



NANOG®

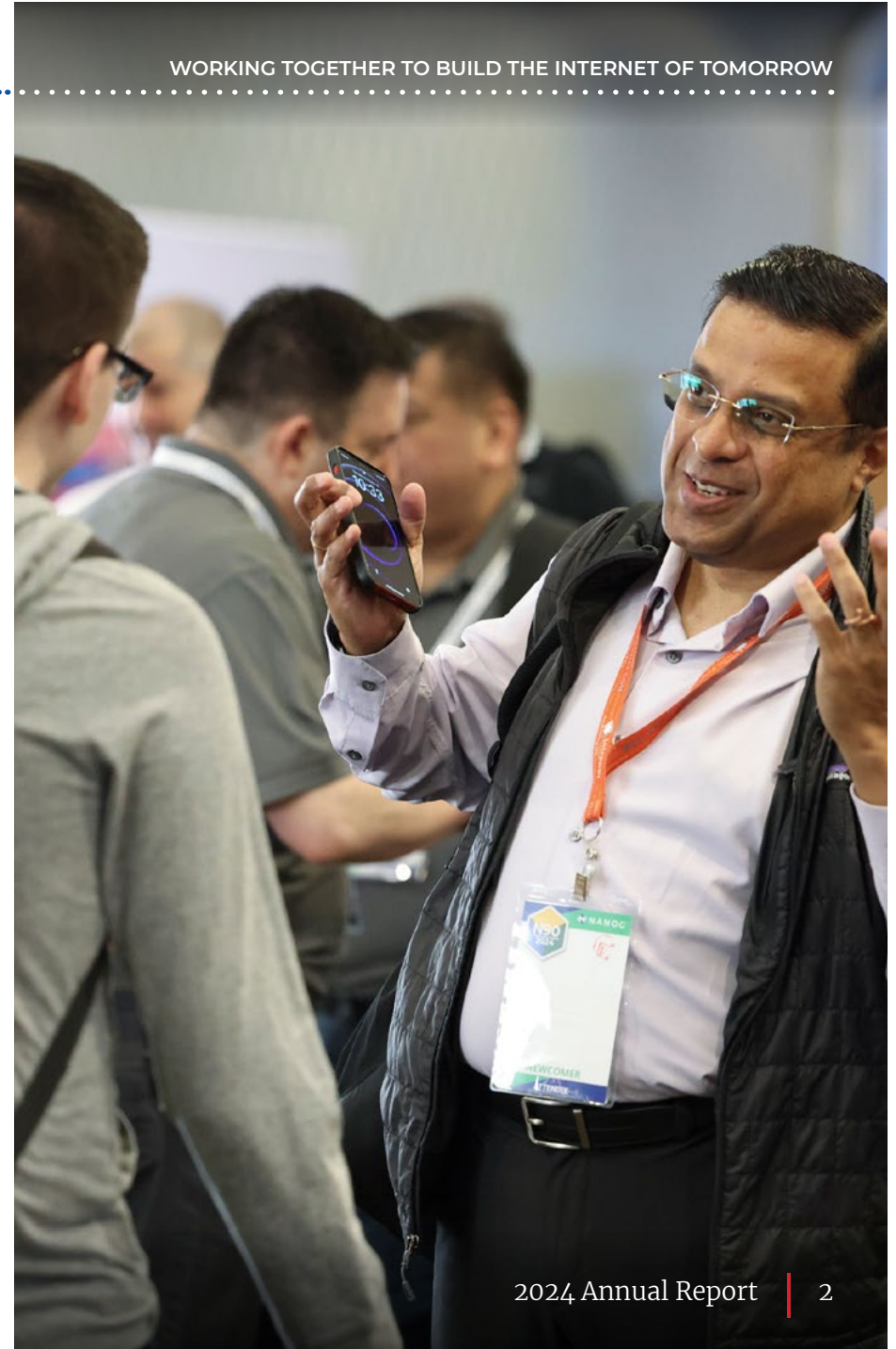
2024

Annual Report

North American  
Network Operators'  
Group

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## Who We Are

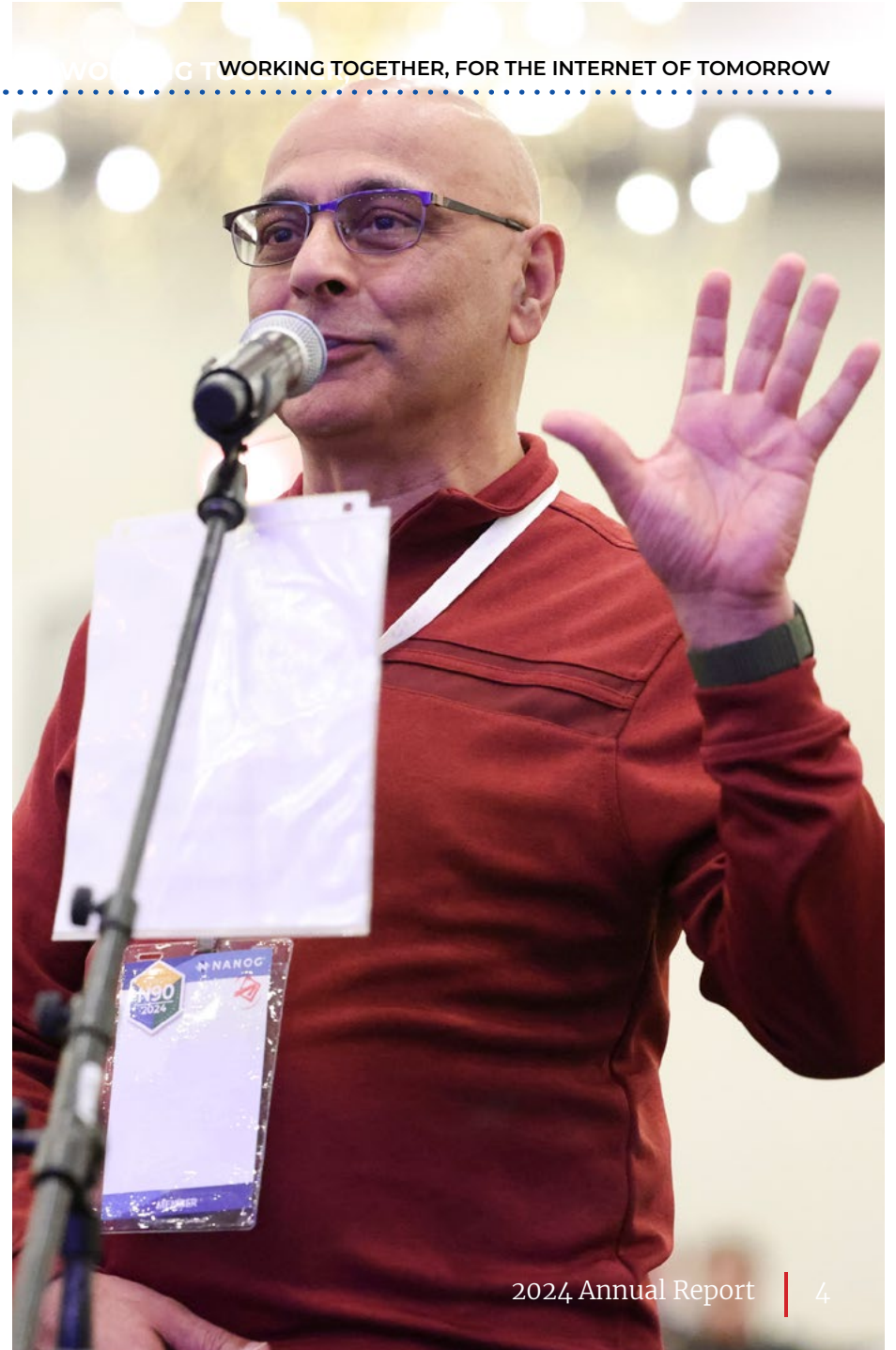
### **Working together to build the Internet of tomorrow®**

We provide opportunities to connect and learn from others in your field, whether you are working or studying.

Since its founding in 1987, The North American Network Operators' Group (NANOG) has been dedicated to advancing a secure, open, and resilient Internet. We offer a platform that inspires, educates, and empowers our community to meet evolving challenges of a global network, all in the pursuit of building the Internet of tomorrow.

## Mission

We are committed to advancing an open, secure, and resilient Internet by inspiring, educating and empowering our community to tackle the evolving challenges of a global network.



## Executive Director's Letter



In the pages of this report you will find a snapshot of the past year in our community. I won't use this space to recap all of the accomplishments, that is what the report is for. What I want to say is this: NANOG is the result of your efforts to create a place

where network engineers are inspired by, and learn from, each other. Yes, we have a corporate presence at our events, and we are grateful for that support. But NANOG is not driven by a corporate entity wanting to promote its latest release or platform. NANOG is YOU.

Looking ahead to 2025 and beyond, our focus remains on two big things: staying operationally strong and growing strategically so that NANOG continues to be relevant and sustainable for years to come.

