

Evaluating the Just and Reasonableness of BOC Ethernet Offerings

Overview

As the nation transforms to a universal packet network, a modern wholesale Metro Ethernet access and transport offering is necessary in order for competition to flourish. Metro Ethernet brings the significant and indisputable cost benefits of Ethernets to the access (first-mile) and aggregation hubs of the nation's broadband infrastructure.¹

Although such an offering is most needed in the nation's urban and suburban markets served by the Bell Operating Companies (BOCs), as demonstrated below, the services offered by the BOCs in those areas are exponentially higher than the rates for comparable service offer by smaller carriers in rural areas (who would be faced with higher costs). It is evident that the market conditions experienced by the BOCs do not produce just and reasonable rates for these services.

The purpose of this analysis is to evaluate the current, published prices of the BOC switched Ethernet offerings when compared to the cost of a comparable offering built using the wholesale broadband transmission platform offered by rural ILECs in NECA Tariff #5.² As the analysis below demonstrates, the prices of the BOCs Ethernet offerings (i.e. the *finished services*)³ are dramatically higher than the cost to develop comparable services using NECA #5 as a wholesale offering.⁴ This

¹ See Metro Ethernet Forum white paper which shows Ethernet cost savings of more than 70% vs. private line or even Frame Relay service, available at http://metroethernetforum.org/PDF_Documents/businesscase_wp_092702f.pdf.

² NECA Access Service FCC Tariff #5 provides Ethernet access and transport services (ETS) at monthly, one-year, three-year and volume pricing plans. ETS provides end-to-end transport at speeds ranging from 2 Mbps to 1 Gbps (where available). At speeds above 50 Mbps, a fiber loop is required. ETS is used for broadband transport using variable length Ethernet packets with the ability to interconnect multiple locations using the Telephone Company's ETS network. This analysis is constructed using Section 16.3 of NECA #5 effective 12/29/2011, available at <https://www.neca.org/WorkArea/linkit.aspx?LinkIdentifier=id&ItemID=6885&libID=6905>.

³ We refer to the BOC offerings as "*finished services*" in as much as these services can be utilized directly by end users with no need for additional components. In contrast, the NECA #5 wholesale offerings must be augmented with additional components (ex. customer premise equipment, etc.) to be considered "end user ready." This analysis accounts for all additional components to augment the NECA #5 offerings, as necessary, to build a service functionally comparable to those of the BOCs.

⁴ The analysis here differs conceptually from a similar analysis performed by the ETC Group and filed with the Commission in its proceeding addressing the transition of the PSTN to an IP platform. See An Analysis of Ethernet Access Options Under NECA #5, Attachment A to the Comments of COMPTTEL In the Matter of: Petition of AT&T to Launch a Proceeding Concerning the TDM-to-IP Transition and Petition of NTCA for Rulemaking to Promote and Sustain the Ongoing TDM-to-IP Evolution, GN Docket 12-353, filed January 28, 2013 ("*NECA #5*

evidence establishes (at the very least) a presumption that the prices of the BOCs services are not just and reasonable and the Commission should reverse its forbearance order and move expeditiously to reform the pricing of Ethernet special access services for these carriers.

Ethernet Service Configurations Analyzed

The analysis below considers the cost of two common arrangements used to reach end-users. The first configuration assumes a competitive provider is collocated at the serving wire center (SWC) of the end user and takes an Ethernet hand-off from the LEC at the LECs Ethernet switch at that SWC. The second configuration assumes that competitive provider is *not* collocated at the SWC of the end user and, therefore, requires Ethernet transport service from the SWC of the end user to a SWC where it is collocated.⁵ These configurations are illustrated below.

Wholesale ETS Analysis”). The purpose of the analysis in the IP Transition proceeding was to compare the advantages of NECA #5 as a *wholesale* last-mile access solution to the *finished service* Ethernet offerings of the BOCs. The purpose of this analysis is to construct an equivalent to the BOC offerings using NECA #5 and compare the cost of this equivalent service to the price of the BOC offering. Although similar in structure, there are differences. Most notably, the analysis here includes the cost of the necessary CPE to provide end-user interfaces (which was not necessary in the prior analysis that focused on the efficacy of NECA #5 as a wholesale platform because the carrier-customer would have to supply CPE providing the end-user interface under either NECA #5 or the BOC offering to maintain traffic-control).

