

**COMCAST ENTERPRISE SERVICES
PRODUCT-SPECIFIC ATTACHMENT
ETHERNET TRANSPORT SERVICES**

ATTACHMENT IDENTIFIER: Ethernet Transport, Version 1.18

The following additional terms and conditions are applicable to Sales Orders for Comcast's Ethernet Transport Services.

DEFINITIONS

Capitalized terms not otherwise defined herein shall have the meaning ascribed to them in the General Terms and Conditions.

“**Comcast Switch**” means Comcast's ethernet terminating device located at a Service Location and used for provisioning its services and the delivery of the UNI (as defined in Schedule A-1). The Comcast Switch constitutes Comcast Equipment.

“**Customer Switch or Router**” means the switch or router installed at the Service Location and used to connect to the UNI. The Customer Switch or Router may be Comcast Equipment or Customer-Provided Equipment.

“**Estimated Availability Date**” means the target date for delivery of Service.

“**Off-Net**” means geographical locations that are outside of Comcast's service area and/or geographical locations that are within Comcast's service area generally but are not readily accessible by Comcast Network facilities. All Off-Net Services are provided by third-party service providers. Off-Net Services that are provisioned over a dedicated network are referred to as “**Off-Net Dedicated**.” Off-Net Services that are provisioned over a non-dedicated network are referred to as “**Off-Net Non-Dedicated**”.

“**On-Net**” means geographical locations where Comcast currently provides Services through the Comcast Network.

“**Service(s)**” means Ethernet Transport Services.

ARTICLE 1. SERVICES

This attachment shall apply to Comcast's Ethernet Transport Services. A further description of the Services is set forth in Schedule A-1 hereto which is incorporated herein by reference. The Service shall not be used to support any PSAP engineering, including, but not limited to, as part of a state or local 911 network or transport to connect to a 911 network.

ARTICLE 2. REGULATORY APPROVAL; TRAFFIC MIX

Comcast's pricing for Service may be subject to FCC, public service commission or other regulatory approval. Further, Customer represents that its use of Service hereunder will be exclusively for the transmission of communications that is classified as

jurisdictionally interstate under FCC rules and regulations. For services for which the endpoints of the service are in the same state, Customer specifically represents that more than ten percent (10%) of the traffic transmitted via the Service will be interstate. (For this purpose, Customer's representation relates to the traffic carried over the Service rather than the locations of the physical endpoints of the facility over which the Service is delivered.) If at any time during the term of the Agreement or any Service Term, less than ten percent (10%) of the traffic transmitted via such Service(s) is interstate, Customer shall immediately notify Comcast of the same in writing. Further, Comcast reserves the right, in its reasonable sole discretion, to reclassify Customer's use of Service as jurisdictionally interstate or intrastate, as appropriate. Customer agrees to indemnify, defend, and hold Comcast harmless from any claims by third parties, including, without limitation, any governmental entities, resulting from or arising out of Customer's failure to properly represent or certify the jurisdictional nature of its use of the Service(s).

ARTICLE 3. CUSTOM INSTALLATION FEES

Once Comcast accepts a Sales Order for Service, Comcast will invoice Customer for all Custom Installation Fee(s). Customer will pay the Custom Installation Fee(s) within thirty (30) days of the invoice date unless a payment schedule is specified in the applicable Sales Order.

ARTICLE 4. PROVISIONING INTERVAL

Following Comcast's acceptance of a Sales Order, Comcast shall notify Customer of the Estimated Availability Date applicable to that Sales Order. Comcast shall use commercially reasonable efforts to provision the Service on or about the Estimated Availability Date; provided, however, that Comcast's failure to provision Service by said date shall not constitute a breach of the Agreement.

