

NANOG

SCinet Overview

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What is SCinet?

2 distinct but interconnected networks built by volunteers and donated equipment

- Production network providing all wired and wireless internet access for attendees and exhibitors
- Research network in support of the Networked Research Exhibition (NRE) and SCinet's Experimental network projects (XNET).

**1 year to design,
1 month to build,
1 week to operate,
1 day to teardown**

Why SCinet?

- Provide hands on experience with cutting edge technology
- Build a network of engineers from both industry and R&E from all over the world
- Provide resources for network research to occur that cannot be done anywhere else
- Interoperability testing
- Diverse hardware vendors

SCinet Technical Teams

Architecture /
Interconnection

DevOps

Routing

WAN Transport

Wireless and Edge

Experimental Networks
(XNET)

Fiber

Network Security

SCinet Teams

Communications

Contributor Relations
& Logistics

Power

Volunteer Services
(Students)

Finance

Physical Security

Digital Experience

Help Desk

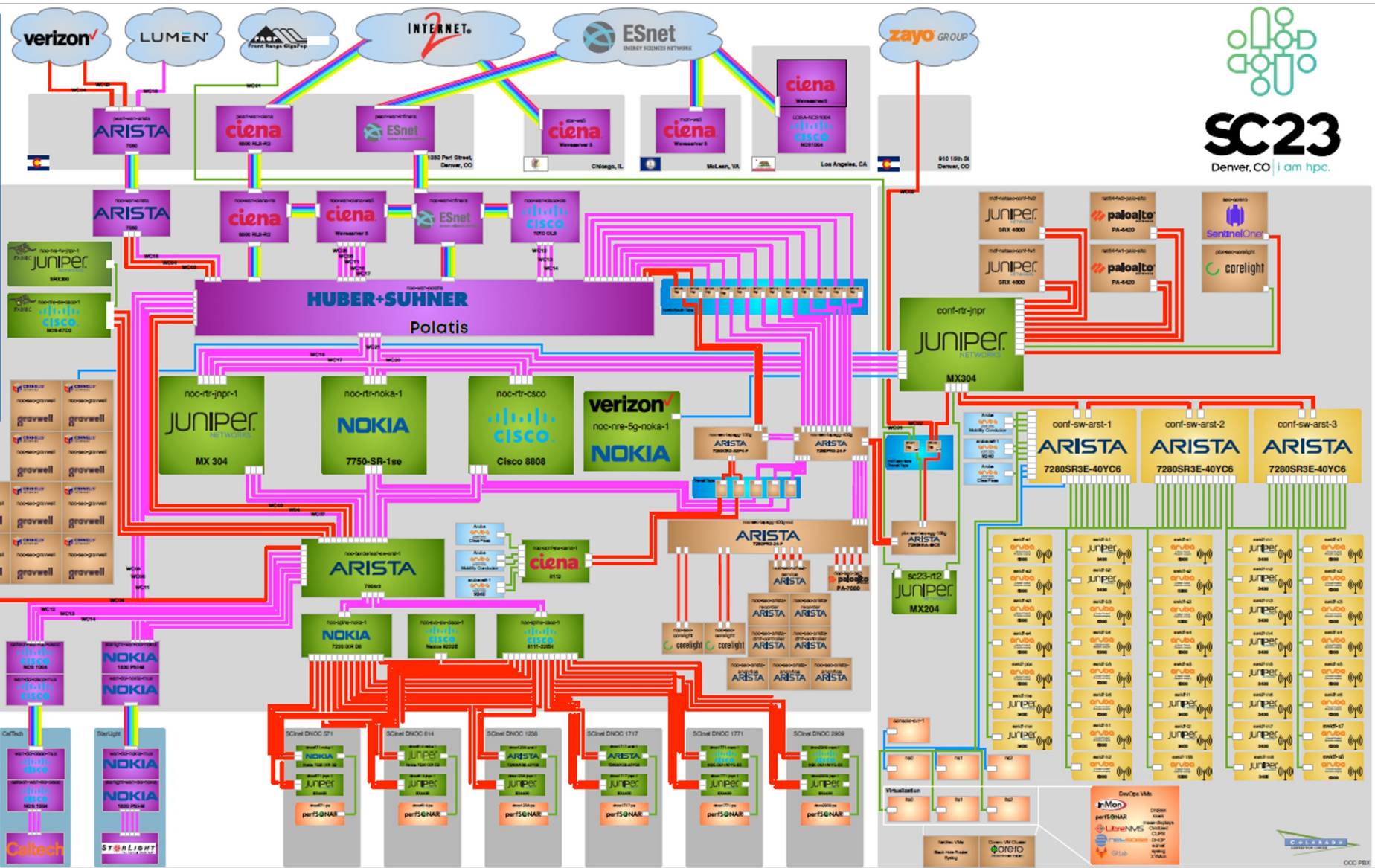
Network Research
Exhibition (NRE)