⁵ All of the BOC services evaluated in this analysis, as well as the wholesale services available under NECA #5, use “postalized” rates for the transport component of the service. That is, the rates are not distance-sensitive, but are charged solely on the basis of a requirement for inter-SWC transport within the carrier’s metro network.

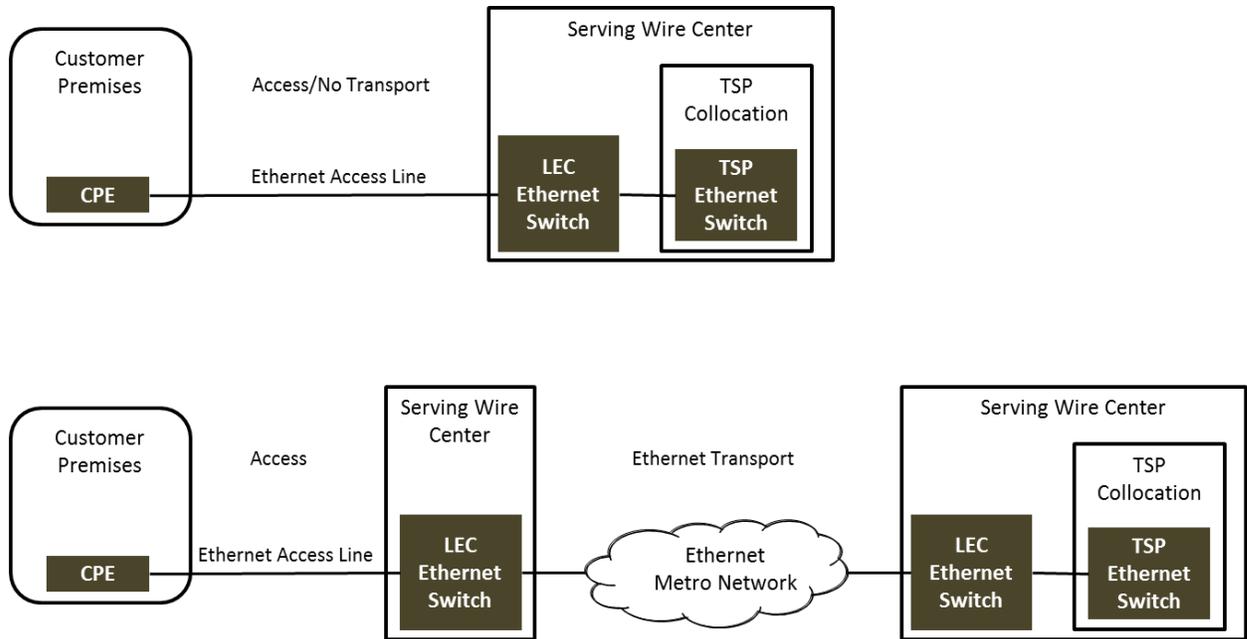


Figure 1: Access Arrangements Without (top) and With (bottom) Metro Transport

Either of the configurations above would allow a competitive service provider to combine the network functionality of NECA #5 with its own traffic management, security and grooming techniques to build a Metro Ethernet service offering comparable to those offered by the BOCs (and described below).

AT&T Switched Ethernet Service

AT&T offers Switched Ethernet Services pursuant to its *AT&T Interstate Access Guidebook, Part 5, Section 4*.⁶ The service comprises rate elements for two types of service arrangements and two types of Customer Port Connections. These rate elements specifically include charges for Customer Port Connection and Committed Information Rate, which is assigned at the port level and also at various “Class of Service” levels. Term discounts are offered and, in this analysis, 12-month and 36-month term pricing are used.

Verizon Transparent LAN Service

Verizon offers Ethernet services through its “Transparent LAN Service” offerings. Verizon has chosen to not publish the “base rate” pricing of its Transparent LAN Service. Therefore, it is not possible to compare its prices to an equivalent service constructed using NECA #5.

⁶ Though AT&T’s Guidebook professes that other, lower rates for service than those shown may be available, there is no way to determine the extent to which (or even if) AT&T has discounted services below the published rates. In the absence of other rates, we use those published in AT&T’s own Guidebook as our reference rates. AT&T’s Interstate Guidebook is available at <http://cpr.bellsouth.com/pdf/is/index.html#section1>.

