

 **FIBER  
INTERNET**

powered by  Cullman Electric  
Cooperative

# *Our Story*

*Sprout's Deployment and Management*

# How CEC began...

- Co-ops started with the Rural Electrification Act of 1936 as part of the New Deal.
- Cullman Electric Cooperative (CEC) was incorporated on May 25, 1936.
- CEC first lines were energized on August 4, 1936.
- Currently has 46,115 Meters and 35, members.

# How we started an ISP...

- We completed our first feasibility studies in 2019.
- The board and members agreed to do a multi-phase approach. Phase 1 was to deploy a 100G ring to 2 CEC offices and 11 fiber huts and 18 CEC fiber substations.
- We turned up subscribers along the backbone.
- Construction was started in 2020.

# How we started an ISP Con't...

- Phase 1 was 246 miles of 144 count mainline fiber.
- It passed around 13,000 members
- CEC took out a 30 Million dollar loan to start the project.
- If Phase 1 was successful, then CEC would continue the project to all members.

# Where we are today...

- As of January 1, Sprout reached 9,004 subscribers and continuing to turn up 320 new subscribers every month.
- The construction is planned to go to the end of 2025 to serve all members.
- Current take rate is 41%
- Current homes passed is 21,000
- Mainline is currently at 1,400 miles the 2,500 total miles to build.



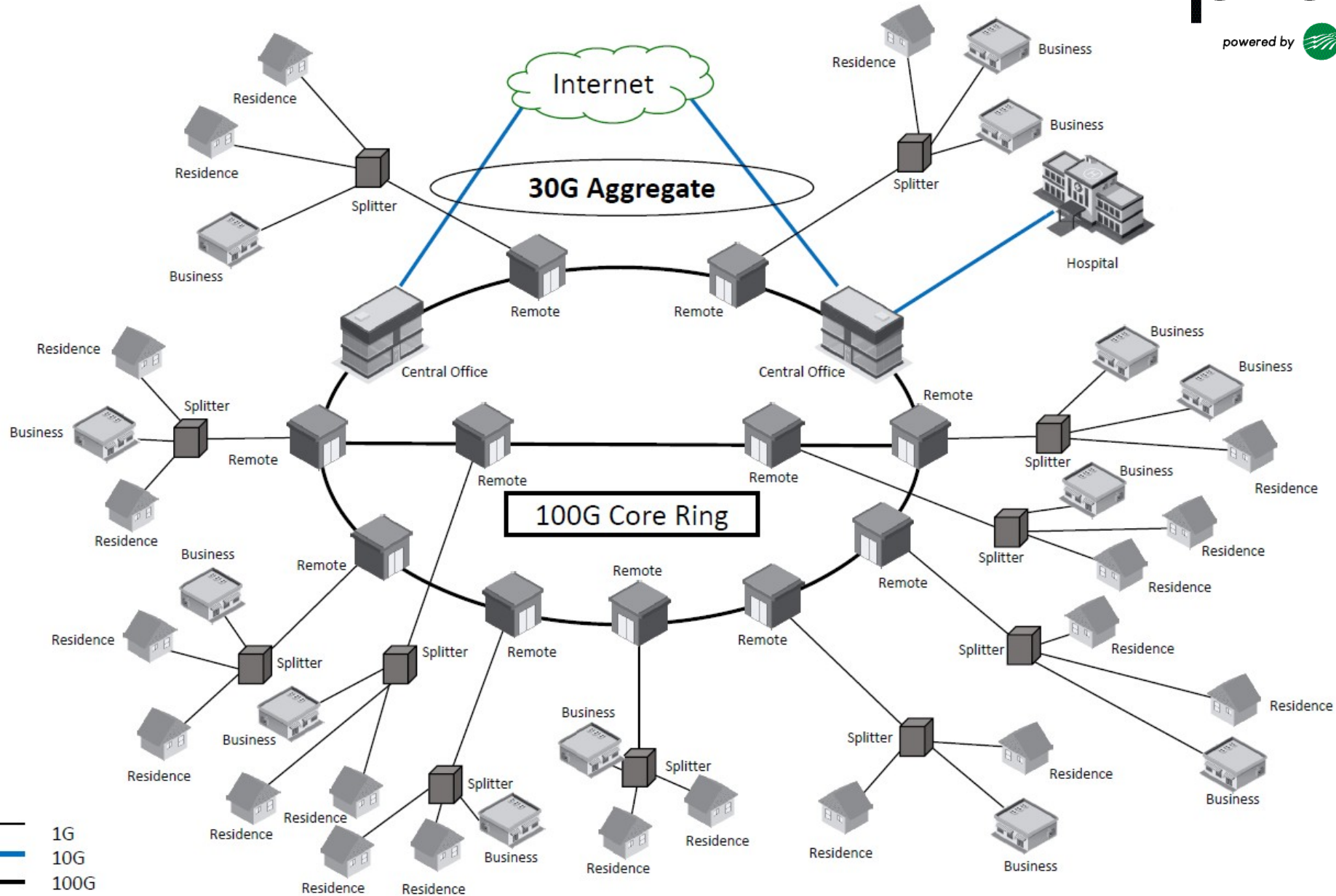
## What we use...

