

A Framework to Price and Cost IT Network Services

John Leahy

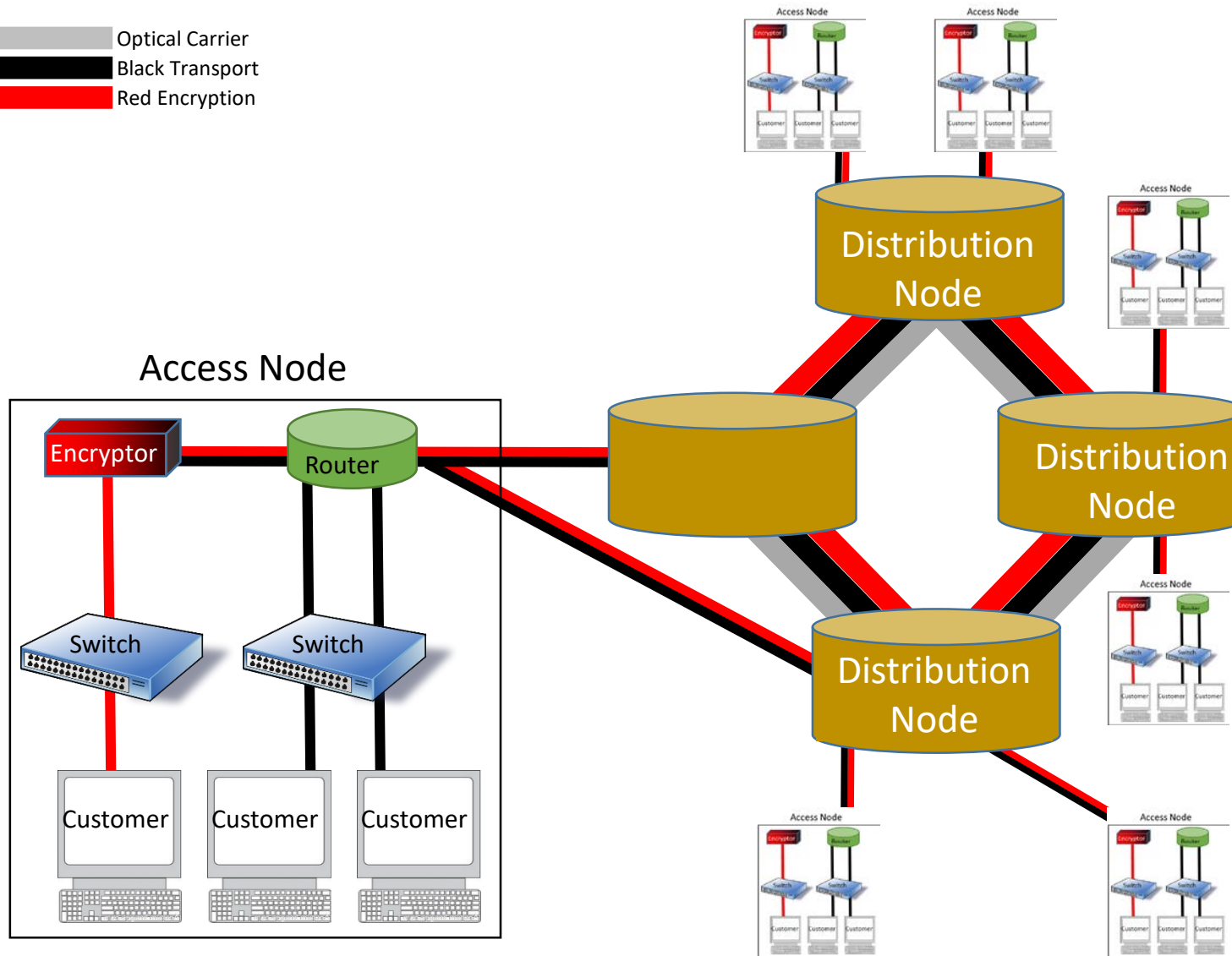


Bottom Line Up Front

- Large scale IT Networks are an efficient way to provide state of the art communications to the enterprise
- To be financially viable IT network pricing must
 - Cover costs
 - Be attractive to as wide a base as possible
 - Be competitive with alternative sources
- Pricing can be based on resources consumed such as
 - Number of circuits (ckts) used
 - Amount of bandwidth or megabits per second (mbps or mb) used
 - Pricing plans that are similar to those in private industry

IT Network Diagram

- Optical Carrier
- Black Transport
- Red Encryption



Components

- **Optical Carrier** – A very large data communications leased line that operates at speeds of 10 gigabytes per second (10 gbps) or higher. It forms the backbone of an Enterprise IT network
- **Black Transport** – A smaller capacity line available in a number of megabytes per second sizes for use by organizations
- **Red Encryption** – A Black Transport or Optical Carrier line that has an added level of protection for highly secure communications

Enterprise Network IT Cost Components

COMPONENTS	Red Encryption	\$18,912,000	Equipment Recapitalization	\$1,920,000
			Labor	\$16,992,000
	Black Transport	\$12,608,000	Equipment Recapitalization	\$1,280,000
			Labor	\$11,328,000
	Optical Carrier	\$6,240,000	Leased Lines	\$6,240,000
	TOTAL COST TO BE RECOVERED			\$37,760,000

Costs to be Recovered			
\$37,760,000			
	\$18,912,000		
\$12,608,000			
		\$6,240,000	
Transport < 10 Gbps	Encryption < 10 Gbps	Encryption ≥ 10 Gbps	Transport ≥ 10 Gbps
Services			

Total cost of the enterprise network . . .
 . . . is allocated among the three components . . .
 . . . that can be layered in different ways to produce services

All costs are notional

Enterprise Network IT Demand

CIRCUITS	ETH-2 Mbps	ETH-5 Mbps	ETH-50 Mbps	ETH-100 Mbps	ETH-300 Mbps	ETH-600 Mbps	ETH-1 Gbps	ETH-10 Gbps	ETH-40 Gbps	ETH-100 Gbps	TOTAL
RED ENCRYPTION	160	96	128	64	32	30	24	30	160	8	732
BLACK TRANSPORT	240	216	228	112	72	70	64				1,002
OPTICAL CARRIER	240	216	228	112	72	70	64	42	164	10	1,218

BANDWIDTH	ETH-2 Mbps	ETH-5 Mbps	ETH-50 Mbps	ETH-100 Mbps	ETH-300 Mbps	ETH-600 Mbps	ETH-1 Gbps	ETH-10 Gbps	ETH-40 Gbps	ETH-100 Gbps	TOTAL
RED ENCRYPTION	320	480	1,280	6,400	9,600	18,000	24,000	300,000	6,400,000	800,000	7,560,080
BLACK TRANSPORT	480	1,080	2,280	11,200	21,600	42,000	64,000				142,640
OPTICAL CARRIER	480	1,080	2,280	11,200	21,600	42,000	64,000	420,000	6,560,000	1,000,000	8,122,640

The cumulative build up of **Cost Objects** into various Services drives the **Circuit** demand

The cumulative build up of **Cost Objects** into various Services drives the **Bandwidth** demand

RED ENCRYPTION	RED ENCRYPTION	160	96	128	64	32	30	24	30	160	8	732
	BLACK TRANSPORT	160	96	128	64	32	30	24				534
	OPTICAL CARRIER	160	96	128	64	32	30	24	30	160	8	732

