Prof. Emily Meanwell, IU, Philip Berg, IU, and Alan Walsh, IU.</td>
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<td>6/28/2023</td>
<td>CCCG Monthly Call - Cloud Forum Redux</td>
<td>Contrary to on premise infrastructure, one cannot simply 'set it and forget it' in the cloud as resources are billed by the hour (or minute!). Out of this paradigm, came a new specialty for IT folks – FinOps (Cloud Financial Management). This month we have wonderful speakers featured at Cloud Forum 2023 presenting on their experience developing and managing FinOps. The number one cloud comment I get from Executives, “I hear everything is much more expensive in the cloud”. My response, “Not if managed correctly”. Please join us to learn FinOps tips and tricks from renowned higher ed experts. <strong>Speakers:</strong> Maggie Spangenberg, UT Austin, and Jonathan White, UCF.</td>
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<td>6/20/2023</td>
<td>SkyPilot Webinar</td>
<td>SkyPilot is an open-source framework from UC Berkeley that enables users to run Machine Learning and Data Science batch jobs seamlessly on any cloud, reduce cloud costs substantially, tap into best-in-class hardware on different clouds, and enjoy higher resource availability. In the webinar, we will introduce the concept of SkyPilot and show demos of how to easily launch jobs on any cloud with SkyPilot. <strong>Speakers:</strong> Rob Fatland, University of Washington, and Zhanghao Wu, UC Berkeley.</td>
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<td>5/24/2023</td>
<td>CCCG Monthly Call - Using the Public Cloud for Teaching &amp; Learning</td>
<td>This month will feature panelists from our community that have used cloud for teaching and learning. Some have taught cloud in the classrooms, while others have supported faculty in using cloud in their courses. Our panelists will share their experiences, what has worked, what didn’t, tips, and tools/services from our partners such as AWS, Azure, and Google to assist with teaching and learning. <strong>Speakers:</strong> Lucrecia Boswell, Stanford University, Jim Charters, University of Michigan, Jeremy Miller, Kentucky Community &amp; Technical College System, Dan O’Brien, George Mason University, Amanda Tan, Internet2, Alan Walsh, Indiana University. <strong>When:</strong> 9am PT/12pm ET <strong>Where:</strong> <a href="https://internet2.zoom.us/j/91519802344">https://internet2.zoom.us/j/91519802344</a> <strong>Running Agenda/Notes:</strong> <a href="https://tinyurl.com/EDUCAUSE-CCCG">https://tinyurl.com/EDUCAUSE-CCCG</a></td>
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<td>UT Austin will share their FinOps journey from initial cloud exploration to exponential growth. UT’s processes needed to evolve as cloud spend went from nothing to over $1M annually. UT is planning to show dashboard visualizations that allow departments across campus to see their current spend, cost optimization opportunities, and usage data. There are also internal processes for tagging cloud resources and billing back to departments for recovering spend.</td>
<td>Moving applications to the public cloud can be daunting. There are years of organic growth that need to be unwound, staff to train, project plans to write, and new architectures to design. To ease the pain William &amp; Mary chose to adopt cloud concepts and best practices in our on-premise operations before any significant migrations. In this presentation, we’ll talk about what changes we made, how they prepared us for cloud migrations, and how it continues to make hybrid operations easier (because we still have a network on-campus to run). We’ll close with a brief case study of how the single mode of operation made moving our student information system to the cloud trivial and nearly transparent to our users.</td>
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<td>2. Moving Faster With the Cloud Everywhere</td>
<td>- When: 10:30 am PDT / 1:30 pm EDT (duration 1 hour)</td>
<td>- When: 10:30 am PDT / 1:30 pm EDT (duration 1 hour)</td>
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<td>5/3/2023</td>
<td>Infrastructure &amp; Platform Services - Search for good tooling: RONIN for Researchers - Simplifying the Cloud</td>
<td>In 2021 Internet2 NET+ Infrastructure &amp; Platform Services program manager Bob Flynn put out a call to the community to identify the greatest areas of need for tooling to help them run the major cloud platforms at scale at their institutions. That call included a survey and that survey resulted in our 2022 exploration and ultimate agreement to create a higher ed Kion program. This year we are moving down the list of survey results to revisit RONIN. Please join us for a fresh look at RONIN and help us assess community interest in a NET+ RONIN agreement.</td>
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<td>Description: Researchers venturing more and more into using cloud computing and commercial cloud vendors. Many of them do not have experience with system administration or managing cloud services. This can present a challenge to groups who do not have the capacity to hire a cloud specialist to manage infrastructure for them and may lead to less utilization of cloud services.</td>
<td>Over the last few years, the Advanced Research Computing (ARC) team at the University of British Columbia (UBC) has explored various cloud platforms and solutions to help UBC researchers harness the power of the public cloud and enhance their computing capabilities.</td>
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<td>- When: 1 pm PDT / 4 pm EDT (duration 1 hour)</td>
<td>Our journey with RONIN started in January 2020 with an in-person demo of the RONIN platform. We transitioned our successful RONIN Platform pilot to being the first University in North America to use RONIN as a full-service cloud offering to the UBC research community.</td>
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<td>- Register: <a href="https://internet2.zoom.us/webinar/register/7016811340028/">https://internet2.zoom.us/webinar/register/7016811340028/</a></td>
<td>We will briefly discuss what ARC is and our role at UBC. Our researcher community and the challenges faced with public cloud using the user interfaces on current cloud providers. We will share our experience with RONIN and demonstrate a live demo of what a researcher just starting out will experience on RONIN and what it takes to set up their workflow in a cloud environment.</td>
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<td>4/26/2023</td>
<td>CCCG Monthly Call - Automating AWS Orgs and Control Tower</td>
<td>If you are using AWS and have struggled to figure out how to manage your org(s), manage your Control Tower, balance automation and manual processes, then you will want to check this out: Kelly Rivera, Lead Cloud Engineer, University of Wisconsin Madison, knows this stuff cold and has gone down all the rabbit holes that the rest of us merely peek over the edge of. She will share her hard-won wisdom with the community.</td>
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| 3/22/2023  | CCCG Monthly Call - Cloud Teams                                       | **Cloud Teams | Higher Ed Models**  
This month we will cover a heavily discussed topic in the cloud space – Cloud Teams. As you build in the cloud, you need someone designated to properly maintain workloads. Is that a team of one, a brand-new team, or a team of existing staff that are working in a hybrid environment? What roles make a successful Cloud Team? How are responsibilities divided up? How do you get folks trained? When is the best time to formally establish a Cloud Team? Join us to explore different Cloud Team models with our esteemed panelists.  
- **Time:** 9am PT/12pm ET  
- **Location:** https://internet2.zoom.us/j/91519802344  
- **Post-meeting assets** (recording, slides, etc.) | Chris Manly | Cornell University – Assistant Director of Cloud and Infrastructure Services  
Jonathan White | University of Central Florida – Cloud Infrastructure Strategist  
Kevin Willey | Bucknell University - Executive Director Enterprise Technologies  
Michael Benedetto | American Museum of Natural History – CISO and Deputy CIO | CCCG |
| 3/1/2023   | Achieving Multi-Cloud Control and the Freedom to Innovate              | Whether your institution is starting on its cloud journey and you’re balancing innovation and sustainability, or you are trying to bring some order to years of organic experimentation, it requires practices, planning, and tooling to manage a multi-cloud environment. In this session, we’ll hear from Washington State University and Princeton University as they share their progress on the cloud adoption path and how they are tackling the challenge of ensuring control while providing freedom to users to innovate.  
**NOTE:** Both speakers will be talking about the role that Kion plays in these efforts.  
- **Post-meeting assets** (recording, slides, etc.) | Bill Bonner, Director of Network and Cloud Engineering, Washington State University  
Mark Ratliff, Director for Cloud Infrastructure Services, Princeton University | I2 |
| 2/22/2023  | CCCG Monthly Call - Enhancing Public Health Infectious Disease Genomics through Cloud Computing | Infectious disease genomics is a rapidly changing field within public health. The increased need for genetic characterization during the SARS-CoV-2 pandemic combined with newly emerging sequencing technologies has led to a wide adoption and application of sequencing approaches across public health laboratories. This in turn has created a need for compute environments that can handle complex bioinformatics workflows and scale to meet a growing need. The Wisconsin State Laboratory of Hygiene (WSLH) has adopted a Cloud based approach that leverages AWS services to build a highly reliable infrastructure that is both cost effective and highly scalable. When combined with Nextflow pipelines utilizing Docker containers the result is a highly reproducible production analysis environment that is capable of supporting a variety of public health goals including infectious disease surveillance and outbreak investigations.  
- **Time:** 9am PT/12pm ET  
- **Location:** https://internet2.zoom.us/j/91519802344  
- **Post-meeting assets** (recording, slides, etc.) | Dr. Kelsey Florek, Professor of Genomics, Data Science, and Public Health, UW-Madison | CCCG |
| 2/2/2023   | NET+ AWS Town Hall: Transforming Genomic and Biological Data into Insights with AWS Omics | Amazon Omics helps healthcare and life science organizations and their software partners store, query, and analyze genomic, transcriptomic, and other omics data and then generate insights from that data to improve health and advance scientific discoveries. Learn how Amazon Omics provides scalable workflows and integrated tools for preparing and analyzing omics data and automatically provisions and scales the underlying infrastructure so that you can spend more time on research and innovation. Amazon Omics supports large-scale analysis and collaborative research.  
This session is for research decision-makers, researchers, and RCD team members who want to learn how Amazon Omics can accelerate research, support large-scale analysis, and generate insights to improve health and advance scientific discoveries.  
- **Time:** Wednesday, Feb 15, 11am PST/2pm EST  
- **Registration:** https://internet2.zoom.us/webinar/register/1716734475521/WN_e2gYTCK8TGlBxIEhbf_3A  
- **Post-meeting assets** (recording, slides, etc.) | Lee Pang, Principal Solutions Architect, Health AI at AWS | I2 |
| 2/15/2023  | Stanford Technology Platform Assessment and Strategy Peer Discussion | Stanford is currently underway with an initiative to evaluate our IT Portfolio to review drivers, governance, funding, and strategies being used to inform thoughtful cloud deployment models. As part of this effort, we would like to learn from our peers, by collecting data in the form of the questions found in this sheet. Please take a moment to provide your input. While data is being collected, we will be scheduling two one-hour meetings (February 7, 9 12pm ET) for open dialog and collaboration. I am happy to share the methodology, recommendations and results of this effort with those that are interested.  
- **Time:** Tuesday Feb 7 and Feb 9 (two options to attend) 9am PT/12pm ET  
- **Location:** https://stanford.zoom.us/j/96042520479?pwd=Q590ekVMmjEqktaTEGUYNpaF0iG709 | Lucrecia Kim-Boswell | COMM |
The CCCG will be hosting a special presentation on **Monday, February 6th, 2023 9am PST /12pm EST**.