- Juniper MX204s for our full table edge routing
- Ciena 5171 for our MPLS-TP Layer 2 backbone
- Adtran TA-5000s for mix GPON & XGS-PON FTTH
- Juniper EX-4600 for our 10G server aggregation
- Calix u4 and u6 for home RGs with a small amount of Plumes from the original deployment.

# Sprout Network



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# IX Peering

- DDoS protection through Arelion
- 30G aggregate bandwidth through Arelion
- 100G Circuit to Atlanta through Arelion
- 100G Circuit to Dallas through Arelion
  - 30G of it is to DE-CIX Peering.
  - Avg bandwidth is around 15G and max around 25G
- Capcon Networks provides service
- Excellent service and support.



# IX BGP Peering

```
syntax error, expecting <command>.
mfreeman@AD03-MX204> show bgp summary
Threading mode: BGP I/O
Default eBGP mode: advertise - accept, receive - accept
Groups: 8 Peers: 22 Down peers: 0
Peer          AS           InPkt    OutPkt    OutQ    Flaps  Last Up/Dwn  State|#Active/Received/Accepted/Damped...
-----
DATA.inet.0: 30417/161176/161176/0
                398446 35465839 32636621 0        5 13w6d 11:21:12 Establ
                174 15507494 217685 0        5 9w6d 20:29:30 Establ
DATA.inet.0: 454449/919421/919421/0
                8075 69437 72717 0        6 3w2d 14:28:25 Establ
DATA.inet.0: 550/550/550/0
                32934 11539 12036 0        3 3d 21:46:06 Establ
DATA.inet.0: 0/44/44/0
                32934 69537 72718 0        2 3w2d 14:28:29 Establ
DATA.inet.0: 28/44/44/0
                16509 42366 32772 0       39 1w3d 15:21:01 Establ
DATA.inet.0: 11/3038/3038/0
                16509 93650 72717 0        3 3w2d 14:28:17 Establ
DATA.inet.0: 3027/3038/3038/0
                714 71264 72718 0        2 3w2d 14:28:25 Establ
DATA.inet.0: 852/1131/1131/0
                714 71240 72717 0        2 3w2d 14:28:21 Establ
DATA.inet.0: 279/1131/1131/0
                62499 1753160 72719 0        2 3w2d 14:28:34 Establ
DATA.inet.0: 48791/116414/116414/0
                62499 1748850 72718 0        2 3w2d 14:28:29 Establ
DATA.inet.0: 67620/116414/116414/0
                398446 17412 14801967 0        1 6w6d 8:42:16 Establ
DATA.inet.0: 0/0/0/0
                1299 29865002 72719 0        2 3w2d 14:28:35 Establ
DATA.inet.0: 322326/923149/923149/0
                714 70132 66001 0        2 3w0d 10:16:33 Establ
DATA.inet6.0: 77/296/296/0
                714 70394 66234 0        0 3w0d 12:06:11 Establ
DATA.inet6.0: 219/296/296/0
                8075 63251 66235 0        0 3w0d 12:06:41 Establ
DATA.inet6.0: 103/103/103/0
                16509 45106 32769 0       33 1w3d 15:20:11 Establ
DATA.inet6.0: 907/907/907/0
                32934 11539 12035 0        1 3d 21:46:06 Establ
DATA.inet6.0: 0/27/27/0
                2 32934 63417 66235 0        0 3w0d 12:06:29 Establ
DATA.inet6.0: 25/27/27/0
                1 62499 2849276 65954 0        6 3w0d 9:54:38 Establ
DATA.inet6.0: 4479/53882/53882/0
                1 62499 2857047 66179 0        0 3w0d 11:40:00 Establ
DATA.inet6.0: 49388/53882/53882/0
                1299 24476726 66235 0        0 3w0d 12:06:07 Establ
DATA.inet6.0: 127288/182462/182462/0
```