RED ENCRYPTION	RED ENCRYPTION	320	480	1,280	6,400	9,600	18,000	24,000	300,000	6,400,000	800,000	7,560,080
	BLACK TRANSPORT	320	480	1,280	6,400	9,600	18,000	24,000				60,080
	OPTICAL CARRIER	320	480	1,280	6,400	9,600	18,000	24,000	300,000	6,400,000	800,000	7,560,080

BLACK TRANSPORT	BLACK TRANSPORT	80	120	100	48	40	40	40				468
	OPTICAL CARRIER	80	120	100	48	40	40	40				468

BLACK TRANSPORT	BLACK TRANSPORT	160	600	1,000	4,800	12,000	24,000	40,000				82,560
	OPTICAL CARRIER	160	600	1,000	4,800	12,000	24,000	40,000				82,560

OPTICAL CARRIER								12	4	2	18
-----------------	--	--	--	--	--	--	--	----	---	---	----

OPTICAL CARRIER								120,000	160,000	200,000	480,000
-----------------	--	--	--	--	--	--	--	---------	---------	---------	---------

Demand forecasts are notional

Enterprise Cost Allocation

COST TO BE RECOVERED

Optical Carrier	EQUIP-Black Transport	LABOR-Black Transport	ASSETS-Red Encryption	LABOR-Red Encryption	TOTAL
6,240,000	\$1,280,000	\$11,328,000	\$1,920,000	\$16,992,000	\$37,760,000

CIRCUIT (Ckt) FORECAST

Optical Carrier	1,218
Black Transport	1,002
Red Encryption	732

BANDWIDTH (B/W) FORECAST (in Mbps)

Optical Carrier	8,122,640
Black Transport	142,640
Red Encryption	7,560,080

... by Circuit/Bandwidth Forecast ...

COST PER CIRCUIT AND COST PER BANDWIDTH

	Optical Carrier	EQUIP-Black Transport	LABOR-Black Transport	EQUIP-Red Encryption	LABOR-Red Encryption
per Circuit	\$5,123	\$1,277	\$11,305	\$2,623	\$23,213
per B/W expressed in Mbps	\$0.7682	\$8.9736	\$79.4167	\$0.2540	\$2.2476

... to arrive at cost per Circuit and cost per Bandwidth

UNIT COST		OPTICAL CARRIER		BLACK TRANSPORT		RED ENCRYPTION	
Bandwidth	Mbps	Op Cxr Ckts	Opt Cxr B/W	Black Trans Ckts	Black Trans B/W	Red Encryp Ckts	Red Encryp B/W
ETH-2 Mbps	2	\$5,123	\$2	\$12,583	\$177	\$25,836	\$5
ETH-5 Mbps	5	\$5,123	\$4	\$12,583	\$442	\$25,836	\$13
ETH-50 Mbps	10	\$5,123	\$8	\$12,583	\$884	\$25,836	\$25
ETH-100 Mbps	100	\$5,123	\$77	\$12,583	\$8,839	\$25,836	\$250
ETH-300 Mbps	300	\$5,123	\$230	\$12,583	\$26,517	\$25,836	\$750
ETH-600 Mbps	600	\$5,123	\$461	\$12,583	\$53,034	\$25,836	\$1,501
ETH-1 Gbps	1,000	\$5,123	\$768	\$12,583	\$88,390	\$25,836	\$2,502
ETH-10 Gbps	10,000	\$5,123	\$7,682			\$25,836	\$25,016
ETH-40 Gbps	40,000	\$5,123	\$30,729			\$25,836	\$100,062
ETH-100 Gbps	100,000	\$5,123	\$76,822			\$25,836	\$250,156

The Circuit cost equals the

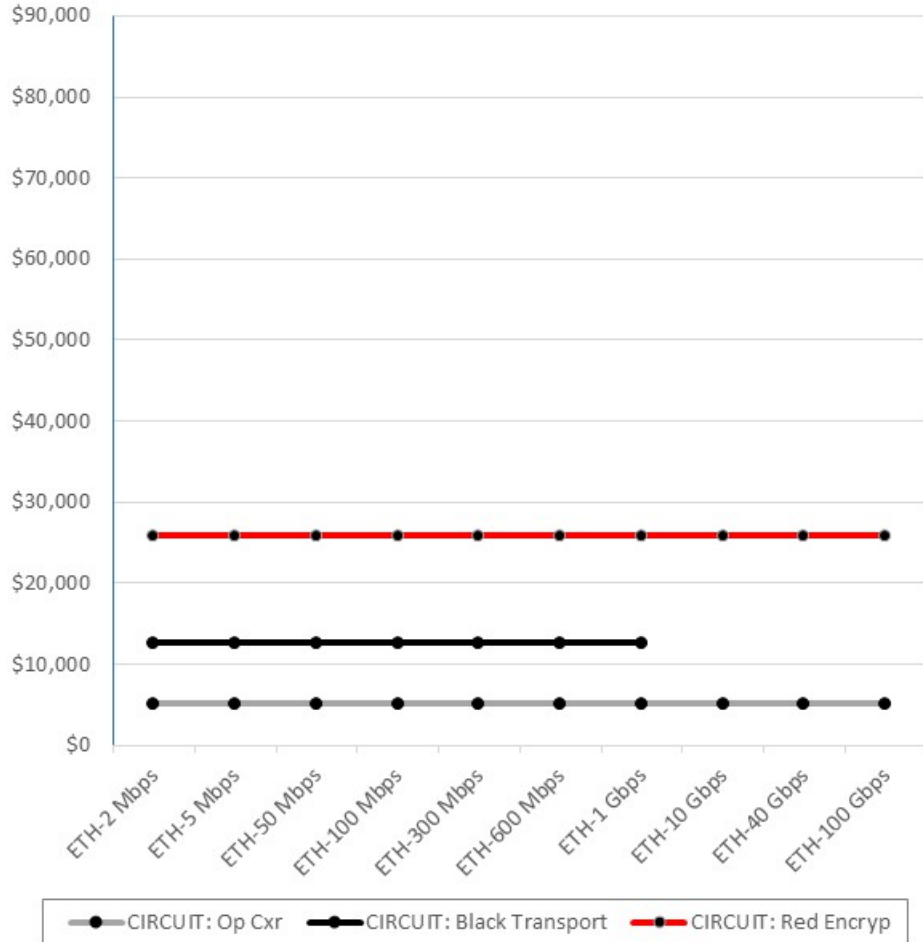
- Optical Carrier per Circuit cost
- and the sum of the Red/Black Equipment and Transport Cost per Circuit

The Bandwidth cost equals the

- Optical Carrier B/W cost times the Mbps for each bandwidth level
- and the sum of the Red/Black Equipment and Transport Cost times the Mbps for each bandwidth level

Price/Cost of Business Enterprise Allocated by Circuits

Costs to be Recovered			
www.iceaaonline.com/portland2017			
\$37,760,000			
\$18,912,000			
\$12,608,000			
\$6,240,000			
Transport < 10 Gbps	Encryption < 10 Gbps	Encryption ≥ 10 Gbps	Transport ≥ 10 Gbps
Services			