Thank you for your ongoing engagement. But please note, you are not the only ones we need to hear from. If we only asked for input from our supporters (you who have spent the time to read an Annual Report) we could miss important information. If you haven't read about 'survivorship bias' look it up (Survivorship bias - Wikipedia). It's a good reminder that to really grow, we need to understand not just

who is here, but who isn't and why. Here is my request ... ask your friends and colleagues why or why not NANOG, and then tell us what they tell you. Their feedback could help shape where we go next.

I also want to give a big shout out to the NANOG staff. We have a great team working hard behind the scenes and I am grateful for their efforts. They are here to guide and enable your vision. I want to thank the staff for their amazing work keeping NANOG going and growing during the transitions that NANOG has been through.

One thing I didn't fully grasp when I joined NANOG last year was the level of commitment of our members and volunteers. You truly live the motto: "By Engineers, For Engineers". So to our members, volunteers, attendees and sponsors, THANK YOU. Together we are continuing to build something great.

NANOG: By Engineers, For Engineers.

Jonathan Black  
Executive Director

## Board of Directors



### Board Responsibilities

The NANOG Board is accountable to the NANOG membership, ensuring the organization remains transparent, relevant, valuable and financially stable. The Board collaborates closely with appointed Committees to promote, support and enhance NANOG.