**Rede Nacional de Ensino e Pesquisa (RNP)** is the Brazilian national research and education network (NREN), roughly equivalent to the role **Internet2** plays in the US. Not only do they provide secure and high-capacity internet, but they do targeted development services and support innovative projects to further the social good. Their system includes universities, educational and cultural institutes, research agencies, teaching hospitals, parks and technology centers. With this, they benefit 4 million Brazilian students, teachers and researchers.

Seven years ago, when RNP started to work with public cloud, they had a very traditional dev team. Their applications ran on premises and they had very little automation in their development processes. They started to lift & shift systems to the cloud but they did not feel they were really reaping the benefits of the public cloud or of DevSecOps practices. They found it difficult to become a “Cloud Native / DevSecOps” Organization.

It took 4 years and an iterative process to transform themselves into a cloud-savvy, DevSecOps-practicing, actively-learning organization. They would like to share their journey, how they operate now, and the impact these changes have had on their work. In addition to the lessons learned along the way, they will discuss the tools they have developed to support their work and use cases they have applied them to.

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**1/25/2023**

**CCCG Monthly Call** - **Gettin g started with the cloud (Best Practices)**

Hear stories from our panelists on getting started in the cloud. Panelists will discuss their cloud journey, lessons learned, what they would do if they had to do it again, and offer some guidance for our community. Afterwards, we will discuss the formation of a Cloud Best Practices Working Group and will seek volunteers from our community.

- **Time**: Wednesday, 1/25 at 9am PST / 12pm EST
- **Location**: [https://internet2.zoom.us/j/91519802344](https://internet2.zoom.us/j/91519802344)

**Speakers**
- Rick Rhoades (Penn State University)
- Shelley Rossell (Univ of Chicago)
- Bill Thompson (Lafayette)
- Kevin Willey (Bucknell University)

