Members Meeting

May 8th, 2018

Agenda

- Introductions
- Review (2017 & 2018)
  - Participants
  - POP deployments
- Architecture
  - Discards event
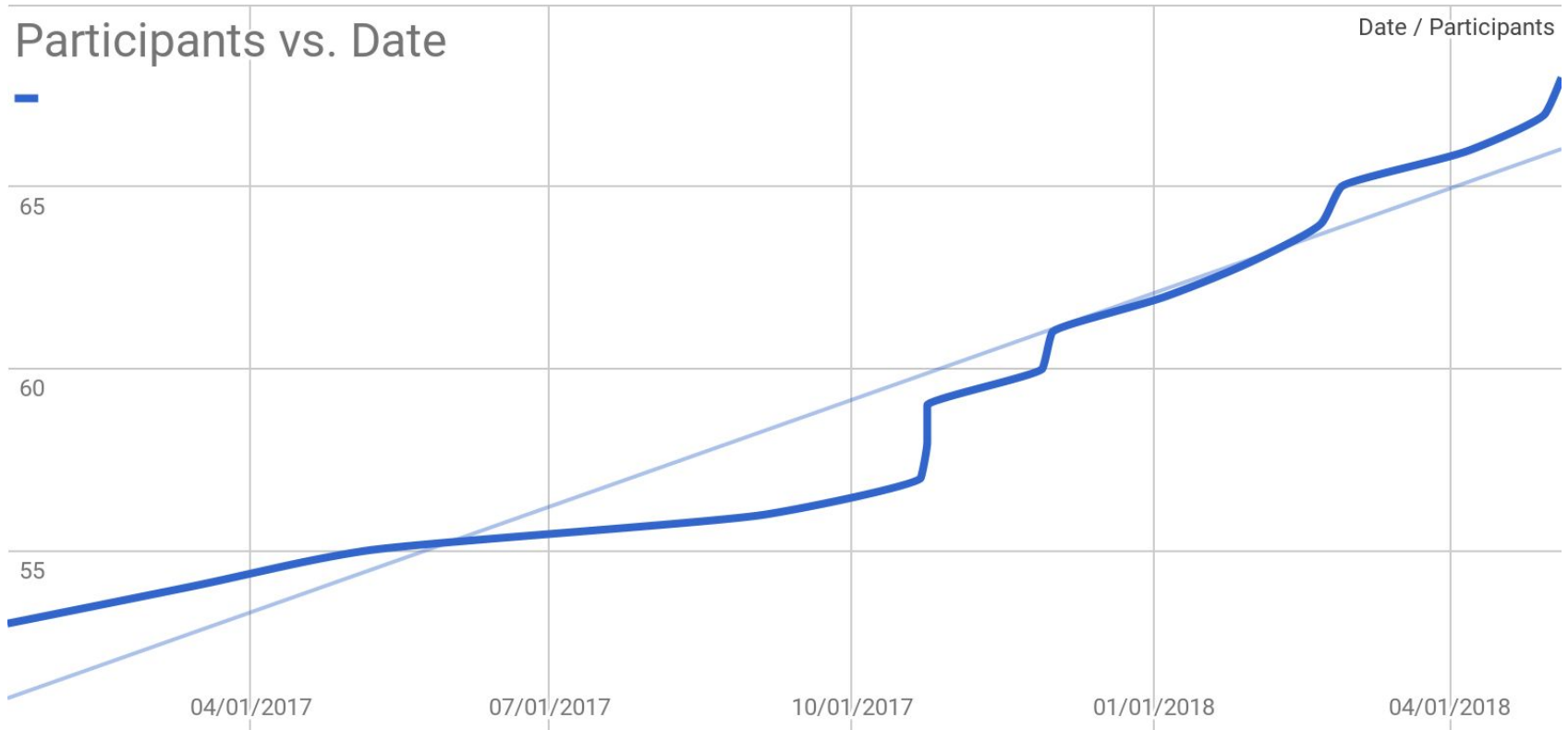- Financial update
- Future opportunities

Introductions

- Board members
  - Justin, Leslie, Matt, Tim, Navin, Bronwyn

- Participants

Thanks Weebly for today's venue!

