Ethernet Services

I. ETHERNET SERVICES - TECHNOLOGY

Ethernet Services utilize Ethernet technology to transport data and are offered with the following Ethernet ports: (1) 10/100 Mbps Ethernet port where (a) the 10 Mbps Ethernet service provides a physical IEEE-compliant (IEEE 802.3) 10Base-T (twisted pair), RJ-45 interface to the customer (transmission speed is available at a maximum of 10 Mbps which is equal to the line rate of the 10Base-T interface); and (b) the 100 Mbps Ethernet (Fast Ethernet) service provides a physical IEEE-compliant 100Base-TX (twisted pair) RJ-45 interface to the customer (transmission speed is available at a maximum of 100 Mbps, which is equal to the line rate of the 100Base-TX interface); (2) 1000 Mbps Ethernet port – Gigabit Ethernet where the 1000 Mbps Ethernet (Gigabit Ethernet) service provides an IEEE-compliant physical interface of either 1000Base-SX (multimode fiber), or 1000Base-LX (single mode fiber) interface to the customer; and (3) 10000 Mbps Ethernet port – 10 Gigabit Ethernet where the 10000 Mbps Ethernet (10Gigabit Ethernet) service provides an IEEE-compliant physical interface of either 10GBase-SR (multimode fiber), or 10GBase-LR (single mode fiber) interface to the customer.

For the purposes of the Service Level Agreement ("SLA") below, an Ethernet Service is "Protected" if it is ordered on a ring-protected route. If there is an interruption on the ring, the traffic is automatically re-routed in the opposite direction on the ring until the normal condition is restored.

II. SERVICE DESCRIPTIONS

A. Enterprise Switched NLAN Services

Enterprise Switched NLAN Services ("Enterprise SNLAN") are switched Ethernet services that incorporate data switching technology through the use of Ethernet switches in the TWTC Network. Enterprise SNLAN conforms to Metro Ethernet Forum ("MEF") E-LAN standards and provides customers with access to TWTC's shared, oversubscribed metro Ethernet infrastructure through Ethernet ports that are unique to each customer and its locations. Each location has a port and a bandwidth component for ordering and billing purposes. The Enterprise SNLAN Service will accept and carry tagged and untagged Ethernet traffic. If a customer requires individual tag service from TWTC, it shall use the VLAN identifications assigned by TWTC. Enterprise SNLAN Services may be ordered with Class of Service ("CoS") as described below. If purchased without CoS, the "Best Effort" classification in the SLA below would apply to them.

Additional Features:

- Any-to-any connectivity
- TWTC differentiates customer traffic on the shared infrastructure through unique logical connections for each customer
- Metro area solution
- Various bandwidth increments are offered over 100M, 1000M and 10G End User Ethernet ports
- Port-based pricing
- Full port line rate to the Customer
- Full-duplex service
- Ethernet ring topology

- REP and RSTP spanning tree network restoration protocols (Sub-second convergence and failover time)
- Limited oversubscription of network bandwidth

B. Elite NLAN Services (Point-to-Point Configuration)

Elite NLAN Services are dedicated point-to-point, transparent Ethernet services that conform to MEF "EPL" standards. The Services provide a dedicated point-to-point DWDM or SONET-protected transport solution between customers' locations. The Services are available in bandwidth increments of 10 Mbps, 100 Mbps, 622 Mbps (GigE port but with a limited bandwidth of 622M), 1000 Mbps (GigE), and 10 Gbps. The Services are provisioned on TWTC's fiber infrastructure to provide Ethernet LAN-to-LAN connectivity over the metro area, and each location includes a port and a bandwidth component for ordering and billing purposes.

Additional Features:

- Dedicated Point-to-Point connectivity and bandwidth between two Customer locations
- Customer has access to full bandwidth of the port (no bandwidth increments)
- Full-duplex services
- DWDM or SONET-Protected service (hybrid SONET platform)
- Tagged or untagged Customer Ethernet traffic

C. Extended NLAN Services

Extended NLAN Services ("ENLAN") are fully meshed, inter-market Ethernet Services provisioned on TWTC's Network and provide a managed end-to-end solution. ENLAN Services conform to E-LAN MEF standards, encapsulating Customer traffic using layer 2 tunnels. An Ethernet connection will be established between TWTC's central office Ethernet switch and an aggregation router to transport Ethernet frames across TWTC's Network.

ENLAN is provisioned on diverse and redundant paths, meaning that if there is an interruption on one of the paths, the ENLAN traffic will be automatically re-routed onto a secondary path until the primary path is restored. Enterprise SNLAN Services are required on each end of the ENLAN Service, and are priced separately.

ENLAN may be ordered with CoS, as described below; and would be then considered a "premium" service. If purchased without CoS, the service would be considered a basic service, and the "Best Effort" classification in the SLA below would apply.

D. E-Line Services

E-Line is a point-to-point Layer 2 Ethernet service between any two IEEE-compliant User Network Interfaces ("UNIs"). These UNIs may be connected with other IEEE-compliant UNIs at a variety of speed intervals, regardless of the platform or device that enables them.

The E-Line service is comprised of a UNI at each site combined with Ethernet Virtual Connections ("EVC") between UNIs that create a point-to-point or hub and spoke network topology. Each UNI and EVC is priced separately. E-Line may be ordered as: (a) a port-based private line with limited but dedicated line rate speeds (a/k/a/ Ethernet Private Line or "EPL," which is available with a protected or unprotected configuration); (b) a transparent oversubscribed service between two UNIs (a/k/a/ Ethernet Virtual Private Line or "EVPL," which is

only available in a protected configuration); or (c) a multiplexed VLAN-based solution with dedicated or shared EVCs that span between UNIs, and is available at a variety of speed intervals (this service also may be referred to as EVPL, which is only available in a protected configuration).