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**2022**

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| 12/14/2022 | **CCCG November/December Monthly Meeting - Review of EDUCAUSE 2022, Cloud Forum 2022, and I2 Technology Exchange 2022** | As we look forward to the new year, your co-chairs are starting to think about 2023 and what our priorities are for the CCCG. Please join us to review and discuss the various conferences in the fall. What were your takeaways? Any sessions worth bringing to the larger community? This will be an opportunity for all our community members to provide feedback for the coming year? What's working? What's not? Trends we should be focusing on? | Niranjan Davray
James Monek
Kari Robertson | CCCG Running notes |
| 11/30/2022 | **AWS Control Tower in Higher Education**                             | Please join a discussion about Control Tower in Higher Ed. We’ll focus on the main differences and gotchas for higher ed vs. standard deployments and talk about starting fresh with CT or bringing it into an Org with existing accounts.                                                                                                                                   | Bob Flynn, Internet2
All of you! | I2 Running notes |
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| 11/16/2022 | NET+ AWS Discussion - The Role of Cloud in Institutional Resilience | The last two years have demonstrated the unique role hyper-scale, on-demand computing in keeping the institution operational when faced with unexpected circumstances. A recent EDUCAUSE QuickPoll on institutional resilience prompted the question of the part cloud computing should, and shouldn’t, play in your organization’s resilience planning. Invite your leadership to join leaders from our community to discuss how, where and when we should be thinking about these powerful tools. | Strategic IT thinkers and decision makers – CIOs, AVPs and Directors of Infrastructure, Cloud Enablement Managers | Damian Doyle, Deputy CIO, UMBC  
Patrick Frontiera, Senior Business Development Manager, Higher Ed, AWS  
Rick Rhoades, Chair, NET+ AWS SAB and Manager, Cloud Services, PSU  
Kari Robertson, AWS Education Champion, CCCG Co-Chair, Executive Director of Infrastructure Services at UCOP  
Bob Flynn, Internet2 (moderator) |
| 11/11/2022 | Higher Ed Cloud Forum | The 2022 Cloud Forum was held at Washington University in St. Louis. Each day portions were made available live. Today’s content included:  
**Presentations:**  
- Embracing Enterprise Architecture to Drive New Cloud Value  
- Secure Research Initiatives Learnings  
**Research:** From the Fringes to the Mainstream: How COVID-19 Conspiracy Theories Spread across Social and Mainstream Media |  | Kevin Muller, Fordham  
Barbara Schnell, UC Boulder  
Prof. Axel Bruns, Australian Research Council Laureate Fellow and Professor in the Digital Media Research Centre at Queensland University of Technology in Brisbane, Australia, and a Chief Investigator in the ARC Centre of Excellence for Automated Decision-Making and Society |
| 11/10/2022 | Higher Ed Cloud Forum | The 2022 Cloud Forum was held at Washington University in St. Louis. Each day portions were made available live. Today’s content included:  
**Lightning Talks:**  
- So, You Want to Move to the Cloud. What Could Go Wrong?  
- Quantum Computing in the Classroom  
- Piloting Microsoft’s Direct Pay Option  
- The Year in AVD  
- Shifting backup storage away from AWS  
- Cloud-Enabling the Biomedical Research Workforce  
- NIH Cloud Lab  
- Splitting the tab 300 ways  
- Service Attribute Management at Scale  
**Research:** Drivers of Healthcare Outcome Disparities at the Individual Level |  | Bob Flynn, Internet2  
Dan Landerman, Northwestern  
Chris Lawrence, Iowa  
Cornelia Bailey, Chicago  
John Bailey, WashU  
Todd Reilly, National Institutes of Health  
Dr. Azizi Seixas, Director of The Media and Innovation Lab, University of Miami, Miller School of Medicine |
| 11/9/2022 | Higher Ed Cloud Forum | The 2022 Cloud Forum was held at Washington University in St. Louis. Each day portions were made available live. Today’s content included:  
**Lightning Talks:**  
- Let a Thousand PaaSes Bloom  
- Provisioning GovCloud Accounts  
**Panel:** The Challenge of Federal Cloud Funding  
**Research:** Using the Cloud to Disrupt Health and Medicine |  | Matthew Rich, Northwestern  
Shelley Rossell, Chicago  
Nick Weber, National Institutes of Health  
Dr. Azizi Seixas, Director of The Media and Innovation Lab, University of Miami, Miller School of Medicine |
<table>
<thead>
<tr>
<th>Date</th>
<th>Event</th>
<th>Panelists</th>
<th>Notes</th>
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<tbody>
<tr>
<td>10/27/2022</td>
<td>CCCG October Meeting to be held at EDUCAUSE Annual Conference 2022</td>
<td>Join this discussion on the challenges and opportunities associated with cloud computing. Topics will include contract negotiations, vendor relationship management, compliance and legal issues, data privacy and security considerations, identity and access management, service integration, skills and staffing implications, and cloud use cases that enable institutional agility, efficiency, and innovation. <a href="https://events.educause.edu/annual-conference/2022/agenda/cloud-computing-community-group-cmg-meeting-open-to-all">https://events.educause.edu/annual-conference/2022/agenda/cloud-computing-community-group-cmg-meeting-open-to-all</a></td>
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| 19 Oct 2022 | Key Considerations for Supporting Academic Researchers                 | Researchers are increasingly leveraging computational technologies as a key approach within their research. More and more disciplines are leveraging data, simulation, and advanced analytics to perform their research. Researchers have increasingly complex requirements and expectations as they join institutions and funding agencies are requiring new and more complex data retention approaches. At the institutional level, developing a strategy to support the wide range of requirements in a supportable, cost effective, and secure way has become a critical strategic initiative. This session will discuss a perspective on how to support researchers, impacts from the funding agencies and AWS technology solutions.  
- Audience: This session is for higher education information technologists, VPs of Research and principal investigators interested in using cloud to accelerate and scale their scholarship.  
- Time: Wednesday, October 19 at 11 am PDT/2 pm EDT |            |
| 18 Oct 2022 | NET+ Kion Service Evaluation and Release                               | Back in January of this year Internet2 hosted a webinar for Kion (formerly cloudtamer) in response to community demand for a multi-platform cloud enablement tool. (Scroll down to January 11 in this list for details and a link to the recording.) The webinar and buzz it generated led to a NET+ service evaluation and now a higher education agreement.  
A dozen schools participated in the Kion service evaluation. The community members who led the working groups would like to share their work and findings with you. Please join us to better understand the accessibility, business, functional, identity, and security reviews conducted during the past four months to vet Kion's suitability for meeting the needs, and adhering to the practices, of the research and education community's cloud operations.  
For more read the blog post: [Kion Checks the Top Boxes](https://drive.google.com/drive/folders/1609H6Qg9cOyYQgLZUFBPwEzOFhYEVkJ?usp=sharing) |            |
| 9/28/2022  | CCCG Monthly Call - Revisiting our failures.                            | Discussing how we faltered, then picked ourselves up, dusted ourselves off and came back better than ever!  
NOTE: No Zoom recording so attendees can feel safe to have open discussions. |            |
| 8/24/22    | CCCG Monthly Call - Cloud Standards Panel                              | Panelists discuss the following questions followed by Q&A with the larger group:  
- What systems/tools do you have in place to maintain/monitor cloud standards?  
- How do you decide on the list of cloud standards (and when new standards should be added)? |            |
| 7/27/22    | CCCG Monthly Call - Sharing Stanford’s best practices for building out a centralized GCP offering | How do you enable researchers or data analysts across disparate schools or agencies to take advantage of GCP, while providing central oversight, budgeting and governance? See how Stanford addressed this challenge, after various schools across the university started using GCP independently and requested help from Central IT to get billing and oversight under control.  
Lucrecia Kim-Boswell, IT Director of Stanford University, will walk through the best practice structure their partner setup to manage billing and operations, so that an entire campus can easily access GCP with the help from a small University IT Team. |            |
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<tr>
<th>Date</th>
<th>Event Description</th>
<th>Presenters</th>
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<tbody>
<tr>
<td>6/22/22</td>
<td>CCCG Monthly Call - Open Discussion</td>
<td>• Damian Doyle, UMBC&lt;br&gt;• James Monek, Lehigh University&lt;br&gt;• Kari Robertson, University of California</td>
</tr>
<tr>
<td>5/25/22</td>
<td>CCCG Monthly Call - Secure research enclaves and compliance</td>
<td>• John Bailey, Washington University in St. Louis&lt;br&gt;• James Monek, Lehigh University</td>
</tr>
<tr>
<td>4/27/22</td>
<td>CCCG Monthly Call - Open Discussion</td>
<td>• Damian Doyle, UMBC&lt;br&gt;• James Monek, Lehigh University&lt;br&gt;• Kari Robertson, University of California</td>
</tr>
<tr>
<td>4/20/22</td>
<td>Internet2 NET+ Special Event - Sustainability and AWS: Insights for Higher Education - A NET+ AWS Town Hall</td>
<td>• Hahnara Hyun, Partner Solution Architect for Amazon Web Services</td>
</tr>
<tr>
<td>3/23/22</td>
<td>CCCG Monthly Call - Data Lakes</td>
<td>• James Monek, Lehigh University&lt;br&gt;• Aswan Movva, University of California, Berkeley</td>
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### Data Lake in the Cloud - March CCCG Meeting

Does your institution have a cloud data lake strategy? Does it look more like a data puddle? Interested in learning how you can deploy a data lake in the cloud to handle and analyze data at scale? As with last month, we encourage you to bring along a buddy. This time bring along your favorite data analysts, scientists, or data architects to share important tips to get a data lake working at your institution.

There will be two presentations along with questions, answers, and discussions.

"Lessons Learned from AWS Student Data Lake POC", by James Monek from Lehigh University

"A Cloud Data Lake Approach to COVID Recovery" by Aswan Movva from University of California, Berkeley

- **When**: 9am PT/12pm ET
- **Where**: [https://internet2.zoom.us/j/91519802344](https://internet2.zoom.us/j/91519802344)
- **Running Agenda/Notes**: [https://tinyurl.com/EDUCAUSE-CCCG](https://tinyurl.com/EDUCAUSE-CCCG)
On February 23, 2022, Internet2 attended the CCCG call to talk about their Networking for Cloud Services and to query the group about how the future Cloud Connect Console will look, feel and work. During the discussion, attendees asked about the multi-cloud environment and asked for additional discussion on multi-cloud. They also touched on how a layer3 “virtual cloud router” solution that doesn’t require hair pinning traffic between clouds through your campus or data center could reduce complexity, improve latency, increase performance, and reduce cost. The I2 networking team believes that together we can develop a solution that that meets these goals, supporting your critical cloud workloads.