Participants (2017 to current)

Participants vs. Date — Date / Participants

2017

- Added new participants:
  - *Linode*
  - *Sail Internet*
  - *SkyFiber Internet*
  - *Multex Systems*
  - *Southern NJ Internet Providers*
  - *Cloudflare (production CDN)*
  - *High Desert Internet Services*
  - *WIDE (M-root DNS)*

2018

- Added new participants:
  - *Amaysim/6Net*
  - *Telekomunikasi Indonesia*
  - *Weebly (2nd 10G upgrade)*
  - *SRDF Labs*

- Provisioning:
  - *Amazon (3x 10G LAG up & IP plumbed)*
  - *Necto (port up)*
  - *Packet (LOA issued)*
  - *UnWired Broadband (LOA issued)*
  - *PCH/WoodyNet (10G upgr. - Quad9, DNS root)*

DNS roots & recursive

Root	Organization	Originator	Status
D	University of Maryland	PCH	v4 v6
E	NASA Ames	PCH	v4 v6
F	Internet Systems Consortium	Internet Systems Consortium	v4 v6
J	Verisign	Verisign	v4 v6
M	WIDE / JPRS	WIDE / JPRS	v4 v6

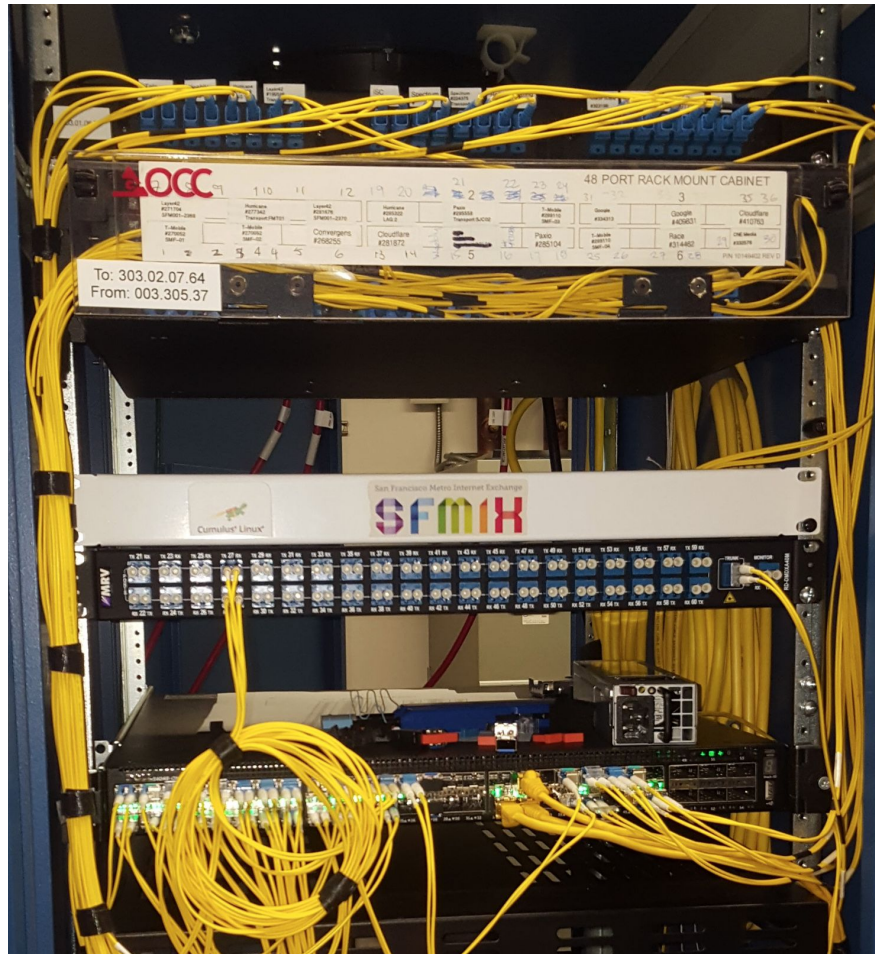| Anycast	Organization
8.8.8.8	Google
9.9.9.9	PCH (IBM)
74.82.42.42	Hurricane