The multiplexed E-Line service provisioned with three or more locations is commonly referred to as point to multipoint or, because of its architecture, may be referred to as "VLAN-based" point-to-point. The multiplexed

E-Line service utilizes a "hub and spoke" topology, where several VLAN-based services (the "spokes") aggregate into a single multiplex UNI or NNI (the "hub"). The UNI or NNI is available as a 100M, 1G, or 10G Ethernet port and may be ordered as a transparent or multiplexed interface. EVCs are available in shared or dedicated bandwidth increments from 2Mbps to 10Gbps. The UNI conforms to MEF standards, and the terminology and configurable options associated with the multiplexed E-Line Services typically follow MEF standards.

E. E-Access Service

E-Access is a point to point Layer 2 Ethernet service between two IEEE-compliant Ethernet ports. One side is always an External Network-to-Network Interface ("ENNI") and the other side is either a UNI or a second ENNI. The Ethernet ports are connected with E-Access Operator Virtual Connections ("OVCs"), which are available at a variety of capacities, regardless of the platform or device that enables them. The complete E-Access service is comprised of an ENNI, an OVC, and a UNI or other ENNI.

The E-Access service also resembles a "hub and spoke" topology. The ENNI provides the "hub" for the OVC services (which act as the spokes) via an S-VLAN tag and allows for "Q-in-Q," or stacked, tagging that recognizes that there is more than one layer of VLAN tags. The ENNI is available as a stand-alone service, without a corresponding OVC and UNI or ENNI.

The OVC is available in various bandwidth increments ranging between 2Mbps to 10Gbps and may be ordered with shared or dedicated bandwidth classifications. The product conforms to MEF standards, and the terminology and configurable options typically follow these standards. OVCs may be ordered as:

(a) a port-based private line with limited but dedicated line rate speeds (a/k/a Ethernet Private Line or "EPL"), and is available with a Protected or Unprotected configuration;

(b) a transparent shared or dedicated service (a/k/a Ethernet Virtual Private Line or "EVPL") available at many speed intervals, and is only available in a Protected configuration; or

(c) a multiplexed VLAN-based solution with dedicated or shared EVPLs that span between an ENNI and a multiplexed UNI, which is available at a variety of capacities. This service may also be referred to as an EVPL service, and is only available in a Protected configuration. A multiplexed UNI allows the customer to terminate up to two E-Access OVCs to the same UNI, with the other end at a second ENNI; solely for the purpose of redundancy.

The UNI is available as a 100Mbps, 1Gbps, or 10Gbps Ethernet port and may be ordered as a transparent or multiplexed interface. TWTC will install a Network Interface Device at the premise of each UNI. The ENNI is available as a 1Gbps or 10Gbps Ethernet port and may be ordered with a single or dual hand-off. A dual hand-off is provisioned using LACP protocol, in an active/standby configuration.

III. SERVICE CLASSIFICATIONS

A. Class of Service.

For an additional charge, Customer may order CoS for its Enterprise SNLAN, Elite NLAN, and ENLAN Services. CoS provides customers with the ability to prioritize multiple applications that are competing for the same network resources. CoS provides several levels or "classes" of differentiated service and essentially controls network and system resources in order to achieve a more predictable flow of Customer's proprietary traffic across the TWTC Network. TWTC offers five levels of CoS priority (listed in descending order of priority): Realtime; Interactive; Mission Critical; Priority and Best Effort. If Customer orders the CoS feature, it may designate the CoS associated with each traffic group based on its own desired priority levels, provided that the traffic designated by Customer as Realtime and Interactive combined may not exceed the allowable bandwidth designations contracted for in the applicable Service Order. If Customer's traffic exceeds the CoS bandwidth designation, then the remedies set forth in the SLA below will not apply.

B. E-Line and E-Access Services - Dedicated or Shared Bandwidth

Customer may order E-Line and E-Access Services with either dedicated or shared bandwidth. For the Network Latency, Packet Delivery and Network Jitter service level metrics in Sections IV (B), (C) and (D) below, E-Line and E-Access Services with dedicated bandwidth are classified under the remedy tables as "Realtime" services; and those with shared bandwidth are classified as "Best Effort" services. For the Availability service level metric in Section IV (A) below, the classification for E-Line and E-Access service is based on whether it was ordered in a Protected or an unprotected configuration.

IV. SERVICE LEVEL AGREEMENT

A. Availability

Protected Elite NLAN, E-Line and E-Access Services. These services will be available at least 99.999% of the time in a calendar month. The Service is unavailable during any period of time that it experiences a Service Outage. Upon Customer's request, TWTC will issue credits for each Service Outage, and such credits shall be calculated by multiplying the percentage specified in the table below by the MRC for the non-performing Service.

Duration of Service Outage	Percentage Credit
Less than 1 minute (99.999% availability)	No Credit
1 minute up to 4 hours	5% of the MRC
4 hours up to 8 hours	10% of the MRC
8 hours up to 12 hours	15% of the MRC
12 hours up to 16 hours	20% of the MRC
16 hours up to 24 hours	35% of the MRC
24 hours or greater	50% of the MRC

Protected Enterprise SNLAN and ENLAN Services. These Services will be available at least 99.99% of the time in a calendar month. The Service is unavailable during any period of time it experiences a Service Outage. Upon Customer's request, TWTC will issue credits for each Service Outage, and such credits shall be

calculated by multiplying the percentage specified in the table below by the MRC for the non-performing Service.

Duration of Service Outage	Percentage Credit
Less than 5 minutes (99.99% availability)	No Credit
5 minutes up to 4 hours	5% of the MRC
4 hours up to 8 hours	10% of the MRC
8 hours up to 12 hours	15% of the MRC
12 hours up to 16 hours	20% of the MRC
16 hours up to 24 hours	35% of the MRC
24 hours or greater	50% of the MRC

All Unprotected Services. Unprotected Services will be available at least 99.9% of the time in a calendar month. The Service is unavailable during any period of time it experiences a Service Outage. Upon Customer's request, TWTC will issue credits for each Service Outage, and such credits shall be calculated by multiplying the percentage specified in the table below by the MRC for the non-performing Service.