- Amazon
- Apple
- Facebook (meta)
- Microsoft
- DE-CIX

# Adtran TA-5000 and ONT



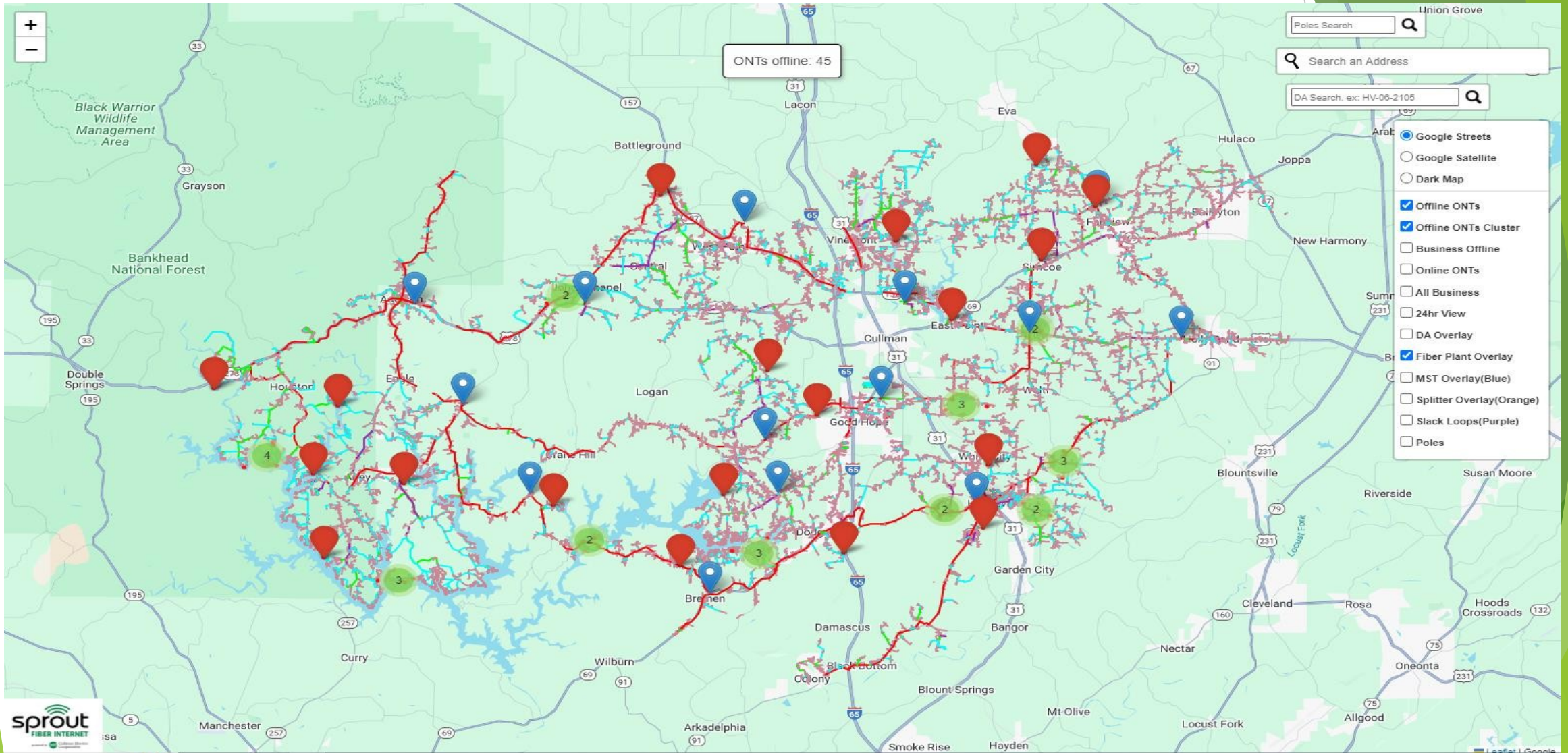
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# Mosaic Subscriber Insight

- Provided by Adtran to help monitor PON network status.
- Rebranded through 7-Sigma NOC360.
- Helps monitor our TA5000s, all ONTs on the system, and has helpful reports to make better business decisions with.
- Able to identify outages in minute and email subscribers.