"SFO01" – 365 Main
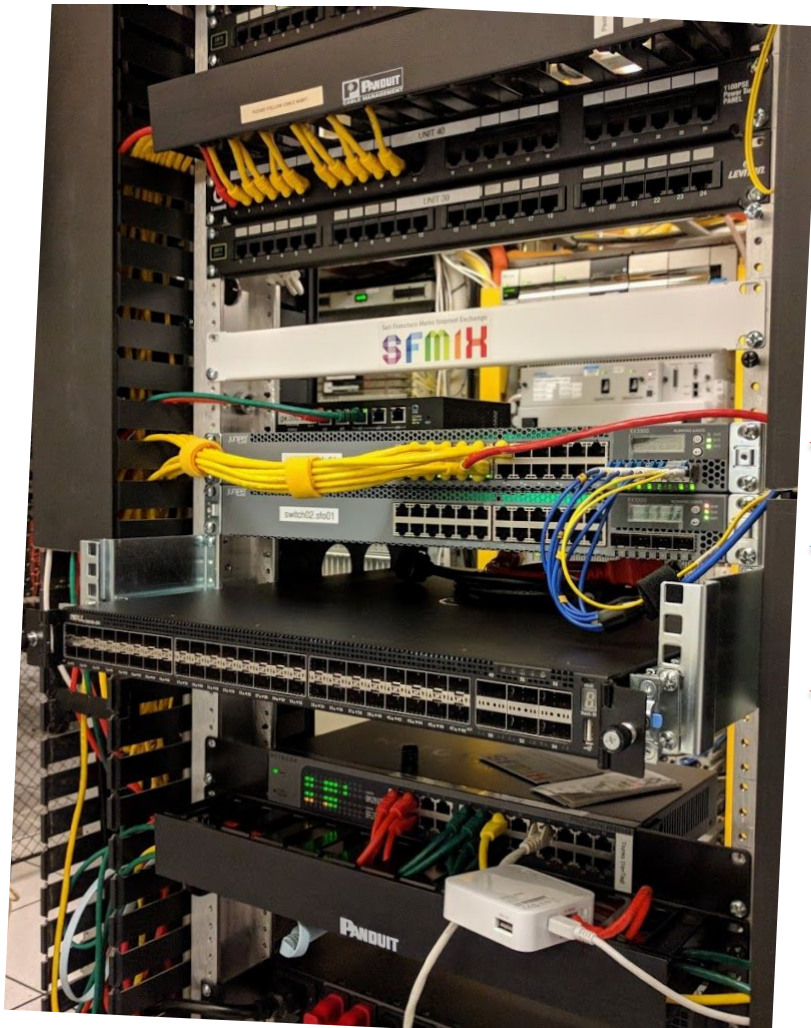
Pre-wired cross-x patching

switch01.sfo01 (EX3300-24T)

cold spare EX3300 (future OOB SW)
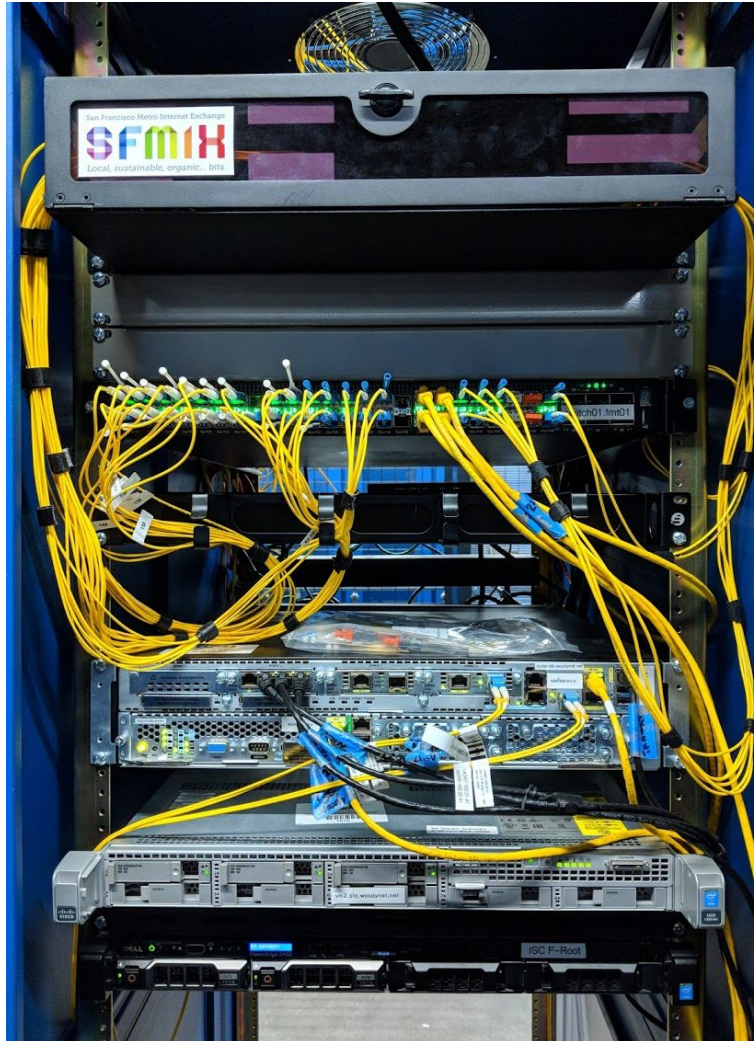
future (Dell S4048-ON) switch

"SFO02" – 200 Paul

Pre-wired cross-x patching

MUX to Wave/Spectrum

switch01.sfo02 (Dell S4048-ON)

"FMT01" – 48233 Warm Springs Blvd.