To continue the discussion, we have scheduled an open discussion session on multi-cloud networking hosted by Internet 2. Please invite all interested colleagues. We will also record the session for those unable to attend.

**Topic:** Multi-Cloud Community Discussion  
**Time:** 11:00 AM Pacific Time / 2:00 PM Eastern Time  
**Location:** [https://tinyurl.com/EDUCAUSE-CCCG](https://tinyurl.com/EDUCAUSE-CCCG)

Meeting ID: 959 8407 0917  
Passcode: 112044

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### 2/23/22 CCCG Monthly Call - Internet2 Cloud Networking Tools and open Discussion

**Asks:** Invite your networking colleagues to the meeting for the presentation/discussion. Put some networking questions/topics in the agenda for the open discussion portion following the presentation.

**Guest Presenters:** We are going to have Internet 2 discuss some plans and ideas they have for how to better allow cloud administrators/architects/etc to be able to manage/adjust/leverage the advanced Internet 2 network features and connections, as well as some opportunities to provide some input into the user design and shaping of these initiatives.

We will also have time for some open discussion, and I’d like to encourage folks to bring along one of their network colleagues if they are available to help us have a broader, well informed discussion since both the I2 presentation and the open discussion will benefit from everyone different perspective.

- **Running Agenda/Notes:** [https://tinyurl.com/EDUCAUSE-CCCG](https://tinyurl.com/EDUCAUSE-CCCG)
- **Session recording and Zoom chat:** [https://drive.google.com/drive/folders/1KxggPxxBe5GxgiQdav28nuoZ5RVJcIqM?usp=sharing](https://drive.google.com/drive/folders/1KxggPxxBe5GxgiQdav28nuoZ5RVJcIqM?usp=sharing)

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### 1/26/22 CCCG Monthly Call – IT’S A PILOT! Legitimatin experiment al work in your cloud*

Has this happened to you? You have a cloud that’s not ready to take payments, or not ready to be used by the masses, or you don’t know how to do things right — but something comes through that you shouldn’t say no to. UChicago has handled these situations with a lightweight pilot framework. Both the cloud people and the user agree in advance, in writing, on what both parties will get from the situation. It has helped to set expectations about the unexpected and ultimately get unstuck.

The 2nd part of Wednesday’s meeting be open discussion (so put those topics in the running agenda or bring them with you Wednesday). We look forward to seeing everyone, and I’ve included all the meeting info below again as a reminder.

- **When:** 9am PT/12pm ET  
- **Where:** [https://internet2.zoom.us/j/95984070917?pwd=ZVl5NjNK2kX1E2aDE2QlRlUWhzZz09](https://internet2.zoom.us/j/95984070917?pwd=ZVl5NjNK2kX1E2aDE2QlRlUWhzZz09)
- **Meeting ID:** 959 8407 0917  
- **Passcode:** 112044

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### 1/11/22 Internet2 Infrastructure & Platform Services – Search for Good Tooling – Kion.io

Last summer Internet2 NET+ Infrastructure & Platform Services program manager Bob Flynn put out a call to the community to identify the greatest areas of need for tooling to help them run the major cloud platforms at scale at their institutions. That call included a survey and that survey produced some decent results.

In a three-way tie for the top survey response were:

1. Account automation and maintenance  
2. Security monitoring and remediation  
3. Cost tracking management and savings.

The solutions had to be multi-cloud and pass muster with institutional security and compliance. One tool that was specifically suggested by multiple respondents in these areas was [Cloudtamer.io](https://cloudtamer.io).

Cloudtamer.io has since changed its name to Kion, but we are still interested to see if their tools will meet these needs. It appears to tick all those boxes from the survey, but will it work for higher ed? Join us to find out.

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**2021**

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<th>Date</th>
<th>Title</th>
<th>Description</th>
<th>Speaker</th>
<th>Meeting Assets</th>
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### 12/8/21 Special Edition Monthly Call - The Big Lie: Cloud Computing - Bill Wrobleski, Penn State

**The Big Lie: Cloud Computing - Bill Wrobleski, Penn State**

12:00pm ET - 12:45pm ET

In 2011, I started evangelizing for the Cloud. It’s been 10 years, so the future I promoted has come true. Right? I’ll revisit the vision we imagined, what actually happened, and explore the question “Is cloud computing the biggest disappointment for higher education this century?”

**EDUCAUSE 2021 and Cloud Forum 2021 Wrap-ups. What are we planning for 2022?**

- **When:** Wednesday, December 8 2021 9am PDT/12pm EDT
- **Where:** [https://internet2.zoom.us/j/91519802344](https://internet2.zoom.us/j/91519802344)
- **Running Agenda/Notes:** [https://tinyurl.com/EDUCAUSE-CCCG](https://tinyurl.com/EDUCAUSE-CCCG)

### 11/18/21 Live from Cloud Forum 21 - Presentations

**Cost is always a concern when moving from the traditional capex model on prem to the opex model in the cloud. Declan Fleming and Jessica Respicio from UC San Diego will share what they learned about cost (and business) optimization from their experience with cloud at UCSD and CloudBank.**

In our final presentation, Penn State’s Rick Rhoades will share how pandemic hiring challenges and an innovative talent-sharing program led to surprising success and unexpected outcomes.

See the [Cloud Forum Agenda](https://tinyurl.com/EDUCAUSE-CCCG) for descriptions, slides and recordings.

### 11/18/21 Live from Cloud Forum 21 - Researcher (Amazon)

**Researcher presentations are a highlight for Cloud Forum attendees each year. The researchers are asked to focus on their research, not the underlying cloud technology, though that does sometimes poke through. These talks are meant to remind us cloud professionals of the importance of the work we do each day.**

This year’s researcher nominated by Amazon is Professor Eric Venner, Associate Professor, Division Director for Bioinformatics from the Human Genome Sequencing Center – Clinical Lab at the Baylor College of Medicine with a talk titled "Implementing Genomic Medicine at the HGSC."

**Eric Venner, Associate Professor, Division Director for Bioinformatics from the Human Genome Sequencing Center – Clinical Lab at the Baylor College of Medicine**

### 11/17/21 Live from Cloud Forum 21 - Researcher (Microsoft)

**Researcher presentations are a highlight for Cloud Forum attendees each year. The researchers are asked to focus on their research, not the underlying cloud technology, though that does sometimes poke through. These talks are meant to remind us cloud professionals of the importance of the work we do each day.**

This year’s researcher nominated by Microsoft is Dr. Travis Osterman of Vanderbilt University Medical Center with a talk titled "Lessons Learned from VUMC’s First End-to-End Cloud Project."

**Dr. Travis Osterman of Vanderbilt University Medical Center**

### 11/17/21 Live from Cloud Forum 21 - Presentations

**The maintenance and lifecycle of data is a never-ending challenge. In our first presentation we’ll hear about research into how schools are dealing with the seeming end to unlimited cloud storage being done by Internet2’s Oren Sreebny. Oren will be joined by Helen Hockx-Yu who will share how Notre Dame is approaching the problem.**

In our second presentation, Ken Bigelow and Venkat Mahadevan from the University of British Columbia will explain their efforts to make use of cloud computing easier for their research community.

See the [Cloud Forum Agenda](https://tinyurl.com/EDUCAUSE-CCCG) for descriptions, slides and recordings.

