Members Meeting

April 6th, 2015
Agenda

- Introductions
- Architecture
- Services available
- History (est. 9 years ago!)
- Expenditures
- Sustainability
- Future opportunities
Architecture

**Active POP’s**
- SFO01 (est. 2006)
- SFO02 (11/2013)
- FMT01 (04/2015)

**Future POP tasks**
- SCL01, SCL02, MTV01:
  Transport (contract signed, cabinet allocated, OOB transit provisioned)
- SJC01: Mgmt approval
“SFO01” – 365 Main

- Pre-wired cross-x patching
- (soon to retire) OpenBSD 4.1 MRTG
- Juniper EX3300-24T (2x 10G available)
- Guerrilla marketing (free stickers)
- Transit / OOB switch (Netgear)
- (newly installed) Proxmox VM host
- ServerTech managed PDU
“SF002” – 200 Paul

- 60 SMF strands (1/4\textsuperscript{th} consumed)
- (behind) 2x ServerTech PDU’s
- Cumulus 48x10GE 4x40GE switch (A & B power fed)
- OOB switch (Netgear GS524E)
- SFMIX AS12276 router, Esgob
- Packet Clearing House
- Verisign
- Proxmox VM’s (rs #1, web site, mailman)
- Transit switch (Juniper EX2200-C)
- RouteViews (after photo taken)
SFMIX ‘design patterns’

**Slow start**

- Consider a site when owner sponsors space, power, cross-x’s along with an identified transport provider
- Initially transport agnostic (MPLS, dim, wave)

**Mature as demand warrants**

- Migrate to dark when possible
- Partner w/ colo sales & marketing for outreach/education

**Regional patriotic effort**

- Built and consumed by local volunteers & organizations
Services

DNS

- PCH  D-root, E-root, 100+ TLD’s
- ISC   F-root, TLD’s
- Verisign  J-root, .com gTLD
- Esgob  extensive free secondary DNS

R&E

- RouteViews  powerful debugging tools, feeds bgp.HE.net tool
- RIPE atlas probe: https://atlas.ripe.net/probes/10415/

Route Server

- 70% of membership utilized for IPv6, 45% IPv6
2006..

- Landscape: Equinix (San Jose), S&D PAIX (Palo Alto)
- Anchor site: 365 Main Street
- Fiscal sponsor: Packet Clearing House
- 6 members: GlobalNetOpex, Meta Interfaces, Centauri, UnitedLayer, Unwired, Layer42
- Single 6509 (Sup2), all copper fast & gigE
2013

- Landscape: Equinix 2x IX’s, CoreSite Any2
- Open-IX movement gains traction
- Telx + Layer42 offer to expand in 200 Paul Ave
- 10GE available at both sites
- 10 members, added: Telx, Lookout, Hurricane Electric, Webpass
- IPv6 allocations (*more on that later..*)
2014

- Landscape: Equinix 2x, Any2, AMS-IX Bay
- 19 members, added: Yelp, Digital Ocean, Monkeybrains, PCH, Spectrum Networks/Wave Broadband, Monkey Inferno, Reliablehosting/Black Oak, Esgob, Weebly, ISC
- BIRD based dual-stack route server (AS63055)
- SFMIX admin assets (web site, mailing list, primary DNS) moved to 200P VM’s (AS12276)
- Expansion: Vantage (Santa Clara) campus
(current) 2015

- 22 members, added: Verisign, RouteViews, T-Mobile
- Admin network multi-homes: Telx, ISC, & Hurricane
- Formalized as 501(c)6 non-profit: same as SIX, NWAX
- Maintenance: software & physical wiring updates
(planned) 2015

- 501(c)6 non-profit effort:
  - Hold first board meeting
  - Insurance
  - Sign over existing contracts
- Expansion: Layer42 (Mountain View & Santa Clara), Hurricane Electric (Fremont), Vantage, Coresite, QTS, & 365Main “SV7”
- (additional) maintenance: software & physical wiring updates (move to dark and/or protected L2 circuits)
- IPv6 re-number day: 4-byte ASN compliant
  - Likely sequential instead of encoding 2-byte number
ARIN: peering /48, rs ASN
200 Paul: 1& 10GE optics, patches, OpenWRT OOB
2014 - Expenditures

Yearly Total
$11,695.28

- ARIN: admin /24 & /48
- 501(c)6 incorporation
- VM servers
- OOB switches, managed PDU’s
- 1 & 10GE optics, patches
- Logo, stickers
(early) 2015 - Expenditures

Yearly Total
$2,062.66

- 10GE optics, patches
- (no ARIN bill, yet)
- (many new sites coming)

ARIN
Equipment
Legal
Marketing
Optics
Patch Cords
Physical Infrastructure
Expenditures Summary

• $14,605.19 over 1.5yrs (late 2013 to current 2015)
  – Many “one time” events – incorporation, server VM hosts, logo, ARIN initial resources

• Not exhaustive - Google Apps, domains, labeling tape, pastries, etc.
  – Trivial expenses not recorded or just written off as a donation
  – Business cards, parking tickets, conferences, gas, etc. obviously not counted
North America non-profit IX’s

• SIX “One time fees, annual donations”
• NWAX “GigE free, 10G $2950/yr”
• TorIX “GigE $1200/yr, 10G $10,000/yr”

NOT (even by a wide margin) a fair comparison

• Established large membership
• Majority 10GE ports, significantly more routes
• Regional incumbents, no obvious commercial “competitor”
Sustainability

• 501(c)6 maturity brings new responsibilities:
  — Insurance (colo requirement)
  — Tax filing

• Bare minimum yearly operations (assuming zero growth)
  — $3k : ARIN resources, domain names, insurance

• “Comfortable” budget : $10k/yr
  — Covers bare minimums + optics, patches, misc. consumables
  — Backup / expansion equipment reserves, “rainy day” fund
  — Continue with all volunteers, no paid staff
Current & previous sponsors

• Colo, power
  – Digital Realty, Telx, Layer42, Hurricane Electric

• Transit, transport
  – Layer42, Telx, ISC, Paxio, Spectrum Networks

• Switching
  – Cumulus Networks, Packet Clearing House, JNet Solutions
In-kind support

- **Optics**
  - flexOptix (discounted pricing)

- **Transport equipment**
  - DE-CIX (6x 16 channel DWDM muxes + 16 mating optics! *danke*)

- **Administrative guidance**
  - PCH, INEX, SIX, NWAX

- **Legal**
  - Kaufhold Gaskin LLP (Ruth Hawley)
Future

• Expand membership
  — Pushing aggressively with large content players (*Google calculated 11Gbps based on existing member participation*)
  — Spread the word! T-shirts @ NANOG63?

• 2nd route server
  — Current is BIRD+FreeBSD, looking at Quagga+Ubuntu

• Improve operations
  — IXP Manager as authoritative database
  — QBRIDGE support for Cumulus
  — Extend Ansible modules (love to open source for other IX’s)
Discussion

• Sustainability
  — Fee by port speed (1 or 10GE), by 95\textsuperscript{th} percentile?
  — Fundraising drives (SIX 3yr mean $11k/yr)?
  — Continue to rely on \textit{Bank of Matt & Tim} (not scalable)?

• Volunteers
  — Operations software (provisioning, monitoring)

• Consider the project a good attempt and fold?