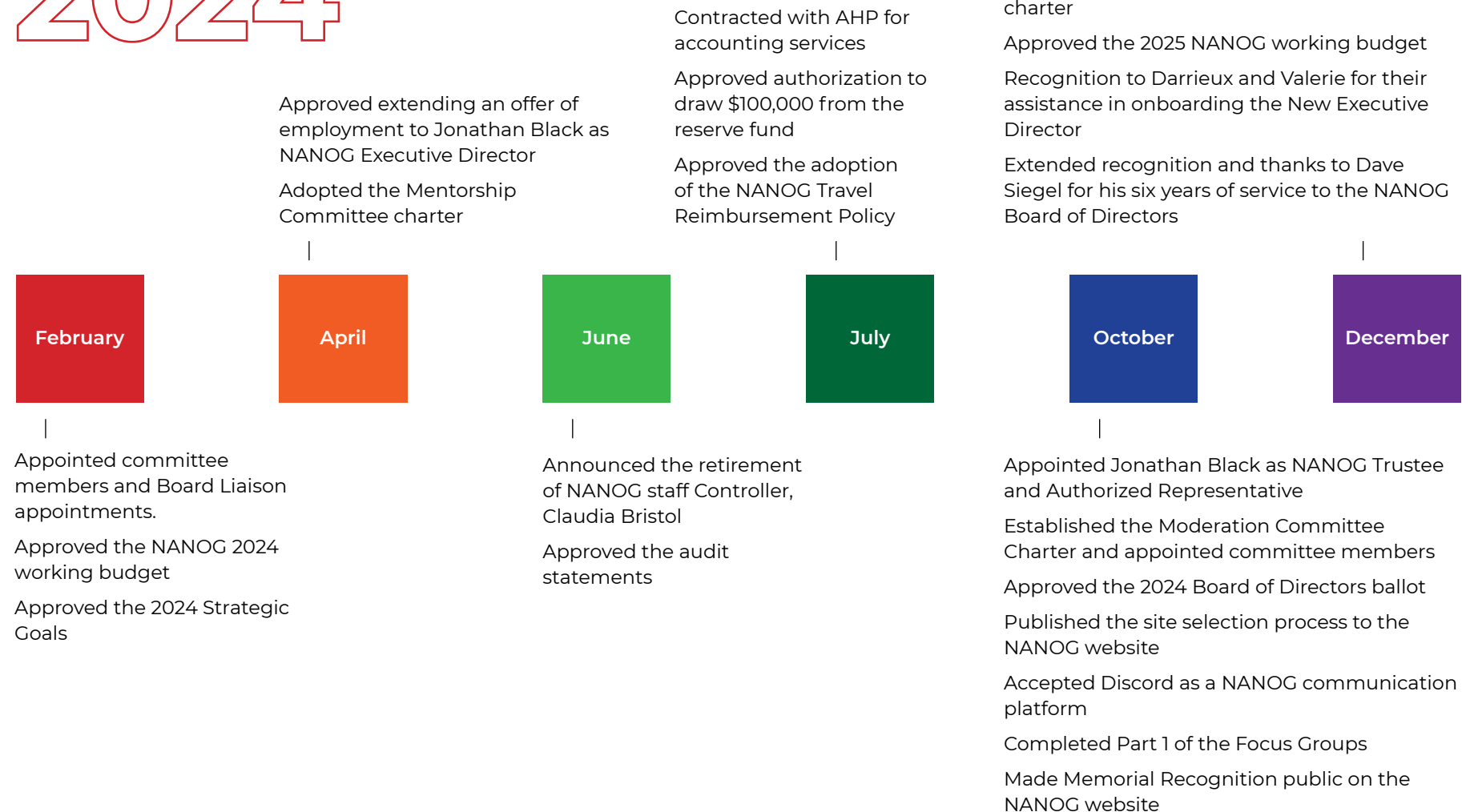
Every year, the NANOG board reviews long-term goals to steer the organization toward sustainability in the post-pandemic landscape. During the first quarter of 2024, the Board refined these goals and set specific targets for the year.

### Members of the Board

- Leslie Daigle, Board Chair
- Vincent Celindro, Vice Chair + Liaison to the Community Engagement Committee
- Michael Costello, Treasurer + Liaison to the Audit Committee + Education Committee
- Steve Feldman, Secretary + Liaison to the Hackathon Committee
- Cat Gurinsky, Member + Liaison to the Mentorship Committee + Program Committee
- Dave Siegel, Member + Liaison to the Education Committee + Election Committee
- Stevan E. Plote, Program Committee Chair
- Jonathan Black, Executive Director



# Board Actions 2024



# Strategic Goals 2024

In December 2023, the NANOG board continued to discuss long term goals to guide the organization back to sustainable footing in the post-pandemic reality.

The NANOG board approved the following items as its view of the direction of the organization for 2024.

## 2024 Goals

The following NANOG organizational goals were drafted in December 2023, refined through January 2024, and agreed upon by the board in February 2024.

## Mission

- Ensure continued relevance
  - Improving Registration numbers
    - Average 1,000 in-person attendees per meeting
  - Building the plan (part of marketing plan)
    - Messaging
    - Advertising
- Program Content
  - PC supported in thematic programs for June and October meetings
  - Review and proposal for different program material in 2024 and beyond
    - BCOPs, tutorials, etc

## Funding: Return to break-even

- Target meeting profitability – location, size (attracting attendees), sponsorship-appeal, local costs
  - Develop NANOG-profit-model parameters for meetings, looking at where we meet (for 2026 meeting planning)
  - Maximize sponsorship for 2024 & 2025 meetings
    - Inventory - extract maximum possible inventory from each location
- Regain level of 7 premium sponsors – relationships
- Flesh out and implement a coherent marketing plan to increase attendance and meet sponsorship goals
  - Messaging - create materials for Business Development teams to use with sponsors
- Product
  - Is the value of a sponsorship offered aligning to what we charge for it?
  - Badge scanning - additional value - additional revenue source?
  - Have an expo room for the full meeting duration?
- Engaging with Prospects - maintain regular communication with top current and former sponsors

## Operational excellence

- Successfully onboard a new executive director
- Identify and implement community communications tool(s) relevant to current day members
  - With appropriate moderation and management tools
  - Clear relationship to existing tools, purposes and expectations
  - Manageable costs (dollars and personnel resources)



# Income/Expenditures 2024

Statements Of Activities And Changes In Net Assets		
December 31	2024	2023
<b>Revenues and Support</b>		
Meeting sponsorships	1,576,133	1,811,504
Meetings fees	1,244,354	1,376,413
In-kind sponsorship	116,001	38,400
Membership dues	64,526	67,312
Other program income	1,708	26,891
<b>Total Revenues and Support</b>	<b>3,002,722</b>	<b>3,320,520</b>
<b>Functional Expenses</b>		
Meetings	2,888,886	3,067,474
Other programs	328	101,830
General and administrative	746,192	792,392
<b>Total Functional Expenses</b>	<b>3,635,406</b>	<b>3,961,696</b>
<b>Other Income</b>		
Net investment return	251,102	277,781
Other income	93,798	0
<b>Total Other Income</b>	<b>344,900</b>	<b>277,781</b>
<b>(Decrease) in Net Assets</b>	<b>-287,784</b>	<b>-363,395</b>
<b>NET ASSETS, BEGINNING OF YEAR</b>	<b>2,827,386</b>	<b>3,190,781</b>
<b>NET ASSETS WITHOUT RESTRICTIONS, END OF YEAR</b>	<b>2,539,602</b>	<b>2,827,386</b>

