



# SC20

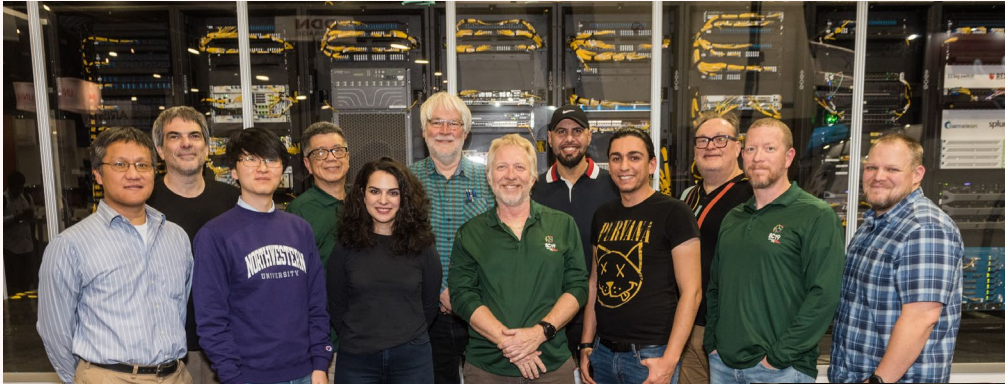
Atlanta, GA | more  
than hpc.

Introduction to the SCinet  
Experimental Networks Team  
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November 13th, 2020 • XNet

## The XNet team, past and present

SC19 XNet team



...and the faces of some current and past members.

### Who are we?

The activities around XNet attract individuals across industry, laboratories, and academia with an interest in exploring new networking ideas in a truly unique environment. While the size and scope of the teams have varied over the years, one overarching theme has been a desire to push the boundaries of what is possible within SCinet.

### The role of XNet

The Experimental Networks Team engages partners in research, education, and industry to facilitate high-performance networking experiments during the SC Conference. These experiments often span multiple years, and the results serve to push the boundaries of network technologies and set the stage for SCinet's continuous evolution to meet the network-intensive needs of the HPC community during SC. The team has historically worked closely with the annual Innovating the Network for Data-Intensive Science (INDIS) workshop, which facilitates discussion of network-intensive demonstrations and advancements related to high-performance networking.

## A Brief History

- Founded during SC99 in Portland, OR
- Known for a time as eXtreme Networks!
- A venue to showcase emerging, often pre-commercial or pre-competitive, developmental networking technologies
  - Protocols, applications, services
- Recent successes include adoption of Faucet SDN controller and maturation of a DTN service for SCinet



**DWDM**

**OC-48 SONET**

**10G Ethernet**

**Infiniband**

**GMPLS**

**Encryption**

**RDMA**

**SuperJumboFrames**

**Migration**

**DTNs**

**Optical Switching**

**SDN**

**400G Ethernet**

# Working with SCinet

- Involvement can be daunting for XNet participants
  - Short time frames
  - Lots of content to parse and learn
  - SCinet has certain fixed patterns
- Communication of deadlines and processes has become increasingly important
- SCinet Communications and DevOps teams have taken a lead in developing a Communications Portal for bridging some of these gaps

**Tap Interfaces**

Edit	Delete	Continue
ID	2091	
Name	pbx-taps	
Location	CCC-PBX	
Rack		
Equipment ptr	pbx-taps	
Description	taps in pbx	

**Tap Interfaces**  
Tap interfaces come in pairs and are listed in the center of the table. Far End A, into the tap, back out of the tap, and to

Export to CSV	Show Interfaces Only	Add Tap Interface	Bulk Updates		
Far End A	First Patch	Type	Connector	Tap Interface In	Tap Interface
wic1 NIC1	wic1 NIC1	10GBaseLR	LC	1/A	1/B
wic1 NIC2	wic1 NIC2	10GBaseLR	LC	2/A	2/B
wic2 NIC1	wic2 NIC1	10GBaseLR	LC	3/A	3/B
wic2 NIC2	wic2 NIC2	10GBaseLR	LC	4/A	4/B

**Booth Information**

Location (x,y)	(240,370)
Dimensions	10x20
Active DNOC	DNOC 571

**Connections**

Name	Coords	Medium	Type	Description
A	(10,20)	SM	GbE	

**Tap Uplinks**  
Tap uplinks are the output of the tapped interfaces. They provide the m

Export to CSV	Show Uplinks Only	Add Tap Uplink	Bulk Updates			
Tap Uplink	Connector	Type	Tapped Interfaces	First Patch	Far End	Description
1/T	LC	10GBaseLR	1/A 1/B	pbx-sec-bigswitch 5	pbx-sec-bigswitch 5	pbx-sec-bigswitch 5 6
2/T	LC	10GBaseLR	2/A 2/B	pbx-sec-bigswitch 11	pbx-sec-bigswitch 11	pbx-sec-bigswitch 11 12
3/T	LC	10GBaseLR	3/A 3/B	pbx-sec-bigswitch 19	pbx-sec-bigswitch 19	pbx-sec-bigswitch 19 20
4/T	LC	10GBaseLR	4/A 4/B	pbx-sec-bigswitch 25	pbx-sec-bigswitch 25	pbx-sec-bigswitch 25 26