CenturyLink (Legacy Qwest)

CenturyLink (Legacy Qwest) offers Metro Optical Ethernet (MOE) service through its *Rates and Services Schedule Interstate No. 1*.⁷ It is available in three “designs.” These are: Customer Premises, Central Office and Ethernet with Extended Transport (EwET). A recurring monthly rate for service includes a charge for a Bandwidth Profile at the Customer Premises, Central Office and/or EwET; and any Optional Features, including Quality of Service options such as Committed Information Rates. Term discounts are offered and, in this analysis, 12-month and 36-month pricing are used.

NECA #5 Ethernet Transport Service (ETS)

Ethernet Transport Service (ETS) is a wholesale broadband access and transport offering of rural ILECs described in NECA tariff #5. ETS allows Ethernet packets generated by Ethernet-compatible customer premises equipment (CPE) to be transmitted using available capacity on shared transmission paths through the NECA #5 carrier’s ETS network to a destination defined by the Telecommunications Service Provider (TSP, or Carrier-customer).⁸

ETS provides the wholesale building blocks with which a Carrier can build its own highly-resilient, deterministic network and offer Ethernet services comparable to AT&T, Verizon and CenturyLink described above. ETS pricing is principally determined by the speed requested for both the Ethernet Virtual Connections (EVCs) and Channel Terminations (CTs); additional (distance-insensitive) charges when one SWC does not serve both Customer Designated Premises (CDP); and, the distance between the SWC and CDP (i.e. over or under 300 feet). The price of the ETS CT is also determined by the “Rate Band” of the ETS SWC, which is meant to accommodate the differences in operating costs (for whatever reason) between different NECA carriers. The analysis below focuses on Rate Band 1, since that is the rate band most similar to the suburban and/or urban markets served by the BOCs to which the prices are compared.⁹

The analysis below compares the prices of each of the BOCs service offerings and the cost associated with building that service offering using the services available under NECA #5.

⁷ Available at http://www.centurylink.com/tariffs/fcc_gc_acc_rss_no_1.pdf

⁸ For a complete description of ETS and its usefulness as a wholesale offering see *NECA #5 Wholesale ETS Analysis*, ftn 4 supra.

⁹ As a practical matter, comparing Rate Band 1 prices to BOC special access services is most favorable to the BOCs, whose suburban and urban markets would likely enjoy lower costs than the rural ILECs that concur in NECA #5. The minimum service period for ETS Ports and CTs is twelve months. The minimum service period for all other ETS elements is one month. Length of term percentage-based discounts are available for 36-month and 60-month commitments. Volume discounts are also provided. The basic rate elements, rates and discount structures for ETS service are identified in Appendix A.

Comparison of ETS-Based Offering to BOC Ethernet Services

Table 1 below shows the comparison of ETS to the rates of AT&T and CenturyLink (Qwest) for Ethernet access service where the TSP is collocated within the SWC of the end user. The rates in this chart assume a 12 month term. As shown, the rates of both AT&T and CenturyLink (Qwest) eclipse the cost for the service built using the NECA #5 wholesale components, in many cases, by an order of magnitude or more. Noteworthy is the fact that AT&T's prices are consistently 1000% or more than the comparable service built using NECA #5.

12-Month Term No Transport	Service Type - Monthly Charge Per Access Line				
	NECA 5 Ethernet Transport Service	AT&T Switched Ethernet Service	% Above NECA 5 Rates	CenturyLink (Qwest) Metro Optical Ethernet (MOE)	% Above NECA 5 Rates
2 Mbps	\$ 183	\$ 1,943	962%	\$ 448	144%
5 Mbps	\$ 192	\$ 2,064	977%	\$ 554	189%
10 Mbps	\$ 202	\$ 2,192	983%	\$ 890	340%
20 Mbps	\$ 231	\$ 2,794	1110%	\$ 1,155	400%
50 Mbps	\$ 270	\$ 3,206	1086%	\$ 1,521	463%
100 Mbps	\$ 312	\$ 3,822	1126%	\$ 2,129	583%
250 Mbps	\$ 482	\$ 6,230	1192%	\$ 4,163	763%
500 Mbps	\$ 652	\$ 8,450	1195%	\$ 6,197	850%
750 Mbps	\$ 829	\$ 11,280	1261%	\$ 9,248	1015%
1000 Mbps	\$ 1,015	\$ 12,960	1177%	\$ 11,281	1011%

Table 1: Ethernet Access Only – 12-Month Term

Table 2 shows the effect of 36-month discounting on all services. Though discounting brings the comparisons closer, the difference between the rates are still tremendously significant, reaching more than 1000% in many instances. In the case of AT&T prices, the rates, again, are more than five to ten times the cost of the comparable service built using NECA #5.