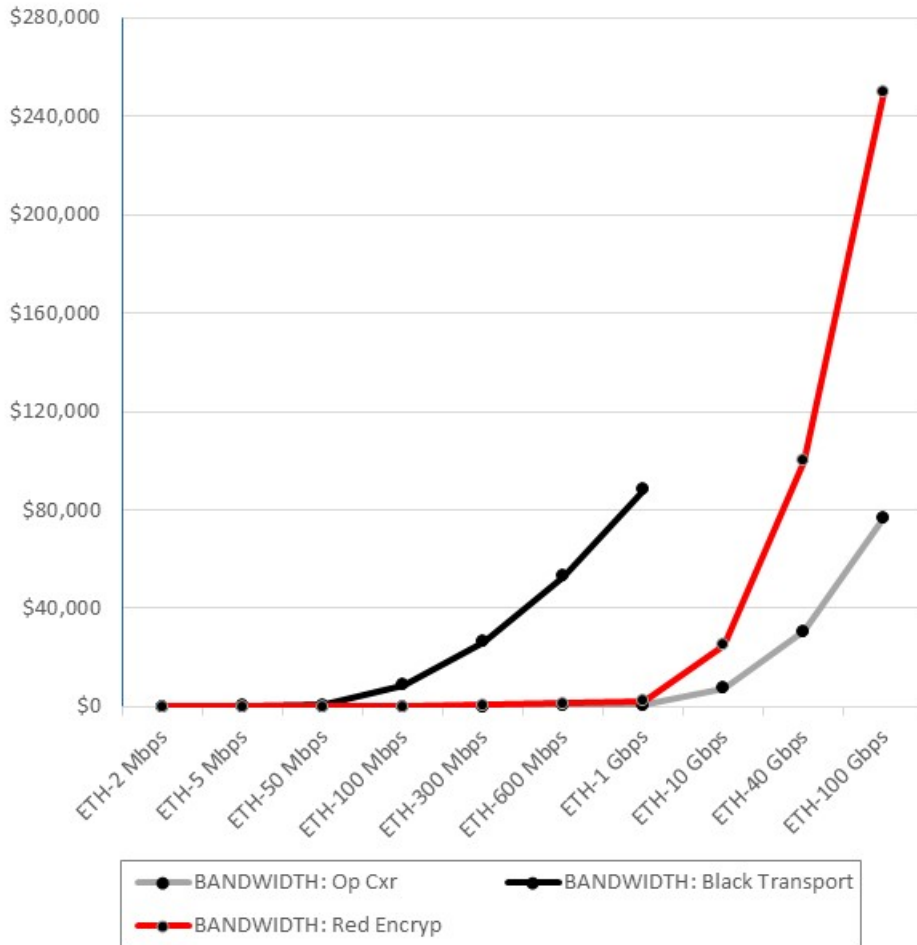


- **Pros**
 - Easy; total costs divided by total circuits
 - Acceptable if the customer base all tend to use the same mix of circuits
 - Best for very small, informal arrangements
- **Cons**
 - Cost of very small circuit the same as very large circuits
 - No price penalty for moving up to highest bandwidth available
 - Results in inefficient use of IT network resources
- **Competition**
 - Lower bandwidth customers leave for cheaper competitive prices
 - Causes costs to rise for remaining customers

Bandwidth	Mbps	Optical Carrier Ckts [1,218]	Black Trans Ckts [1,002]	Red Encryp Ckts [732]
ETH-2 Mbps	2	\$5,123	\$12,583	\$25,836
ETH-5 Mbps	5	\$5,123	\$12,583	\$25,836
ETH-50 Mbps	10	\$5,123	\$12,583	\$25,836
ETH-100 Mbps	100	\$5,123	\$12,583	\$25,836
ETH-300 Mbps	300	\$5,123	\$12,583	\$25,836
ETH-600 Mbps	600	\$5,123	\$12,583	\$25,836
ETH-1 Gbps	1,000	\$5,123	\$12,583	\$25,836
ETH-10 Gbps	10,000	\$5,123	\$12,583	\$25,836
ETH-40 Gbps	40,000	\$5,123	\$12,583	\$25,836
ETH-100 Gbps	100,000	\$5,123	\$12,583	\$25,836

Price/Cost of Business Enterprise Allocated by Bandwidth

Costs to be Recovered			
www.iceaaonline.com/portland2017			
\$37,760,000			
		\$18,912,000	
\$12,608,000			
\$6,240,000			
Transport < 10 Gbps	Encryption < 10 Gbps	Encryption ≥ 10 Gbps	Transport ≥ 10 Gbps
Services			



Pros

- Assigns costs to resources consumed
- Those who use more of the IT network service pay more

Cons - High Bandwidth

- Bandwidth increases geometrically resulting in massive jumps in price
- A small number of customers bear the overwhelming share of cost
- Financial viability tied to a few customers

Cons - Low Bandwidth

- Revenue from low end bandwidth does not cover recurring O&M cost
- Decades of use necessary to recover incremental equipment costs
- Low price would result in a flood of orders

Competition

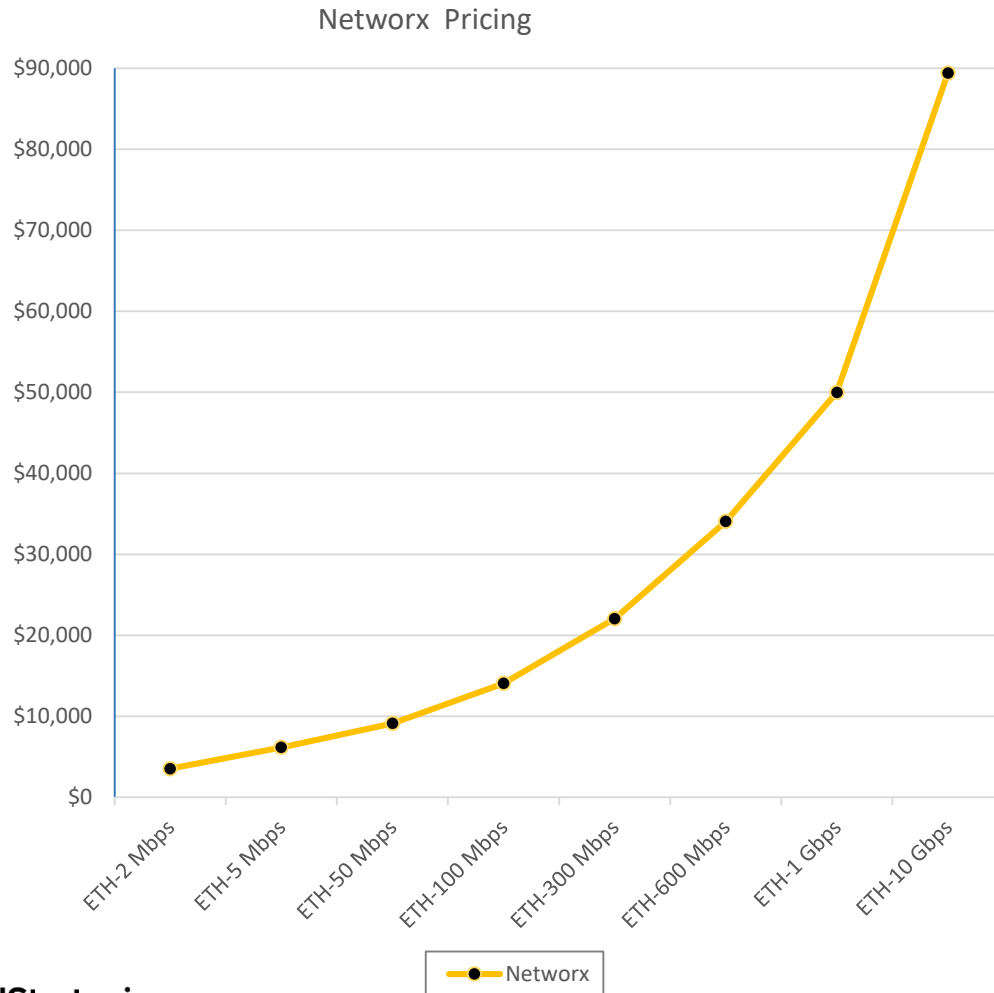
- Higher bandwidth customers leave for cheaper competitive prices
- Customers may elect to start their own, internal network operations
- Defectors destroy the shared services model