### 11/16/21 Live from Cloud Forum 21 - Researcher (Google)

**Researcher presentations are a highlight for Cloud Forum attendees each year. The researchers are asked to focus on their research, not the underlying cloud technology, though that does sometimes poke through. These talks are meant to remind us cloud professionals of the importance of the work we do each day.**

This year’s researcher nominated by Google is Luigi Marchionni, Associate Professor of Pathology at Weil-Cornell Medicine. Professor Marchionni’s talk is titled "A Hitchhiker’s Guide to Big Data Based Biomarkers."

**Luigi Marchionni - Associate Professor of Pathology at Weil-Cornell Medicine**
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<tr>
<td>11/16/21</td>
<td>Live from Cloud Forum 21 - Lightning Talks</td>
<td>The first day of the 2021 Cloud Forum's online content kicked off with nine (9!) lightning talks from the National Institutes of Health, University of Chicago, CloudBank and Internet2. For details, slides and a recording of the talks see, the Cloud Forum agenda.</td>
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<td>Philip Meacham - NIH&lt;br&gt;Yanik Wynter – NIH&lt;br&gt;Carlo Espiritu - NIH&lt;br&gt;Joel Peterson - NIH&lt;br&gt;Rob Fellow - UW, CloudBank&lt;br&gt;Shelley Rossell - Univ Chicago&lt;br&gt;Connelia Bailey - Univ Chicago&lt;br&gt;Ananya Ravipati - Internet2&lt;br&gt;Bob Flynn - Internet2</td>
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<tr>
<td>10/29/21</td>
<td>EDUCAUSE 2021 Face to Face meeting</td>
<td>Join this discussion on the challenges and opportunities associated with cloud computing. Topics will include contract negotiations, vendor relationship management, compliance and legal issues, data privacy and security considerations, identity and access management, service integration, skills and staffing implications, and cloud use cases that enable institutional agility, efficiency, and innovation.</td>
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<td>Jody Couch, UC Berkeley&lt;br&gt;Damian Doyle, UMBC&lt;br&gt;James Monek, Lehigh University</td>
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<td>9/22/21</td>
<td>Cloud FinOps</td>
<td>Cloud costs keeping you up at night? Are you wondering how to keep costs from running out of control? What practices should you put in place now to stay on top of the cloud spending game? A group of higher education cloud professionals with expertise in cost optimization and cloud financial best practices met regularly through the spring and summer pooling their expertise in an effort to create a list of tips and techniques for making the most of your cloud dollars. In this session they shared those pearls of wisdom with you, their colleagues in higher ed cloud. Find their slides, full tip sheet, presentation recording and more on the session resource page.</td>
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<td>Matthew Chess - University of Michigan&lt;br&gt;John Finigan - University of Colorado Anschutz Medical Campus&lt;br&gt;Mike Florian - University of Arizona&lt;br&gt;Bob Flynn - Internet2 (staff support)&lt;br&gt;Erik Lundberg - University of Washington&lt;br&gt;Sara Jeanes - Internet2&lt;br&gt;Timothy Middelkoop - internet2&lt;br&gt;Richard Murillo - Harvard University&lt;br&gt;Kari Robertson - University of California Office of the President&lt;br&gt;Ben Rota - Harvard University&lt;br&gt;Nick Young - University of North Carolina Greensboro&lt;br&gt;Jonathan White - University of Central Florida</td>
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<tr>
<td>8/26/21</td>
<td>Special Edition of Monthly CCCG Call -</td>
<td>We are excited to announce that for this month’s call, the Research Computing and Data CG will be partnering with the Cloud CG! The call will be held on Thursday, August 26th from 1-2 pm ET. In this call, we will discuss top use cases for cloud for research. We will first hear from you on what your top use cases are, and what services you are keeping on-premise. We will then explore how to manage distributed costs associated with cloud usage. We will discuss models and resources used to support researchers using the cloud, as well as the level of support provided at different institutions.</td>
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|           |                                                                                                      | Please download and import the following iCalendar (.ics) files to your calendar system. Monthly: [https://educause.zoom.us/meeting/3JkdkㅡoTsuGNEIXXMKLyvD68yVkJ93HBR.ics?cigToken=98tyKuCqgszi5lOVlBuCRoweYiqM_TwtrnbjY14mILNqT_exX1EfbC9hqN4iD](https://educause.zoom.us/meeting/3JkdkㅡoTsuGNEIXXMKLyvD68yVkJ93HBR.ics?cigToken=98tyKuCqgszi5lOVlBuCRoweYiqM_TwtrnbjY14mILNqT_exX1EfbC9hqN4iD)
Join Zoom Meeting [https://educause.zoom.us/j/91906070425?pwd=SHJnZUNYVnVWAsZ2aTJ3Tm45MUNVdz09](https://educause.zoom.us/j/91906070425?pwd=SHJnZUNYVnVWAsZ2aTJ3Tm45MUNVdz09)
Meeting ID: 919 0607 0425<br>Passcode: 243359 |
<p>|           |                                                                                                      | CCCG Running notes                                                                          |
|           |                                                                                                      | CCCG Running notes                                                                          |
|           |                                                                                                      | CCCG Running notes                                                                          |</p>
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<th>Moderator</th>
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<tr>
<td>7/28/21</td>
<td>NET+ GCP Summer Camp: Running the Institution on Cloud Power</td>
<td>Maneesha Aggarwal &amp; Parikit Dave, Columbia University</td>
<td>I2O</td>
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<td>John Bailey, Washington University in St. Louis</td>
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<td>David Reid, University of Missouri</td>
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<td>7/28/21</td>
<td>Making better teams with diverse hiring and retention</td>
<td>Amanda Caton (She /Her/Hers) – System Engineering Team Manager, Lehigh University</td>
<td>Panelists</td>
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<td>Bobby Cox – ServiceNow Developer, UC Berkeley</td>
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<td>Tre’Von McKay</td>
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<td>Sowmya Shankar – Applications Programmer, University of Delaware</td>
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<td>Sherika Wynter – Senior Product Manager &amp; Contract Lead, Cloud Services, NIH Center for Information Technology</td>
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<td>Sara Jeanes – Product Manager, eduroam, Internet2</td>
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<tr>
<td>7/21/21</td>
<td>NET+ GCP Summer Camp: The Power to Change Lives</td>
<td>Gilad Evrony, New York University, Grossman School of Medicine</td>
<td>I2O</td>
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<td>Phillip Harris, Massachusetts Institute of Technology</td>
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<td>7/15/21</td>
<td>NET+ Palo Alto Networks: Cloud-native security for workloads and SaaS applications</td>
<td>Edward Chen, Arizona State University</td>
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<td>Philip Harris, University of Oklahoma</td>
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<td>Jillian Wilson, Georgia State University</td>
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<td>Emily Willard, UNC Chapel Hill</td>
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<tr>
<td>6/23/21</td>
<td>NET+ GCP Summer Camp: Teach the Cloud, Teach Using the Cloud</td>
<td>Wu-chang Feng, Portland State University</td>
<td>I2O</td>
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<td>Geraldine Van der Auwera, Broad Institute of MIT and Harvard</td>
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<td>Alan Walsh, Indiana University</td>
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<tr>
<td>6/23/21</td>
<td>Open Discussion</td>
<td>New co-chair announced. Congratulations to James Monek from Lehigh University!</td>
<td>CCCG Running notes</td>
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<td>Date</td>
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<td>Speakers</td>
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| 6/10/21    | NET+ CloudCheckr Premium Webinar                                       | Whether you are multi-cloud or focusing your efforts on one, support tooling for cost and security tracking are increasing helpful and increasingly important. CloudCheckr provides cost management, asset inventory, security & compliance monitoring, and resource utilization tracking across your multi-cloud environments, giving not only centralized visibility into your cloud at the enterprise level, but also putting tools in the hands of individual researchers, departments and developers. See CloudCheckr in action and hear what your peers who evaluated the service think about it. | • David Kalish - CloudCheckr  
• Ethan Conner - Carnegie Mellon University  
• Shane Heily - The Pennsylvania State University  
• Gerard Shockley - Boston University  
• Noah Abrahamson - Stanford University  
• Jennifer Trippett - DLT | I2O   |
| 6/2/21-6/4/21 | Higher-Ed DevOps Conference                                           | On the afternoons (1-5 EDT) of June 2-4, the Higher-Ed DevOps Conference will be meeting to share training, best practices, and more. If you are faculty/staff of any InCommon institution, you are welcome to join us… for free! Check out the agenda. | | COMM |
| 5/26/21    | New NET+ Services Introduced to Meet Higher Ed Community Needs        | 20 schools collaborate with Internet2 to vet and release four new NET+ services to the community.  
- CloudCheckr  
- Google Workspace of Education  
- Palo Alto Networks  
- signNow and airSlate | • Noah Abrahamson - Stanford University  
• Nick Young - University of North Carolina Greensboro  
• Rick Haugerud - University of Nebraska  
• Manoj Chitre - Claremont Graduate School | I2O   |
| 5/26/21    | Higher Ed Case Studies of Power and Agility in the Public Cloud       |  
- University of California migrates PeopleSoft HR to AWS  
- University of creates powerful COVID-19 testing tracking tooling under constantly changing guidelines | • Kari Robertson - University of California Office of the President  
• Ken Taylor - University of Illinois, Office of the CIO | CCCG  |
| 5/14/21    | Unconference                                                           | Community-driven conversations on:  
- Security & Governance  
- Research & HPC  
- Cost Management & Billing  
- Service Delivery  
- Cloud Ops & Tactics  
- Getting Started & Evolving Cloud Strategy | • All of you! | CF |
| 4/28/21    | Open Discussion                                                        |  
- Presentation Internet2’s Jamie Sunderland about the results of a recent Research Computing in the Cloud survey he ran for the NSF.  
- Discussion of the Internet2 CLASS training program for those who support researchers’ move to the cloud.  
- An update on the discussion in the February meeting on the costs associated with AWS Transit Gateway and the types of behaviors and services it enables (or not) at Higher Ed institutions | • Jamie Sunderland - Internet2  
• Dana Brunson - Internet2  
• Kevin Murakoshi - AWS | CCCG  |
| 4/9/21     | Trust and Security                                                    |  
- The case for avoiding “networking” in your cloud adoption strategy.  
- Securing Security for your Cloud Strategy  
- TLD TL;DR - Trust from on high  
- Panel: Protecting cloud hosted data sets | • John Bailey - Washington University in St. Louis  
• Shelley Rossell and Cornelia Bailey - University of Chicago, Information Security  
• Sara Jeanes, Adair Thaxton, and Nick Lewis - Internet2 | CF |