SCinet

Network Architecture
v12 - November 1st, 2023
Alexander Barnes

- 1 Gigabit Ethernet
- 10 Gigabit Ethernet
- 100 Gigabit Ethernet
- 400G DCI
- Dark Fiber
- DWDM OTN
- WiFi Access Point
- Routing
- WAN
- Edge
- DevOps
- Security
- Wireless





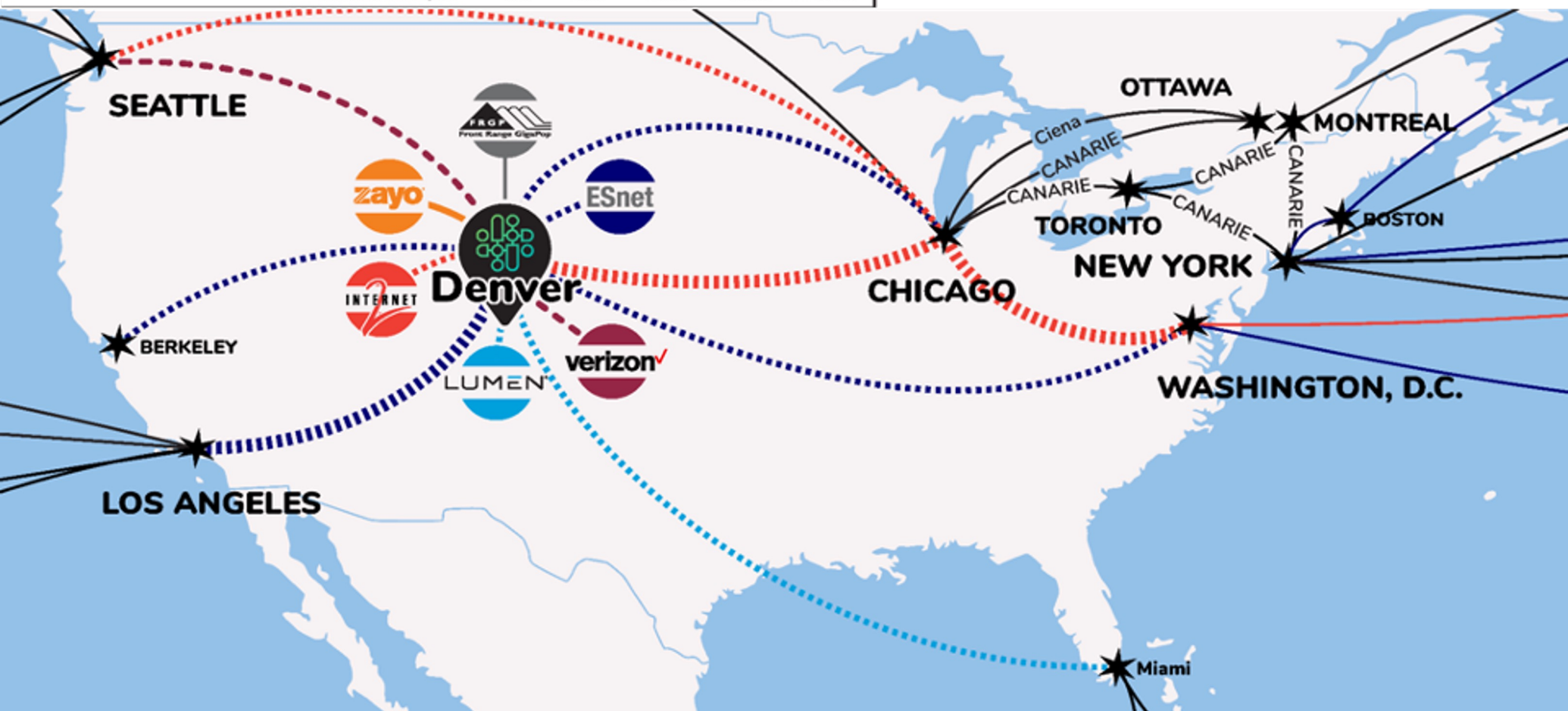
 NANOLOG™

SCinet Delivers the World to Denver for SC23



● ESnet ● verizon ● INTERNET ● zayo ● FRONTRANGE ● LUMEN

Network Connection Speed: — 10Gb — 100Gb - - - 2x100Gb - - - 1x400Gb - - - 3x400Gb





Volunteers

SCinet Volunteers

SCinet Volu



Cool statistics from SC23

6.71 Tbps delivered to the CCC

16 x 400 Gbps connections

28.7kW power draw

206 Scinet Volunteers

\$40.5m in donated & loaned hardware, software, and optics from 30 contributors

12+ miles of Fiber deployed

421 wireless access points deployed



What cool new things did we do this year?

IPv6 including transitional helpers such as DHCP option 108, NAT64 and DNS64

Verizon 5G Wireless on the show floor

400G ZR+ AND tapped the Internet2 commodity circuit using 400G ZR+

NSO Orchestration and Automation with EVPN/VXLAN

Tapped 8.04 Tb of traffic- LAN and WAN

What cool new things did we do this year?

2x400GE (800GE) optics between vendors

Multi-vendor zero touch provisioning

RPKI (Alerting, not dropping)