36-Month Term No Transport	Service Type - Monthly Charge Per Access Line				
	NECA 5 Ethernet Transport Service	AT&T Switched Ethernet Service	% Above NECA 5 Rates	CenturyLink (Qwest) Metro Optical Ethernet (MOE)	% Above NECA 5 Rates
2 Mbps	\$ 165	\$ 1,123	582%	\$ 402	144%
5 Mbps	\$ 172	\$ 1,274	638%	\$ 497	188%
10 Mbps	\$ 182	\$ 1,627	793%	\$ 796	337%
20 Mbps	\$ 208	\$ 1,964	845%	\$ 1,053	406%
50 Mbps	\$ 243	\$ 2,306	848%	\$ 1,389	471%
100 Mbps	\$ 281	\$ 2,822	906%	\$ 1,948	594%
250 Mbps	\$ 434	\$ 4,450	925%	\$ 3,803	776%
500 Mbps	\$ 587	\$ 6,480	1004%	\$ 5,659	864%
750 Mbps	\$ 746	\$ 8,880	1090%	\$ 8,442	1031%
1000 Mbps	\$ 913	\$ 10,560	1056%	\$ 10,296	1027%

Table 2: Ethernet Access Only – 36-Month Term

Table 3 shows the impact of an access configuration where the TSP is not resident within the SWC of the end user. ETS charges for EVCs and CoS are somewhat higher with this configuration, where end user traffic transits the NECA #5 carriers ETS network to a distant SWC. A 12-month discounting period is shown. In this scenario, where one would expect the core network transport efficiencies of AT&T to dwarf those of a small rural carrier, AT&T's resulting rates are still from three to more than eight times higher than those of a service built using NECA #5. The comparison of CenturyLink (Qwest) fares only slightly better, still generally doubling (and in some cases, nearly tripling) the cost of a comparable service built using NECA #5.

12-Month Term Metro Transport	Service Type - Monthly Charge Per Access Line				
	NECA 5 Interswitch Ethernet Transport Service	AT&T Switched Ethernet Service	% Above NECA 5 Rates	CenturyLink (Qwest) Metro Optical Ethernet (MOE)	% Above NECA 5 Rates
2 Mbps	\$ 209	\$ 1,943	830%	\$ 448	114%
5 Mbps	\$ 229	\$ 2,064	800%	\$ 554	142%
10 Mbps	\$ 274	\$ 2,192	701%	\$ 890	225%
20 Mbps	\$ 373	\$ 2,794	649%	\$ 1,155	210%
50 Mbps	\$ 475	\$ 3,206	576%	\$ 1,521	221%
100 Mbps	\$ 652	\$ 3,822	486%	\$ 2,129	226%
250 Mbps	\$ 1,215	\$ 6,230	413%	\$ 4,163	242%
500 Mbps	\$ 1,789	\$ 8,450	372%	\$ 6,197	246%
750 Mbps	\$ 2,376	\$ 11,280	375%	\$ 9,248	289%
1000 Mbps	\$ 3,047	\$ 12,960	325%	\$ 11,281	270%

Table 3: Ethernet Access with Metro Transport – 12-Month Term

Finally, Table 4 shows the 36-month discount term effect on Ethernet Access/Transport combination service. As one can see, the difference in rates between the services of the BOCs and those built using NECA #5 is hundreds of percentage points.

36-Month Term Metro Transport	Service Type - Monthly Charge Per Access Line				
	NECA 5 Interswitch Ethernet Transport Service	AT&T Switched Ethernet Service	% Above NECA 5 Rates	CenturyLink (Qwest) Metro Optical Ethernet (MOE)	% Above NECA 5 Rates
2 Mbps	\$ 188	\$ 1,123	497%	\$ 402	114%
5 Mbps	\$ 206	\$ 1,274	517%	\$ 497	141%
10 Mbps	\$ 246	\$ 1,627	561%	\$ 796	223%
20 Mbps	\$ 336	\$ 1,964	485%	\$ 1,053	213%
50 Mbps	\$ 427	\$ 2,306	440%	\$ 1,389	225%
100 Mbps	\$ 587	\$ 2,822	381%	\$ 1,948	232%
250 Mbps	\$ 1,094	\$ 4,450	307%	\$ 3,803	248%
500 Mbps	\$ 1,610	\$ 6,480	303%	\$ 5,659	252%
750 Mbps	\$ 2,138	\$ 8,880	315%	\$ 8,442	295%
1000 Mbps	\$ 2,743	\$ 10,560	285%	\$ 10,296	275%

Table 4: Ethernet Access with Metro Transport – 36-Month Term,

Conclusion

The analysis above demonstrates that the prices charged by AT&T and CenturyLink are not plausibly just and reasonable. By extension, this demonstrates that the markets in which they compete are not sufficiently competitive to force their prices to cost-based levels (even when “cost-based” is estimated by the proxy prices of rural carriers who lack the economies of scale and scope that AT&T and CenturyLink should enjoy).