Duration of Service Outage	Percentage Credit
Less than 45 minutes (99.9% availability)	No Credit
45 minutes up to 4 hours	5% of the MRC
4 hours up to 8 hours	10% of the MRC
8 hours up to 12 hours	15% of the MRC
12 hours up to 16 hours	20% of the MRC
16 hours up to 24 hours	35% of the MRC
24 hours or greater	50% of the MRC

B. Network Latency – Continental United States and Hawaii

TWTC measures "Network Latency" with respect to average round-trip transmission on its Network each calendar month. Upon Customer's request, TWTC will issue credits for TWTC's failure to meet the Network Latency metrics specified below if the failure is service impacting to the Customer. Such credits will be calculated by multiplying the percentage specified in the table below by the MRC for the non-performing Service. The credits specified below are not cumulative and, for any calendar month, Customer is only entitled to one credit specified in the table below based on the highest affected contracted-for CoS level for the non-performing Service.

Network Latency						
		Classification Designation – Percentage Credits				
Continental United States	**Hawaii**	**Realtime (Dedicated Bandwidth)**	**Interactive**	**Mission Critical**	**Priority**	**Best Effort (Shared Bandwidth) & Basic Services**
45.00 milliseconds ("ms") or less	75.00 ms or less	No Credit	No Credit	No Credit	No Credit	No Credit
45.01 to 50.00 ms	75.01 to 80.00 ms	10%	5%	No Credit	No Credit	No Credit
50.01 to 60.00 ms	80.01 to 90.00 ms	15%	10%	No Credit	No Credit	No Credit
60.01 to 65.00 ms	90.01 to 95.00 ms	20%	15%	No Credit	No Credit	No Credit
65.01 to 70.00 ms	95.01 to 100.00 ms	30%	25%	20%	10%	No Credit
70.01 to 75.00 ms	100.01 to 105.00	40%	35%	25%	15%	No Credit
75.01 ms or greater	105.01 or greater	50%	45%	30%	20%	10%

C. Packet Delivery

TWTC measures packet delivery on its Network on a monthly basis. Packet Delivery is determined by averaging sample measurements taken each calendar month between TWTC's designated POPs. Upon Customer's request, TWTC will issue credits for TWTC's failure to meet the Packet Delivery metrics specified in the table below if such failure is service impacting to the Customer. Such credits will be calculated by multiplying the percentage specified in the table by the MRC for the non-performing Services. The credits specified below are not cumulative and, for any calendar month, Customer shall only be entitled to one credit specified in the table below based on the highest contracted-for CoS level for the non-performing Service.

Packet Delivery					
	Classification Designation – Percentage Credits				
Within Continental U.S. and from Continental U.S. to Hawaii	**Realtime (Dedicated Bandwidth)**	**Interactive**	**Mission Critical**	**Priority**	**Best Effort (Shared Bandwidth) & Basic Services**
99.9% or greater	No Credit	No Credit	No Credit	No Credit	No Credit
99.5% to 99.8%	10%	5%	No Credit	No Credit	No Credit
99% to 99.4%	20%	15%	No Credit	No Credit	No Credit
98% to 98.9%	30%	20%	15%	No Credit	No Credit
97% to 97.9%	40%	25%	20%	15%	No Credit
Less than 97%	50%	40%	25%	20%	10%

D. Network Jitter – Continental United States and Hawaii

TWTC's Network Jitter metric only applies to Services for which the Customer has selected either the Realtime or Interactive CoS. "Network Jitter" means the average variation in delay for packet transfers between TWTC's

designated points of presence ("POPs") during a calendar month, as further described below in the section titled "Measurements." Upon Customer's request, TWTC will issue credits for TWTC's failure to meet the Network Jitter metrics specified in the table below if the failure is service impacting to the Customer. Credits will be calculated by multiplying the percentage specified in the table by the MRC for the non-performing Service. The credits specified below are not cumulative and, for any calendar month, Customer shall only be entitled to one credit specified in the table below based on the highest contracted-for CoS level for the non-performing Service.

Network Jitter (one way)						
		Classification Designation – Percentage Credits				
Continental United States	**Hawaii**	**Realtime (Dedicated Bandwidth)**	**Interactive**	**Mission Critical**	**Priority**	**Best Effort (Shared Bandwidth) & Basic Services**
1 ms or less	1 ms or less	No Credit	No Credit	No Credit	No Credit	No Credit
1.1 ms to 2.0 ms	1.1 ms to 2.0 ms	5%	No Credit	No Credit	No Credit	No Credit
2.1 ms to 4.0 ms	2.1 ms to 4.0 ms	10%	5%	No Credit	No Credit	No Credit
4.1 ms to 5.0 ms	4.1 ms to 5.0 ms	15%	10%	No Credit	No Credit	No Credit
5.1 ms to 6.5 ms	5.1 ms to 6.5 ms	20%	15%	10%	No Credit	No Credit
6.6 ms to 7.5 ms	6.6 ms to 7.5 ms	30%	20%	15%	No Credit	No Credit
7.6 ms to 10.0 ms	7.6 ms to 10.0 ms	40%	30%	25%	15%	No Credit
10.1 ms or greater	10.1 ms or greater	50%	40%	30%	20%	10%

E. Measurements

All latency, packet delivery and jitter measurements are measured by averaging sample measurements taken during the calendar month. For Services provided within the continental United States, measurements are taken at TWTC's POPs in the continental United States; for Services provided in Hawaii, between TWTC's POPs in Honolulu, HI and TWTC's POPs on the west coast of the continental United States. Performance metrics are available at TWTC's online customer portal at https://customerportal.twtelecom.com/ or upon Customer's request.

