IXP Building
Is free a problem?

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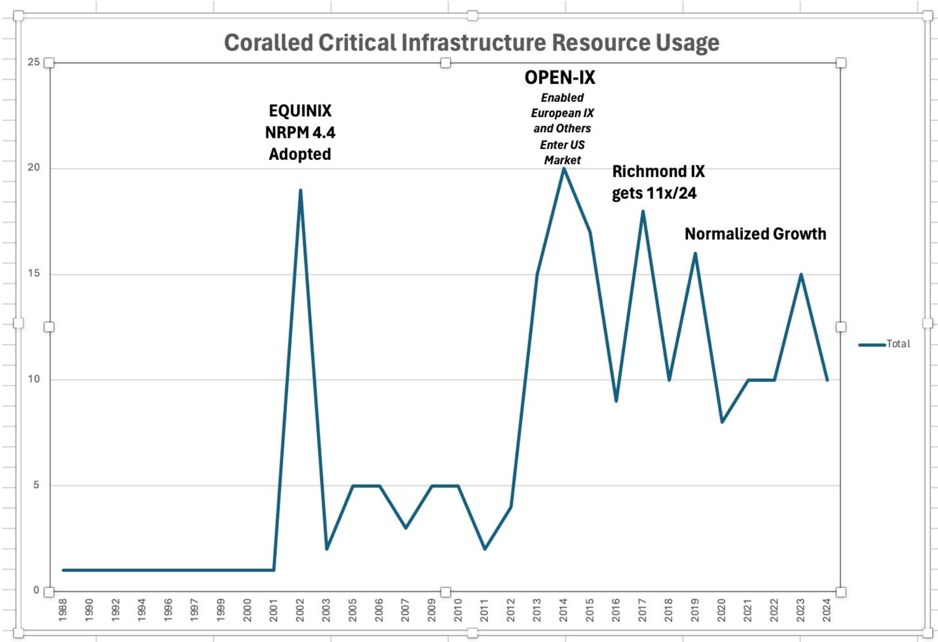
Background – IX Stimulus

- IXPs start from zero, almost without exception
- In 2004, ARIN adopted NRPM 4.4 micro-allocations, easing IPv4 access for IXPs
- Around 2010, a major CDN turned "free" interconnection into a growth strategy by productizing membership in an IX as an easy button. Others soon followed suit. {Akamai, Google, Meta, et. Al.}
- A large collab provides ~$100K in startup funds for Open IX in 2013 to kick off standardization to improve competitiveness.
- Compounded stimulus for IXPs and "free”: *YOU* became the product.

- **But did "free for me" create a structural finance problem for IXPs?**

IXP Growth (ARIN 4.4 micro-allocations data through 2024)



US IXPs grew from a handful in tier 1's to many following multiple "stimulus" including ARIN 4.4

The cost of "free for me" — who's actually paying?

(Very) Basic Financial Analysis

- Illustrative for presentation purposes
- Small IXP and edge DC profiles
- Definition of “Free stuff”: Racks, power, transit, and remote hands for *worthy* anchors
- Costs are for standing up the IXP and supporting it, not building the data center
- MOIC models IXP derived datacenter benefits independently

Results: Data Center O/O IXP (No Free Stuff)

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IXP Financial Model

ILLUSTRATIVE OPERATING MODEL

	Plain Old IXP			
Start	Jun-26		Exit EBITDA	$248,419	
Exit	Dec-33	*<- Exit Sensitivity*	Exit Multiple	7.0x	*<- Multiple Sensitivity*
Investment Capital	$155,000		Enterprise Value	$1,738,931	
MOIC	13		Debt	$0	
			Cash	$305,641	
			Equity Value	$2,044,572	

UNITS	12/31/26 2026	12/31/27 2027	12/31/28 2028	12/31/29 2029	12/31/30 2030	12/31/31 2031	12/31/32 2032	12/31/32 2033
Panels	0	0	2	2	2	2	2	2
Cross Connects	0	0	6	8	10	14	18	18
Conduit Inches	0	0	3	4	6	9	11	11

PRODUCT REVENUE								
kW Revenue	$0	$0	$7,997	$22,896	$39,618	$74,168	$104,289	$133,688
Panel Revenue	$0	$0	$5,543	$10,465	$10,779	$11,102	$11,435	$14,413
Cross Connect Revenue	$0	$0	$11,196	$32,054	$42,782	$57,055	$81,890	$128,508
Cabinet Revenue	$0	$0	$0	$0	$0	$0	$0	$0