FABRIC in SCinet

Automated black hole routing with FlowSpec via Gravwell and Corero

New custom written database for physical and config data - iNext

Research Stats

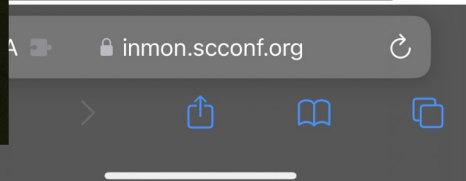
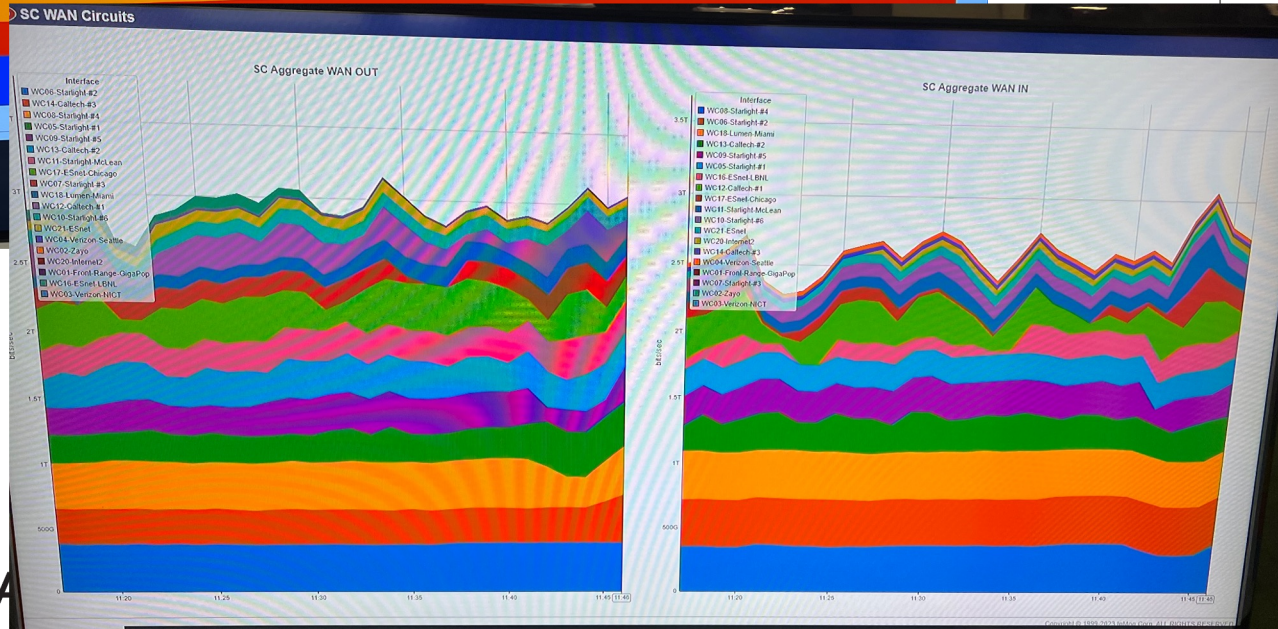
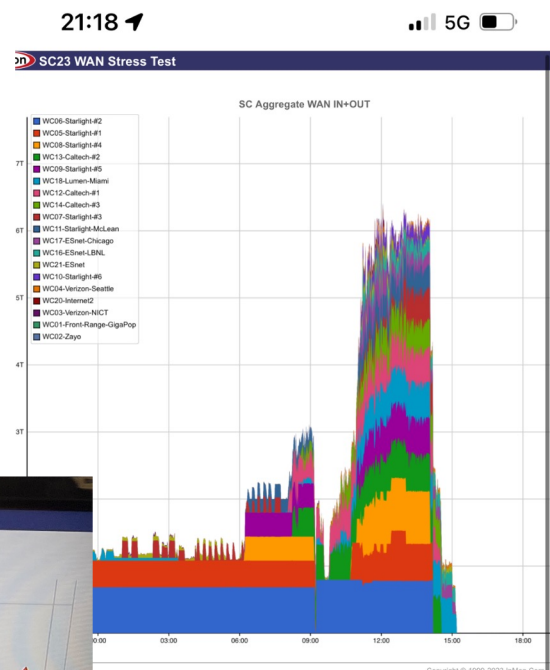
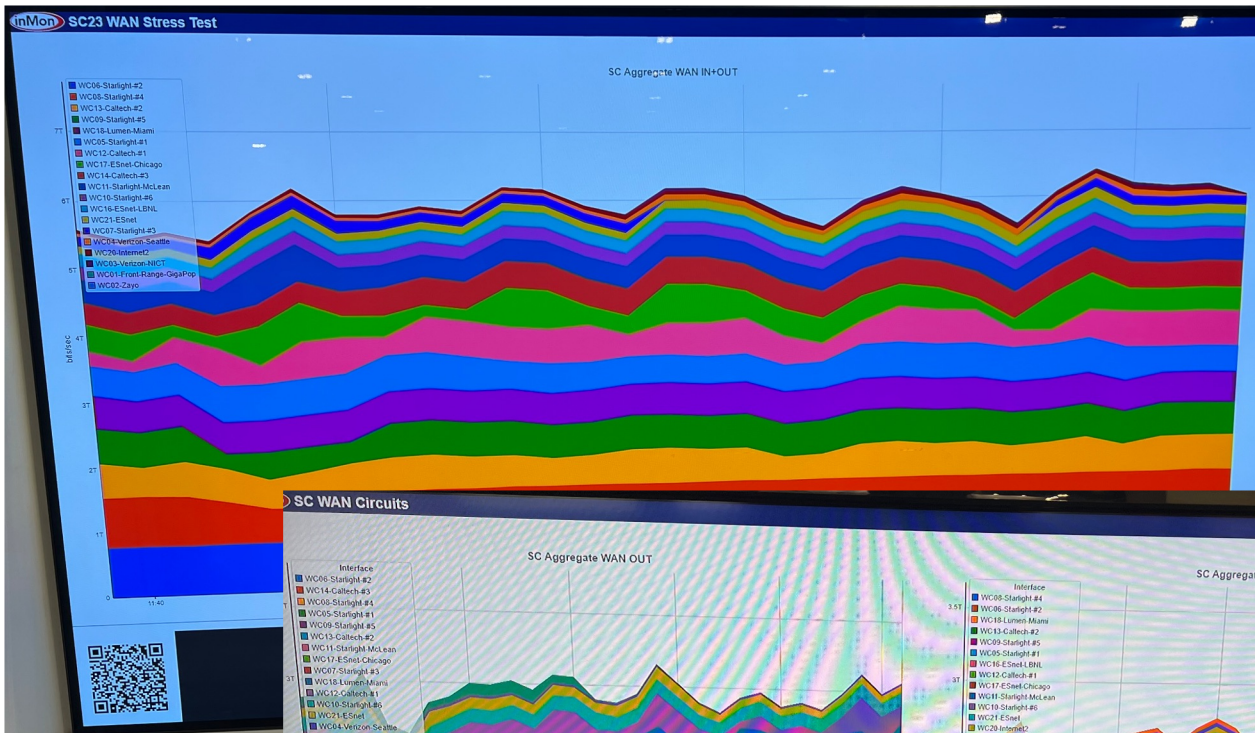
30 Published Abstract submissions