V. ENHANCED MANAGEMENT SERVICE DESCRIPTIONS AND SLAS - E-LINE AND ENTERPRISE SNLAN ORDERED WITH CoS (DOMESTIC ONLY)

Enhanced Management provides Customer with the ability to track the performance of E-Line and Enterprise SNLAN services (that are ordered with CoS) through the "*My Service*" portion of TWTC's website portal. The portal provides Customer with visibility to Frame Delay (Latency), Frame Delivery (Packet Delivery) and Frame Delay Variation (Jitter) performance metrics between the service location and TWTC's nearest POP, and also between the two TWTC POPs associated with the services. Enhanced Management also includes interactive network performance management functionality (collectively "Thresholds and Alerts"). Thresholds and Alerts is accessible via MyService and allows Customer to select performance/utilization thresholds and notification parameters based on the reported data that can be utilized for purposes of network planning, resource optimization and troubleshooting. THRESHOLDS AND ALERTS ARE PROVIDED "AS IS" WITH NO EXPRESS OR IMPLIED WARRANTY. The Service Order for the E-line or Enterprise SNLAN (that is ordered with CoS) service will include a separate line item for the Enhanced Management feature if ordered by

Customer. TWTC provides an Enhanced Management SLA that entitles Customer to credits if TWTC fails to meet the Frame Delay, Frame Delivery and Frame Delay Variation metrics described below ("Enhanced Management SLA"), but is not available for all service locations. If the E-Line and Enterprise SNLAN services are being provided to a location where the Enhanced Management SLA is available, and Customer orders Enhanced Management, the Service Order will include a notation "Enhanced Management SLA" with respect to those services. Enhanced Management SLA credits are issued in addition to other credits that Customer may be eligible for under Section IV above.

For the Frame Delay, Frame Delivery and Frame Delay Variation service level metrics in Sections V (A), (B) and (C) below, E-Line Service with dedicated bandwidth are classified under the remedy tables as "Realtime" services; and those with shared bandwidth are classified under the remedy tables as "Best Effort" services. TWTC's failure to meet any of the Frame Delay, Frame Delivery and/or Frame Delay Variation standards contained in the Enhanced SLA shall not constitute a "Service Outage" for purposes of the applicable SLA or the Agreement. Credits are only issued if requested by Customer, and such requests must be submitted to TWTC within thirty (30) days of the end of the calendar month in which TWTC failed to meet the applicable metric.

A. Enhanced Frame Delay (Latency)

TWTC measures Frame Delay with respect to average round-trip transmission each month between TWTC's CPE located at Customer's premises and TWTC's nearest POP ("Site to POP Frame Delay (Latency)") and with respect to average round-trip transmission between any two TWTC POPs associated with Customer's Enhanced E-Line Services or Enterprise SNLAN Services ("POP to POP Frame Delay (Latency)"). Upon Customer's request, TWTC will issue credits for TWTC's failure to meet such Frame Delay metrics specified in the tables below in any calendar month, and such credits will be equal to five percent (5%) of the monthly recurring Service fee for the applicable non-performing Enhanced E-Line or Enterprise SNLAN Service site.

Enhanced Site to POP Frame Delay (Latency) *				
Enhanced Management: E-Line and Enterprise SNLAN Service Standard				
For Bandwidth from 0Mbps to 15Mbps (Round Trip)				
Realtime (Dedicated)	**Interactive**	**Mission Critical**	**Priority**	**Best Effort (no CoS)**
20 ms	22 ms	23 ms	24 ms	25 ms
For Bandwidth from 16Mbps and Above (Round Trip)				
9 ms	10 ms	11 ms	12 ms	13 ms

Enhanced POP to POP Frame Delay (Latency) (Round Trip) *				
Enhanced Management: POP to POP Service Standard				
Realtime (Dedicated)	**Interactive**	**Mission Critical**	**Priority**	**Best Effort (no CoS)**
Value in Table *	Value in Table + 2 ms	Value in Table + 3 ms	Value in Table + 4 ms	Value in Table + 5 ms

"Table" refers to the POP to POP Frame Delay (Latency) Table contained in Appendix 1 for Enterprise SNLAN Services and Appendix 2 for E-Line Services.

B. Enhanced Frame Delivery (Packet Delivery)

TWTC measures Frame Delivery as an average each month between TWTC's CPE located at Customer's premises and TWTC's nearest POP ("Site to POP Frame Delivery (Packet Delivery)") and between any two TWTC POPs associated with Customer's Enhanced Enterprise SNLAN Services or Enhanced E-Line Services ("POP to POP Frame Delivery (Packet Delivery)"). Upon Customer's request, TWTC will issue credits for TWTC's failure to meet such Frame Delivery metrics specified in the tables below in any calendar month, and such credits will be equal to five percent (5%) of the monthly recurring Service fee for the applicable non-performing Enhanced E-Line or Enterprise SNLAN Service site.

Enhanced Site to POP Frame Delivery (Packet Delivery) *				
Enhanced Management: E-Line and Enterprise SNLAN Service Standard				
For Bandwidth from 0Mbps to 15Mbps (Round Trip)				
Realtime (Dedicated)	**Interactive**	**Mission Critical**	**Priority**	**Best Effort (no CoS)**
99.9%	99.8%	99.7%	99.6%	99.5%
For Bandwidth from 16Mbps and Above (Round Trip)				
99.95%	99.85%	99.75%	99.65%	99.55%

Enhanced POP to POP Frame Delivery (Packet Delivery) (Round Trip) *				
Enhanced Management: E-Line and Enterprise SNLAN Service Standard				
Realtime (Dedicated)	**Interactive**	**Mission Critical**	**Priority**	**Best Effort (no CoS)**
99.95%	99.85%	99.75%	99.65%	99.55%

C. Enhanced Frame Delay Variation (Jitter)

Frame Delay Variation is the average variation in delay for packet transfers during each calendar month between TWTC's CPE located at Customer's premises and TWTC's nearest POP ("Site to POP Frame Delay Variation (Jitter)") and between any two TWTC POPs associated with Customer's Enhanced Enterprise SNLAN Services and Enhanced E-Line Services ("POP to POP Frame Delay Variation (Jitter)"). For Enhanced Enterprise SNLAN Services, the Frame Delay Variation only applies to Realtime or Interactive CoS. For Enhanced Enterprise SNLAN Services without CoS and E-Line Services, Frame Delay Variation only applies to Best Effort. Upon Customer's request, TWTC will issue credits for TWTC's failure to meet the Site to POP Frame Delay Variation (Jitter) or the POP to POP Frame Delay Variation (Jitter) metrics specified in the tables below in any calendar month, and such credits will be equal to five percent (5%) of the monthly recurring Service fee for the applicable non-performing Enhanced E-Line or Enterprise SNLAN Service site.