Results: Data Center Owned IXP (Free Stuff)

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IXP Financial Model

ILLUSTRATIVE OPERATING MODEL

	Plain Old IXP	
Start	Jun-26	
Exit	Dec-33	*<- Exit Sensitivity*
Investment Capital	$155,000	
MOIC	14	

Exit EBITDA	$244,294	
Exit Multiple	7.0x	*<- Multiple Sensitivity*
Enterprise Value	$1,710,055	
Debt	$0	
Cash	$516,133	
Equity Value	$2,226,188	

UNITS	***12/31/26*** **2026**	***12/31/27*** **2027**	***12/31/28*** **2028**	***12/31/29*** **2029**	***12/31/30*** **2030**	***12/31/31*** **2031**	***12/31/32*** **2032**	***12/31/32*** **2033**
Panels	0	0	2	2	2	2	2	2
Cross Connects	0	0	6	10	14	20	24	24
Conduit Inches	0	0	3	7	9	12	14	14
PRODUCT REVENUE								
kW Revenue	$0	$0	$7,997	$42,113	$80,677	$100,403	$123,726	$145,797
Panel Revenue	$0	$0	$5,543	$10,465	$10,779	$11,102	$11,435	$14,413
Cross Connect Revenue	$0	$0	$11,196	$35,898	$56,429	$82,351	$113,255	$149,739
Cabinet Revenue	$0	$0	$0	$0	$0	$0	$0	$0

Results: IXP absorbing CDN costs

LIGHTBOARD IXP Financial Model

ILLUSTRATIVE OPERATING MODEL

	Plain Old IXP	
Start	Jun-26	
Exit	Dec-33	*<- Exit Sensitivity*
Investment Capital	$820,000	
MOIC	-1	

Exit EBITDA	-$135,848	
Exit Multiple	7.0x	*<- Multiple Sensitivity*
Enterpise Value	-$950,935	
Debt	$0	
Cash	$8,779	
Equity Value	-$942,156	

Conclusions

- Baseline: For a 15-member IXP, subsidizing content over 5 years runs ~$0.08/Mbps at 50% utilization (market average: ~$0.03) well above sustainable levels for an IXP membership typically absorbing all costs
- Data centers are the beneficiary of most ecosystem financial improvements and SHOULD bear the costs, with limits when practical
- IXPs SHOULD NOT charge the data center. Getting in the middle of returns will result in conflicts
- The model *does* pencil: "free for me" means someone else pays, – but it creates stronger returns for the facility hence supporting the IXP is a clear win for everyone.
- Facilities with healthy ecosystems don't need such stimulus e.g. 32 AoA, 1530 Swift, Cologix MSP, Equinix IAD, etc. but may benefit from discounts for competitive growth

- Ecosystem Builder: ✓ Improved Returns: ✓ Better Internet: ✓

Panel questions

1. IXPs and/or DC’s have been subsidizing CDN and cloud presence for over a decade. Is that a feature or a bug? **[Result: Feature]**

2. If you're a data center operator running an IXP, what's the real cost of "free" — and has anyone actually modeled it? **[Result: $0]**

3. CDNs and clouds get free ports, free power, free transit — and the IXP gets traffic. Is that a fair trade, or have IXPs and its members been played? **[Result: Fair trade]**

4. Is there a credible strategy to get content providers to pay their share, or has that ship sailed? **[Result: Yes, growth]**

5. Closing: We started by asking "is free a problem?" Having heard the panel; *Has your answer changed?* ***[Result: It’s a strategy. It’s not a problem]***

Post Panel Notes

- **IRL:** EBITDA gap is probably wider; stimulus *accelerates* the model where a *lack of stimulus* slows the model probably more than represented. This makes funding the stimulus worth even more returns wise.
- **Limits:** The ability to impose limits is largely based on success and the IXP operator and data center cooperating to succeed. There are cases where no stimulus for an IXP makes sense and it's time for IXPs to *compete* to create a perfect market.
- **Misalignment:** If one party "succeeds" more than the other there will be conflict. However, define success? An IXP driving a port fee model to sustain itself and cash reserves (business continuity) vs. a large count of high margin cross connect NOI? Stay in your lane.