



# NANOG<sup>®</sup> Overview

North American Network Operators' Group  
Working together, to build the Internet of tomorrow<sup>®</sup>





# Agenda

- What is NANOG?
- NANOG Governance
- The NANOG Program
- Outreach
- Adapting to a Rapidly Changing World
- Chaos creates opportunity
- Lessons Learned
- Q+A

# What is NANOG?

- We are a community-driven nonprofit organization.
- Our roots date back to 1987, when Merit Network was tasked with re-engineering and managing the NSFNET.
- NANOG's original charter was formed in 1994.
- In 2011, the NANOG community voted for independence from Merit Network.
- NANOG was the first, and is still the largest, Network Operators' Group.

# What does NANOG do?

- Conferences that showcase innovative, educational content that aims to drive new solutions to the networking community's greatest challenges.
- Mentoring the next generation of networking professionals.
- Empowering those supporting Internet access in underserved communities across North America.
- Actively encouraging diversity, inclusion, and collaboration within our community.

# Our conferences

**1,000+** attend NANOG conferences.

**200+** are first-time attendees.

**20+** countries around the world represented.

**15+** students in our College Immersion Program

# Our Reach

**13,000+** industry professionals and students.

**9,300+** LinkedIn followers

**18,200+** YouTube subscribers

**2,311,400+** YouTube views since June 2013.





# NANOG Governance

How NANOG is run





# Board of Directors



Tina Morris  
Board Chair



David Siegel  
Vice Chair



Vincent Celindro  
Treasurer



Steve Feldman  
Secretary



Patrick Gilmore  
Board Member



Benson Schliesser  
Board Member



Cat Gurinsky  
Program Committee Chair



Edward McNair  
Member/Exec Director



# Staff



Edward McNair  
Executive Director



Darrioux "Dé" Harvey  
Meeting + Events  
Director



Valerie Wittkop  
Program Director



Claudia Bristol  
Controller + HR



Leigh Brooks  
Senior Designer



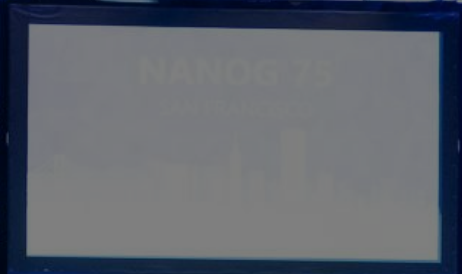
Elizabeth Drolet  
Marketing  
Content Creator



Shawn Winstead  
Bus. Development  
Specialist

# NANOG Committees

- Program Committee (standing)
- Elections Committee
- Audit Committee
- Compensation Committee
- Mentorship Committee
- Education Committee
- Scholarship Committee
- Outreach Committee



### Framework – GitHub/Jenkins/Ansible

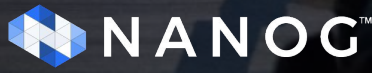
- Initially deployed for Open Networking (Cumulus)
- Playbooks stored in GitHub for version control, change MGMT, and code/peer review
- Playbooks run from Jenkins for centralization, security, auditing, logs, etc. (logs all jobs and results to Splunk)
- Ansible and associated plugins/modules installed on Jenkins server