Notes:
- I2O: Internet2
- COMM: Community-driven
- CCCG: Case Studies of Power and Agility in the Public Cloud
- CF: Community-driven Forum
### 3/24/21 Using Cloud for Research at Scale
- **Use of GCP by Rubin Observatory**
- Using commercial clouds to process IceCube jobs

- The Vera C. Rubin observatory will conduct a 10 year astronomical survey of the southern sky, the Legacy Survey of Space and Time (LSST). This will produce 20TB of data nightly. In the run up to operations, which should start late 2023, we have started a large scale three year experiment with Google. This talk will introduce Rubin Observatory, the data processing and access and a little of what we are doing with Google Cloud Platform (GCP).

- William O'Mullane
- Igor Stillgoi

### 3/12/21 Google Team-selected Researcher + Community Presentation
- **Disorganized Organizations: Balancing the need for control with distributed IT**
- Leveraging VirtualFlow to harness the power of cloud computing to target COVID-19 proteins via ultra-large virtual screens

- Ben Rota – Harvard

### 3/5/21 Jupyter on Google
- We'll have Marc Cohen from Google leading us through the managed offerings from Google, plus folks from UMBC and NYU talking about their Jupyter Hub deployments on GCP, and Burwood talking about how partners can help with Jupyter.

- Marc Cohen - Google

### 2/24/21 How Universities are Providing Self-Service Cloud Environments for Researchers
- **RONIN** gives researchers explicit budget control and forecasting so they can use their research budgets effectively
- **RONIN** also provides research IT with administrative oversight into researcher spend and control over the security policies enforced across all RONIN users
- Service Workbench promotes collaboration around data, by enabling researchers to upload and share data sets, and also allows quick access to public research data sets hosted by AWS
- Service Workbench provides researchers with spend transparency and control by enabling them to see individual workspace costs, as well as spend across projects and organizational units.

- Parice Brandies, PhD Candidate, University of Sydney School of Life and Environmental Sciences
- Paul Avillach, Assistant Professor in Pediatrics & Biomedical Informatics, Harvard Medical School and Boston Children’s Hospital
- Nathan Albrighton, CEO and Founder of RONIN
- Madhu Bussa, Sr. Solutions Architect, AWS
- Oren Sreebny, Consultant Internet2 Cloud Programs, Internet2

### 2/24/21 Open Discussion
- Presentation and discussion by Ben Rota from Harvard summarizing results of a recent Research Computing in the Cloud survey.
- Discussion on how to fund ongoing cloud costs (storage and compute) for research projects once the grant expires
- Discussion on the costs associated with AWS Transit Gateway and the types of behaviors and services it enables (or not) at Higher Ed institutions

- Ben Rota – Harvard
### Amazon Team-selected Researcher + Community Presentation
- Managing IaC Code Rot: Terratest in Action
- Using the cloud to support research access to confidential data: The Administrative Data Research Facility

### Cloud Challenges Facing Smaller Institutions
What are the different challenges that are faced by smaller institutions, how do strategic /operational motives differ, how are school designating their staff since they are already wearing so many different hats in many cases. How do we better connect with this community to make sure they are represented in our community?

### Cloud Strategy
- What’s your deal: provider, consumer, or broker?
- Self Managed vs. Managed Service Provider
- The Power of Free: A Crisis of Opportunity and how the Cloud Saved Us
- Infrastructure Analytics at UNCG
- Panel: Strategic Cloud Decision Making

### Patient-specific air flow modeling to support ventilator splitting under dire conditions
- IAM in the cloud – architecture, cost and benefits

### Discussion
Discussion around Re-Invent and recent Cloud Forum sessions. Updates on what is happening on campuses around COVID recovery and cloud use to support those efforts. Discussion on cost management and remote training. (No recording this month)