Pre-wired cross-x patching

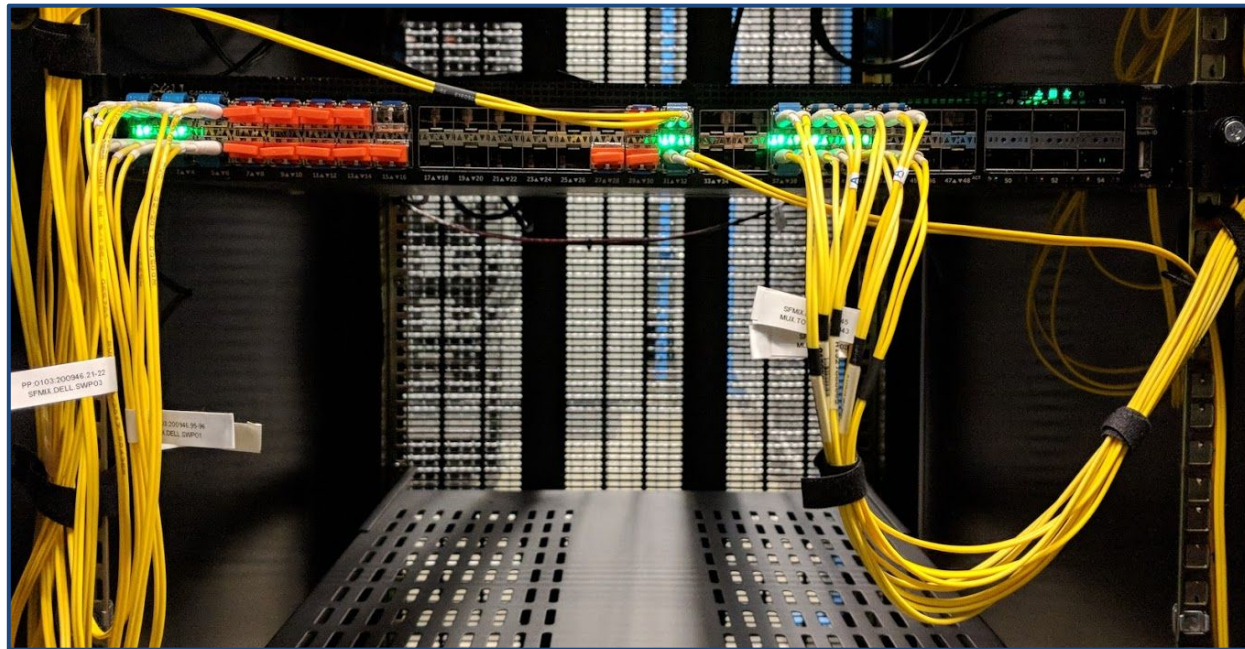switch01.fmt01 (Dell S4048-ON)

Packet Clearing House (router)

Packet Clearing House (DNS cache)

ISC F-root "in a box" (DNS cache)

"FMT01" – 48233 Warm Springs Blvd.

"SJC01" – 11 Great Oaks Blvd.

Ubnt EdgeRouter - OOB

switch01.sjc01
(Dell S4048-ON)

Hackathons

- Average of 4 participants
- Happens every few months
- Work includes:
  - Writing code (Ansible, Python, etc)
  - Onboarding volunteers
  - Administrative
  - Debugging
  - Upgrades
  - Planning

Hackathons

- Many services driven by [Ansible](#) (route server, switch configs, web site, etc.)
- Goal to deprecate YAML to SQL backend
- Very beginning early stages of portal development

- *Really could use more volunteers here, most of us are network / systems engineers - not programmers*

Hackathons

- Participants *(outside of the board)*
  - Pier Carlo Chiodi, James Ouyang, Saima Hashimi, Joe Gross, Ryan Anderson … Thank You!

