

OPEN-IX
A PROPOSAL TO FIX A PROBLEM
DRAFT VERSION 5.2

OPPORTUNITY

There are two opportunities for sea change in the North American Internet market. First, there is significant support for the concept of business-neutral and member-governed Internet exchanges. Second, an additional and complimentary opportunity exists for increasing market share amongst data centers by significantly reducing interconnect complexity and cost and increasing the level of competition amongst them while improving their access to networks within critical interconnection markets.

WHAT IS OPEN-IX?

Open-IX serves as a self-regulatory body of owners, operators, users and those concerned with Internet exchanges in North America. Open-IX intends to:

- 1) Encourage the creation and development of, and the investment in Internet exchanges by developing minimum standards of performance
- 2) Promote common and uniform specifications for data transfer and physical connectivity.
- 3) Improve IX performance by developing criteria and methods of measurement to reduce the complexity that restricts interconnection in fragmented markets.
- 4) Certify Internet Exchanges that meet these standards..

The Open-IX standards and framework creates an organized and deliberate method to foster this change efficiently, rapidly and in partnership with the datacenter and IX community, fully supported by the Internet community at-large.

PROBLEM STATEMENT

There is a centralized density of network providers in common centers in North America, resulting in network expansion difficulties outside of those centers and a lack of resiliency in case of disaster. This limits customer choice of data center facilities because data centers with limited network connectivity are not able to attract relevant interconnection density to make these alternatives viable. Solving this problem should lower costs for all parties and spur internet growth.

THE INTERCONNECT PROBLEM

The cost to provide a physical inter-connect versus the value to the purchaser is not reflected properly. Inter-connects also used as a tool to deny significant access to alternative facilities.

Let's assume that a delivery infrastructure using an advanced optical interconnect delivery system configuration that can provide interconnect for 1440 fibers in an standard frame that occupies a liberal footprint of 64 square feet in a conditioned data center space. That would equate to rack rent at a standard kW cost of about \$960 MRC. The available interconnect count would be 720 pairs. At a conservative cost per interconnect of \$300 MRC this equates to \$432,000 MRC in revenue per frame. The cost of the service frame itself is about \$30,000 and it might be expensed over a five-years as telecom infrastructure.

It should be understood that there are additional costs required to operate the interconnect service. Those costs are typically sunk into facility expense as measured by the kW cost calculation which was designed to express a fair infrastructure expense e.g. cost of energy delivery, rent, interconnect piping and service delivery components.

EXAMPLE OF THE INTERCONNECT PROBLEM – FIBER INTERCONNECTS EACH

Expense	Datacenter A	Datacenter B	Datacenter C
MRC	\$500 ea.	\$375 ea.	\$0 ea.
NRC	\$1000	\$500	\$200 - \$600
36 mos. Cost	\$19000	\$14000	\$200 - \$600
Lifetime Cost	NA	NA	\$200 - \$600

EXAMPLE OF THE IXP PROBLEM – 10GE PORT

Expense	Commercial IXP	Member IXP-A	Member IXP-B
MRC	\$2,500 ea	\$1,000 ea	\$1,500 ea
YRC	\$30,000 ea	\$12,000 ea	\$18,000 ea

SCOPE

Scope of the initiative is North America.

WHO WE ARE AND OUR AFFILIATIONS

Like-minded individuals comprise the Open-IX Interim Board. All members of the board are volunteers who represent the Internet community in the United States. We represent ourselves and not our employers, who may join OIX at a later date:

- Paul L. Andersen, CIRA
- Donald S. Clark, Google
- Dan Golding, Iron Mountain
- Martin Hannigan, Akamai
- Keith Mitchell, SMOTI
- David Temkin, Netflix
- Barry Tishgart, Comcast

HOW WE REPRESENT THE INTERNET COMMUNITY NOW AND IN THE FUTURE

The current slate of volunteers represents the community of network and data center operators. The community supports this group through a partnership, and our interactions at network operator and Internet community meetings. Participation in our latest survey, and public updates in the NANOG and RIPE forums and direct interactions with IXP's and data centers underscores the support and community governance aspects of our project. At a later date, we will ask the community to ratify the make up of the committee as "certifier" of standard compliance projects deemed inline with the goals and objectives of the project at-large and following established best current practices.

In the future we expect to have a formalized governance process that will support the relationship between data center, IX operators and the community. This governance process will be responsible for ensuring that data center and IX Operators continue to serve the community's best interests - including outreach, market expansion and fiscal responsibility.