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<tr>
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<td>Amazon Team-selected Researcher + Community Presentation</td>
<td>• Managing IaC Code Rot: Terratest in Action</td>
<td>Jason Armbruster, Cloud Architect/Engineer &amp; Wylie Butler, Cloud Engineer – University of Colorado</td>
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<td>• Using the cloud to support research access to confidential data: The Administrative Data Research Facility</td>
<td>Dr. Julia Lane, Professor at the NYU Wagner Graduate School of Public Service, at the NYU Center for Urban Science and Progress, and a NYU Provostial Fellow for Innovation Analytics</td>
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<td>• What’s your deal: provider, consumer, or broker?</td>
<td>Cornelia Bailey – University of Chicago</td>
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<td>• Self Managed vs. Managed Service Provider</td>
<td>Kari Robertson – University of California, Office of the President</td>
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<td>• The Power of Free: A Crisis of Opportunity and how the Cloud Saved Us</td>
<td>Ryan Frazier – Harvard Business School</td>
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<td>Moderator: Brian Jemes – University of Idaho; James Monek – Lehigh University; Bill Thompson – Lafayette</td>
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<td>12/11/20</td>
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<td>Amanda Randles – Alfred Windsor and Victoria Stover Mordecai Assistant Professor of Biomedical Sciences – Duke University</td>
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<td>Bill Thompson – Lafayette College</td>
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| 11/13/20   | Research Support                      | • Panel: Getting the Most out of your Public Cloud Research Dollars – An overview of the NSF-funded CloudBank project and the NIH STRIDES Initiative, how they benefit academic researchers and how best to support them.  
• Cloud Research Resources to Simplify the Research Lifecycle  
• Automating the provisioning of HIPAA allied instances with Ansible and Step Functions | • Cornelia Bailey – University of Chicago – Moderator; Brian DeMeule – UC San Diego; Nick Weber – National Institutes of Health;  
• Joshua Kisse – Texas A&M University;  
• Matthew Chess – University of Michigan; Brandon Swickerath – University of Michigan |
| 10/28/20   | Strategies for Controlling Costs in the Cloud | Teams from Harvard and University of Michigan will talk about ways to save money on cloud computing and their approaches to helping their campuses realize those savings.                                           | • Ben Rota and Richard Murillo – Harvard University;  
• Mathew Chess, Kenny Moore and Alok Vimawala – University of Michigan |
| 10/9/20    | Cloud Community Governance            | • Bringing order to wild free range cloud through inclusive governance  
• Panel: Leveraging the Cloud Community                                                                                                                                                               | • Damian Doyle and Todd Haddaway – University of Maryland Baltimore County;  
• Oren Sreebny – Internet2 – Moderator; John Bailey – Washington University in St. Louis; Bob Flynn – Indiana University;  
• Matthew Rich – Northwestern University; Alok Vimawala – University of Michigan |
| 9/23/20    | Open Discussion                       | Lots of community announcements. A pitch for people to join the DevSecOps conversation. Brief mention of the FinOps discussion. What role is cloud playing in back to school and COVID-related work, including storage of testing/tracing data. Short rant about Box security. Discussion of how schools are taking requests for cloud accounts and how they keep track of inventory and what people are doing in their accounts. Lessons and resources shared. |                                                                                               |
| 9/11/20    | Cloud Enablement Success Stories      | • Working with Cloud reserved instances to reduce costs  
• Monitor AWS with Grafana 7  
• Cloud Billing  
• OTICA – Platform-on-a-Platform for GCP  
• UCF’s Remote Learning Solution to the Pandemic  
• Notre Dame’s Accelerated VDI Madness | • Gerard Shockley – Boston University;  
• James Monel – Lahigh University;  
• Jim Charters – University of Michigan;  
• Hans Jacobsen & Alan Ge – Stanford Healthcare;  
• Jeff Samek, Robert Connors & Bob Mello – University of Central Florida;  
• James Smith & Brandon Rich – University of Notre Dame |
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<td>8/26/20</td>
<td>From Zero To Secure Research Hero In Four Weeks!</td>
<td>University of Pittsburgh IT was approached by one of its leading researchers with a challenge: provide for a secure environment in which research could be conducted on a controlled HIPAA dataset. Oh, by the way, enable access from the internet AND allow people only take specific pieces of data out of the environment AND we need it in a month.</td>
<td>Brian Pasquini, Enterprise Architect - University of Pittsburgh</td>
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<td>8/5/20</td>
<td>Q&amp;A with IU Box Migration team</td>
<td>As a number of schools review their storage and collaboration strategies, Indiana University can provide insights from its experience. Indiana University was the first high-profile higher education customer to announce it was moving to Microsoft and Google and away from Box. IU's early start resulted in many schools looking to learn from their research, successes and failures. IU has received several inquiries from other higher ed schools and is offering to discuss its experience and considerations. As a result, the IU Box migration team put on an infoshare in June covering their process, communications, technical decisions and lessons. The recording of that infoshare, as well as slides and detailed communication plan, can be found at <a href="https://drive.google.com/drive/folders/1zZ5YnND9K-O-MFReZxslMU4bdq9D6aBwS?usp=sharing">link</a>. It's one thing to listen to the story, it's another to chat with the story tellers. In the wake of the infoshare the calls for meetings with the migration team have continued to come. In order to allow this hardworking team to focus on their hard work, we have arranged a dedicated Q&amp;A session for any and all to bring their questions about tools and timing, dependencies and decisions, method and messaging, and so much more. NOTE: We learned our lesson last time and we have a larger-capacity Zoom roof for this call.</td>
<td>Adam Sweeny - Indiana University, Justin Zemlyak - Indiana University</td>
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<td>7/23/20</td>
<td>Higher Ed Cloud Networking &amp; Security Workshop - Workshop Capstone: Peer Architectures</td>
<td>Presentations from three peer institutions, each presenting their architectures and best practices on one of the three platforms. Panel discussion, Q &amp; A, Workshop wrap</td>
<td>Ken Hoover – Yales University, Jason Sullivan – University of Arizona, Alok Vimawala – University of Michigan</td>
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<td>7/22/20</td>
<td>Open Topic Discussion with a twist</td>
<td>Many in the community are taking part in the Higher Ed Cloud Networking &amp; Security Workshop series. At the start of that series, attendees brainstormed a number of questions for the cloud vendors. Among those questions were many that were better suited as a discussion between members of the community. July would normally be an open topic discussion. We are keeping with that in spirit, but we are going to seed the conversation with a selection of questions from the list.</td>
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<td>7/9/20</td>
<td>Higher Ed Cloud Networking &amp; Security Workshop - Google Responses to Workshop Attendee Questions &amp; Challenges</td>
<td>This session of the Cloud Networking and Security workshops features Google’s team answering the questions and challenges compiled by community participants during the May 28 session.</td>
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<td>7/7/20</td>
<td>Higher Ed Cloud Networking &amp; Security Workshop - GCP Security and Networking Training</td>
<td>This session of the Cloud Networking and Security workshops features Google's overview of GCP security and networking tools and best practices.</td>
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<td>6/25/20</td>
<td>Higher Ed Cloud Networking &amp; Security Workshop - Amazon Responses to Workshop Attendee Questions &amp; Challenges</td>
<td>This session of the Cloud Networking and Security workshops features Amazon's team answering the questions and challenges compiled by community participants during the May 28 session.</td>
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Switching cloud storage platforms can be challenging, especially when petabytes of data are involved. Indiana University has begun the process of switching from Box to Microsoft and Google for end-user cloud storage and is looking to share its experience and learn from the community. Topics will include IU’s motivations for a move, selecting a migration vendor, when to leave the legacy storage up or take it down during a migration, how to handle loss of features when changing platforms, what communications challenges universities will face, and how COVID19 complicates a storage migration.

This session of the Cloud Networking and Security workshops features Amazon’s overview of AWS security and networking tools and best practices.

This session of the Cloud Networking and Security workshops features Microsoft’s team answering the questions and challenges compiled by community participants during the May 28 session.

This session of the Cloud Networking and Security workshops features Microsoft’s overview of Azure security and networking tools and best practices.

Structured discussions to articulate the challenges faced by IT Pros when configuring, securing and managing enterprise cloud environments trying to meet the diverse demands of a higher education institution.

 UNC Greensboro is exploring an idea to help catalyze adoption of cloud infrastructure for research and in the classroom across the entire university by creating a Cloud Cyberinfrastructure Innovation Lab. The lab is focused on institutional adoption of cloud infrastructure - something that can be challenging for a R2 and traditionally liberal arts institution.