**Patch panel images for NOC**

1081:01.01 AS24-5013 SM backbones out to

Ports	Fiber type	Front Cable	Back	Last Updated
1,2	SM	A7006 1	AS24-5013 1,2	0/28/2019 14:18
3,4	SM	E3194 2	AS24-5013 3,4	0/28/2019 14:18
5,6	SM	A7001 2	AS24-5013 5,6	0/28/2019 14:18
7,8	SM	A7132 2	AS24-5013 7,8	1/16/2019 18:14
9,10	SM	A7229 1	AS24-5013 9,10	1/16/2019 18:14
11,12	SM	A7073 2	AS24-5013 11,12	1/16/2019 18:14
13,14	SM	A7033 2	AS24-5013 13,14	1/16/2019 18:14
15,16	SM			0/28/2019 14:18
17,18	SM			0/28/2019 14:18
19,20	SM		AS24-5013 19,20	0/28/2019 14:18
21,22	SM		AS24-5013 21,22	10/28/2019 14:18
23,24	SM		AS24-5013 23,24	10/28/2019 14:18

**1081:01.01, Port 7**

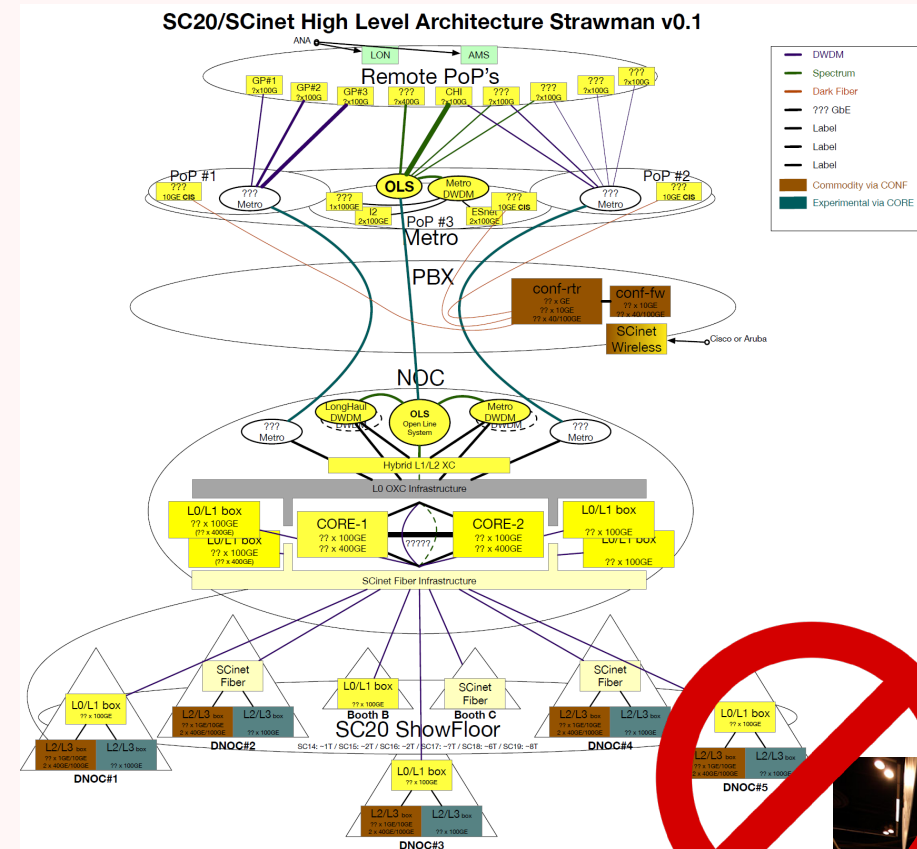
Front  
1081:01 01 7 F -> 1081:01 15 11 F (A7132 2 -> A7132 2)  
Back  
1081:01 01 7 B -> 571:01 01 7 B (AS24-5013 7 -> AS24-5013 7)

**Trace**

1081:01 01 7 F (100GBaseLR4)	0/28/2019 14:18
E2698 1 SM (Patch details)	0/28/2019 14:18
1081:03 01 11 12 F SC	0/28/2019 14:18
1081:03 01 11 12 B SC	0/28/2019 14:18
ES24-1000-0002 11 SM (Patch details)	0/28/2019 14:18
ES24-1000-0002 11 SM (Patch details)	0/28/2019 14:18
1081:01 15 11 12 B SC	0/28/2019 14:18
1081:01 15 11 12 F SC	0/28/2019 14:18
A7132 2 SM (Patch details)	0/28/2019 14:18
1081:01 01 7 8 F SC	0/28/2019 14:18
1081:01 01 7 8 B SC	0/28/2019 14:18
AS24-5013 7 SM (Patch details)	0/28/2019 14:18
571:01 01 7 8 F SC	1/16/2019 18:14
C1141 1 SM (Patch details)	1/16/2019 18:14
571:01 03 7 8 F LC	1/16/2019 18:14
571:01 03 7 8 B LC	1/16/2019 18:14
FS2-4385 1 SM (Patch details)	1/16/2019 18:14
1081-B (100Gbps)	0/28/2019 14:18

# Challenges in going virtual

- What is XNet without a physical playground?
- Pivoting to virtual content
  - Engaging with previous XNet teams
  - Organizing an INDIS Workshop panel
  - Gathering deep dive content for SCinet tracks
- Requiring teams to work more independently on their own demonstrations
  - Keeping applications for SCinet in mind



## Looking towards the future

- Continue tradition of experimentation within SCinet
- Nurture remote collaboration and research
  - Not just those that can bring equipment to SC/SCinet
- Further engage the world of experimental testbeds
- Explore defining the scope and role of a more dynamic and distributed SCinet presence

In closing

- Thank you to all those who have contributed and worked with us on short notice
- We hope you enjoy the virtual content and discussion
- Contact XNet about future involvement: [xnet-leads@scinet.supercomputing.org](mailto:xnet-leads@scinet.supercomputing.org)