Architecture

Active POP's

- SFO01 (est. 2006)   365 Main
- SFO02 (11/2013)   200 Paul
- FMT01 (04/2015)   48233 Warm Springs
- SJC01 (11/2017)   11 Great Oaks

Inactive POP's

- Vantage - 2820 Northwestern (Santa Clara)
- Evocative - 534 Stockton (San Jose)
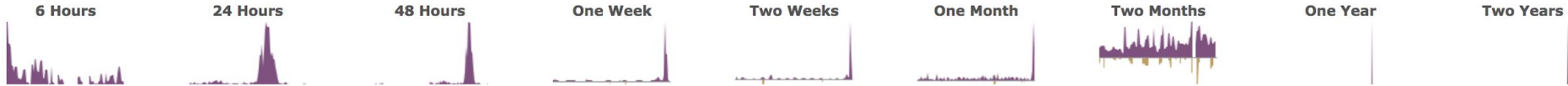- Evocative - 1400 65th (Emeryville)

Switching

- 75% of switches Cumulus Linux on Dell

- Completed migrating from cheap no-name optics to flexOptix
  - 2 participants using BiDi 10G optics for cross-x (pricing) efficiency *wink*

- Would like to depreciate copper by end of 2018
  - lots of troubleshooting, bad cross-x wiring, distance issues
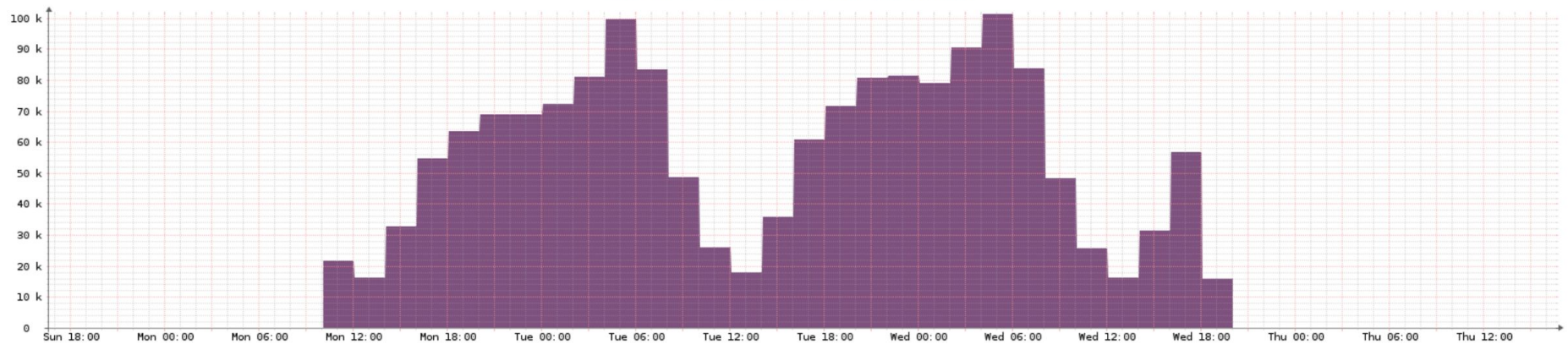
Packet Loss on the FMT Switch on Feb 5th 2018
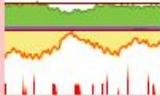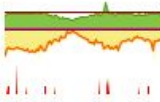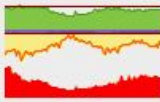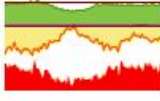
DWDM (Fremont - San Jose)

🏷 **swp37** Transport (SJC01 via Paxio LAG #1 Ch 37 DWDM)		← 248.220Mbps → 30.340Mbps ← 0.000pps → 4.980kpps	10.000Gbps fullDuplex
🏷 **swp38** Transport (SJC01 via Paxio LAG #2 Ch 38 DWDM)		← 247.860Mbps → 30.980Mbps ← 0.000pps → 4.960kpps	10.000Gbps fullDuplex
🏷 **swp39** Transport (SJC01 via Paxio LAG #3 Ch 39 DWDM)		← 266.330Mbps → 30.500Mbps ← 0.000pps → 4.750kpps	10.000Gbps fullDuplex
🏷 **swp40** 🚩 Transport (SJC01 via Paxio LAG #4 Ch 40 DWDM)		← 252.460Mbps → 29.880Mbps ← 0.000pps → 4.740kpps	10.000Gbps fullDuplex
🏷 **swp41** 🚩 Transport (SJC01 via Paxio LAG #5 Ch 41 DWDM)		← 246.860Mbps → 33.660Mbps ← 0.000pps → 5.320kpps	10.000Gbps fullDuplex
🏷 **swp42** 🚩 Transport (SJC01 via Paxio LAG #6 Ch 42 DWDM)		← 250.510Mbps → 29.570Mbps ← 0.000pps → 4.720kpps	10.000Gbps fullDuplex

