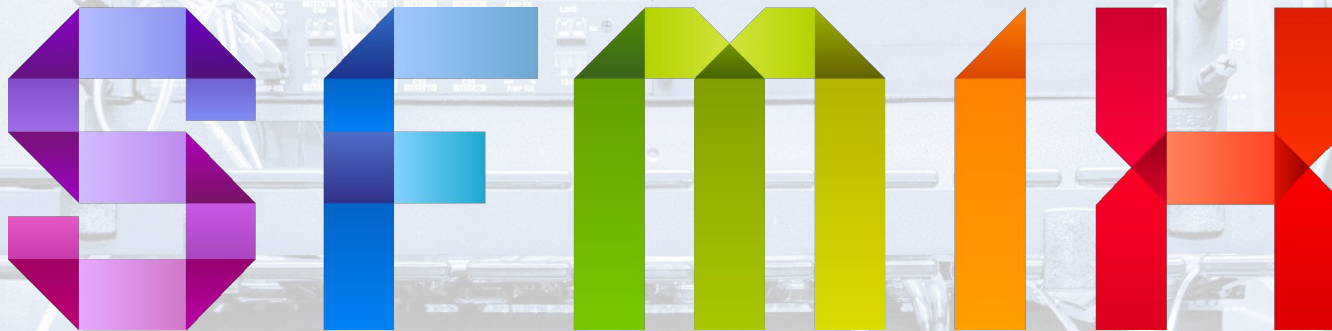




WiFi →

Zoom
starting
@ 12:30



Members Meeting

October 22nd, 2025

Agenda

- Introductions
- Board Elections
- New/upgraded Participants
- 2025 Accomplishments
- 2026 Plans
 - San Jose clean-up
 - Backbone resilience / expansion
 - [Partial routes/cache servers offering](#)
- Deployments in & outside of the Bay
- Financials

Introductions All Around

- Executive Director
 - Matt
- Board members
 - Tim, Justin, Peter, Chris, Walt, Lee
- Volunteers
 - Jof
- Participants

Thank you HE for hosting!



HURRICANE ELECTRIC
INTERNET SERVICES

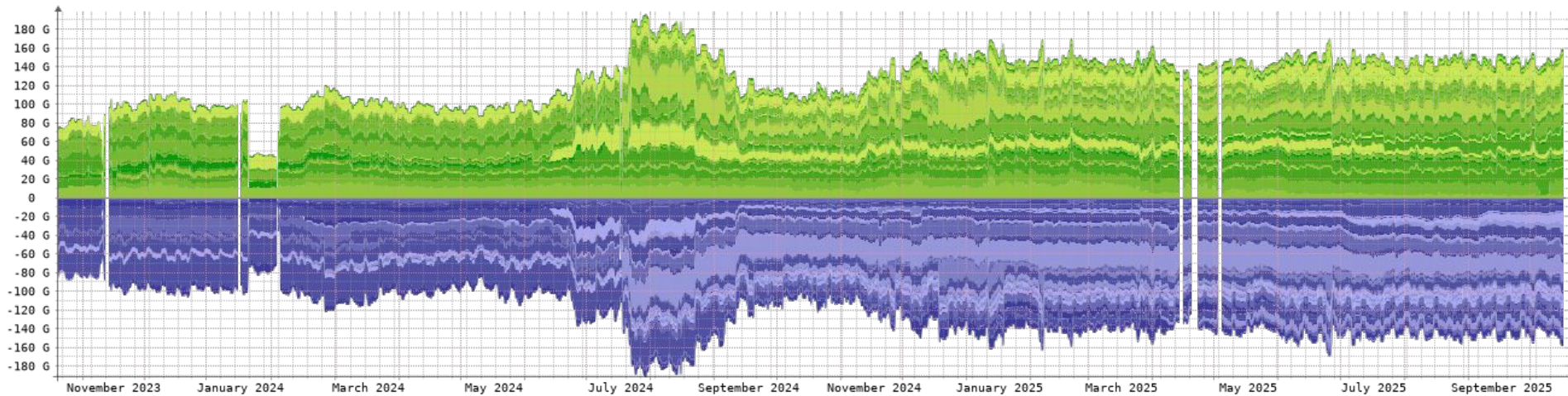
Board Elections

- Bylaws require 10% quorum, not met for recent election
- Rehold election, will do another 2 week cycle, same candidates - **please vote!**

IXP Quorum % →

Seattle	<u>5%</u>
Portland	<u>10%</u>
Minneapolis	<u>10%</u>
Miami	<u>50%</u>
Saskatoon	20%

Bandwidth for the Last Two Years



Currently peaking at 175 Gbps (*down from 200*)

2025

- Added new/upgraded participants *(Notes)*
 - *Prodigi*
 - *SpaceX/Starlink* *(2x100G → 4x100G)*
 - *OVHcloud*
 - *Nutrien*
 - *IT7 Networks*
 - *AirRabbit*
 - *Fortinet*
 - *Blue Wireless Ltd*
 - *Salesforce* *(returned)*
 - *ParadoxNetworks*
 - *ACE CDN* *(Tencent, WeChat)*
 - *Internet Archive* *(2x10G → 1x100G)*