ARTICLE 5. SERVICE COMMENCEMENT DATE

Comcast shall inform Customer when the Service is available and performing at the Service Location in accordance with the Technical Specifications (as defined in Article 8) (“**Availability Notification**”). Charges for Service shall begin to accrue as of the Service Commencement Date. The Service Commencement Date shall be earliest of: (A) the date on which Customer confirms receipt of and concurrence with the Availability Notification; (B) five (5) business days following the date of the Availability Notification, if Customer fails to notify Comcast that the Service does not comply materially with the Technical Specifications (as defined below) or (C) the

date on which Customer first uses the Service. In the event that a Service Term has not been expressly set forth in a Sales Order, the Service Term for such Sales Order shall be twelve (12) months.

ARTICLE 6. TERMINATION CHARGES; PORTABILITY; UPGRADES; OFF-NET SERVICES

6.1 The charges set forth or referenced in each Sales Order have been extended to Customer in reliance on the Service Term set forth therein.

6.2 Termination Charges for On-Net Services.

A. Subject to Section 6.3, in the event that On-Net Service is terminated following Comcast's acceptance of the applicable Sales Order but prior to the Service Commencement Date, Customer shall pay Termination Charges equal to one hundred and twenty percent (120%) of the costs and expenses incurred by Comcast in installing or preparing to install the On-Net Service.

B. Subject to Section 6.3, in the event that On-Net Service is terminated on or following the Service Commencement Date but prior to the end of the applicable Service Term, Customer shall pay Termination Charges equal to a percentage of the monthly recurring charges remaining for the unexpired portion of the then-current Service Term, calculated as follows:

- i.** 100% of the monthly recurring charges with respect to months 1-12 of the Service Term; plus
- ii.** 80% of the monthly recurring charges with respect to months 13-24 of the Service Term; plus
- iii.** 65% of the monthly recurring charges with respect to months 25 through the end of the Service Term; plus
- iv.** 100% of any remaining, unpaid Custom Installation Fees.

Termination Charges shall be immediately due and payable upon cancellation or termination and shall be in addition to any and all accrued and unpaid charges for the Service rendered by Comcast through the date of cancellation or termination.

C. Termination Charges for Off-Net Services. Subject to Section 6.3, in the event that Off-Net Service is terminated following Comcast's acceptance of the applicable Sales Order but prior to the Service Commencement Date, Customer shall pay Termination Charges equal to one hundred and twenty percent (120%) of the costs and expenses incurred by Comcast in installing or preparing to install the Off-Net Service, including any third-party incurred by Comcast as a result of the early termination of the Service.

Subject to Section 6.3, in the event that Off-Net Service is terminated on or following the Service Commencement Date but prior to the end of the applicable Service Term, Customer shall pay Termination Charges equal to 100% of the monthly recurring charges remaining through the end of the Service Term plus 100% of any remaining, unpaid Custom Installation Fees. Customer shall also pay any third-party charges incurred by Comcast as a result of the early termination of Service.

6.3 Exclusions. Termination Charges shall not apply to Service terminated by Customer as a result of Comcast's material and uncured breach in accordance with the General Terms and Conditions.

6.4 Portability. Customer may terminate an existing On-Net Service (an "**Existing Service**") and turn up a replacement On-Net Service (*i.e.*, activate Service with termination points on Comcast's network that are different than those of the Existing Service) (a "**Replacement Service**") without incurring Termination Charges with respect to the Existing Service, provided that (a) the Replacement Service must have a Service Term equal to or greater than the remaining Service Term of the Existing Service but in no event less than twelve (12) months; (b) the Replacement Service must have monthly recurring charges equal to or greater than the monthly recurring charges for the Existing Service; (c) Customer submits a Sales Order to Comcast for the Replacement Service within ninety (90) days after termination of the Existing Service and that Sales Order is accepted by Comcast; (d) Customer reimburses Comcast for any and all installation charges that were waived with respect to the Existing Service; and (e) Customer pays the actual costs incurred by Comcast in installing and provisioning the Replacement Service.