DWDM (Fremont - San Jose)

```
switch01-fmt01:/home/matt# for i in `seq 37 42` ; do echo "### swp$i" ;
ethtool -m swp$i |  egrep -v '(threshold|Off)' | egrep dBm ; done ;


### swp37
    Laser output power                          : 1.3022 mW / 1.15 dBm
    Receiver signal average optical power       : 0.0032 mW /-24.95 dBm
### swp38
    Laser output power                          : 1.6600 mW / 2.20 dBm
    Receiver signal average optical power       : 0.0033 mW /-24.81 dBm
### swp39
    Laser output power                          : 1.6630 mW / 2.21 dBm
    Receiver signal average optical power       : 0.0035 mW / -24.56 dBm
### swp40
    Laser output power                          : 1.2671 mW / 1.03 dBm
    Receiver signal average optical power       : 0.0023 mW /-26.38 dBm
### swp41
    Laser output power                          : 1.5080 mW / 1.78 dBm
    Receiver signal average optical power       : 0.0032 mW /-24.95 dBm
### swp42
    Laser output power                          : 1.5787 mW / 1.98 dBm
    Receiver signal average optical power       : 0.0030 mW /-25.23 dBm
```

DWDM (Fremont - San Jose)

SPECIFICATION

FORM FACTOR	SFP+
CONNECTOR	LC
INTERFACE	DWDM
WAVELENGTH TX	C15 - 1565.5 nm
WAVELENGTH RX	1565.5 nm
DISTANCE	80 km
POWERBUDGET (DB)	23 dB
TRANSMIT MIN.	0 dBm
RECEIVE MIN.	-23 dBm
TRANSMIT MAX.	5 dBm
RECEIVE MAX. (RECEIVER OVERLOAD)	-6 dBm

FLEXOPTIX   HOME

Home > Universal Transceiver > 10G SFP+ DWDM ZR | 80 km, 100 Ghz Grid - C-Band, Sin

10G SFP+ DWDM ZR C15 / 1565.50
80 km, 100 Ghz Grid - C-Band, Singlemode, LC

P.1696.23.15
SFP+
DWDM ZR

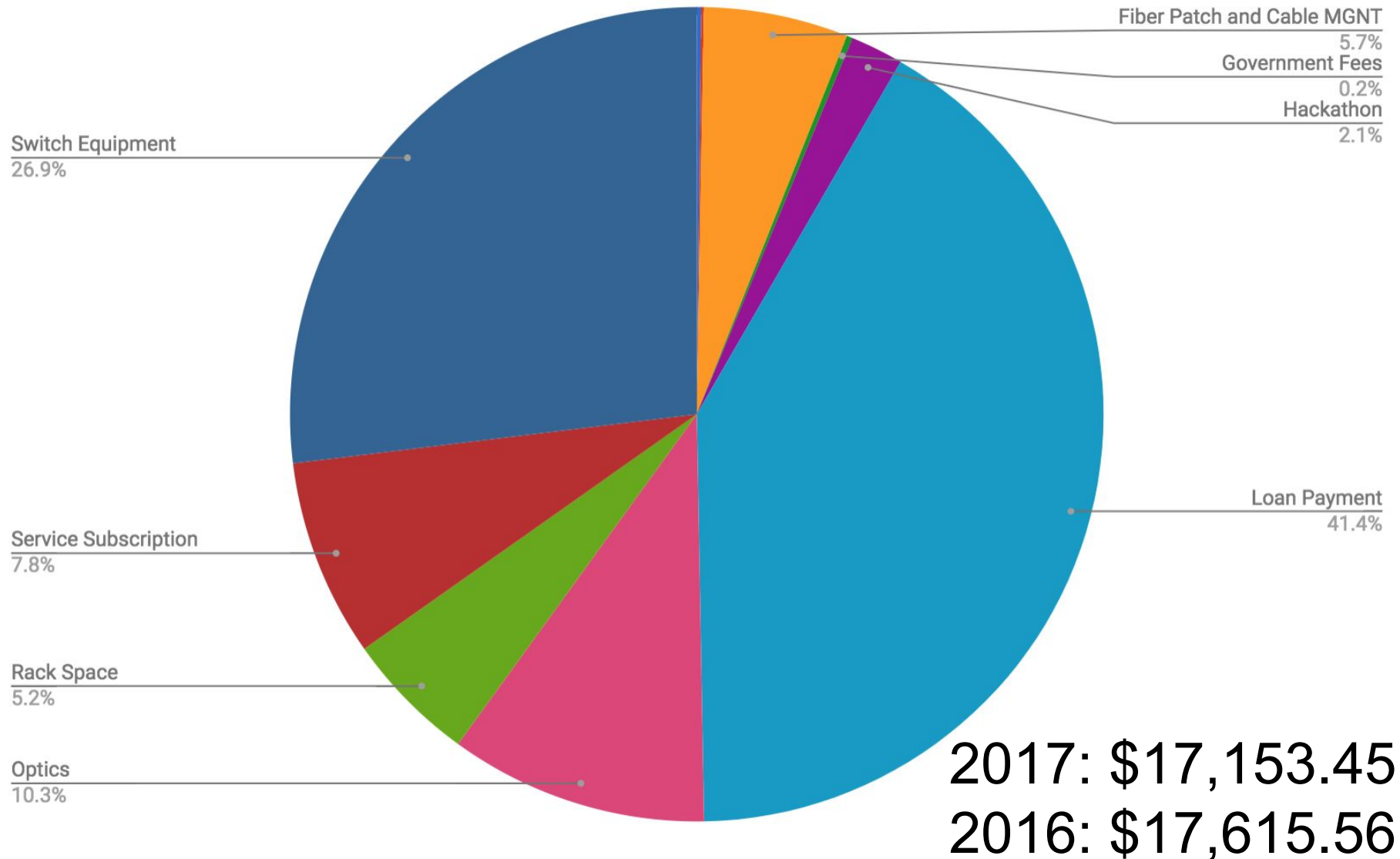Thankfully flexOptix specs are conservative