Bandwidth	Mbps	Optical Carrier B/W [8,122,640 mb]	Black Trans B/W [142,640 mb]	Red Encryp B/W [7,560,080 mb]
ETH-2 Mbps	2	\$2	\$177	\$5
ETH-5 Mbps	5	\$4	\$442	\$13
ETH-50 Mbps	10	\$8	\$884	\$25
ETH-100 Mbps	100	\$77	\$8,839	\$250
ETH-300 Mbps	300	\$230	\$26,517	\$750
ETH-600 Mbps	600	\$461	\$53,034	\$1,501
ETH-1 Gbps	1,000	\$768	\$88,390	\$2,502
ETH-10 Gbps	10,000	\$7,682		\$25,016
ETH-40 Gbps	40,000	\$30,729		\$100,062
ETH-100 Gbps	100,000	\$76,822		\$250,156

Cost Allocation Conclusions

- Part of the customer base is always:
 - Better off seeking a competitive solution
 - Bears a disproportionate amount of the burden
 - One segment significantly subsidized by another
- Often leads to inefficient allocation of resources

A Competitive Rate Structure: Network Pricing (from GSA schedule)



Bandwidth	Mo Network Price - Various	Ann'l Network Price - Various
ETH-2 Mbps	\$294	\$3,528
ETH-5 Mbps	\$514	\$6,168
ETH-50 Mbps	\$760	\$9,120
ETH-100 Mbps	\$1,172	\$14,064
ETH-300 Mbps	\$1,838	\$22,056
ETH-600 Mbps	\$2,838	\$34,056
ETH-1 Gbps	\$4,166	\$49,992
ETH-10 Gbps	\$7,449	\$89,388
ETH-40 Gbps	N/A	N/A
ETH-100 Gbps	N/A	N/A

- Various carriers provide service depending on which has lowest price for a given bandwidth
- Network pricing is equivalent to the sum of Optical Carrier + Black Transport
- Network does not offer encrypted service

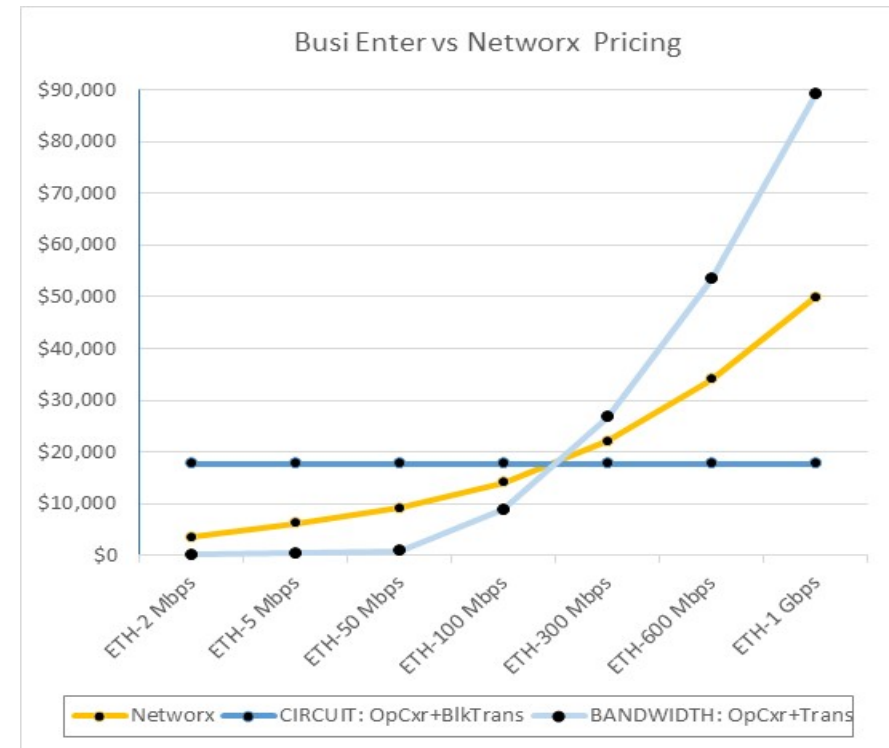


Networkx Pricing Comparison vs Business Enterprise

Bandwidth ¹	Mbps	Networkx Pricing	CIRCUITS: OpCxr+ BlkTrans ²	BANDWIDTH: OpCxr+ BlkTrans ²
ETH-2 Mbps	2	\$3,528	\$17,706	\$178
ETH-5 Mbps	5	\$6,168	\$17,706	\$446
ETH-10 Mbps	10	\$9,120	\$17,706	\$892
ETH-100 Mbps	100	\$14,064	\$17,706	\$8,916
ETH-300 Mbps	300	\$22,056	\$17,706	\$26,748
ETH-600 Mbps	600	\$34,056	\$17,706	\$53,495
ETH-1 Gbps	1,000	\$49,992	\$17,706	\$89,159