# Balance Sheet 2024

Statements Of Financial Position		
December 31	2023	2022
<b>Current Assets</b>		
Cash and cash equivalents	370,810	418,754
Investments	2,514,410	2,394,825
Accounts receivable	409,211	307,666
Prepaid expenses	145,172	245,088
Total Current Assets	3,439,603	3,366,333
Equipment and Technology, net	158,264	266,760
<b>TOTAL ASSETS</b>	<b>3,597,867</b>	<b>3,633,093</b>
<b>LIABILITIES AND NET ASSETS WITHOUT RESTRICTIONS</b>		
<b>Current Liabilities</b>		
Accounts payable	20,781	3,493
Deferred revenues	1,037,484	802,214
<b>Total Current Liabilities</b>	<b>1,058,265</b>	<b>805,707</b>
<b>Net Assets Without Restrictions</b>		
Undesignated	1,621,057	1,325,443
Designated by the Board of Directors	918,545	1,501,943
<b>Total Net Assets Without Restrictions</b>	<b>2,539,602</b>	<b>2,827,386</b>
<b>TOTAL LIABILITIES AND NET ASSETS WITHOUT RESTRICTIONS</b>	<b>3,597,867</b>	<b>3,633,093</b>

# Registration Report 2024

Registration			
	Total In Person	Total Virtual	First Time Attendee
N90 Charlotte February	629	105	20% 125
N91 Kansas City June	673	65	27% 184
N92 Toronto October	808	61	26% 209

Employment Demographics					
	Students	Junior/ Int Level	Senior Level	Executive Level	Total
N90 Charlotte February	1% 4	17% 108	63% 397	22% 138	629
N91 Kansas City June	1% 10	16% 126	59% 353	20% 131	673
N92 Toronto October	1% 16	13% 134	49% 423	17% 172	808

Organization Demographics						
	Vendor	Service Provider	Non Profit	IX Operator	Other	Total
N90 Charlotte February	30% 194	47% 300	9% 61	18% 118	10% 68	629
N91 Kansas City June	26% 174	47% 317	9% 62	18% 125	9% 60	673
N92 Toronto October	24% 195	42% 341	13% 105	20% 162	10% 87	808



## 2024 NANOG Meetings At A Glance

### NANOG 90 - Charlotte, NC - 12-14 February, 2024

<b>734</b> TOTAL ATTENDEES	<b>105</b> VIRTUAL REGISTRATIONS	<b>629</b> IN-PERSON REGISTRATIONS	<b>215</b> MEMBER REGISTRATIONS	<b>410</b> NON-MEMBER REGISTRATIONS	<b>4</b> STUDENT REGISTRATIONS	<b>125</b> FIRST NANOG	<b>13.2%</b> WOMEN IN ATTENDANCE 97
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### NANOG 91 - Kansas City, MO - 10-12 June, 2024

<b>738</b> TOTAL ATTENDEES	<b>65</b> VIRTUAL REGISTRATIONS	<b>673</b> IN-PERSON REGISTRATIONS	<b>218</b> MEMBER REGISTRATIONS	<b>445</b> NON-MEMBER REGISTRATIONS	<b>10</b> STUDENT REGISTRATIONS	<b>184</b> FIRST NANOG	<b>13.6%</b> WOMEN IN ATTENDANCE 101
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### NANOG 92 - Toronto, Canada - 21-23 October, 2024

<b>869</b> TOTAL ATTENDEES	<b>61</b> VIRTUAL REGISTRATIONS	<b>808</b> IN-PERSON REGISTRATIONS	<b>219</b> MEMBER REGISTRATIONS	<b>573</b> NON-MEMBER REGISTRATIONS	<b>16</b> STUDENT REGISTRATIONS	<b>209</b> FIRST NANOG	<b>14.3%</b> WOMEN IN ATTENDANCE 125
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# Meeting Sponsors

# 2024

Whether you are signing on for a Premium or Meeting Host sponsorship, securing a booth at Beer n' Gear, or supporting community networking via the Espresso Bar or Network Lounge, there are many opportunities to show support of NANOG's programs and our community.

In 2024, 74 different companies sponsored NANOG meetings, investing in the strength of the community we've built. By showcasing their innovations, they inspire problem-solving and new approaches to network operations.

## Premium Sponsors:

- **Diamond:** Internet Tool & Die Company
- **Platinum:** ARIN, AWS, Ciena, Equinix
- **Gold:** BlueCat Networks, F5, Imperva, QTS, Telstra, Verisign

## Individual Meeting Sponsors:

- |                     |                          |
|---------------------|--------------------------|
| • Adtran            | • Charter Communications |
| • Akamai            | • Cisco                  |
| • Approved Networks | • Cisco Meraki           |
| • Arelion           | • Comcast                |
| • ARIN              | • Console Connect        |
| • Arista Network    | • Corero                 |
| • AVIZ Networks     | • CRIX                   |
| • AWS               | • DE-CIX                 |
| • BlueCat Networks  | • Digital Realty         |
|                     | • Epsilon                |
|                     | • Equinix                |