Financial

- Start charging in mid 2015
  – Halfway paid off previous loan to Matt and paid off Tim
  – Covering hardware, SaS, ARIN, bookkeeper and CPA
- Stay true to our mission
  – regional, affordable, focused
  – $995/yr =<1G, $1995/yr more than >1G
  – registered non-profit's may request comp

Financial

- January 01, 2017 balance: $16,538.86

- January 01, 2018 balance: $23,325.41

- Outstanding debt: $11,008
  - Pay back start-up loan (>⅔ paid off)

- Current balance (as of May 8, 2018): $60,620.28

- Estimated balance (as of mid July): $72,404.28
  - Confirmed outstanding member dues

2017 Expenditures

Fiber Patch and Cable MGNT
5.7%

Government Fees
0.2%

Hackathon
2.1%

Switch Equipment
26.9%

Loan Payment
41.4%

Service Subscription
7.8%

Rack Space
5.2%

Optics
10.3%

2017: $17,153.45
2016: $17,615.56

2017 P&L

Revenue	
Dues Income	19,940
Support Income	4,000
Total Revenue	**23,940**
Gross Profit	**23,940**
Operating Income / (Loss)	**23,940**
Other Income and Expense	
Bank Service Charges	(10)
Dues & Subscriptions	(260)
Fees & Licenses	(20)
General Expenses	(480)
Insurance	(317)
Office Expenses	(799)
Telephone & Internet	(1,227)
Total Other Income and Expense	**(3,112)**
Net Income / (Loss) before Tax	**20,828**
Net Income	**20,828**
Total Comprehensive Income	**20,828**