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graph TD
    GitHub[GitHub] --> Jenkins[Jenkins/Ansible]
    Jenkins --> Splunk[Splunk]
    Jenkins -- EAPI/CLI --> Arista[Arista]
    Jenkins -- SSH --> Cumulus[Cumulus]
    Jenkins -- Nitro API --> Citrix[Citrix]
    Jenkins <--> User((User))
  
```

# The NANOG Program

Curated by industry professionals





# Program Committee

- Our program is the very heart of NANOG.
- The Program Committee (PC) is appointed by the board, however once appointed, the PC self organizes and operates independently.
- It's made up of 25 industry professionals who curate our talks to assure they are relevant to network professionals.





# Outreach

Empowering people, and inspiring change.



# What's NANOG Outreach?

Education is central to NANOG's mission. Through outreach to colleges and universities, affiliate NOGs, and more remote tech communities, we're able to provide greater access to NANOG's tools, resources, and educational programming, which is designed and taught by industry professionals committed to the ongoing advancement of the Internet in North America.

# What is our focus?

NANOG Outreach programs are focused on three distinct areas of need:

- Industry education for networking professionals.
- Educational and career development for college + graduate students.
- Training within underserved regions of North America.

A photograph of three young adults standing outdoors on a university campus. On the left is a young woman with curly brown hair wearing a dark green top. In the center is a young man with short dark hair wearing a blue denim shirt. On the right is a young woman with long, wavy blonde hair wearing a white top with black lace-up details. They are all smiling and looking towards the camera. The background shows a grassy area, trees, and a modern building with large windows.

# NANOG College Programs

Scholarship winners • NCI





# NANOG 2021 Scholarships Recipients

## Abha Ahuja Scholarship – \$10,000

- Emma Beeler, University of Alaska Fairbanks. Major: Electrical Engineering.
- Lyndsey Tribbitt, University of Florida. Major: Computer Science.

## John Postel Scholarship – \$10,000

- Jon Cowart, Penn State University Park. Major: Electrical Engineering.
- Brandon Staple, University of Colorado Denver. Major: Computer Science.

# NANOG College Immersion (NCI)

- NCI was designed to give educators the opportunity to sponsor up to 5 students at a NANOG conference.
- It helps students gain a competitive edge by:
  - Engagement with seasoned industry professionals.
  - Direct access to best-in-class content on the latest Internet technologies.
  - Participation in hands-on training and networking with potential employers and business contacts

A woman with glasses and a green dress is speaking into a microphone at a podium. She is gesturing with her left hand. In the foreground, the backs of several audience members' heads are visible. The background features wood-paneled walls and a large green plant on the left.

# Underserved Communities

Inequality is the greatest threat to democracy.



# The state of Internet inequality

- 19 million Americans – 6 percent of the population – still lack access to fixed broadband service at threshold speeds
- In rural areas, nearly one-fourth of the population – 14.5 million people – lack access to this service.
- In tribal areas, nearly one-third of the population lacks access.

# ISOC's Indigenous Community Summit

- NANOG participates in ISOC's Indigenous Community Summit.
- We help through our vast library of online talks and tutorials.
- We offer online support through our mailing lists – which reflect years of internet development content.
- We encourage participation in NANOG conferences.





# Community Outreach

Valiant Cross Academy for at risk youths.





# Adapting to a Rapidly Changing World

Changes made + lessons learned

# When COVID hit we asked ourselves:

- How do we keep our staff and community safe?
- We are a community event organization – how do we maintain relevance?
- Can we manage financially without events?
- How long will the pandemic last?

# Scrambling, like everyone else...

- Due to uncertainty, it took several weeks to determine that having an in-person meeting was out of the question.
- Once the decision was made to go virtual, our streaming contractor helped us deliver our first virtual event.
- However, due to scheduling conflicts and scarcity in the marketplace, we were left without a streaming provider for our next event.
- We were forced to expedite the development our own virtual platform in three months time.





# Chaos creates opportunity

But can we take advantage of it?

# NANOG's virtual platform

- The ability to stream video from any platform
- Flexible display options
- Zoom integration
- Real-time chat
- Built in Q+A
- Online Help
- Virtual Expo Booths
- Real-time polling through third-party support

## ...more development

- **Event management system** – with the option to support other industry events.
- **Event registration system** – supports in-person + virtual registrations, registrations of team members, membership purchases, renewals + donations.
- **360 live stream** – to enable virtual attendees the sense of being at event.
- **Meeting appointment tool** – currently under development – beta tool targeted for release at NANOG 85 in Montréal.



# Online – content is king

- **NANOG TV** – Highlighting the top talks from hundreds of previous NANOG events.
- **Monthly webinars** – targeting students + those new to the industry.
- **Increase community engagement** – by developing meaningful newsletters, blogs, interactive polls + engaging social media.
- **Internet Innovators series** – video interviews focusing on pivotal individuals that helped shape the Internet as we know it today.

# Broadening our scope

- Working with ISOC + ICANN on outreach initiatives in North America.
- We are committed to providing structured educational programs at our conferences + online.
- Developing mentorship programs to help new members of our community further their careers.
- Re-inventing our Hackathon to engage industry professionals + students.
- Ombuds to support diversity, inclusion, equity + belonging with in our community.



# Lessons Learned

Challenges of a small nonprofit





# COVID exposed our weakness

- Sponsors want face-to-face engagement + ROI.
- Being small has its advantages - you can change course quickly.
- Being small has its disadvantages – resources are limited.
- We need to explore new revenue sources.
- The world has changed since COVID, and it may never be what it once was.

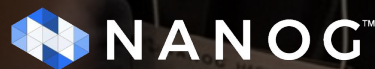
# Final thoughts

- The plan that got us to this point, might not be the plan to get us to the next point.
- Always be willing to evaluate any process or procedure.
- Change is essential to any living thing.
- Change is difficult.
- If you were building your organization completely from scratch, what would it look like?

A photograph of three people, two men and one woman, sitting around a laptop. They are all smiling and looking towards the camera. The man on the left has a beard and is wearing a dark jacket with colorful stripes on the sleeve. The man in the middle is wearing a plaid shirt and a lanyard with a badge. The woman on the right is wearing a dark hoodie with a peace sign and the letters 'N O W O' on it. The background is blurred, showing other people and what appears to be a hackathon environment.

# Thank you

We hope you'll join us in building the Internet of tomorrow.



Akshat



Q+A