- EXA Infrastructure
- Fiber Broadband
- Flexoptix
- Fonex
- Google Fiber
- H5 Data Centers
- Hydrolix
- IBM
- INDATEL
- Infinera
- Internet2
- Ionos
- IPv4.Global
- IPXO
- Iron Mountain
- ISC
- ISOC
- Jane Street
- JPIX
- Juniper Networks
- Kentik
- LightRiver
- London Internet Exchange (LINX)
- LiveAction
- Montreal Internet Exchange (QIX)
- Mox Networks
- Myriad360
- Nesevo
- Netrality Data Centers
- NETSCOUT
- Netskope
- NOCIX
- Nokia
- NTT
- Opendgear
- OSI Global
- Precision Optical Technologies
- QTS
- Radware
- RocNet Supply
- SEGRA
- Sinewave
- Smartoptics
- Spectrum
- Telehouse
- ThousandEyes
- TierPoint
- Toronto Internet Exchange (TORIX)
- TOWARDEX
- Uniti
- Verisign
- Washtenaw Fiber
- Windstream Wholesale
- XKL

# Program Committee

## PC Responsibilities

The Program Committee (PC) is responsible for the programs at all NANOG meetings and events. With a goal of scheduling around 1,600 minutes per meeting, or 4,800 minutes per year, the PC drafts Calls for Presentations, solicits presenters for submissions, and selects content for over 80 hours of programming every year.

During 2024 the PC worked to review 206 submissions, of which 105 were accepted for presentation. They also secured Keynote presentations for each meeting in 2024. The PC also continued taking steps in 2024 to strategically look at specific sectors of network operations in order to secure content that would flow through the full three days of each meeting.

	Total Community Submissions	Accepted Talks	Keynotes
NANOG 90 (Charlotte) February	<b>70</b>	<b>34</b>	Rob Shakir + Mark Johnson
NANOG 91 (Kansas) June	<b>75</b>	<b>36</b>	Corey Quinn + Kireeti Kompella
NANOG 92 (Toronto) October	<b>61</b>	<b>35</b>	Hugh Holbrook + Geoff Huston



## Program Committee Leadership

- Steve Plote, Chair - Plote & Associates
- Adair Thaxton, Vice Chair
- Les Williams, Secretary
- Valerie Wittkop, Program Director - NANOG

## 2024 Program Committee Members

- Phil Bedard
- John Brown
- Daniel Chioreanu
- Elizabeth Culley
- Kate Gerry
- Mikael Holmberg
- Alex Latzko
- Nimrod Levy
- Fearghas McKay
- Steve Meuse
- Sergey Myasoedov
- Nagendra Nainar
- Yingzhen Qu
- Arul Sekar
- Krassi Tzvetanov
- Steve Ulrich
- Michael Voity
- Jeffrey Zhang



# Ad-Hoc Committees

## 2024

### Audit Committee

The purpose of the Audit Committee is to assist the Board of Directors in fulfilling its oversight responsibilities concerning the financial reporting process, the system of internal controls, the audit process, and NANOG's processes for monitoring compliance with laws and regulations. The Audit Committee appoints the independent auditor.

In 2024, the Audit Committee received the Auditor's Report and after review, submitted it to the Board of Directors for acceptance.

#### Audit Committee Members

- Tom Beecher
- Jason Bothe
- Michael Costello
- Stevan Plote
- Charles Rumford



### Community Engagement Committee

The purpose of the Community Engagement Committee is to support, engage and encourage diversity and acceptance within the greater NANOG community. At NANOG we strive to create an inclusive culture that ensures all people feel respected and valued for who they are as an individual or group.

#### Community Engagement Committee Members

- |                    |                       |
|--------------------|-----------------------|
| • Vincent Celindro | • Tina Morris         |
| • Jon Eikel        | • Yingzhen Qu         |
| • Kate Gerry       | • Giulia Reading      |
| • Stephen Hartman  | • Alejandro Silvestre |
| • Moira Johnson    | • Clara Wade          |
| • T.Marc Jones     | • Akeyla Wallace      |
| • Toni Kalombo     | • Les Williams        |
| • Louie Lee        | • Valerie Wittkop     |
| • Marlin Martes    |                       |



## Elections Committee

The purpose of the Elections Committee is to assist the Board of Directors by conducting elections for NANOG Board positions, proposed amendments to governing documents, and to conduct any other election-related matters as directed by the NANOG Board. The Election Committee is to review the NANOG Bylaws periodically.

In 2024, the Elections Committee continued use of a ranked-choice voting system for NANOG annual elections. The results of that election process are as follows:

Eligible voters: 698

Total votes cast: 165

Elected: Steve Feldman, Elizabeth Culley

There were no Bylaw amendments in 2024.

## Elections Committee Members

- Fearghas McKay
- Chris Rogers
- Leif Sawyer
- Dave Siegel
- Tony Tauber
- Valerie Wittkop

## Hackathon Committee

The Hackathon Committee plans and implements the NANOG Hackathon for industry professionals at all skill levels to learn about network automation, software development and other related topics. After a community discussion forum was held at NANOG 89, to discuss the desires and needs of the NANOG community, the NANOG Hackathon got a reboot in 2024.

The overall theme of 2024 was “Put your sleuthing skills to the test!” And the topic for the three Hackathons revolved around Problem Solving / Troubleshooting competitions.

Participants formed teams which collaborated to solve the posed problems. Scoring was based on network reachability and how fast the problems were solved, with each team aiming to be the first to solve problems and win the big score of the event.

NANOG Hackathon 90 took place in Charlotte, NC February 11, 2024

The first time in a new format, NANOG 90 Hackathon participants spent Sunday afternoon solving various problem scenarios.

NANOG Hackathon 91 took place in Kansas City, MO June 09, 2024

The new format continued to grow as participants were able to engage with hands-on experiences working through the troubleshooting competition.



NANOG Hackathon 92 took place in Toronto, ON Canada October 21-22, 2024

Trying something new in Toronto - the Hackathon took place during the week of NANOG 92. Problem solving scenarios were released each morning, and participants could huddle up with Hackathon Committee members for support during the day on Monday and Tuesday, with a report out and award of top prize during General Session on Wednesday.