Appendix A
Ethernet Transport Service

ETS Channel Termination < 300 Feet		
Bi-directional Speed	Non-recurring	Monthly
2 Mbps	\$ 295.00	\$ 43.45
5 Mbps		\$ 53.33
10 Mbps		\$ 61.59
20 Mbps		\$ 67.60
50 Mbps		\$ 81.13
100 Mbps		\$ 90.14
250 Mbps		\$ 128.38
500 Mbps	\$ 442.00	\$ 168.26
750 Mbps		\$ 195.52
1 Gbps		\$ 223.83

ETS Channel Termination > 300 Feet		
Bi-directional Speed	Non-recurring	Monthly
2 Mbps	\$ 295.00	\$ 110.20
5 Mbps		\$ 111.42
10 Mbps		\$ 113.00
20 Mbps		\$ 127.84
50 Mbps		\$ 149.98
100 Mbps		\$ 160.25
250 Mbps		\$ 227.13
500 Mbps	\$ 442.00	\$ 300.47
750 Mbps		\$ 345.63
1 Gbps		\$ 400.62

ETS Basic Port			
Bi-directional Speed	Non-recurring	Monthly	DSL-ASC One-time
2 Mbps	\$ 259.00	\$ 55.30	\$ 150.00
5 Mbps		\$ 61.22	
10 Mbps		\$ 67.60	
20 Mbps		\$ 75.11	
50 Mbps		\$ 82.63	
100 Mbps		\$ 90.14	
250 Mbps		\$ 124.43	
500 Mbps	\$ 388.00	\$ 157.74	\$ 225.00
750 Mbps		\$ 199.48	
1 Gbps		\$ 240.37	

ETS EVC (Intraswitch)		
Bi-directional Speed	Non-recurring	Monthly
2 Mbps	\$ 205.00	\$ -
5 Mbps		\$ -
10 Mbps		\$ -
20 Mbps		\$ -
50 Mbps		\$ -
100 Mbps		\$ -
250 Mbps		\$ -
500 Mbps	\$ 307.00	\$ -
750 Mbps		\$ -
1 Gbps		\$ -

ETS EVC (Interswitch)		
Bi-directional Speed	Non-recurring	Monthly
2 Mbps	\$ 205.00	\$ 23.70
5 Mbps		\$ 32.05
10 Mbps		\$ 60.09
20 Mbps		\$ 120.18
50 Mbps		\$ 168.26
100 Mbps		\$ 268.41
250 Mbps		\$ 553.00
500 Mbps	\$ 307.00	\$ 921.43
750 Mbps		\$ 1,224.51
1 Gbps		\$ 1,602.48

CoS - Monthly Per Mbps (Intraswitch)		
Bi-directional Speed	Near Realtime	Real Time
2 Mbps	\$ 0.24	\$ 0.48
5 Mbps		
10 Mbps		
20 Mbps		
50 Mbps	\$ 0.14	\$ 0.27
100 Mbps		
250 Mbps		
500 Mbps	\$ 0.08	\$ 0.16
750 Mbps		
1 Gbps		

CoS - Monthly Per Mbps (Interswitch)		
Bi-directional Speed	Near Realtime	Real Time
2 Mbps	\$ 0.79	\$ 1.58
5 Mbps		
10 Mbps		
20 Mbps		
50 Mbps	\$ 0.49	\$ 0.99
100 Mbps		
250 Mbps		
500 Mbps	\$ 0.30	\$ 0.59
750 Mbps		
1 Gbps		

Term and Volume Discounts	
Commitment	Discount
36-Month Term	10%
60-Month Term	20%
More than 4 ETS Ports in service	10%

Ethernet CPE	
Device	Monthly Cost
8-port Gb Ethernet Switch (Ex. ADTRAN NetVanta) 5-year, straight-line depreciation	\$ 21.67