2025 Accomplishments

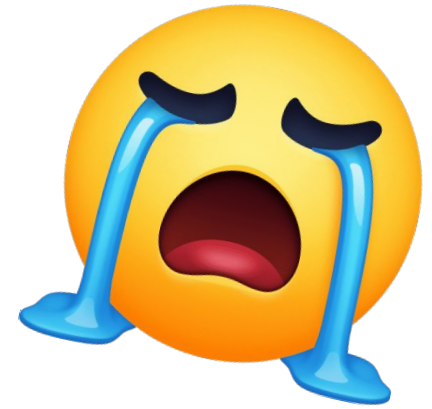
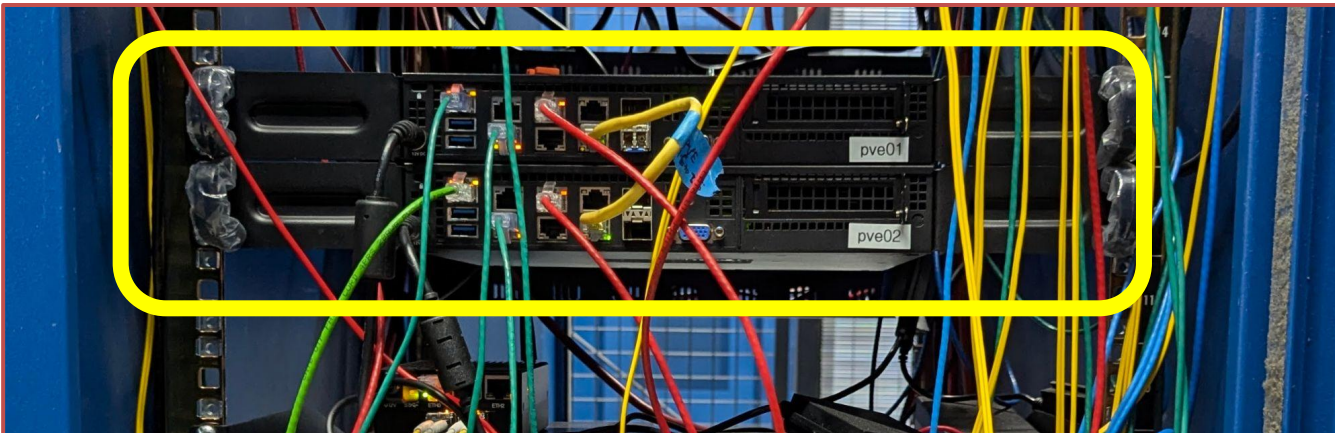
- Deployed additional 400G capable Arista 7280CR3-36S switches (SJC01)



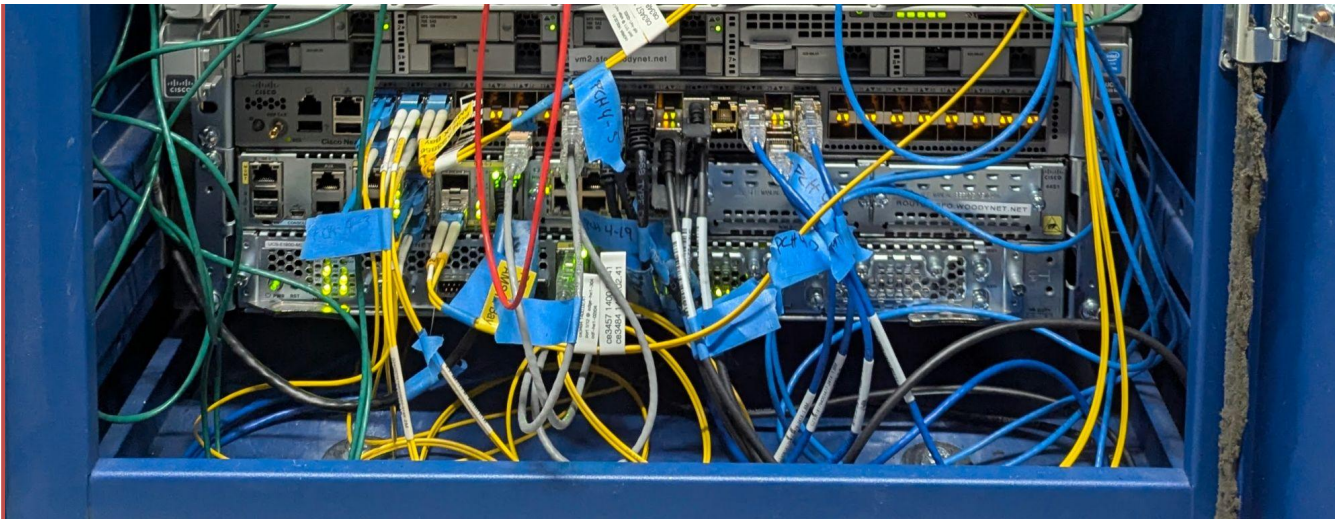
- EOS to 4.32.4.1M
 - *64bit, multi-agent routing, disable IGMP, errdisable recovery conditions, SSH ciphers*
- Santa Clara 200G ring
- Completed management network refresh
 - *Dual PSU mgmt switches, VyOS WireGuard, swap PDU's to non-EOL models, Tailscale, etc*
- Formal relationship w/ Equinix (*thanks Walt!*)

2026 Plans

- 400Gbps: [SFO01 \(365 Main\) ↔ FMT01 \(Hurricane\)](#)
 - *Reference backbone slides*
- SJC01 Equinix cabinet migration
 - *See migration detail slides*
- Cache server/partial routes service
 - Migrate from proof-of-concept Juniper MX to production grade Nokia SR-OS
 - Fulfill backlog of interested ISP's