6.5 Upgrades. Customer may upgrade the speed or capacity of an Existing Service without incurring Termination Charges, provided that (a) the upgraded Service (the "**Upgraded Service**") must assume the remaining Service Term of the Existing Service, but in no event less than twelve (12) months; (b) the Upgraded Service must have the same points of termination on Comcast's network as the Existing Service; (c) Customer submits a Sales Order to Comcast for the Upgraded Service and that Sales Order is accepted by Comcast; (d) Customer pays Comcast's applicable nonrecurring charges for the upgrade; and (e) Customer agrees to pay the applicable monthly recurring charges for the Upgraded Service commencing with the upgrade. Upgrades to Off-Net Services are subject to the applicable third party service provider rules and availability. Comcast has no obligation to upgrade Customer's Off-Net Service.

Off-Net Services. If Customer is receiving Off-Net Services, Comcast shall, in its sole discretion, have the ability to (a) provide On-Net Services in lieu of such Off-Net Services and/or (b) substitute the current Off-Net Services provider for an alternate Off-Net Services provider, each, at no additional cost to Customer; provided, however, that Comcast shall not make any changes to Customer's Off-Net Services provider that

could, in Comcast's reasonable opinion, impair Customer's specific network design or provider attributes (e.g., diversity). Comcast shall use commercially reasonable efforts to coordinate a mutually agreeable time with Customer to conduct any such changes.

ARTICLE 7. ADDITIONAL INFORMATION

As necessary for the interconnection of the Service with Customer's intended destination, Customer's equipment, or services provided by third parties, Comcast may request (as applicable), and Customer will provide to Comcast, circuit facility assignment information, the service key, firm order commitment information, and design layout records necessary to enable Comcast to make the necessary cross-connection between the Service and Customer equipment or Customer's other service provider(s). Comcast may charge Customer nonrecurring and monthly recurring cross-connect charges to make such connections. Notwithstanding any Service Level Agreement or similar commitment applicable to the underlying Service, the cross-connect itself shall not be eligible for any service level credits or remedies.

ARTICLE 8. TECHNICAL SPECIFICATIONS; SERVICE LEVEL AGREEMENT

The technical specifications applicable to the Service are set forth in Schedule A-1 hereto ("Technical Specifications"). The service level agreement applicable to the Services is set forth in Schedule A-2 hereto ("Service Level Agreement" or "SLA").

ARTICLE 9. NETWORK GROOMING AND TRANSPORT CHANGES

Comcast may perform grooming to optimize network performance or to enable Customer's requested service tier, including transitioning a Service's transport from HFC to Fiber, provided the Service remains with substantially equivalent or improved technical specifications. Any Service Interruption due to such grooming will be treated as Scheduled Maintenance under Schedule A 1, Section D.2.(b), and not as an unplanned Service Interruption under Schedule A 2. A change in transport associated with grooming initiated by Comcast may result in a new circuit identifier and/or physical demarcation change; such changes will not reset or shorten the then current Service Term, and will not increase the Customer's MRC for the impacted Service unless Customer separately orders a higher CIR or UNI.