Enhanced Site to POP Frame Delay Variation (Jitter) *				
Enhanced Management: E-Line and Enterprise SNLAN Service Standard				
For Bandwidth from 0Mbps to 15Mbps (One Way)				
Realtime (Dedicated)	**Interactive**	**Mission Critical**	**Priority**	**Best Effort (no CoS)**
3 ms	4 ms	NA	NA	5 ms
For Bandwidth from 16Mbps and Above (One Way)				
2 ms	3 ms	NA	NA	4 ms

Enhanced POP to POP Frame Delay Variation (Jitter) (One Way) *				
Enhanced Management: POP to POP Service Standard				
Realtime (Dedicated)	**Interactive**	**Mission Critical**	**Priority**	**Best Effort (no CoS)**
2 ms	3 ms	NA	NA	5 ms

D. Measurement of Enhanced Frame Delay (Latency), Frame Delivery (Packet Delivery) and Frame Delay Variation (Jitter)

The measurement of Frame Delay, Frame Delivery and Frame Delay Variation excludes the duration of Service Outages, scheduled or emergency maintenance, outages of TWTC's data collection engine, performance issues caused by Customer's equipment or the acts or omissions of Customer or its end users, and fiber cuts caused by third parties or Customer failures to release the applicable Enhanced E-Line and Enterprise SNLAN Services to TWTC for testing. For circuits with Bandwidths of 15 Mbps or lower, the measurement of such Frame Delay, Frame Delivery and Frame Delay Variation metrics also excludes any time period that Customer's total bandwidth utilization or bandwidth utilization by CoS exceeds fifty percent (50%) of the applicable contracted bandwidth. For circuits with bandwidths over 15 Mbps, the measurement of such Frame Delay, Frame Delivery and Frame Delay Variation metrics also excludes any time period that Customer's total bandwidth utilization or bandwidth utilization by CoS exceeds seventy percent (70%) of the applicable contracted bandwidth. The Enhanced SLA shall not apply to any site for any calendar month if TWTC's measurement of Frame Delay, Frame Delivery and Frame Delay Variation does not include at least twenty five percent (25%) of the duration of any calendar month. Credits provided for the applicable metric are not cumulative and, in any calendar month, Customer shall only be entitled to one credit per metric per Enhanced E-Line or Enterprise SNLAN Service site. All measurements are based on the average of the metrics for that calendar month.

For E-Line EPL Services, the actual traffic path may be configured differently than TWTC's Enhanced POP to POP calculations. For such E-Line EPL Services, the applicable Enhanced SLA metrics as well as the metrics provided in *My Service* will be calculated in accordance with the path of TWTC's E-Line backbone and not the actual traffic path.

Appendix 1

(to Service Level Agreement – Enhanced SNLAN Services - Domestic Only)