## Hackathon Committee Members

- Aaron Atac
- Steve Feldman
- Kate Gerry
- Ryan Hamel
- Toni Kalombo
- Fearghas McKay
- Roni Mukherjee
- Dhairyasheel Patil
- Aaron Roth
- Charles Rumford
- Steve Ulrich
- Valerie Wittkop
- Chris Woodfield



## Mentorship Committee

The purpose of the Mentorship Committee is to make Mentorship program recommendations to the NANOG Board for consideration and final approval. The Mentorship Committee aims to develop a well-rounded program of professional growth supporting the NANOG community, with the primary focus on improving early-NANOG experiences of meeting attendees & participants, as well as ongoing professional mentorship and growth.

The Mentorship Committee has had a successful 2024 as we worked to foster growth and opportunities for individuals aspiring to pursue careers as network engineers.

### Key Accomplishments:

**Semi-monthly Meetings:** The committee met regularly to discuss mentee-mentor pairings, ensuring a personalized experience for each participant

**NANOG Presentations:** Slides were developed and presented at NANOGs tri-annual meetings to introduce newcomers to not only the NANOG meeting, but to the mentorship opportunities within the community.

**NANOG Ambassador Program:** The launch of this program in October saw excellent participation, encouraging broader community involvement and a personalized one-on-one experience

**Help Desk Initiative:** A NANOG Committee Help Desk was established at events, providing on the ground support for the community

**Four Pillars for Growth:** The committee discussed the importance of developing four key areas to ensure sustainable growth and success:

- **Administrative:** Streamlining the operations of the mentorship program for greater efficiency and impact
- **Marketing:** Expanding awareness and visibility of the mentorship program through the various communication channels available
- **Recruitment:** Attracting both mentors and mentees to participate and grow the program
- **Events:** Continue to provide valuable opportunities for connection, learning and collaboration during NANOG conferences

### Mentorship Committee Members

- Wendy Leedy, Chair
- Justin Ryburn, Co-Chair
- Matthew Petach, Secretary
- Darrel Newcomb, Mentor-Mentee Pairing coordinator
- Ivo Pascucci, Member
- Alex Latzko, Member

## Social Media Posts 2024

### Thank you!

Your support via clicked links, shares, and comments enables our content to stay relevant.

Social media algorithms function by promoting “engaged” content. When you engage with our social media, you ensure our community sees important NANOG news updates and stays connected.

