Better, faster, and more local access to the Internet and the Cloud in Maine

Jeff Letourneau, Executive Director
Networkmaine

Jim Troutman, Director
NNENIX
Internet Transit Capacity: 40 Gbit/sec
CDN and Peering Capacity: 152 Gbit/sec
On-net CDN Cache Capacity: 92 Gbit/sec
R&E Private Peering Capacity:

60 Gbit/sec
62% of all IP Traffic from CDNs or Peering
14 Years of Internet Transit Contracts

Growth matches drop in unit costs
NNENIX

Just getting started
This is NOT a technical talk.

This is about business, and the business of the Internet.

If you want more technical, there is a NNENIX webinar on the MTUG website from April 2017 you can watch
How much do you spend on your Internet connectivity today?

What do you get for that cost?

How much did you pay 10 years ago?
What is NNENIX?

A not-for-profit organization (IRS 501(c)3 applied for)

- All volunteer - 3 founding Directors, 2 technical ops staff
- Educational mission to promote and foster better Internet infrastructure in Maine and the region
How does NNENIX help promote and educate about the Internet?

- By providing training, education, and consulting support about how the Internet really works (technical and political), training on how to setup BGP routing, peering relationships, and help collaboration in the network operator community & for economic development

- Also a physical Internet Exchange Point (IXP) with locations for network operators to connect to each other
• April 2016 - Initial concept discussion at MFCUG 2016
• July 2016 - 1st organizer meetings (Letourneau, McCarthy, Troutman)
• September 2016 - TAM meeting, 1st public announcement
• November 2016 - Incorporated non-profit entity
• March 2017 - PCH donation of equipment
• November 2017 - Hurricane Electric arrives in Portland
• February 2018 - Orono location operational
• April 2018 - 6 members - UMaine, PCH, WoodyNet, HE, McFarlane Associates, Pioneer Broadband (connecting)
• NNENIX was formed with support and donations from Maine Fiber Company, Packet Clearing House, Cisco Systems, and the University of Maine system

• Maine Fiber Company
  • Donation of cabinet space and power in Portland for our initial start-up period
  • short term loan to cover organizational startup expenses ($10,000)
Packet Clearing House (PCH.NET)

- global non-profit institute dedicated to fostering IXPs and improving Internet infrastructure around the world, supported by various governments, Internet Service Providers & tech companies

- Operator of over 120 country code Top Level Domains (ccTLD) for DNS

- Major donation of Cisco Nexus 9396 and 3524 switches & support contracts
* Cisco Systems
  * Donation of DC power supplies for 9396 switch
* University of Maine System
  * support for technical operations
  * access to UMS existing caching appliances for NNENIX
  * charter paying member
NNENIX physical Internet Exchange is now operational in two locations:

- Portland, Maine (MFC Regen Hut, 9 Westland Ave.)
  - 1, 10, and 40 GigE ports available, and LAG bundles
- Orono, Maine (UMaine Neville Hall)
  - 1 & 10 GigE ports available, and LAG bundles
- 10 GigE connection between sites
* NNENIX future plans include expansion to:
  * New Hampshire
    * Manchester, Hanover
  * Vermont
    * Burlington
      * University of Vermont wants to host NNENIX in Burlington
  * Expansion will be driven by membership demand
Hurricane Electric created global POP in Portland, Maine because of NNENIX
> Hurricane Electric is a global Tier 1 carrier
> IPv4 100k routes, 1/7th of global IPv4 Internet
> IPv6 26k routes, 1/2 of global IPv6 Internet
> L2 connections available to any other HE POP globally (150 locations)
> will Open Peer with any other NNENIX member
> Market leading IP transit pricing now available in Maine
> Eventual ring redundancy to Moncton, NB
Benefits of an IXP are many - latency, cost, capacity, resiliency

Avoid the “boomerang effect” for traffic

Local traffic stays in Maine, not going to Chicago, NYC, or Boston

- Faster connections at a lower cost
- Resiliency and redundancy in the event of fiber cuts or other network outages in the region or globally

For example, students at home doing homework for K12 and UMaine system, will have more direct access
Access to content distribution caches

Local servers, faster delivery at lower cost

Today NNENIX provides access to Netflix, Akamai and Google content caches

this is typically 40-50% of residential ISP peak traffic

traffic comes from the exchange instead of via IP transit.

More Content Delivery Networks will join in future & larger carriers
The global Domain Name System (DNS) relies on thirteen Root servers to operate.

Root Servers are all over the world, instances of 10-150 server clusters each, handling billions of requests per day

www.root-servers.org
• NNENIX is hosting Root DNS Servers
• “E” Root DNS server instance operated by NASA
  • e.root-servers.net
• “D” Root DNS server operated by University of Maryland
  • d.root-servers.net
• Verisign “J” Root server instance coming soon
## Wholesale IP Transit Pricing

**1998-2015 - from drpeering.net**

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• NNENIX is open to affiliate membership from anyone ($250/year) to show support

• Open to full membership with an IXP port (speeds from 1 GigE to 40GigE), for any organization that meets the technical requirements (BGP, ASN, IP addresses)

• $250/month for 1 GigE Port, $500 (currently) for 10 GigE Port

• Charter Member Promotion - 3 year agreement
  • 1st year zero cost, 2nd year 50% discount, 3rd year full price
• We need your support - operating on a cost recovery basis only
  • Become a member - buy a port (or two!)
  • donations needed: cash, transport waves, colo space
  • meeting venue sponsorship
  • additional switching equipment
  • volunteer technical operators
  • board membership
Is the Internet in New England important to you?

Join Martin Hannigan, myself, and 120 others at the New England Peering Forum 2018

June 22nd 10am-7pm at MIT for a day of talks, networking breaks, lunch, and a social beer & wine reception.

nepeeringforum.org

$35 per person