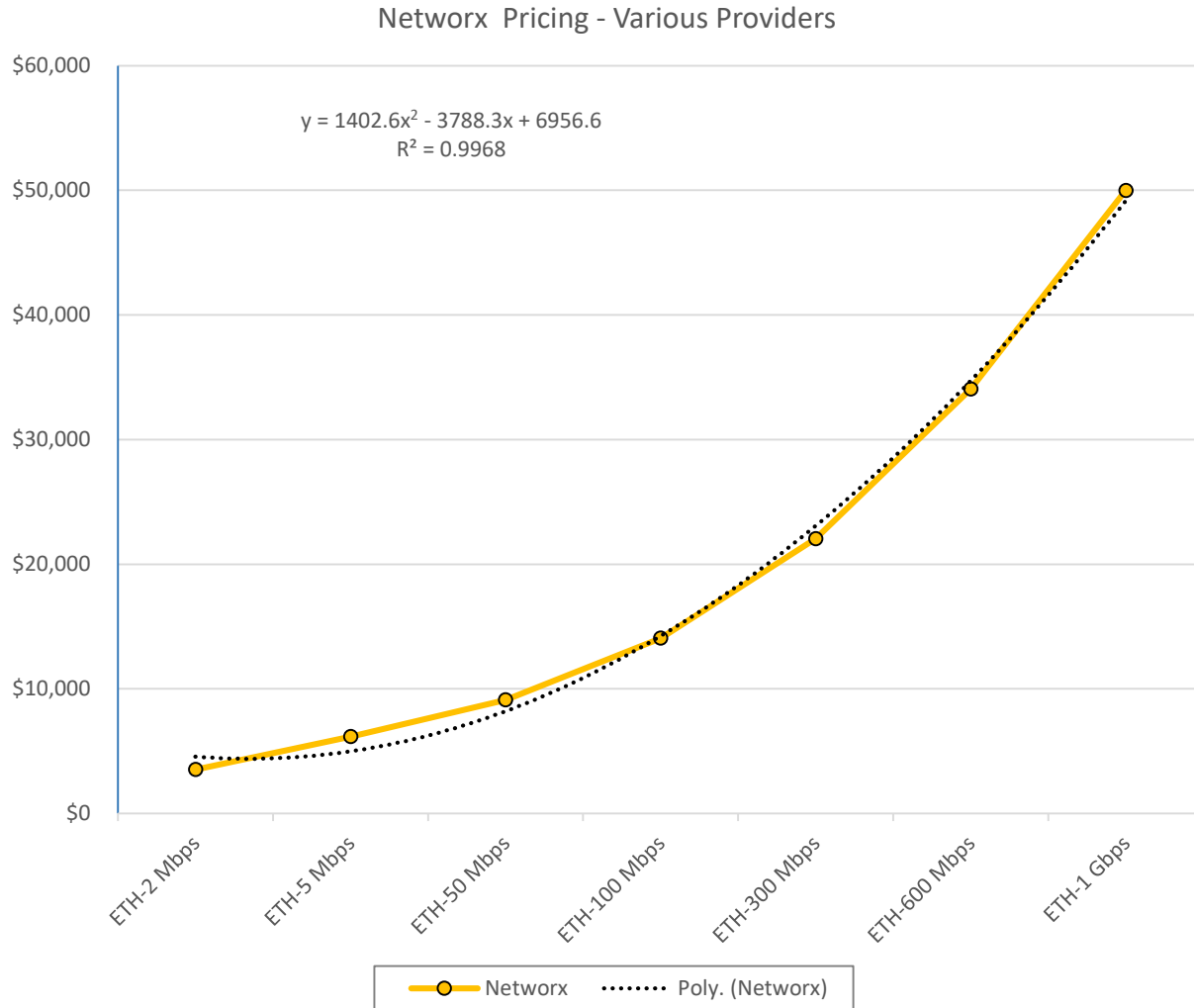
¹ Bandwidth options limited to where both Networkx, Business Enterprise have similar offerings

² Business Enterprise Annual Cost equals Optical Carrier + Black Transport which is equivalent to Networkx Service



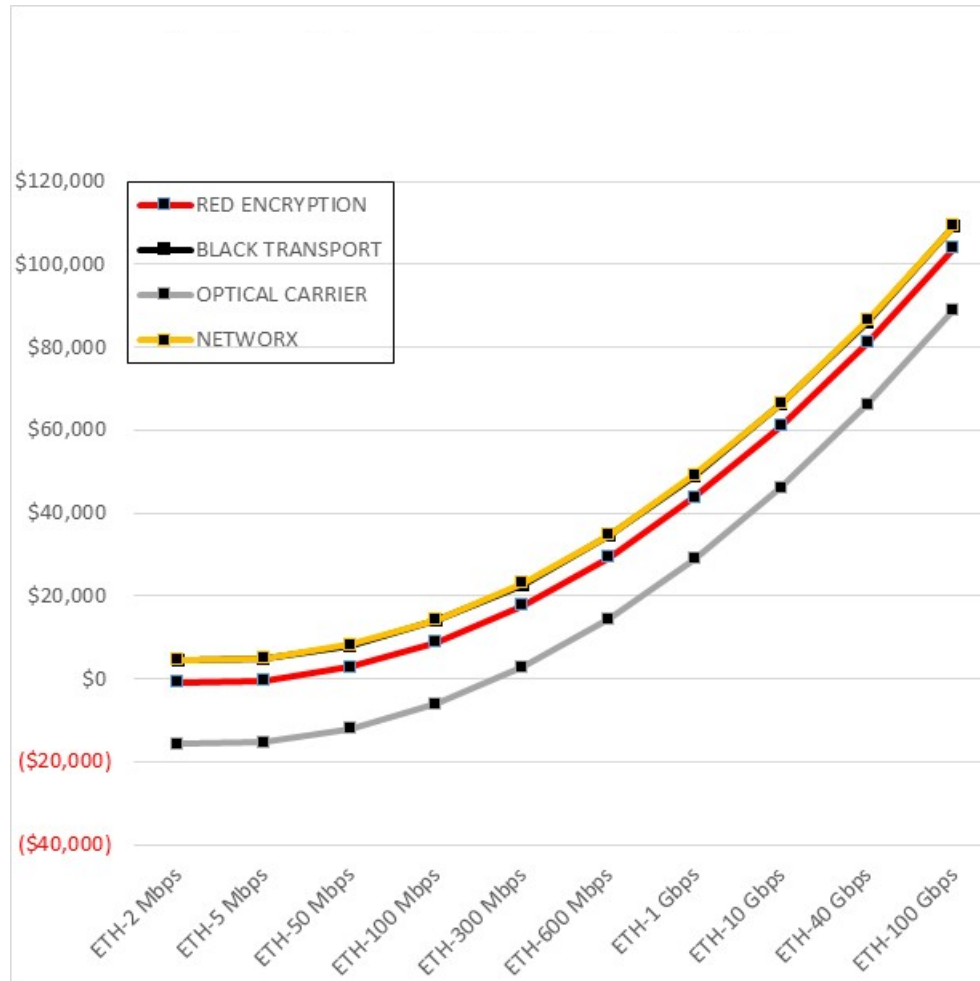
- Networkx service is *above* Business Enterprise **bandwidth** price at low end, and *below* Business Enterprise **bandwidth** price at high end
- Networkx service is *below* Business Enterprise **circuit** price at low end, and *above* Business Enterprise **circuit** price at high end
- Consider the structure of the Networkx rates, not the absolute price

Competitive Network Pricing Trend line



- Trend line is a best fit mathematical equation
 - One issue, it plots a lower price for Ethernet 5 Mbps than for Ethernet 2 Mbps service
 - Trend lines should contribute, but not dictate, cost, pricing strategy

Based on Networkx Pricing Trendline and Recovering All Costs



- Plot the prices for the Business Enterprise offerings –
 - Optical Carrier
 - Black Transport (*Underneath Networkx*)
 - Red Encryption
- Using the best fit polynomial equations . . .
- . . . And adjusting the y – intercept . . .
- . . . Such that the cost for each of the offerings is recovered