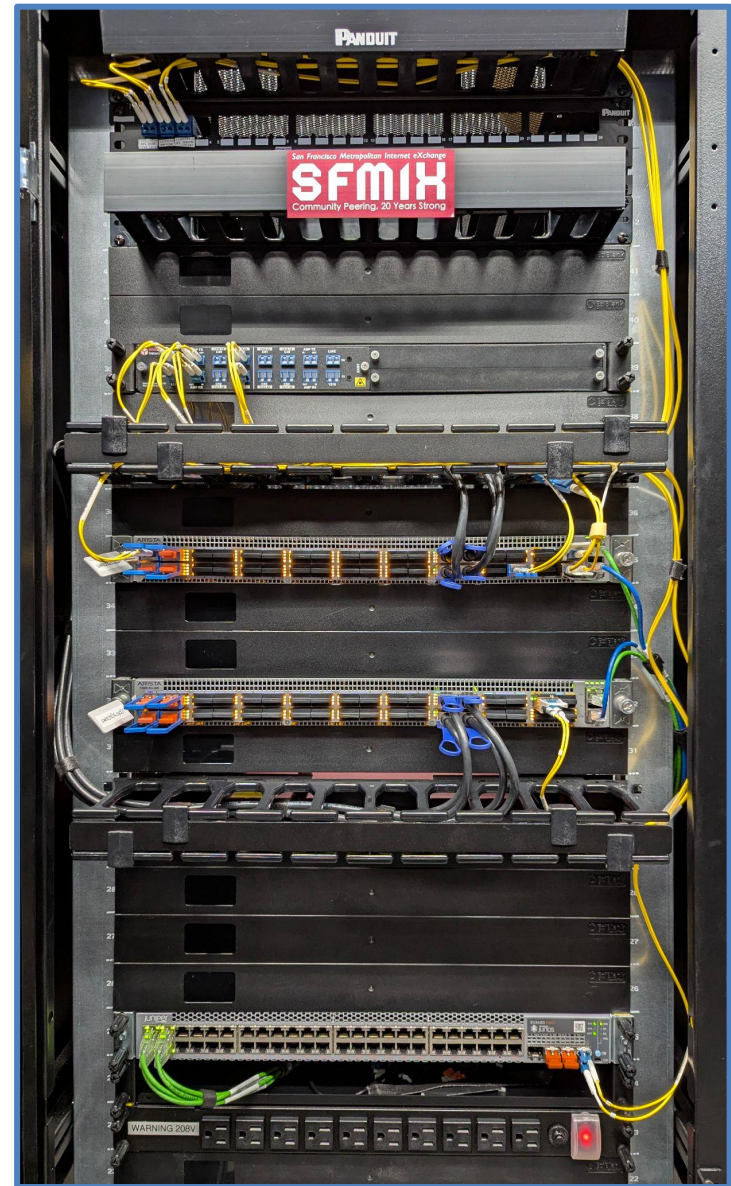
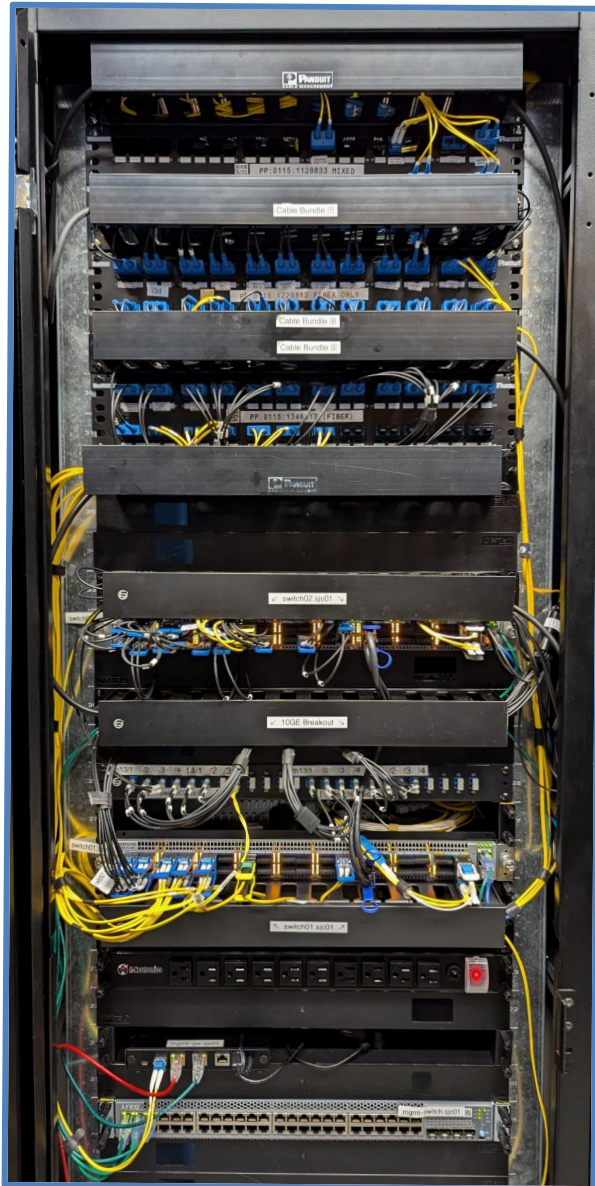
- Proxmox server upgrades (*more cores, flash storage, RAM, redundant PSU's, SFP+, etc*)
 - Route servers often impacted today
 - Long term data warehouse (*flow telemetry*)



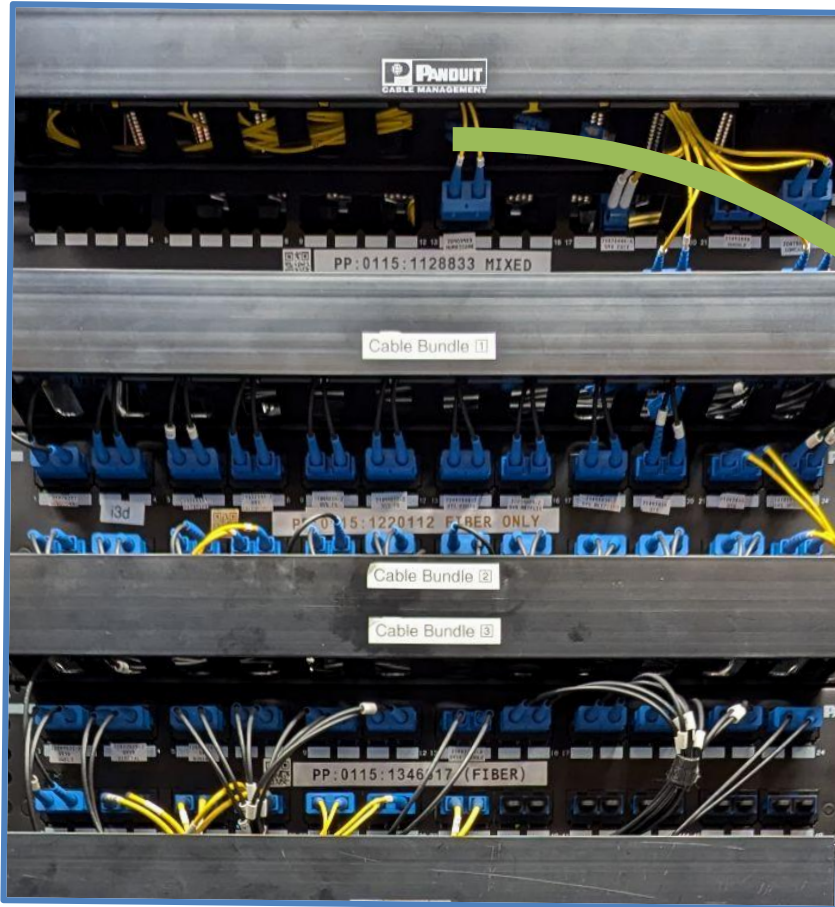
2026 Plans

- Migrate 3rd party servers to OpenColo (*more power*)
- 2026 Maintenance day: Latest EOS M train, EVPN
- Standardized patch paneling
- Convert web site to static generated
- Offer 400G ports (*limited locations*)
- Expansion: Sunnyvale, Oakland, and/or Sacramento?
- Revise bylaws
 - Define non paying participant: generally datacenter operator or DNS provider
 - Voting rights for different classes of member?