POP to POP Latency SLA Real-Time Values (ms)	Albany	Albuquerque	Atlanta	Austin	Baltimore	Binghamton	Birmingham	Boise	Charlotte	Chicago	Cincinnati	Colorado Springs	Columbia	Columbus	Columbus GA	Dallas	Dayton	Denver	El Paso	Fresno	Ft. Lauderdale	Ft. Worth	Greensboro	Greenville	Honolulu	Houston	Indianapolis	Inland Empire	Jacksonville	Kansas City	Lake Charles
Albany																															
Albuquerque	65																														
Atlanta	32	58																													
Austin	50	35	35																												
Baltimore	13	67	24	47																											
Binghamton	15	63	38	48	20																										
Birmingham	36	59	9	35	28	43																									
Boise	75	38	71	47	77	73	72																								
Charlotte	27	55	10	32	19	33	14	68																							
Chicago	24	44	27	30	26	22	31	53	32																						
Cincinnati	34	56	27	41	26	33	31	66	33	16																					
Colorado Springs	53	41	49	27	57	51	51	28	46	33	44																				
Columbia	30	59	12	36	23	37	16	72	9	33	34	50																			
Columbus	27	57	28	41	19	33	32	67	29	17	12	45	33																		
Columbus GA	35	56	9	29	28	42	13	69	14	30	31	47	15	32																	
Dallas	45	31	30	10	42	43	31	42	28	26	36	23	31	36	28																
Dayton	29	55	26	40	21	35	30	65	31	15	10	43	35	7	30	35															
Denver	51	37	47	25	53	49	48	26	44	31	42	7	48	43	45	21	41														
El Paso	60	25	44	23	57	58	45	34	41	39	52	37	45	51	41	19	50	35													
Fresno	83	37	73	50	86	81	74	33	70	62	74	35	75	75	71	45	73	33	33												
Ft. Lauderdale	49	71	21	43	40	56	25	84	26	43	44	62	28	44	24	42	42	60	57	86											
Ft. Worth	46	32	31	9	43	44	31	42	28	26	38	23	32	37	29	6	36	21	19	46	42										
Greensboro	28	58	13	34	20	34	17	71	8	36	35	49	11	30	16	30	32	47	44	73	28	30									
Greenville	41	68	14	44	33	48	18	81	19	35	36	59	20	37	17	39	35	57	54	83	30	40	22								
Honolulu	139	87	123	99	136	137	123	81	120	118	130	99	124	129	120	94	129	96	81	65	135	95	122	133							
Houston	48	36	31	12	39	49	34	48	26	31	42	28	29	42	23	11	41	26	24	51	36	11	28	40	100						
Indianapolis	29	50	22	35	26	27	25	59	27	10	11	38	28	12	25	31	10	36	45	68	37	31	29	30	123	36					
Inland Empire	83	31	67	43	79	81	67	27	64	61	74	42	68	73	64	38	73	40	27	13	79	39	66	77	58	44	67				
Jacksonville	41	68	14	41	33	48	18	81	19	35	36	59	20	37	17	39	35	57	54	83	20	39	21	23	133	34	30	76			
Kansas City	36	46	39	24	37	34	43	58	42	17	28	37	46	28	43	19	27	35	33	61	56	20	44	49	110	24	22	54	49		
Lake Charles	48	41	20	16	39	54	24	53	25	35	43	32	26	43	19	15	41	30	28	56	36	16	27	29	105	10	36	49	29	29	
Las Vegas	79	23	63	36	75	77	63	20	60	58	70	42	64	69	60	35	69	40	20	18	75	34	62	73	65	40	63	13	72	50	45
Lexington	34	56	26	34	26	34	27	64	31	15	15	44	32	12	29	30	14	42	44	72	41	30	33	34	122	35	9	66	34	27	39
Little Rock	48	44	20	21	39	44	20	56	25	26	25	36	27	26	24	18	24	33	31	59	36	17	28	29	108	23	20	52	29	31	27
Los Angeles	82	30	66	42	78	80	66	26	63	60	73	42	67	72	63	37	72	39	26	12	78	38	65	76	57	43	66	6	75	53	48
Louisville	31	54	24	32	28	32	26	62	29	13	13	42	30	14	27	28	12	38	41	70	39	28	31	33	120	33	8	64	33	24	37
Manhattan	9	69	28	52	10	15	32	79	23	27	30	57	27	23	32	46	25	55	62	87	45	50	24	37	143	44	30	87	37	39	44
Memphis	44	46	17	24	36	38	17	58	22	23	22	37	23	22	20	20	21	35	33	61	32	20	24	26	110	25	16	54	26	33	28
Milwaukee	26	47	29	33	28	24	33	56	35	8	19	33	36	19	33	28	18	33	42	62	46	29	39	38	120	33	13	64	38	20	37
Minneapolis	34	35	37	43	36	32	41	45	43	16	27	25	45	27	41	38	25	23	53	53	55	38	48	47	117	43	21	60	47	27	48
Mobile	42	49	14	23	33	49	18	62	20	36	36	40	21	37	11	22	36	38	35	64	29	23	22	23	113	17	31	57	23	36	13
Montgomery	37	53	11	27	30	44	14	66	16	32	33	44	17	33	7	26	32	42	39	68	26	27	18	19	117	21	27	62	19	40	17
Nashville	35	51	22	28	32	34	22	64	27	17	17	42	28	18	25	24	16	40	37	66	37	25	29	30	115	29	12	59	30	28	33
New Orleans	43	45	16	20	35	50	19	58	21	37	38	36	22	39	14	19	37	34	33	60	31	19	23	24	109	13	32	53	24	32	10
Oakland	78	41	76	51	81	76	77	29	73	57	70	31	77	70	73	48	68	29	36	9	89	46	76	86	69	54	63	16	86	63	58
Orange County	83	32	67	43	80	81	68	27	64	62	74	43	68	74	64	38	73	40	27	13	79	39	66	77	59	44	67	7	77	54	49
Orlando	41	66	14	38	33	49	18	78	19	36	36	57	21	37	18	37	35	55	52	81	12	37	22	23	130	31	31	74	15	49	29
Phoenix	72	17	56	30	69	70	56	26	53	50	63	45	57	62	53	29	62	43	14	24	68	28	55	66	72	34	56	19	65	43	38
Portland	85	49	82	58	88	83	83	15	79	64	77	37	83	77	79	54	75	36	44	23	95	53	82	92	84	59	70	29	92	69	64
Raleigh	25	61	16	37	18	31	19	74	10	34	35	52	14	28	19	33	29	50	47	76	31	33	8	24	126	31	32	69	24	47	30
Rochester	11	59	38	44	19	9	43	68	33	18	29	47	37	33	42	38	35	44	54	77	56	40	34	48	132	45	23	76	48	30	49
San Antonio	53	40	35	8	44	51	38	51	29	33	44	29	33	44	27	13	43	28	27	53	40	12	32	44	102	9	38	46	38	26	13
San Diego	86	33	70	46	82	83	70	30	67	64	77	44	71	76	67	41	76	42	28	15	82	42	69	80	60	47	70	8	79	57	52
San Francisco	79	39	76	52	81	77	78	29	73	58	70	32	77	71	74	48	69	30	35	10	89	49	76	86	68	53	63	15	86	64	58
San Luis Obispo	85	35	71	47	85	83	71	34	68	64	76	37	72	77	68	42	75	35	31	15	83	43	70	81	63	48	70	11	80	58	53
Santa Barbara	84	33	68	45	81	82	69	28	65	63	75	40	70	75	66	39	74	37	28	14	81	40	67	78	60	45	68	8	78	55	50
Seattle	89	53	86	62	91	87	86	18	83	68	80	41	87	81	83	57	79	39	48	28	98	57	85	96	90	63	74	34	95	73	68
Spokane	86	50	82	58	88	84	83	15	79	65	77	38	84	78	80	54	76	36	45	36	95	53	82	92	93	60	71	37	92	70	65
Tampa	45	62	18	35	36	52	22	75	22	39	39	53	25	40	21	34	38	51	48	78	13	34	25	27	127	29	33	71	13	49	33
Tucson	76	22	60	34	73	74	61	30	57	55	68	49	62	67	58	33	66	47	18	25	73	32	60	70	72	38	61	18	70	48	43
Tulsa	41	41	40	19	43	38	41	54	37	22	32	33	41	33	37	15	31	31	28	56	53	16	39	50	105	20	27	49	50	10	25
Washington DC	15	65	22	45	7	21	27	75	17	24	24	55	21	17	26	40	19	51	55	83	38	41	18	31	134	38	24	77	31	36	37