NEUTRALITY

Open-IX Association will not compete with its members, offer services, or operate in any manner that has the appearance of non-neutrality.

BUSINESS AND SOCIAL OUTREACH

Open-IX seeks to ensure that all IX operators are able to communicate with both potential and current members and allow peers (members) of all North American internet exchanges the ability to meet and socialize in a neutral environment on a regular basis. Sponsorship would be provided by member exchanges in a manner consistent with their attendee base with no expectation of favor.

Open-IX will also foster communication through tools such as PeeringDB.

HOW THE PROPOSAL AND CERTIFICATION PROCESS WORKS [in progress]

Proposals for IXP building and standards certification for all is electronically sent to certification@open-ix.org. The board will either provide an "initial endorsement" based on meeting the criteria described below or provide comments to the PI. Once the PI receives initial endorsement, the PI's proposal will be put forward to the Internet community at the next relevant opportunity. The official communication vehicle for Open-IX in North American will be the public@open-ix.org mailing list. After initial presentation to the community, a thirty-day public comments period will commence on that mailing list. Comments will be

collected by Open-IX Directors and reviewed. Proposals with community consensus and compliance with the standards will be deemed to have met all criteria and receive a certification from the Open-IX Association.

[flow diagram to be inserted here]

THE STANDARDS

OPEN-IX FAIR INTERCONNECT COST “FICS “STANDARD

Providers of Interconnects will set and publish a fair interconnect standard price that will reflect both internal/local interconnect as well as interconnects to the building MMR frame.

OPEN-IX IXP STANDARD [Needs minimum technical standards]

1. Meets preferred market definition as identified in Table 1
2. Meets or exceeds “Minimum Service Offering” as defined in Table 2 and Section 2
3. Meets or exceeds “Governance Requirements” as defined in Section 3
4. Agrees to operate the IXP only in an OPEN-IX certified data-center facility of their choice
5. Signs an agreement with Open-IX Association agreeing to the above and in exchange for the IXP certification.

OPEN-IX DATACENTER STANDARD - CRITERIA

1. Will provide adequate rack space to an Open-IX Certified IXP of their choice
2. Will provide adequate power to an Open-IX Certified IXP of their choice
3. Adopts the Fair Interconnect Cost Standard “FICS”
4. Signs an agreement with Open-IX Association agreeing to maintain certification for an initial N-year term

OPEN-IX MMR AND BUILDING STANDARD – CRITERIA

1. Adopts the Fair Interconnect Cost Standard “FICS” for the building MMR including suite to suite or building to building interconnects “extended interconnects”
2. Provides for contractual requirements to maintain the standard in the event of outsourcing of the MMR

- Signs an agreement with Open-IX Association agreeing to maintain certification for an initial N-year term

CONTACT US AND PARTICIPATE

FUNCTION	ADDRESS
Information	info@open-ix.org
Certification Requests or Questions	certify@open-ix.org
Open-IX Interim Board	board@open-ix.org
Public Mailing List Subscriptions	http://open-ix.org/mailman/listinfo/public
DC Standards	TBD
IXP Standards	TBD

1. COMMUNITY MARKET ASSERTIONS

In April of 2013, we conducted a narrowly focused survey as to the ranking of specific markets in the United States to be serviced as by the project. That survey was designed to elicit simple and straightforward responses with respect to where participants would be willing to participate in a an effort submitted by a PI and endorsed by the project.

Question: Please indicate the need for OPEN-IX peering in the following markets

				answered question	37
				skipped question	1
	High	Moderate	Low	No Opinion. (I am not familiar enough with the Metro to comment.)	Rating
					Count
NoVa	54.1% (20)	18.9% (7)	13.5% (5)	13.5% (5)	37
New York / NJ	64.7% (22)	8.8% (3)	14.7% (5)	11.8% (4)	34
Silicon Valley	54.5% (18)	18.2% (6)	9.1% (3)	18.2% (6)	33
Chicago	54.5% (18)	24.2% (8)	9.1% (3)	12.1% (4)	33
Los Angeles	50.0% (17)	29.4% (10)	8.8% (3)	11.8% (4)	34
Miami	42.4% (14)	27.3% (9)	12.1% (4)	18.2% (6)	33
Dallas	39.4% (13)	33.3% (11)	6.1% (2)	21.2% (7)	33