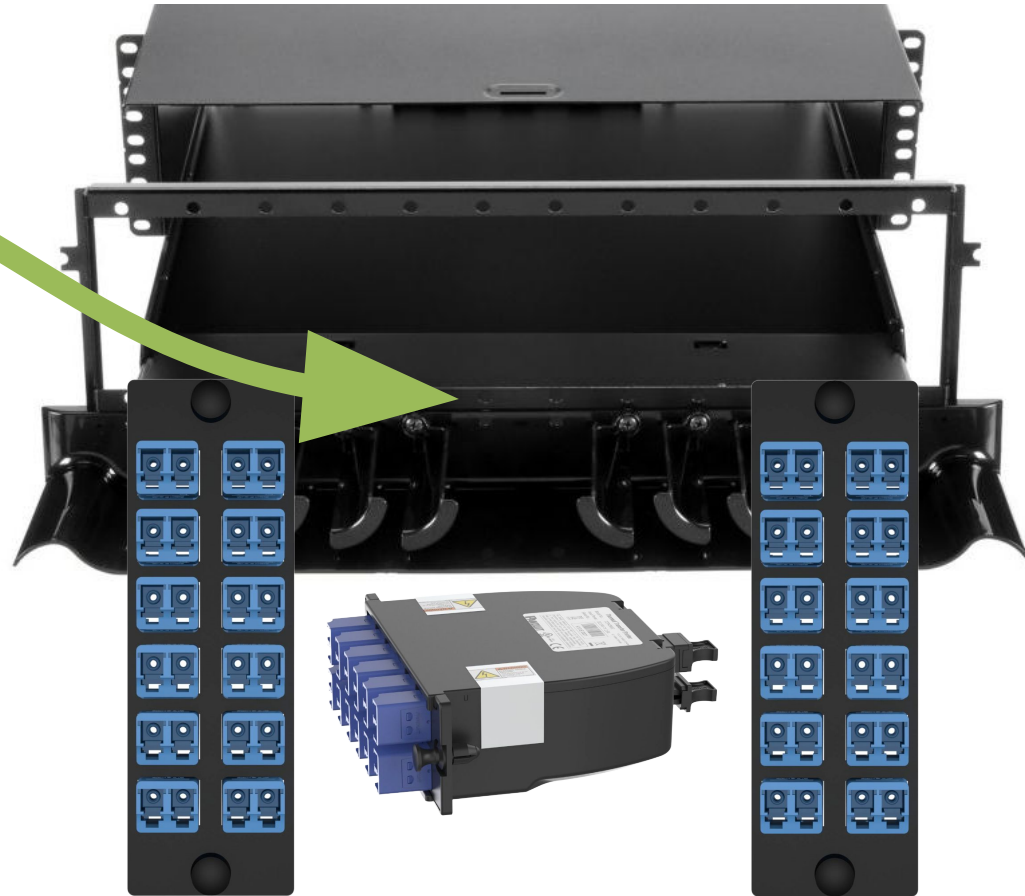
Current SJC01 deployment



SJC01: Patch Panels



SC, 48 participants per 4RU



LC, 144 participants per 4RU

SCL02



FMT01

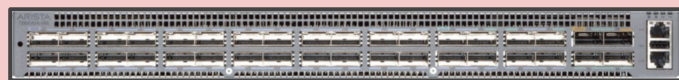


SJC01 Migration - Winter 2025

FMT01

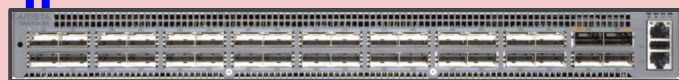


Legacy SFMIX (much ❤️ Softcom)
Cage 1940 Rack 0115



switch01.sjc01