* Based on Average Calendar Monthly Metrics

POP to POP Latency SLA Real-Time Values (ms)	Las Vegas	Lexington	Little Rock	Los Angeles	Louisville	Manhattan	Memphis	Milwaukee	Minneapolis	Mobile	Montgomery	Nashville	New Orleans	Oakland	Orange County	Orlando	Phoenix	Portland	Raleigh	Rochester	San Antonio	San Diego	San Francisco	San Luis Obispo	Santa Barbara	Seattle	Spokane	Tampa	Tucson	Tulsa	Washington DC
Las Vegas																															
Lexington	62																														
Little Rock	46	19																													
Los Angeles	12	65	51																												
Louisville	60	7	17	63																											
Manhattan	83	30	44	86	32																										
Memphis	50	16	9	53	14	40																									
Milwaukee	60	17	28	63	15	30	24																								
Minneapolis	60	25	35	60	23	38	32	13																							
Mobile	53	35	29	56	33	38	26	39	48																						
Montgomery	58	31	25	61	29	34	22	35	43	9																					
Nashville	55	11	13	58	9	36	10	19	27	31	27																				
New Orleans	49	36	31	52	34	39	27	40	51	9	13	32																			
Oakland	22	70	59	15	68	83	64	58	49	66	71	69	63																		
Orange County	13	66	52	6	64	87	55	64	61	57	62	60	53	16																	
Orlando	70	35	29	73	33	38	26	38	47	23	20	30	25	83	74																
Phoenix	11	55	39	18	53	76	43	53	63	46	51	49	42	28	19	63															
Portland	29	75	66	29	73	90	69	67	56	72	77	75	69	19	30	89	35														
Raleigh	65	34	30	68	34	21	27	36	45	25	21	32	26	79	69	24	58	85													
Rochester	72	31	38	75	26	15	34	21	29	49	44	30	50	72	76	48	65	79	31												
San Antonio	39	37	23	45	35	49	27	35	46	21	25	31	17	54	47	35	33	62	34	47											
San Diego	15	69	55	8	67	90	57	67	63	61	65	62	56	18	7	77	20	31	72	79	49										
San Francisco	21	71	62	14	68	83	64	58	49	67	71	69	63	6	15	83	27	19	79	73	55	18									
San Luis Obispo	16	70	56	10	68	89	58	64	55	62	66	63	57	11	11	78	22	25	73	79	50	13	11								
Santa Barbara	14	67	53	7	65	88	56	65	58	59	63	61	55	13	8	75	20	27	71	77	48	11	16	8							
Seattle	32	79	70	34	76	93	73	71	59	76	81	78	72	24	35	93	39	9	88	83	65	36	23	29	32						
Spokane	30	76	67	36	73	90	69	67	56	74	77	75	69	31	37	90	36	17	85	79	62	40	31	37	38	14					
Tampa	67	38	32	70	36	41	29	42	51	26	22	33	29	80	71	8	60	86	27	52	32	74	80	75	72	90	86				
Tucson	15	60	44	18	58	81	48	58	67	51	56	53	47	28	17	68	9	39	63	70	37	16	27	23	20	43	40	65			
Tulsa	45	31	27	48	30	45	29	24	32	32	36	33	28	58	49	47	38	64	43	35	22	52	59	53	50	68	65	44	43		
Washington DC	74	24	37	76	26	11	34	26	34	32	28	30	33	79	78	31	66	86	16	21	42	80	79	85	79	89	86	34	71	41	

* Based on Average Calendar Monthly Metrics

Appendix 2

(to Service Level Agreement – Enhanced E-Line Services - Domestic Only)