### Stay connected to NANOG

**1,245**  
POSTS

**42,825**  
FOLLOWERS

**446,595**  
IMPRESSIONS

**1,869**  
SHARES

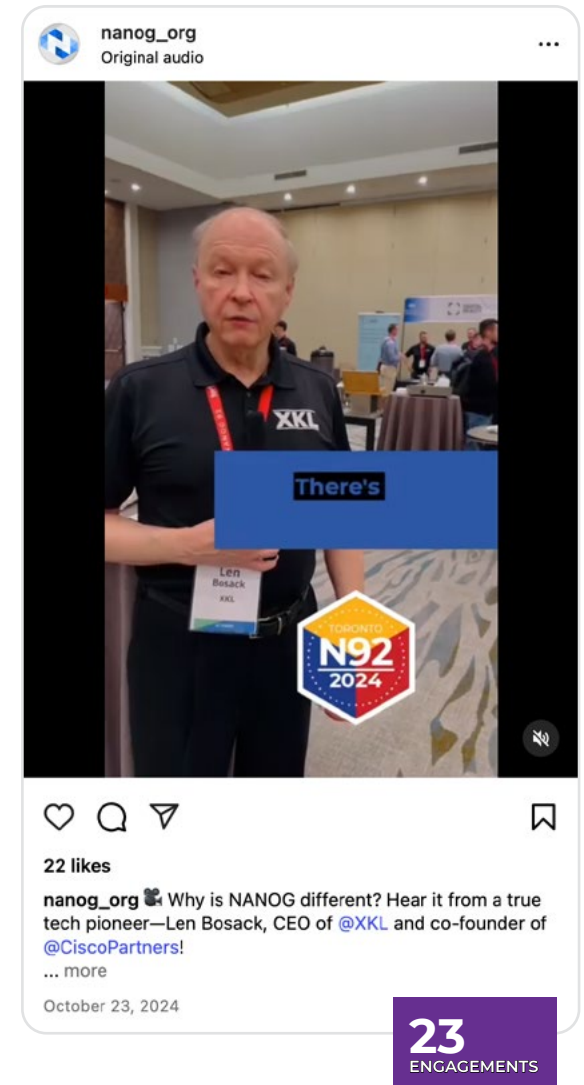
**8,136**  
REACTIONS

**77,423**  
POST VIDEO VIEWS

# Most Engaged Social Media Posts

# 2024

## Instagram



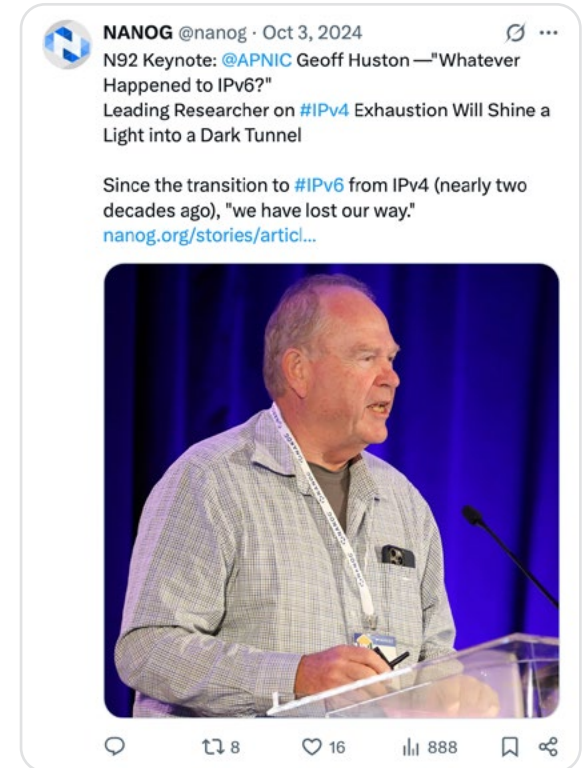
X



5.5K  
VIEWS



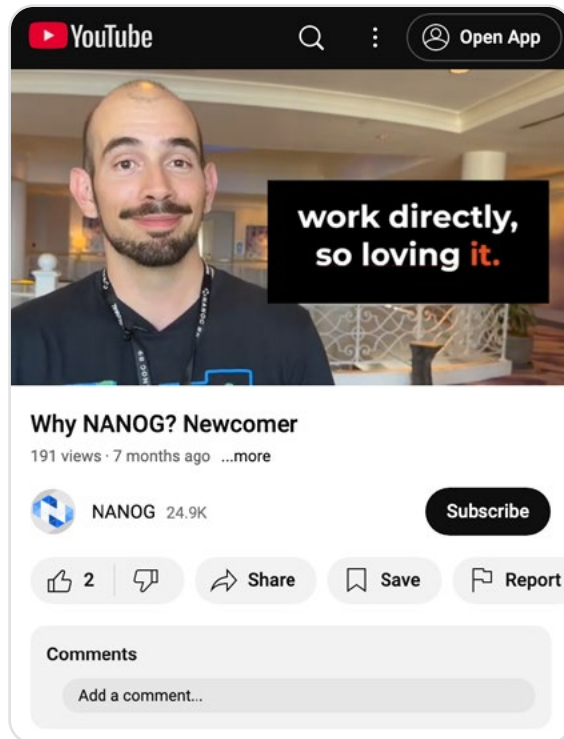
968  
VIEWS



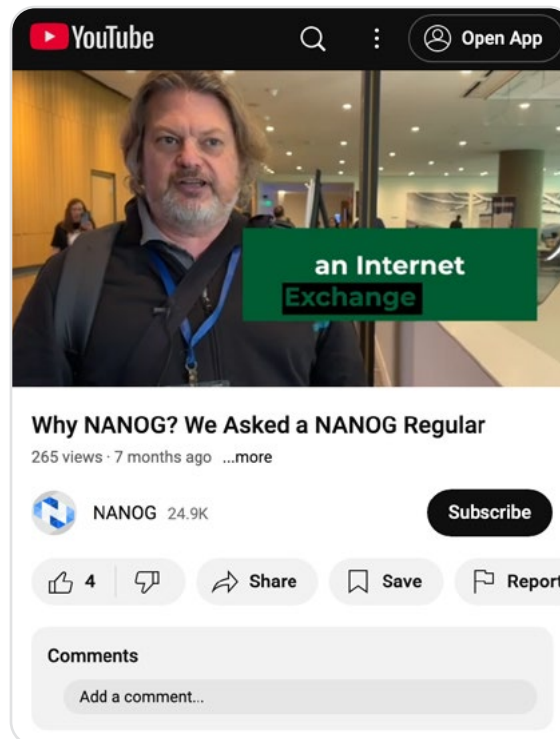
888  
VIEWS



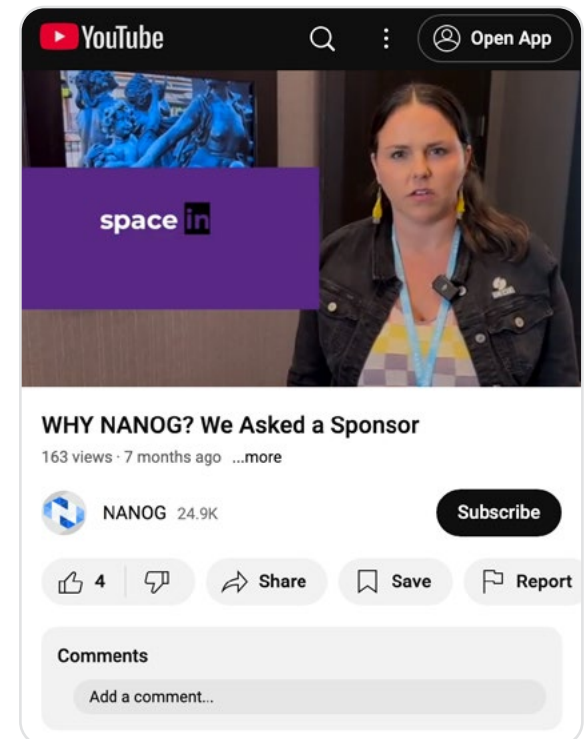
## YouTube



**69.65%**  
AVERAGE PERCENTAGE  
VIEWED



**66.15%**  
AVERAGE PERCENTAGE  
VIEWED

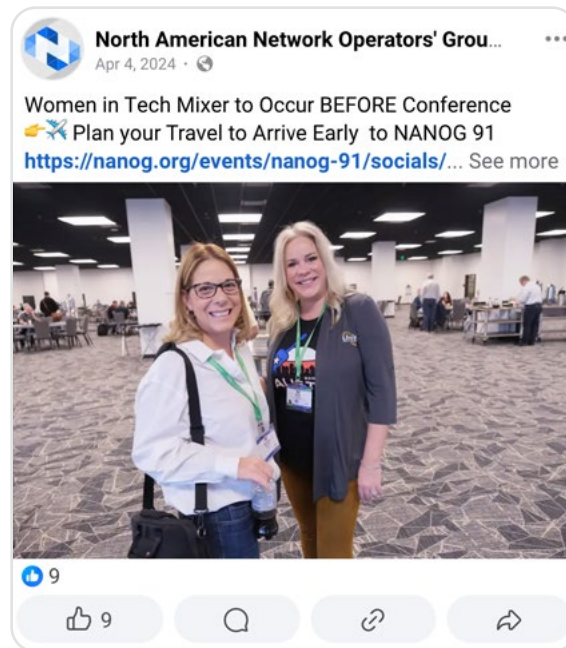


**63.57%**  
AVERAGE PERCENTAGE  
VIEWED

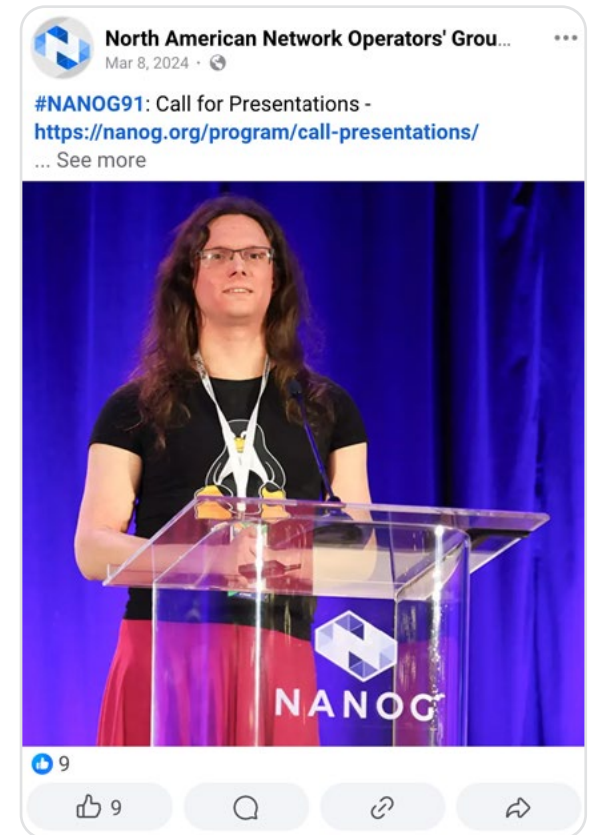
## Facebook



10  
LIKES



9  
LIKES



9  
LIKES

## Newsworthy Mentions

The NANOG Newsletter is your way to stay connected to upcoming meeting announcements and the latest community news and stories.

### Top Performing Mailchimp Announcements



#### *My Favorite NANOG 92 Moment*

Community Shares the Moments that Made Our Last Meeting

#### *Meet NANOG's New Executive Director!*

VIDEO - Interview with Jonathan Black



### 2024 MailChimp Stats

**100,897**  
TOTAL SENDS

**2,458**  
SUBSCRIBED  
↑ 21.4%

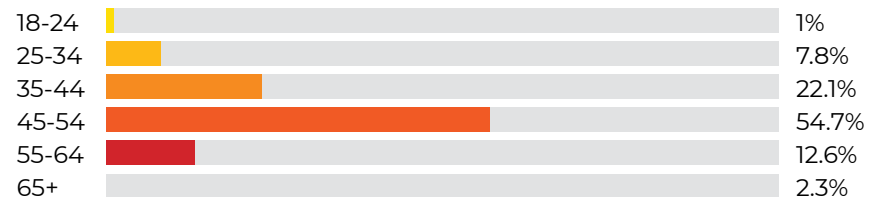
**35.1%**  
OPEN RATE  
↑ 6.7%

**4.8%**  
CLICK RATE  
↑ 12.2%

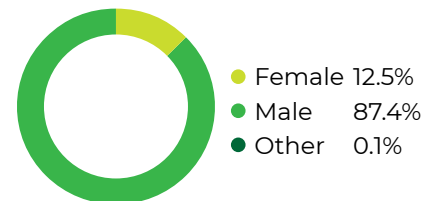
**0.08%**  
UNSUBSCRIBE RATE  
↓ 0.40%

**2,649**  
TOTAL CONTACTS  
↑ 24.2%

#### Age Range



#### Gender



[Subscribe to our newsletter](#)



## Community Voices

### Overheard at NANOG...

"When you're a kid working with venture capitalists, everybody talks about taking their money and running to a tropical island...and nobody ever does. But I did."

- Jeff Osborn, President and CEO of Internet Systems Consortium (ISC)

*Career Stories: "With Great Risk Comes Great Reward"*  
A (Tech) Road Less Traveled with ISC's CEO Jeff Osborn