7280CR3-36S

2x100G
DAC



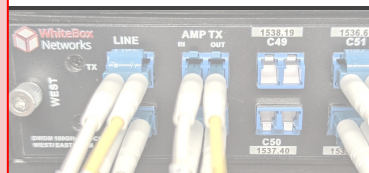
switch02.sjc01
7280CR3-36S



mgmt-switch.sjc01
EX3400-48P

1x400G

1536.61nm



1x100G

1310nm

1x10G

1535.82nm

New SFMIX Cabinet
Cage 1420 Rack 0218



switch04.sjc01
7280CR3-36S

4x100G
DAC

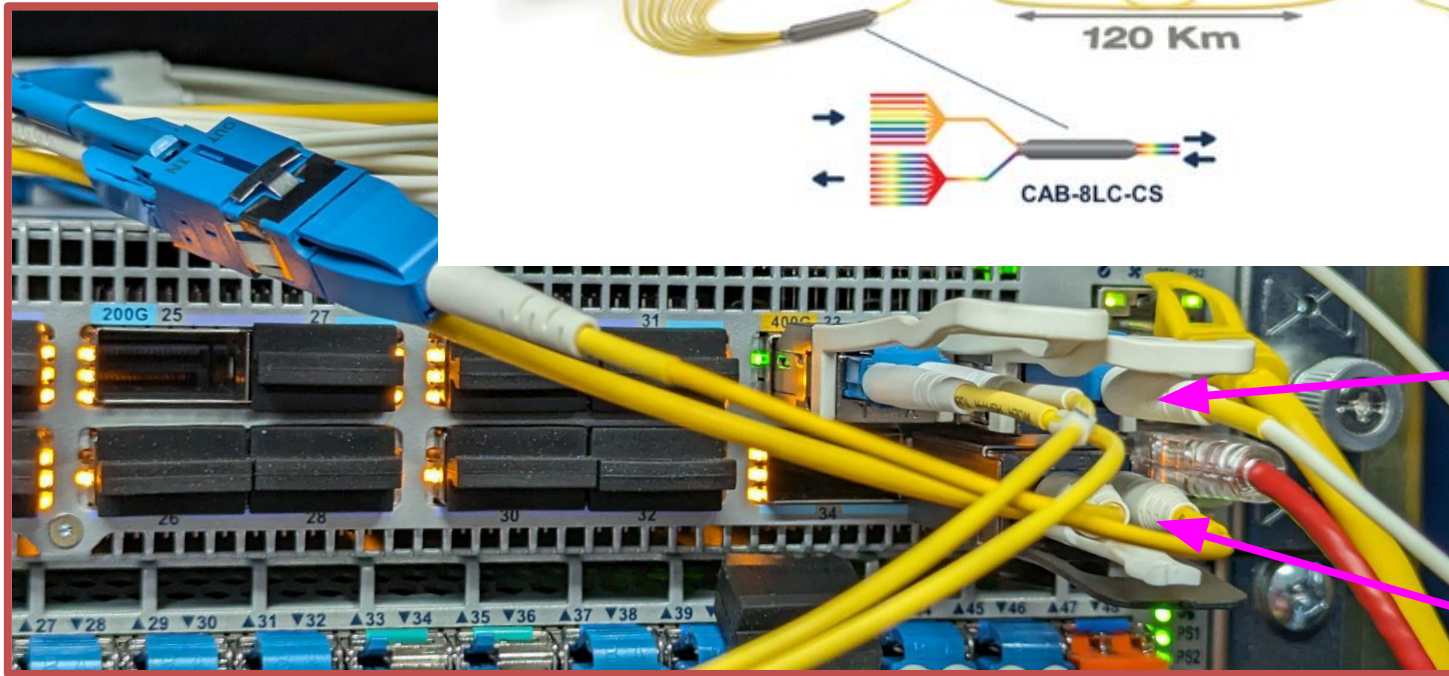
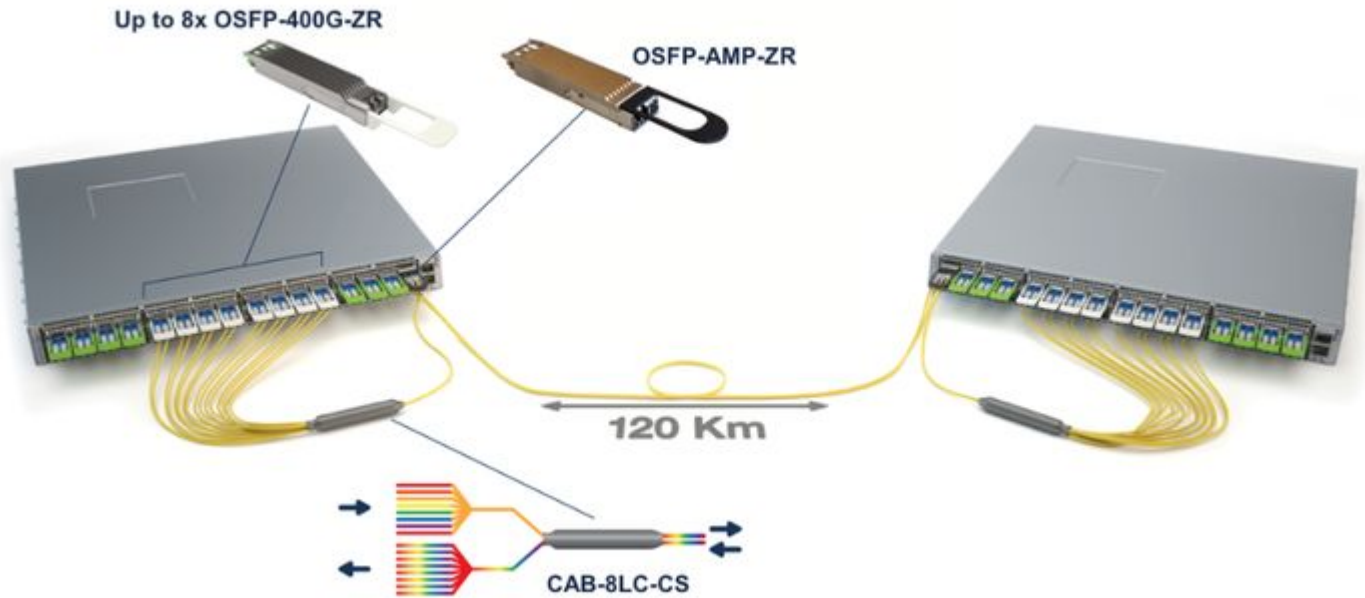