- Jeff Whitworth, the Associate Vice Chancellor of Enterprise Infrastructure – UNC Greensboro
<table>
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<tr>
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<td>3/25/20</td>
<td>The Role of Cloud Computing in Higher Ed's COVID-19 Response (Part 1)</td>
<td>We had over 100 people on the call. The conversation was great. Many schools shared their experiences of transitioning to online teaching, WFH and general community support and several provided helpful resources.</td>
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<tr>
<td>2/26/20</td>
<td>Open Topic Discussion</td>
<td>A lot has happened in the HED cloud world since our last open discussion. Add your topics to <a href="https://tinyurl.com/EDUCAUSE-CCCG">https://tinyurl.com/EDUCAUSE-CCCG</a>.</td>
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</table>
| 1/22/20    | Data-driven Cloud Planning                                           | **Topic 1: Whether Forecasting: Informing Migration Choices with Metrics**  
  * Description: Migration of applications to the Cloud is now a foregone conclusion for many institutions in Higher Ed. The first applications to leave the ground may be obvious or pre-determined, but after that initial rush of success of the few, what can be used to inform the bulk of the daunting effort that remains? Faced with a commitment to migrate 40% of the workload of over 400 applications within a 12 month period, UCLA developed a metrics based scoring and benefits spreadsheet tool to help inform and support the prioritization of application migrations. This presentation explains those metrics, the controls for scoring, and demonstrates the functioning of the tool.**  
  * **Topic 2: From Operational to Predictive: Evolving from a Traditional Data Warehouse to an Analytics Hub**  
  * Description: In 2018, UMBC embarked on creating a new analytics-focused data warehouse with highly-performant real-time data ingestion pipelines using primarily native AWS tools. This session will outline the progress made leveraging AWS tools as well as open sourced products to establish the event-based ecosystem. We hope these methods can be used as a model for other campuses, as well as highlight the long-term benefits of re-architecting critical systems and processes in the cloud to accelerate innovation. |
| 12/14/2022 | CCCG Nov/Dec Meeting                                                 | **James Monek**  
  **Kari Robertson**  
  **Niranjan Davray** |

Special thanks for the *presentation materials* icon by Krish from the Noun Project

- 2019
  - December 16 (combined Nov/Dec event) - Fall Cloud Conference Round-Up
    - Cornell Cloud Forum
    - Microsoft Ignite
    - AWS re:Invent
    - Internet2 Technology Exchange
    - Notes, recording and links
  - October 23 - Federated Access to Research Data
    - Dr. Craig A. Lee, Chair, NIST Public Working Group on Federated Cloud ([lee@aero.org](mailto:lee@aero.org))
    - Khalil Yazdi, Chair, Open Research Cloud Alliance ([khalilyazdi@outlook.com](mailto:khalilyazdi@outlook.com))
    - Slides, notes and recording
  - EDUCAUSE 2019 Face to Face meeting (Chicago, October 16, 2019)
    - Slides, notes and photo
  - September 25 - Open Discussion
    - Early survey results
    - EDUCAUSE F2F
    - CCCG Leadership transition
  - August 28 - Supporting Research in the Cloud - Round 1: The Human Bridge
    - Derek Morr (Cloud Solutions Architect) and Greg Madden (Associate CIO for Research) - Penn State University
Rob Fathland (Research Computing Director) - University of Washington
Marty Sullivan (Cloud Systems Engineer) - Cornell University

July 24 - Open Discussion
- Funding for OS teams in the cloud
- AWS Multi-Tenant vs Multi Account Strategy
- Creating and tracking a ‘cloud innovation’ fund through optimization
- How are you supporting researchers in the cloud?
- Integration Tools

June 26 - Cloud Community Events and Activity
- Recap of Cloud Networking Workshop put on by U Michigan, U Minnesota and Internet2 (Alok Vimawala - UMich)
- Update on Cornell Cloud Forum 2019 (Sarah Christen - Cornell)
- CCCG Engagement Channels (Bob Flynn - IU)
- CCCG Engagement Team (Jody Couch - UCSC)

May 22 - Open Discussion
- Announcements
  - Cloud forums dates: November 6-8, 2019
  - Reminder: CFP for 2019 Cornell Cloud Forum closes June 1 https://bostonu.qualtrics.com/jfe/form /SV_bCyJsiChPsm3Ah
  - #cloud_jobs channel added to CCCG Slack Team - post your cloud jobs there!

Firewalling in AWS: Paul Peterson from Emory talked about networking strategies for their non-research AWS environment. (slides)

April 24 - Google Cloud Platform
- Evolution of GCP at an Office 365 University – presentation by John Bailey, WUSTL
- With Great Integration Comes Great Responsibility (a.k.a. GCP at a G Suite School) – presentation by Bob Flynn, IU
- Google CAB GCP Track
- News from Google Cloud Next
- Tech bulletin: Don’t fear the mystery folder. Unexpected visitor due to Google change https://developers.google.com/apps-script/guides/cloud-platform-projects. - Ananya Ravipati, IU
- IU GCP configuration document https://iu.box.com/s/5h6zj95dawie8crigc8m1v647kksiw20
- Internet2 NET+ GCP contract - Sara Jeanes, Internet2

Mar 27 - Open Discussion
- Performance testing of moving data from one cloud provider to another
- SSO with AWS and how to federate external users
- Upcoming AWS webinar series
- Options for handling cloud training needs
- Call for (self-)nominations for CCCG co-chairs

Feb 27 - Open Discussion (notes)
Jan 23 - Cloud Q & A for Small Schools (recording and resources)

2018
Dec 5 - Excerpts from the 2018 Cornell Cloud Forum (recording and resources)

1. **Title:** Ouch! Commonly Overlooked (or Surprising) Cloud Costs  
   **Description:** “Wait … that costs how much?” How do you prepare stakeholders for cloud-related charges that were provided ‘for free’ while on-premise? What new charges exist in the Cloud? What are the associated costs? Most importantly, who is going to pay them?  
   **Presenters:** Kari Robertson and Glenn Blackler - UC Santa Cruz

2. **Title:** Using AWS CLI with Shibboleth and Duo https://github.com/techservicesillinois/awscli-login  
   **Description:** How can higher education give our faculty and staff convenient access to AWS tools without leaving behind a mess of long-lived secret keys? We’ll demonstrate a University of Illinois plugin to the AWS CLI which authenticates against Shibboleth with Duo and manages short-lived credentials, making it easy to be secure.  
   **Presenter:** Chris Kuehn - University of Illinois

3. **Title:** Kubernetes: Container Orchestration at Scale  
   **Description:** Kubernetes is a resource scheduler that started as a Google project. Now it is the primary container scheduler being adopted across the spectrum of both cloud and on-prem based deployments. With an extensible scale-first architecture it’s easy to see why its adoption has outpaced other solutions such as Docker Swarm and Mesos. The goal is to present on the architecture of Kubernetes and basics of running Kubernetes at scale.  
   **Presenter:** Jeff Sca - University of Michigan

Resources: "Introduction to Kubernetes" open-source eight-hour 100-level labs: https://goo.gl/uHq6T4 and presentation: https://goo.gl/Yb6Hfr

4. **Time Permitting:** AWS re:Invent recap

Oct 24 - Open discussion (see notes)

Sep 26 - Funding models for new cloud paradigms (speakers: David Seidl- Notre Dame, Ben Rota - Harvard)

Nov 1 - Open discussion at in-person meeting at EDUCAUSE Annual Meeting

Aug 22 - Notre Dame and the Cloud - Over the past three years, Notre Dame University has moved more than 80% of their IT infrastructure and services to Amazon Web Services (AWS). On this month’s Higher Education Cloud Collaboration conference call, leaders from Notre Dame University will provide an overview of their move to AWS, and will share their lessons learned and advice for other institutions.

**Limit of recorded history**