"This is a unique community I can't over-geek out on. You must often dumb things down for more general audiences, but this is a technologically knowledgeable crowd, so that'll add some fun to it."

- Mark Johnson, Principal and Chief Technology Officer, Speki Group

*NANOG 90 Keynote: Exploring the Internet History of Meeting Location*  
Mark Johnson Presents "Exploring the Internet History of North Carolina"

"I've got a strong personality, and I know people either love me or hate me, and I'm completely fine with that. The more comfortable I am with myself, the more others feel free to be themselves."

- Samantha Walters, Colocation America  
*Career Stories: A (Tech) Road Less Traveled*

*How a Passion for People Turned into a Career in Tech*

"When I went to my first NANOG, I was scared—the mailing list was intimidating, and everyone seemed to speak with such authority. But then I met Abha Ahuja, and she welcomed me so warmly. She made me feel like I belonged."

- Barrie Jones Cook, Network Engineering and Automation Consultant, Self-employed

*A (Tech) Road Less Traveled: Breaking Barriers*  
*The Path to Redefining Career Flexibility*

"We need to continue to work together to develop and advocate for additional mechanisms of route hygiene, and there are many ways the FCC can play a vital role in those efforts."

- Doug Madory, Director of Internet Analysis, Kentik

*Dissecting the FCC's Proposal to Improve BGP Security*  
*Guest Columnist Doug Madory Investigates Proposal Using Kentik's Unique Data Sets*

## *WE COULDN'T HAVE DONE IT WITHOUT YOU*

Our success depends in large part on the support of individuals and organizations who believe in our mission-critical programs and initiatives.

Your support in 2024 helped us continue our work in the service of advancing an open, secure, and robust Internet, by educating, empowering, and inspiring our community to meet the ever-changing demands of a global network.



**NANOG<sup>®</sup>**

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