# Fiber OMS

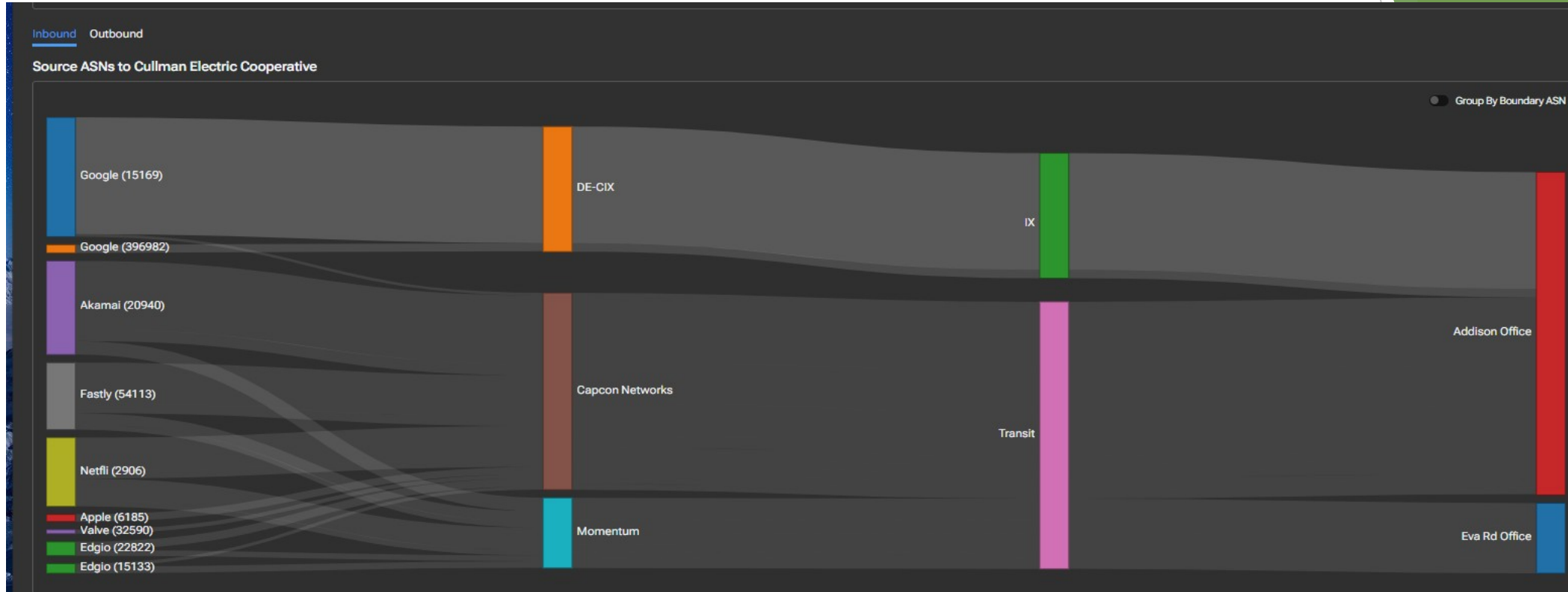


For more info Email:  
Scott Hubbert - ([scott.hubbert@fiberoms.com](mailto:scott.hubbert@fiberoms.com))

# Other Sprout Network Tools

- Site 24x7 to monitor network from outside
- Room Alert for temp/humidity sensors
- RING cameras for hut monitoring
- Open source OS Ticket for construction tickets.
- Home Grown MST Connect for MST placement and splicing. More info contact Mitzi Howard (mitzi@mossrock.com)
- Adtran AOE software
- Calix Service Cloud
- Ciena MCP
- VMware vSphere

# Kentik - Traffic Analysis



## Potential Peers

Time Range  
Last 30 Days

Peer Name	AS Name	Shared Facilities	Average Traffic (Gbps)	Top Sites Average Traffic (Gbps)
Google LLC	15169 - Google,US		4.46	Addison Office: 4.10 Eva Rd Office: 0.36
Akamai Technologies	20940 - Akamai,NL		3.03	Eva Rd Office: 2.12 Addison Office: 0.91
Fastly, Inc.	54113 - Fastly,US		1.97	Eva Rd Office: 1.31 Addison Office: 0.66
Netflix	2906 - Netflix,US		1.75	Eva Rd Office: 1.21 Addison Office: 0.53
Edgio - AS22822	22822 - Edgio (Limelight Networks),US		0.47	Eva Rd Office: 0.30 Addison Office: 0.16
Edgio (Edgecast) - AS15133	15133 - Edgio (Edgecast),US		0.37	Eva Rd Office: 0.26 Addison Office: 0.11
Amazon.com	16509 - Amazon,US		0.33	Eva Rd Office: 0.29 Addison Office: 0.04
Apple CDN	6185 - Apple (CDN),US		0.30	Eva Rd Office: 0.16 Addison Office: 0.14
Google Cloud	396982 - Google (GCP, Google Cloud Platform),US		0.23	Addison Office: 0.20 Eva Rd Office: 0.02





*Questions? Comments?  
Suggestions?*