switch03.sjc01
7280CR3-36S



mgmt-switch02.sjc01
EX3400-48P

Arista DCI-over-dark 400G



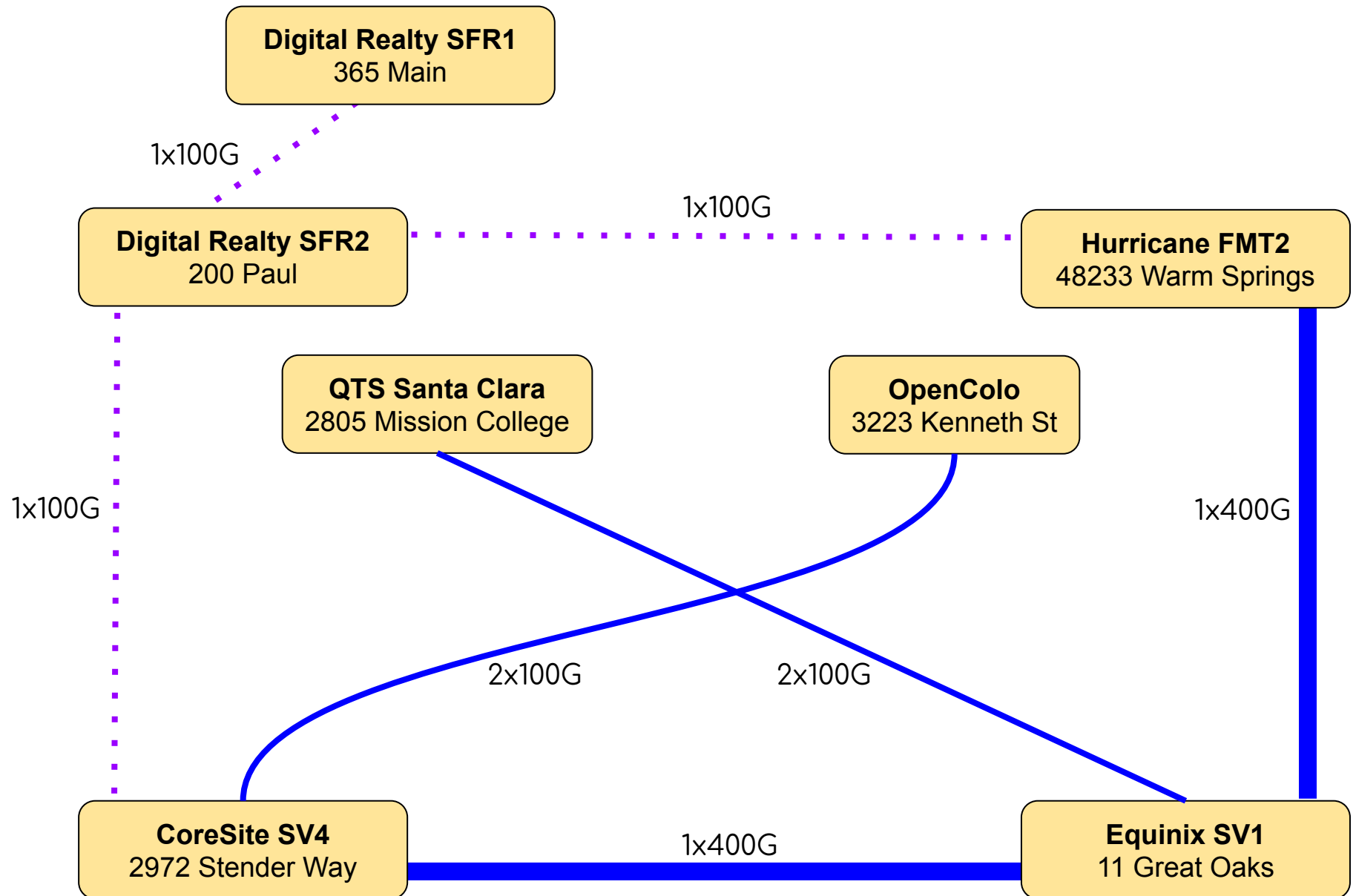
400G QSFP-DD

EDFA Amp

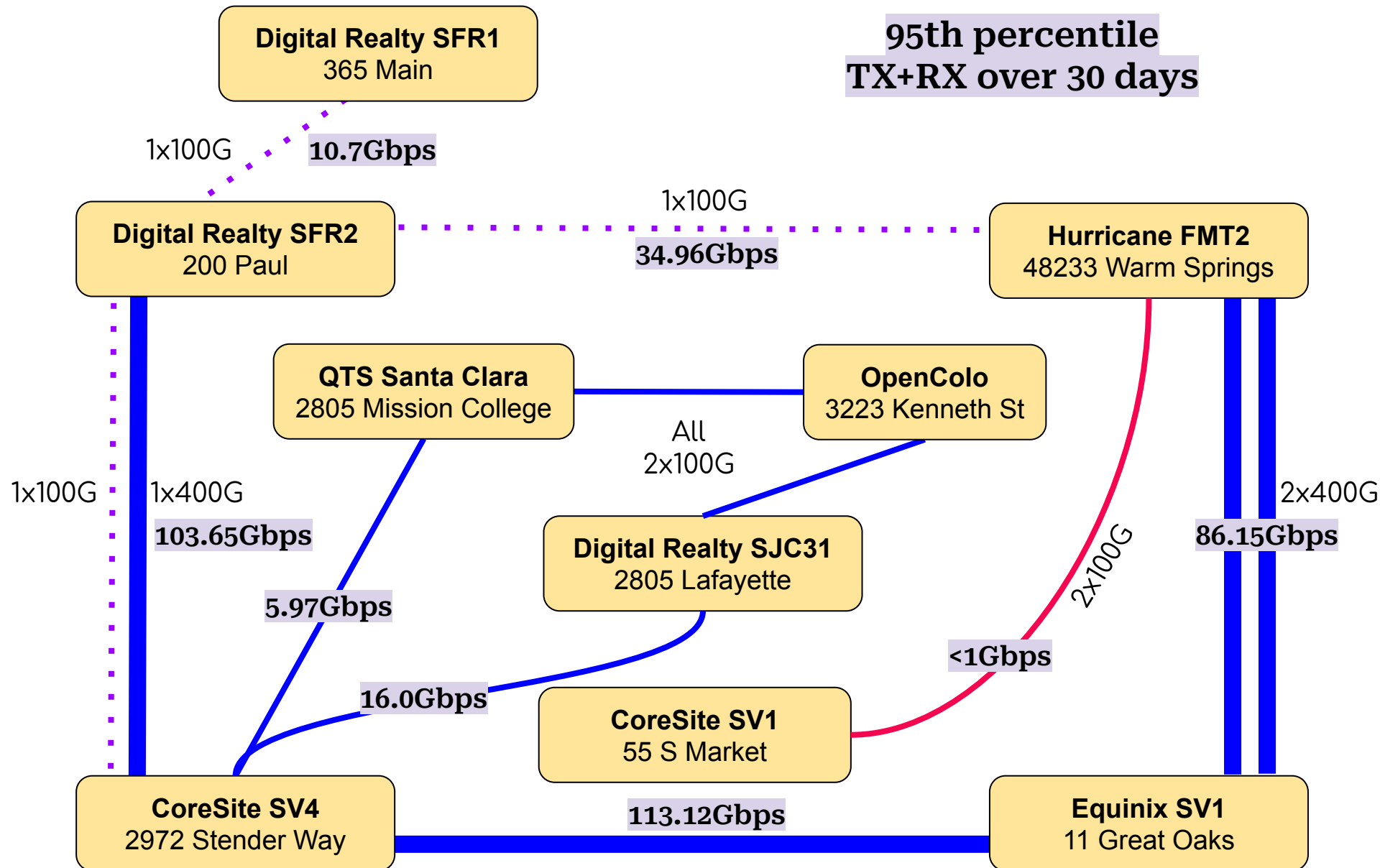
```
hardware port-group 2 select 1x-qsfp-dd(Et35)
```

```
interface Ethernet35/1  
  transceiver frequency 192100.000
```