Business Enterprise Revenue

Presented at the 2017 ICSA Professional Development & Training Workshop

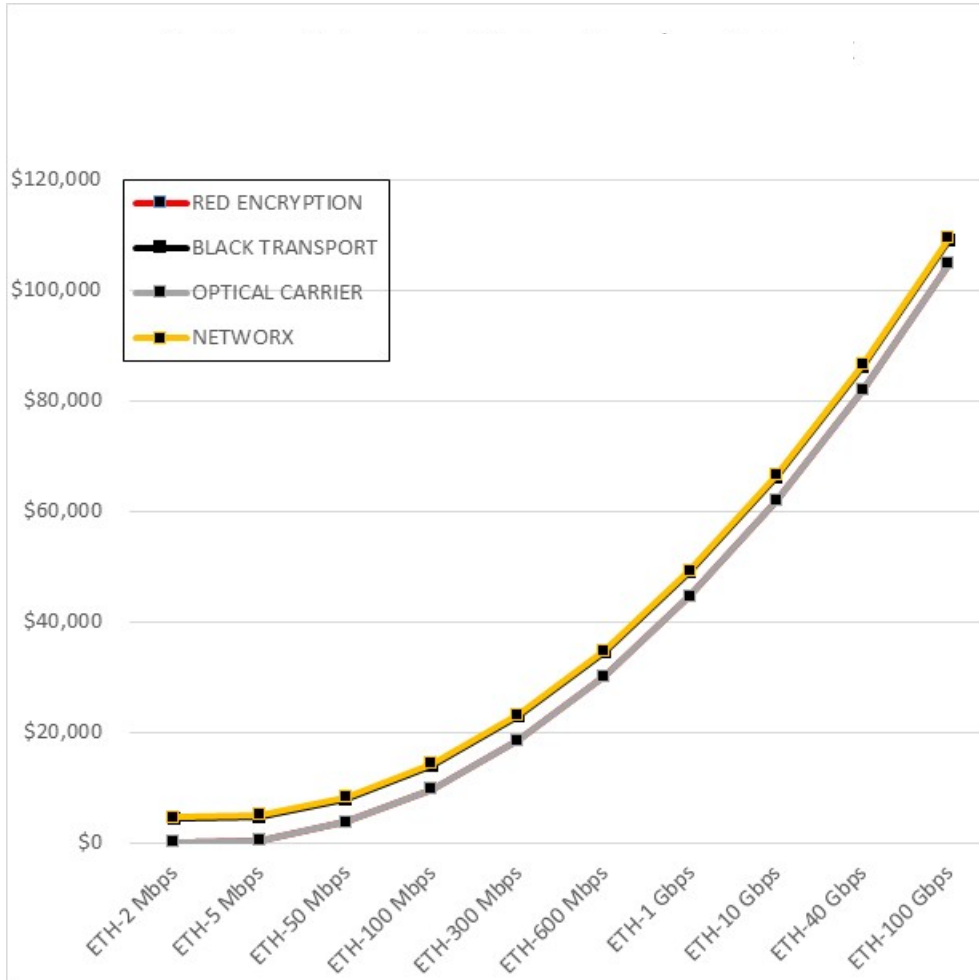
Based on Network Pricing Trendline and Recovering All Costs

	Costs to be Recovered			
	\$37,760,000			
	\$18,912,000			
	\$12,608,000			
	\$6,240,000			
Cost Objects	Transport < 10 Gbps	Encryption < 10 Gbps	Encryption ≥ 10 Gbps	Transport ≥ 10 Gbps

Bandwidth	Mbps	Optical Carrier			Black Transport			Red Encryption			Total Annual Revenue	Percent of Total	Optical Cxr + Black Transport	Networkx Annual Price
		Unit Price	Forecast	Revenue	Unit Price	Forecast	Revenue	Unit Price	Forecast	Revenue				
ETH-2 Mbps	2	(\$15,714)	240	(\$3,771,272)	\$4,297	240	\$1,031,330	(\$791)	160	(\$126,483)	(\$2,866,425)	-7.59%	(\$11,416)	\$3,528
ETH-5 Mbps	5	(\$15,294)	216	(\$3,303,533)	\$4,717	216	\$1,018,809	(\$371)	96	(\$35,618)	(\$2,320,341)	-6.14%	(\$10,577)	\$6,168
ETH-10 Mbps	10	(\$12,069)	228	(\$2,751,831)	\$7,941	228	\$1,810,641	\$2,854	128	\$365,271	(\$575,918)	-1.53%	(\$4,128)	\$9,120
ETH-100 Mbps	100	(\$6,040)	112	(\$676,428)	\$13,971	112	\$1,564,787	\$8,884	64	\$568,549	\$1,456,908	3.86%	\$7,932	\$14,064
ETH-300 Mbps	300	\$2,796	72	\$201,281	\$22,806	72	\$1,642,061	\$17,719	32	\$566,998	\$2,410,340	6.38%	\$25,602	\$22,056
ETH-600 Mbps	600	\$14,436	70	\$1,010,511	\$34,447	70	\$2,411,270	\$29,359	30	\$880,769	\$4,302,550	11.39%	\$48,883	\$34,056
ETH-1 Gbps	1000	\$28,881	64	\$1,848,407	\$48,892	64	\$3,129,101	\$43,804	24	\$1,051,308	\$6,028,816	15.97%	\$77,774	\$49,992
ETH-10 Gbps	10000	\$46,132	42	\$1,937,547	\$66,143	0	\$0	\$61,055	30	\$1,831,655	\$3,769,202	9.98%		
ETH-40 Gbps	40000	\$66,188	164	\$10,854,827	\$86,199	0	\$0	\$81,111	160	\$12,977,773	\$23,832,600	63.12%		
ETH-100 Gbps	100000	\$89,049	10	\$890,491	\$109,060	0	\$0	\$103,972	8	\$831,777	\$1,722,268	4.56%		
			1,218	\$6,240,000		1,002	\$12,608,000		732	\$18,912,000	\$37,760,000	100.00%		

- Using the polynomial equation is a good starting point, but there are issues . . .
- Negative pricing for Optical Transport, Red Encryption suggests customer are being paid to use the service
- Negative values in lower end segment nonsensical
- The 40 Gbps segment has a large demand for circuits, but pays almost 2/3 the cost
- Success of the offering dependent upon retaining both low end and 40 Gbps segments

Eliminate Negative Unit Pricing



- Keep the same shape as the Network curve . . .
- . . . But adjust Optical Carrier, Red Encryption pricing so they no longer show negative values . . .
- . . . While still recovering cost of the service