Atlanta	35.3% (12)	29.4% (10)	8.8% (3)	26.5% (9)	34
Seattle	21.2% (7)	21.2% (7)	36.4% (12)	21.2% (7)	33
Toronto	12.9% (4)	22.6% (7)	32.3% (10)	32.3% (10)	31
Denver	27.3% (9)	27.3% (9)	12.1% (4)	33.3% (11)	33
Boston	24.2% (8)	33.3% (11)	21.2% (7)	21.2% (7)	33
Phoenix	21.9% (7)	21.9% (7)	21.9% (7)	34.4% (11)	32
				Other (please specify)	8

Table 1 Market Survey Results

2. MINIMUM SERVICE OFFERING FOR IXP

Any IXP operator seeking support of the community must also propose the following minimum services.

i. Public Internet Exchange “IX”

1. A metropolitan-wide layer 2 switch platform allowing open any-to-any interconnection

ii. Private VLAN “PVLAN”

1. A metropolitan-wide layer 2 switch platform allowing private, provisioned any to any interconnection across the same platform as the public IX

iii. Virtual Private Line Services “VPLS”

1. A metropolitan-wide service allowing for dedicated bandwidth interconnection between any two points using dedicated ports regardless of membership to the IX across a shared infrastructure

2.1 MINIMUM SERVICE OFFERING SURVEY

In April of 2013 we conducted a narrow survey to demonstrate support for standardized minimum services. The survey defined what services a participant would be interested in acquiring if the opportunity presented itself on a market to market basis.

Question: What services should an OPEN-IX endorsed project provide?

7. What services should OpenIX provide?				
	Yes	No	No Opinion	Rating Count
Standard Internet Exchange (Shared Public VLAN)	92.1% (35)	0.0% (0)	7.9% (3)	38
Virtual Circuits (VLAN, E-Line, E-LAN, etc)	68.6% (24)	17.1% (6)	14.3% (5)	35
Wavelengths	48.6% (17)	17.1% (6)	34.3% (12)	35
		Other (please specify) Show Responses		4
		answered question		38
		skipped question		0

Table 2 Minimum Service Offering Survey Results

3. GOVERNANCE REQUIREMENTS FOR IXP's

In order to insure long-term support, governance plans are defined as part of a proposed project. Seeking Open-IX certification must reflect the balance of the community and the industry coming together to resolve a significant problem. That problem resolution is expected to be long term. The certified entity must propose a governance model that supports close interaction with the Internet community and their representatives, regionally, nationally and internationally. Community governance is not only about processes; it's about getting things done that have a positive benefit to the community that will support the effort. Project initiator must provide measurements that support their interaction with the community and demonstrate on a regular basis that intertwined relationship.

3.1 Community Based Governance Model

- A. Codified, robust North American community engagement requirements
- B. Decision Support Performance Feedback requirements
- C. North American Organizational accountability to stakeholders
- D. North American Collaborations and Partnerships with both the networking and data-center community

4. INITIAL FUNDING REQUIREMENTS

A minimum level of funding is required in order to organize and sustain the project. The members of the review board and the community need to be supported individually with their liability for their fiduciary responsibility centered within the organization. The organization at this stage needs to be formally organized as a non-profit, needs the

creation and legal review of its by-laws and processes and occasionally may need accounting and additional legal advice to maintain the organization. The idea behind organizing this way is to create a community trust, an entity owned by and operated by the community in a similar way and fashion as NANOG, but with a narrower mission.

A. Funding Requirements

Funding needs are low. The largest portion of the expense for the startup phase is legal, account, and fees related to insurance for reviewers. Those fees would go to properly incorporate Open-IX, insure the name is not in conflict from an intellectual property standpoint, creating agreements for the endorsement and continuing “lightweight” operations.

EXPENSE	Yr 1	Yr 2	Yr 3	Yr 4
Legal	\$15,000.00	\$5,000.00	\$4,000.00	\$4,000.00
Telephone	\$2,500.00	\$2,500.00	\$2,000.00	\$2,000.00
Website	\$10,000.00	\$2,500.00	\$1,500.00	\$1,500.00
Insurance	\$5,000.00	\$5,500.00	\$6,000.00	\$6,500.00
Taxes	\$-	\$-	\$-	\$-
Administration	\$8,000.00	\$6,000.00	\$7,000.00	\$8,000.00
Total	\$40,500.00	\$21,500.00	\$20,500.00	\$22,000.00
Startup \$	\$40,500.00			

5. SUSTAINING INCOME TO FUND ON-GOING OPERATIONS

Awaiting completion of by-laws. Initial idea is to provide for a small application fee on a per-market basis to fund a legal review and administration of open-ix. See Section 4, you can likely contrast that to “small application fee”.