POP to POP Frame Delay (Latency) SLA Real-Time Values (ms)	Albany	Albuquerque	Ashburn	Atlanta	Austin	Boise	Charlotte	Chicago	Cincinnati	Colorado Springs	Columbia	Columbus	Dallas	Dayton	Denver	Fresno	Ft. Lauderdale	Ft. Worth	Greensboro	Honolulu	Houston	Indianapolis	Inland Empire	Jacksonville	Kansas City
Albany																									
Albuquerque	75																								
Ashburn	18	67																							
Atlanta	42	40	36																						
Austin	59	37	55	27																					
Boise	105	39	96	75	53																				
Charlotte	35	46	25	14	33	78																			
Chicago	30	50	38	26	34	82	35																		
Cincinnati	27	53	32	23	42	85	32	15																	
Colorado Springs	61	41	66	40	28	55	46	34	41																
Columbia	40	46	28	11	33	79	10	31	32	46															
Columbus	24	57	28	31	44	88	30	23	9	50	34														
Dallas	55	22	47	23	10	54	27	31	37	24	28	40													
Dayton	25	58	30	30	45	89	32	23	7	50	34	7	41												
Denver	53	37	64	37	24	53	43	32	30	8	43	36	20	40											
Fresno	92	36	98	70	47	32	76	64	72	37	76	81	50	80	34										
Ft. Lauderdale	60	69	48	28	45	94	29	50	50	65	33	56	46	55	63	91									
Ft. Worth	54	23	53	23	9	54	28	30	38	24	29	39	6	41	21	51	47								
Greensboro	36	48	21	17	35	81	8	37	34	47	12	28	30	30	45	78	31	30							
Honolulu	156	92	157	135	102	98	136	131	138	104	139	141	115	142	101	70	148	110	140						
Houston	56	33	47	29	12	58	28	37	44	28	32	48	10	49	25	49	37	11	30	108					
Indianapolis	30	50	38	20	39	86	30	10	8	38	26	15	32	18	27	68	44	35	32	137	41				
Inland Empire	99	31	92	64	36	30	70	72	80	63	70	82	44	83	41	12	82	45	72	68	47	77			
Jacksonville	52	50	44	14	37	81	23	35	33	49	19	42	32	40	47	80	19	32	25	138	35	29	74		
Kansas City	40	38	50	36	24	83	44	16	23	43	42	32	21	33	40	73	62	20	47	134	26	21	69	46	
Las Vegas	87	23	79	54	35	21	57	63	67	50	58	70	33	71	48	18	76	35	60	75	37	64	13	62	57
Lexington	30	50	35	29	38	81	34	20	13	46	33	12	34	14	38	77	52	33	34	135	37	15	75	43	30
Little Rock	64	34	55	28	20	66	34	41	44	35	33	51	23	52	32	63	51	16	36	123	22	41	58	36	31
Los Angeles	95	30	93	63	43	31	69	70	78	62	69	81	43	82	40	11	83	44	71	64	38	75	6	73	75
Manhattan	10	72	13	38	59	101	28	30	24	62	32	20	52	22	56	92	53	54	35	156	52	30	96	48	40
Memphis	42	36	47	25	24	71	33	28	20	38	31	25	19	25	34	66	49	20	35	126	24	17	60	34	34
Milwaukee	32	62	43	32	37	81	39	8	18	33	35	26	44	26	30	62	54	33	43	131	49	28	70	39	19
Minnetonka	40	56	50	43	44	72	56	14	25	25	50	32	37	33	22	53	62	39	49	121	44	39	61	45	25
Nashville	36	44	42	33	32	77	39	17	15	43	40	18	28	19	37	72	52	28	39	135	32	12	69	44	28
Oakland	87	40	93	66	49	28	71	59	67	33	72	80	46	80	30	9	92	47	74	72	52	63	16	76	69
Orange County	98	31	89	64	35	30	70	72	79	63	70	82	44	83	41	12	74	45	72	68	37	77	7	74	69
Orlando	50	62	38	25	42	87	19	49	47	59	23	45	42	47	57	85	15	43	22	146	37	42	83	16	57
Phoenix	80	17	72	45	29	27	50	57	58	48	51	64	27	65	42	24	69	29	53	78	30	57	19	55	51
Portland	102	48	109	82	63	15	87	75	83	48	88	92	61	92	45	23	107	62	90	89	67	79	29	92	84
Raleigh	26	52	18	20	40	82	11	39	28	51	16	32	33	34	49	82	35	34	8	141	34	34	76	30	50
Rochester	30	80	38	40	49	103	43	19	33	48	43	29	60	31	46	81	64	44	48	147	57	24	104	50	29
San Antonio	61	36	52	32	8	53	31	37	45	31	36	48	14	50	29	40	42	12	34	96	9	43	34	38	26
San Diego	97	32	89	67	34	31	61	73	79	49	69	83	46	84	43	14	73	39	69	66	35	75	8	73	69
San Francisco	87	39	93	66	47	29	72	60	67	33	72	85	53	80	31	10	92	54	74	74	52	64	15	77	71
Seattle	96	52	102	75	62	18	80	68	76	41	81	82	55	81	38	26	101	55	83	93	61	67	33	85	76
Tampa	52	58	42	19	39	84	22	40	40	54	26	45	34	46	50	80	14	37	26	139	29	35	77	11	50
Tucson	84	21	75	50	25	35	55	58	64	51	55	67	31	68	47	23	62	30	58	76	27	60	17	59	50
Tulsa	47	31	56	31	17	64	36	22	30	32	37	38	14	38	29	60	56	13	38	119	19	27	54	40	12

* Based on Average Calendar Monthly Metrics

POP to POP Frame Delay (Latency) SLA Real-Time Values (ms)	Las Vegas	Lexington	Little Rock	Los Angeles	Manhattan	Memphis	Milwaukee	Minnetonka	Nashville	Oakland	Orange County	Orlando	Phoenix	Portland	Raleigh	Rochester	San Antonio	San Diego	San Francisco	Seattle	Tampa	Tucson	Tulsa
Las Vegas																							
Lexington	63																						
Little Rock	47	44																					
Los Angeles	12	73	57																				
Manhattan	83	27	61	95																			
Memphis	50	20	9	59	38																		
Milwaukee	74	23	45	69	33	28																	
Minnetonka	67	33	52	60	39	33	13																
Nashville	58	12	37	68	33	10	21	28															
Oakland	22	79	59	15	88	62	58	49	68														
Orange County	13	75	58	6	93	60	70	61	69	16													
Orlando	71	49	49	85	43	48	52	59	50	85	71												
Phoenix	11	57	40	18	76	43	67	63	51	28	19	64											
Portland	29	91	75	29	104	77	73	64	83	19	30	100	35										
Raleigh	64	31	39	75	29	36	43	51	37	78	76	25	57	93									
Rochester	92	35	57	87	31	40	22	28	36	75	100	57	85	90	41								
San Antonio	32	40	23	35	57	26	41	47	36	44	33	42	26	59	38	57							
San Diego	15	76	56	8	92	62	72	63	69	18	7	69	18	31	72	98	31						
San Francisco	22	83	67	15	89	69	58	49	74	6	17	86	27	19	78	75	44	17					
Seattle	32	79	68	32	97	71	67	57	76	22	33	94	39	9	87	83	64	34	22				
Tampa	66	43	42	78	46	40	44	52	42	80	72	12	59	96	29	56	32	63	81	90			
Tucson	15	59	43	18	80	45	72	66	54	27	16	60	9	39	61	89	22	14	26	43	53		
Tulsa	44	32	24	53	47	28	25	31	33	56	54	50	37	71	42	36	20	52	63	65	46	39	

* Based on Average Calendar Monthly Metrics