Red Encryption, Black Transport underneath Network

Business Enterprise Revenue

Eliminate Negative Unit Pricing

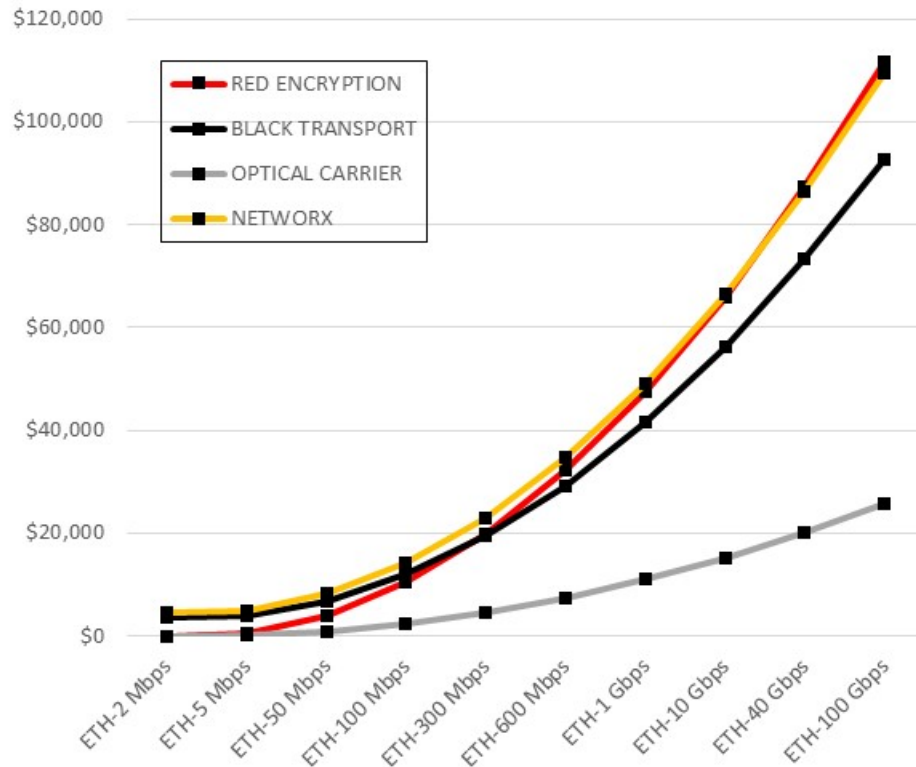
Presented at the 2017 ICEA Professional Development & Training Workshop

	Costs to be Recovered			
	www.iceaonline.com/portal/2017			
Cost Objects	\$37,760,000			
	\$18,912,000			
	\$12,608,000			
	\$6,240,000			
	Transport < 10 Gbps	Encryption < 10 Gbps	Encryption ≥ 10 Gbps	Transport ≥ 10 Gbps
	Services			

Bandwidth	Mbps	Optical Carrier			Black Transport			Red Encryption			Total Annual Revenue	Percent of Total	Optical Cxr + Black Transport	Networkx Annual Price
		Unit Price	Forecast	Revenue	Unit Price	Forecast	Revenue	Unit Price	Forecast	Revenue				
ETH-2 Mbps	2	\$10	240	\$2,400	\$4,297	240	\$1,031,328	\$10	160	\$1,600	\$1,035,328	1.80%	\$4,307	\$3,528
ETH-5 Mbps	5	\$430	216	\$92,772	\$4,717	216	\$1,018,807	\$430	96	\$41,232	\$1,152,811	2.00%	\$5,146	\$6,168
ETH-10 Mbps	10	\$3,654	228	\$833,158	\$7,941	228	\$1,810,639	\$3,654	128	\$467,738	\$3,111,534	5.41%	\$11,596	\$9,120
ETH-100 Mbps	100	\$9,684	112	\$1,084,619	\$13,971	112	\$1,564,786	\$9,684	64	\$619,782	\$3,269,187	5.69%	\$23,655	\$14,064
ETH-300 Mbps	300	\$18,519	72	\$1,333,382	\$22,806	72	\$1,642,061	\$18,519	32	\$592,614	\$3,568,058	6.21%	\$41,326	\$22,056
ETH-600 Mbps	600	\$30,160	70	\$2,111,165	\$34,447	70	\$2,411,269	\$30,160	30	\$904,785	\$5,427,219	9.44%	\$64,606	\$34,056
ETH-1 Gbps	1000	\$44,605	64	\$2,854,720	\$48,892	64	\$3,129,101	\$44,605	24	\$1,070,520	\$7,054,341	12.27%	\$93,497	\$49,992
ETH-10 Gbps	10000	\$61,856	42	\$2,597,939	\$66,143	0	\$0	\$61,856	30	\$1,855,671	\$4,453,610	7.75%		
ETH-40 Gbps	40000	\$81,912	164	\$13,433,502	\$86,199	0	\$0	\$81,912	160	\$13,105,856	\$26,539,358	46.16%		
ETH-100 Gbps	100000	\$104,773	10	\$1,047,727	\$109,060	0	\$0	\$104,773	8	\$838,182	\$1,885,909	3.28%		
			1,218	\$25,391,385		1,002	\$12,607,991		732	\$19,497,980	\$57,497,356	100.00%		

- Set Optical Carrier, Red Encryption to minimal \$10 for 2 Mbps. No changes to Black Transport
- Medium bandwidth segment prices are much higher when compared to Networkx
- Optical Carrier revenue about 4 times as much as cost
- Total Revenue from Black Transport, Red Encryption close to cost
- Ethernet 40 Gbps segment still pays almost half the cost

Adjust Component Prices to be Competitive with Networx



- Keep the same shape as the Networx curve . . .
- . . . But adjust the prices of Optical Carrier, Black Transport so their sum approximates Networx pricing
- . . . While still recovering cost of the service

Business Enterprise Revenue

Presented at the 2017 ICEA Professional Development & Training Workshop

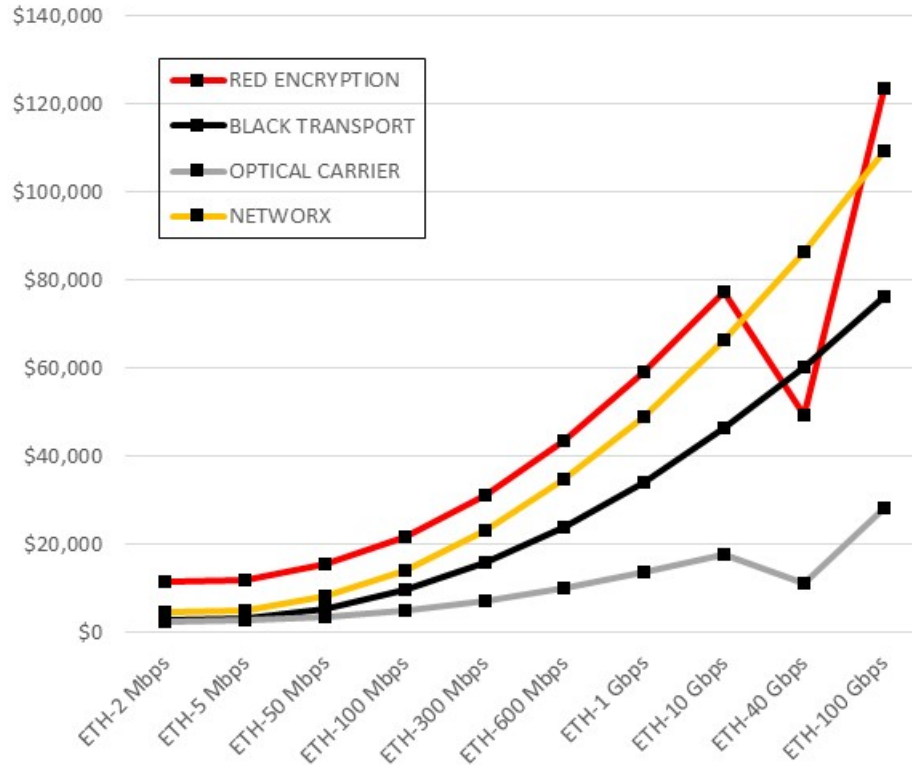
Adjust Component Prices to be Competitive with Networx