2018 YTD Expenditures

Service Subscription
18.7%

Optics
24.1%

Hackathon
2.6%

Bank Fee
3.4%

Rack Space
51.2%
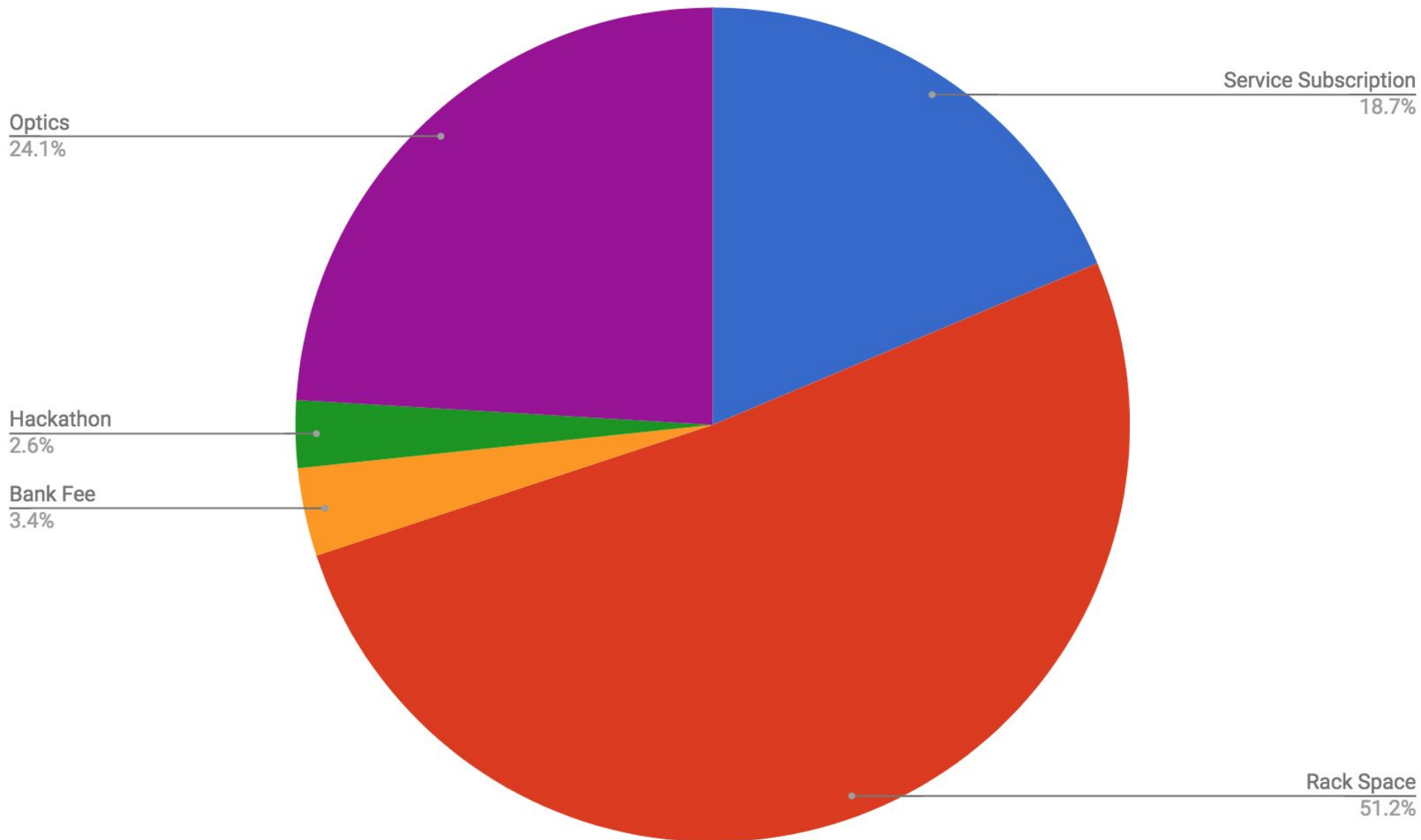
2018 YTD $1,756

Catching up on Paperwork…

SFMIX is a bit behind on our bookkeeping and paperwork with the Government.

- The books
  - Invoicing
  - Taxes
  - Budgets
- Government Paperwork
  - IRS
  - The State of CA Attorney General
  - Franchise Tax Board
  - Secretary of State

Planned 2018 CapEx

- ~$5k DWDM 120km (25dB) optics, qty 12

- ~$2k restock 1 & 10G optics, patch cables

- Large buffer switch(es)
  - Possibly $8K a unit.
  - How to get the price down?

Membership payment status

- Paid up members as of 5/7/2018:

  Amazon.com, Digital Ocean, Fire2Wire, Google, Hurricane Electric, IX Reach, Linode, Pubmatic, Two P, RocketSpace, Unwired Ltd, Weebly, Necto, Softcom

- Exempt (DNS and/or operational insight):

  PCH/WoodyNet (D), ISC (F), WIDE (M), RouteViews

Membership payment status

Total 24 awaiting payment ($64,800)

Committed ($13,955)

Altiora, CNE Media, Cloudflare, Digital Realty / Telx, DNS-OARC, Ether Web Network, Fastmetrics, Limelight, Monkeybrains, Oath (formerly Yahoo!), Out of Wall, Paxio, Race Telecommunications, StackPath (formerly ReliableHosting), T-Mobile, Tekify Broadband, UnitedLayer, Verisign, Wave Broadband, Webpass, Yelp

2018 planned activities

- Deprecate remaining copper switch
  - SFO01 (365 Main): Cumulus S4048-ON in place, schedule window to perform migration

- Route Servers
  - Enforce IRR, OriginAS, RPKI, filters, etc.
  - ~~OpenBGPd (Q1)~~ & Upgrade BIRD (Q2)

- Continue to troubleshoot discards

- Cleanup of financials and tax filings

Discussion

- Discards
  - Switch to [large buffers switches]?
    - BCM Jericho: [Dell S4248FB-ON], [Arista 7280SR-48C6]

- Redundancy
  - Dual power (365 Main)
  - Switch to VXLAN (away from STP)
    - Would facilitate alternative providers between POP's
    - LoNAP, INEX, etc other IXP's already switched

- Expansion
  - 55 S Market (Coresite) .. $5k/yr in power

EOF