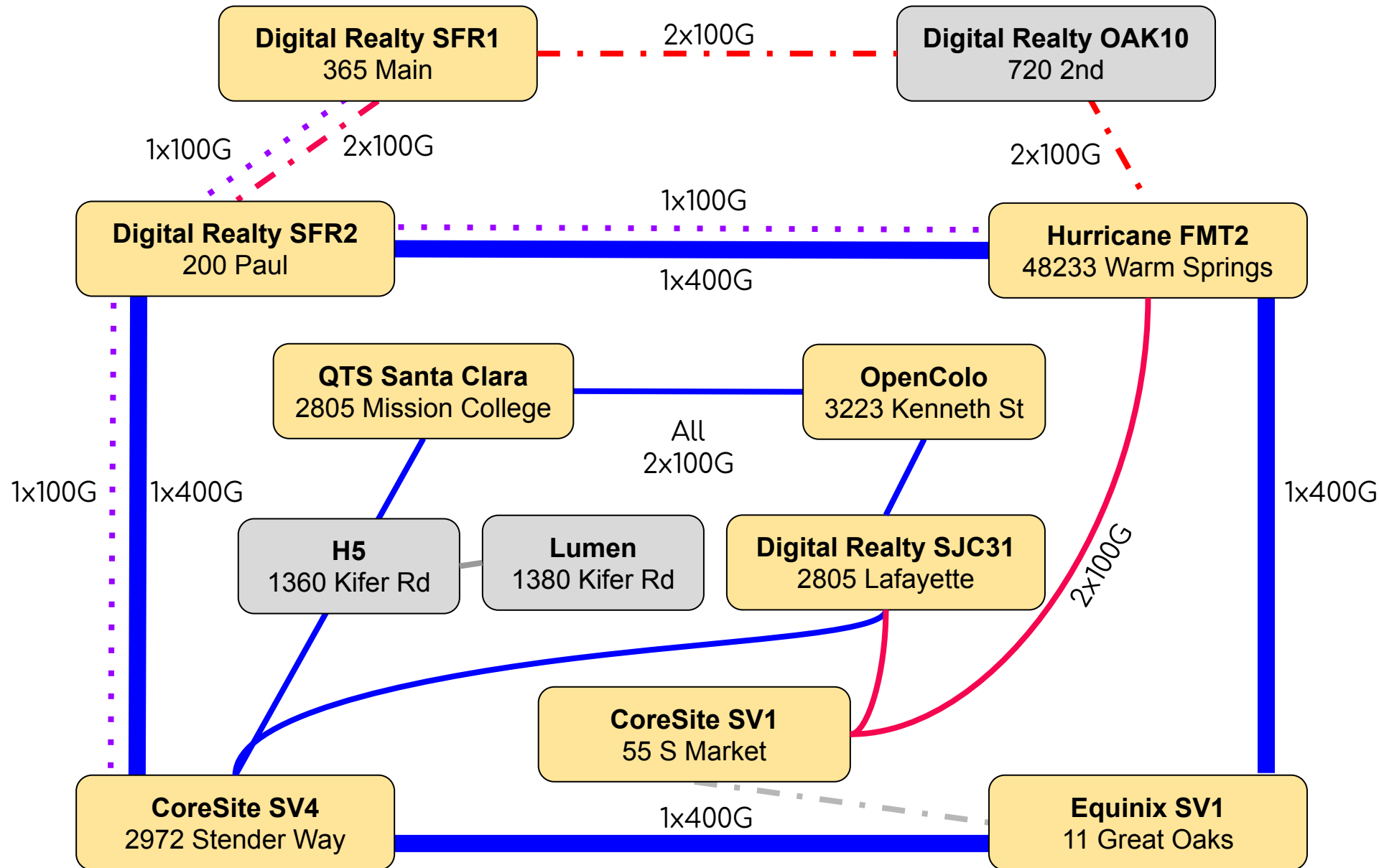
Legacy 2024 Backbone



Current 2025 Backbone



Envisioned 2026



2025 NA IXP landscape

- Robust L2 fabric w/o STP, VXLAN/EVPN
- Multi-site fabrics (campus and/or region)
- Cross-connection MRC ... \$\$\$
- Difficult caches: Akamai, Google
- Growing caches: Netskrt, Valve, Apple
- New BYO caches: Microsoft MCC
- Growth from regional “access networks” ISP’s - lots of M&A, state & federal grants
- Cloud/content steady state - some pulling back from IX, pushing caches

2024 SFMIX scene

Content moves to {off IX} peering and/or caches

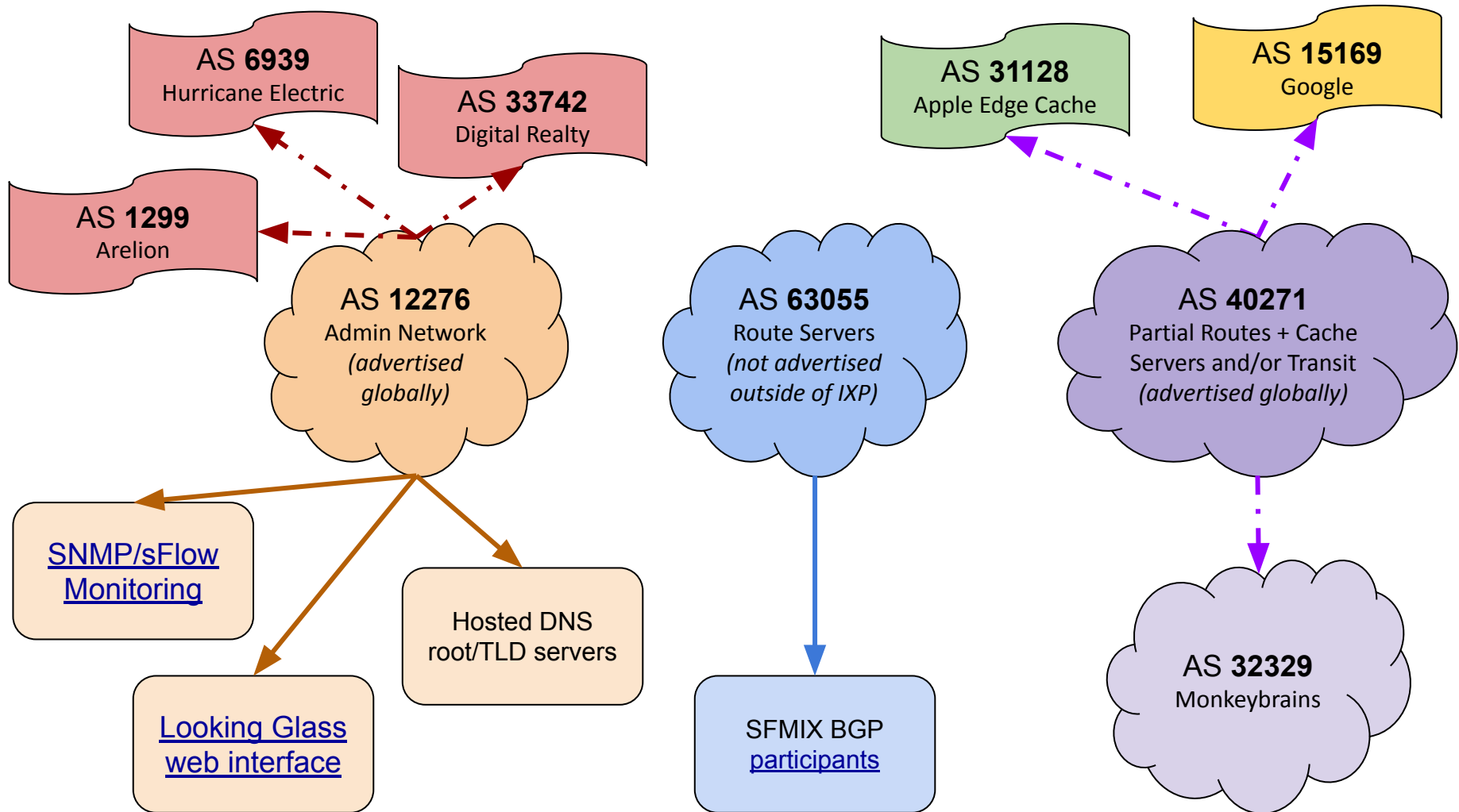
- Regional ISP lost major content peer over IX
 - ISP triggered undisclosed de-peer criteria
 - Content de-peer RS's a year prior
 - Peer is valuable to ISP, vocal customers
 - Content offers PNI, no mutual location
 - ISP escalates to IX for help
- IX not geared to transport PNI's
 - No SLA, tech support overhead
 - Compete against membership
- Content peer did offer PNI to the IX, *if an sourced with an ASN not on the IX...*