	Costs to be Recovered			
	www.iceaonline.com/portal/2017			
	\$37,760,000			
	\$18,912,000			
Cost Objects	\$12,608,000			
	\$6,240,000			
	Transport < 10 Gbps	Encryption < 10 Gbps	Encryption ≥ 10 Gbps	Transport ≥ 10 Gbps
	Services			

Bandwidth	Mbps	Optical Carrier			Black Transport			Red Encryption			Total Annual Revenue	Percent of Total	Optical Cxr + Black Transport	Networx Annual Price
		Unit Price	Forecast	Revenue	Unit Price	Forecast	Revenue	Unit Price	Forecast	Revenue				
ETH-2 Mbps	2	\$2	240	\$590	\$3,653	240	\$876,629	\$11	160	\$1,707	\$878,926	2.33%	\$3,655	\$3,528
ETH-5 Mbps	5	\$106	216	\$22,799	\$4,009	216	\$865,986	\$458	96	\$43,992	\$932,777	2.47%	\$4,115	\$6,168
ETH-10 Mbps	10	\$898	228	\$204,751	\$6,750	228	\$1,539,043	\$3,899	128	\$499,049	\$2,242,843	5.94%	\$7,648	\$9,120
ETH-100 Mbps	100	\$2,380	112	\$266,548	\$11,876	112	\$1,330,068	\$10,332	64	\$661,272	\$2,257,887	5.98%	\$14,255	\$14,064
ETH-300 Mbps	300	\$4,551	72	\$327,682	\$19,385	72	\$1,395,752	\$19,759	32	\$632,285	\$2,355,719	6.24%	\$23,937	\$22,056
ETH-600 Mbps	600	\$7,412	70	\$518,824	\$29,280	70	\$2,049,579	\$32,178	30	\$965,353	\$3,533,756	9.36%	\$36,691	\$34,056
ETH-1 Gbps	1000	\$10,962	64	\$701,555	\$41,558	64	\$2,659,736	\$47,591	24	\$1,142,182	\$4,503,473	11.93%	\$52,520	\$49,992
ETH-10 Gbps	10000	\$15,201	42	\$638,450	\$56,221	0	\$0	\$65,996	30	\$1,979,893	\$2,618,343	6.93%		
ETH-40 Gbps	40000	\$20,130	164	\$3,301,319	\$73,269	0	\$0	\$87,395	160	\$13,983,184	\$17,284,503	45.77%		
ETH-100 Gbps	100000	\$25,748	10	\$257,482	\$92,701	0	\$0	\$111,786	8	\$894,291	\$1,151,773	3.05%		
			1,218	\$6,240,000		1,002	\$10,716,792		732	\$20,803,208	\$37,760,000	100.00%		

- The following adjustments were made
 - Optical Carrier prices reduced by 75%
 - Black Transport prices reduced by 15%
 - Red Encryption prices increased by 7%
- All bandwidth segment prices are competitive when compared to Networx
- Total cost recovered although Black Transport slight lower and Red Encryption a bit higher
- However, Ethernet 40 Gbps segment still pays almost half the cost

Price Reduction Appeals to High Value Customers



- Keep the same shape as the Networkx curve . . .
- . . . And keep Optical Carrier, Black Transport pricing competitive with Networkx offering . . .
- . . . But manually reduce the 40 Gbps price by almost half . . .
- . . . While still recovering cost of the service

In order to obtain this price consider restrictions
- Minimum term buy
- Minimum order quantity

Business Enterprise Pricing

Presented at the 2017 CCAA Professional Development & Training Workshop

Price Reduction Appeals to High Value Customers

	Costs to be Recovered			
	\$37,760,000			
	\$18,912,000			
	\$12,608,000			
	\$6,240,000			
Cost Objects	Transport < 10 Gbps	Encryption < 10 Gbps	Encryption ≥ 10 Gbps	Transport ≥ 10 Gbps
	Services			

Bandwidth	Mbps	Optical Carrier			Black Transport			Red Encryption			Total Annual Revenue	Percent of Total	Optical Cxr + Black Transport	Networx Annual Price
		Unit Price	Forecast	Revenue	Unit Price	Forecast	Revenue	Unit Price	Forecast	Revenue				
ETH-2 Mbps	2	\$2,658	240	\$637,906	\$3,008	240	\$721,930	\$11,540	160	\$1,846,325	\$3,206,161	8.49%	\$5,666	\$3,528
ETH-5 Mbps	5	\$2,761	216	\$596,384	\$3,302	216	\$713,165	\$11,987	96	\$1,150,763	\$2,460,312	6.52%	\$6,063	\$6,168
ETH-10 Mbps	10	\$3,554	228	\$810,201	\$5,559	228	\$1,267,447	\$15,428	128	\$1,974,743	\$4,052,392	10.73%	\$9,112	\$9,120
ETH-100 Mbps	100	\$5,035	112	\$563,962	\$9,780	112	\$1,095,350	\$21,861	64	\$1,399,119	\$3,058,431	8.10%	\$14,815	\$14,064
ETH-300 Mbps	300	\$7,207	72	\$518,877	\$15,964	72	\$1,149,443	\$31,288	32	\$1,001,209	\$2,669,528	7.07%	\$23,171	\$22,056
ETH-600 Mbps	600	\$10,067	70	\$704,708	\$24,113	70	\$1,687,888	\$43,707	30	\$1,311,219	\$3,703,815	9.81%	\$34,180	\$34,056
ETH-1 Gbps	1000	\$13,617	64	\$871,506	\$34,225	64	\$2,190,371	\$59,120	24	\$1,418,875	\$4,480,752	11.87%	\$47,842	\$49,992
ETH-10 Gbps	10000	\$17,857	42	\$749,981	\$46,300	0	\$0	\$77,525	30	\$2,325,759	\$3,075,740	8.15%		
ETH-40 Gbps	40000	\$11,393	164	\$1,868,409	\$60,339	0	\$0	\$49,462	160	\$7,913,901	\$9,782,310	25.91%		
ETH-100 Gbps	100000	\$28,404	10	\$284,037	\$76,342	0	\$0	\$123,315	8	\$986,522	\$1,270,558	3.36%		
			1,218	\$7,605,972		1,002	\$8,825,593		732	\$21,328,434	\$37,760,000	100.00%		

- Keeps prices competitive with Networx
- 40 Gbps segment enjoys lower prices
 - Can be perceived as unfair by some market segments
 - Tie to a minimum order quantity or term agreement
- Spreads out revenue obtained from each segment, reducing risk from customers exiting
- Revenue collected, \$37.8 M, equals total cost

Summary and Conclusions

- Analyze the customer base
 - Small size, homogenous product use may lend itself to simple IT network cost allocation by circuit
- Review three pricing methodology classes
 - By circuit
 - By bandwidth
 - By competitive offering
- Through iteration determine the pricing scheme that *minimizes potential customer exit* from the IT network *while still covering costs*
- Other considerations
 - Look at providing multiple separate IT network services – one each for differing bandwidth requirements
 - Minimum buy requirement
 - Term agreement
 - Supplemental monthly recurring charge
 - Non-recurring charge
 - Location premium/discount
- In the end, Network IT Cost and Pricing must be appealing to your customers regardless of what mathematical logic implies