18 NRE Presentations at the SCinet-sponsored
Exposition Theater

6.71 Tbps of connectivity to the convention
Center

- ~6.5 Tbps to the show floor

WAN Stress-test moved over 3 Tbps each
direction, over 6 Tbps combined in + out



Women in IT Networking at SC (WINS)

The Women in IT Networking at SC (WINS) is a multi-year program initially funded by the National Science Foundation (NSF). * developed for addressing the prevalent gender gap that exists in Information Technology (IT), particularly in the fields of networking engineering and high-performance computing (HPC).



ESnet
ENERGY SCIENCES NETWORK



WINS
Women in IT Networking at SC

WINS Activities

- Enables 3-8 women per year to participate in SCinet
- Selected by a committee of experts and rigorously reviewed and evaluated
- Gives the opportunity to work with the world's leading network and software engineers, and the top network technology vendors.

Ongoing Professional Development

- Fund WINS participants to attend and present at conferences to raise awareness of SCinet, diversity issues in IT, and technical content;
- Quarterly Alumni Meetings
- The Quilt MOR Leadership program.

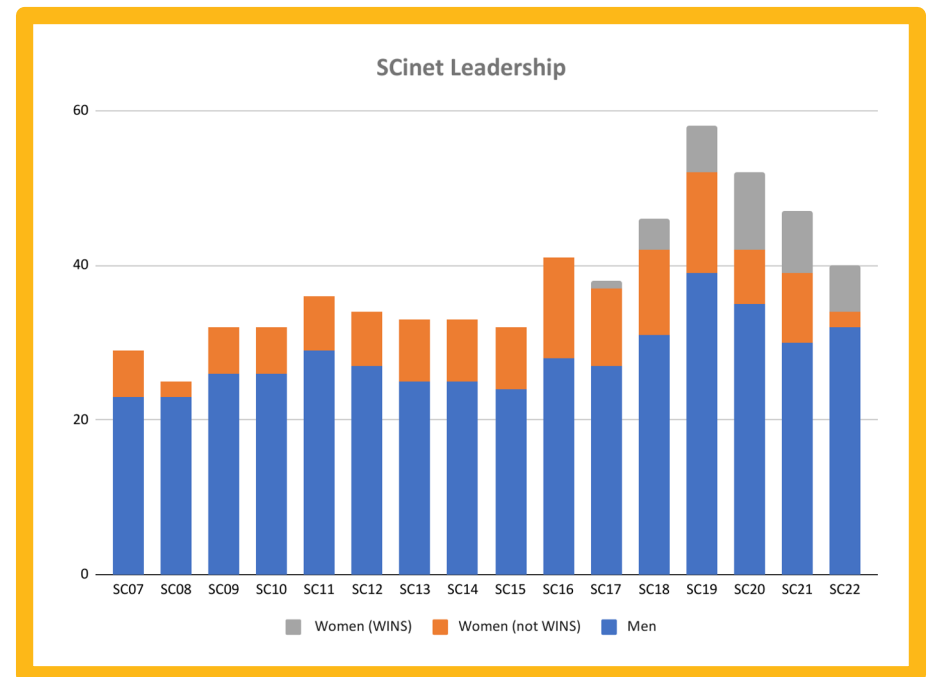