2024 SFMIX scene

Proof of concept

- Spin up “aggregator” ASN, get some v4/v6 PI
- Recycle existing Arista, limitations found
- Desire to re-use existing cross-x where possible, add VLAN tag - give more value
- Using EOL Juniper MX (*rib-groups w/ BGP signalling for selective VRF leaking*)
- Started adding caches: Apple, Netskrt, Valve
 - (*refused to join IX as normal member and/or not present in region*)

You get an AS



VRF leak'age

Content “🍏 cache”:

- Receive opted-in-ISP routes
- Not interested in other caches
- Static default route (*no DFZ*)

ISP “A”

- Wants cache + private peering

ISP “B”

- Wants cache + full table?
- No {duplicate} private peering

ISP “C”

- Wants private peering
- No caches



Current status



- Value *{for subset of IX users}* is real:
 - Single ISP filled 20Gbps day 1, scaled back POC due to capacity constraints
 - Convention center: *“This solves so many problems, been waiting for this..”*
 - ISP: *“We already trust you, the IX is more reliable than our transits, do it..”*
 - Recent survey (*~17% of total IX user base*) interest, commits cover CapEx in *~2 yrs*
- Board guidance very KISS - flat rate, 10Gbps \$300/MRC, no SLA, cover costs

Current status

- PO issued qty 2 VRF capable routers
 - Nokia SR-1-24D (*24x 400G QSFP-DD*)
 - Bonus: Inter-op w/ IX VXLAN underlay
 - Challenge: 400G optic form factors
- Strong desire for separation, control-plane
 - Delivery over existing IX cross-x
- Unanswered: Caches need bursty transit..
 - One transit participant: *If >50Gbps, gotta start charging ya for cabinet* - totally fair

Expansion

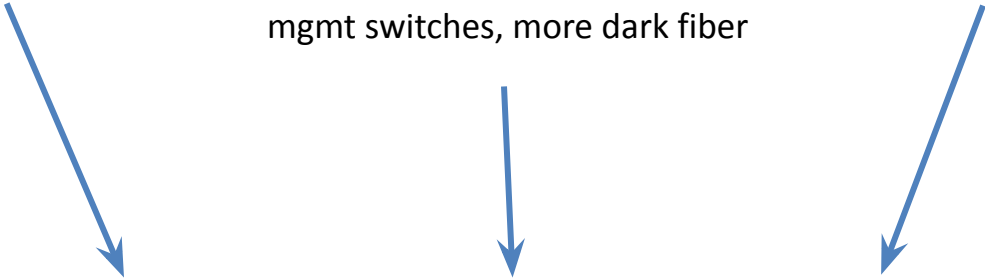
- Sunnyvale
 - H5 (*fka Element Critical*) has expressed interest
 - Possible path into Lumen - reach Cruzio, Surfnet, CENIC, etc
- Oakland
 - Boldyn fiber loops through here today
 - No SFMIX allocated cab, unclear demand?
- Sacramento
 - No content, heavy ISP - Consolidated, DigitalPath, Cal.net, Zeta, Vast/CVIN, etc
 - In discussions w/ Fidium, Zayo, & GoldenStateNet

Financial

400G switches+optics+amps,
Website redesign
Spare 100G switches
new mgmt routers, sparse dark fiber

400G optics+amps, t-shirts,
DevOps consulting, new PDU's &
mgmt switches, more dark fiber

ED professional services, general
liability + D&O insurance, Arista 2x
400G switches in Jan, 2x Nokia 400G
in Nov, almost all dark fiber



Year	2023	2024	2025 (As of Oct 18)
Income	\$274,286	\$302,361	\$362,833
OpEx	\$46,977	\$69,712	\$99,744
CapEx	\$82,415	\$49,609	\$122,168
Bank Balance	\$144,899 EOY	\$154,186 EOY	\$193,028 Current

Projected 2026 Monthly OpEx

Expenses	Avg. Month
Bookkeeping	\$70.00
CPA	\$125.00
Professional Services	\$3,500.00
ARIN	\$41.66
Google Apps	\$64.64
1Password	\$16.00
PO Box	\$18.00
Xero	\$42.00
Domain names	\$3.00
Website hosting	\$25.00
Insurance	\$541.00
Optics, patch cables	\$850.00
Income Tax	\$500.00
Bank/Stripe Fees	\$150.00
Data Centers	\$6,625.00
Dark Fiber	\$10,813.00
Total Expenses	\$23,384.30

Several annual payments shown as per-month (*ARIN, PO Box, etc*)

Dark fiber: Assumes both BIG & Boldyn fully delivered; all below market rate - *thank*  *you!*

Data centers: Well below market rate / pro bono - *thank*  *you!*

Professional services: Well below market rate, quarter time - *thanks*  *Matt!*

EOF