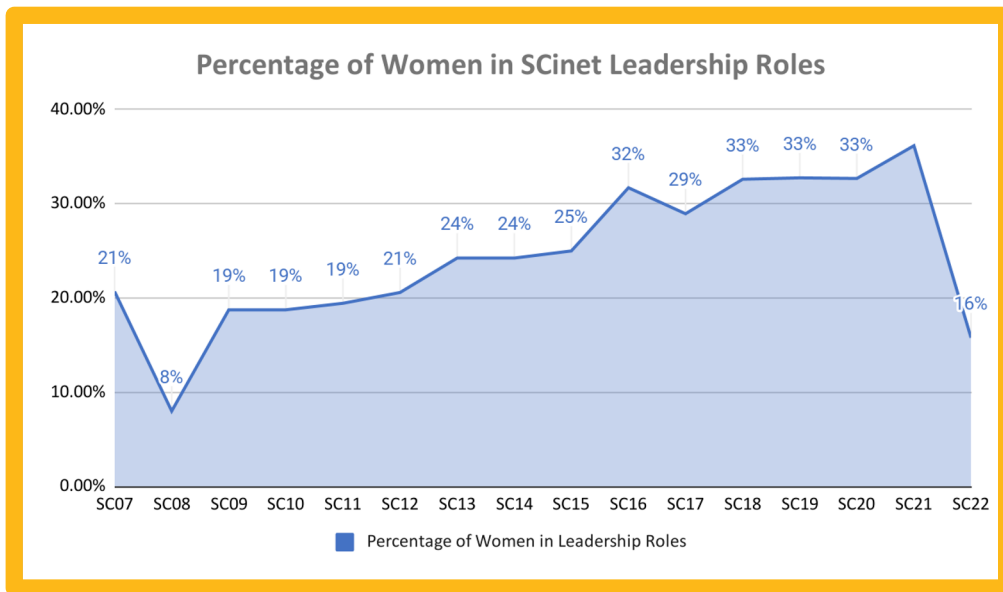
Impact on SCinet

- The percentage of women participating in SCinet has increased significantly since the program started in 2015, both in the number of women participating and the percentage of women on SCinet in general.
- Since 2007, where 15 of the 105 volunteers were women, in 2022, 41 of the 179 volunteers are women with 17 of them in the WINS program.

Impact on SCinet Leadership

- The percentage of women in SCinet leadership has grown from a low of 8% for SC08 to 15% for SC22.
- Women from the WINS program assumed SCinet leadership roles starting in SC17, two years after the program began.
- For SC22, 6 WINS awardees have leadership roles.

Impact on SCinet Leadership



WINS Contributors

- ESnet
- Ciena
- Indiana University
- Internet2
- Juniper
- Northern Tier Network Consortium (NTNC)
- Pacific Northwest GigaPoP (PNWGP)
- The Quilt



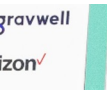
ESnet
ENERGY SCIENCES NETWORK



WINS
Women in IT Networking at SC



Contributors



SC
Bucknell
LSU
THUNDERCAT

11
SOUTH CAROLINA MIXES
CRC

SC24 Atlanta!

If you have any members of your team who may be interested in participating in SCinet please scan the QR code below