COMCAST ENTERPRISE SERVICES PRODUCT-SPECIFIC ATTACHMENT ETHERNET TRANSPORT SERVICES

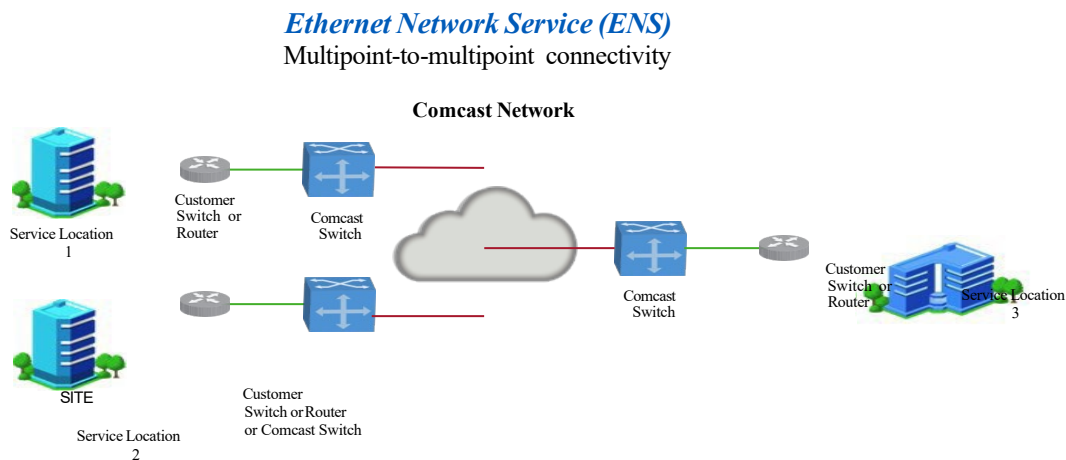
SCHEDULE A-1

SERVICE DESCRIPTIONS, TECHNICAL SPECIFICATIONS AND PERFORMANCE STANDARDS

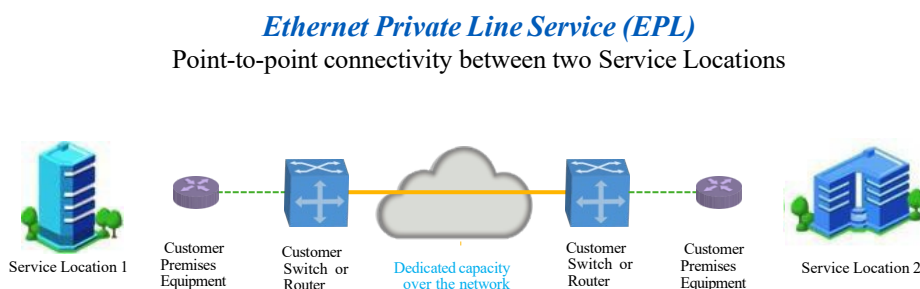
The Services will be provided in accordance with the service descriptions, technical specifications and performance standards set forth below:

A. Service Descriptions

- Ethernet Network Service (“ENS”)** is a multipoint-to-multipoint transport service that enables Customer to connect multiple physically distributed Service Locations across a metropolitan area network (“MAN”) or wide area network (“WAN”) as if such Service Locations are on the same local area network (“LAN”) by providing an ethernet virtual connection (“EVC”) between such Service Locations. The EVC is provided by using industry standard 100 Mbps, 1 Gbps, 10 Gbps or 100 Gbps ethernet user-to-network interfaces, which are located on a Comcast Switch (“UNI”) to enable bidirectional connections between the Customer Switches or Routers at the Service Locations. ENS provides virtual LAN (“VLAN”) transparency, enabling Customer to implement Customer’s own VLANs without any coordination with Comcast. ENS is available with flexible bandwidth options from 1 Mbps to 10 Gbps. Comcast offers three (3) classes of ENS, as described in the Technical Specifications below.

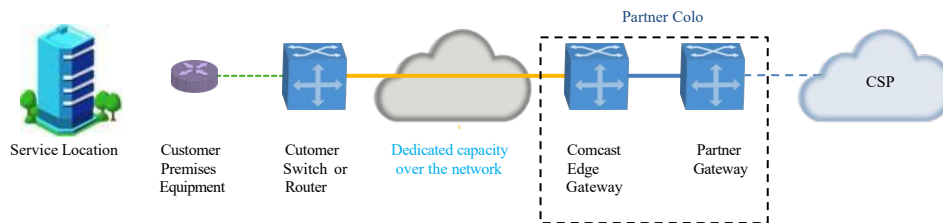


- Ethernet Private Line (“EPL”)** is a point-to-point transport service that provides an EVC between two (2) Service Locations by using industry standard 100 Mbps, 1 Gbps, 10 Gbps or 100 Gbps UNI to enable bidirectional connections between the Customer Switches or Routers at such Service Locations. EPL is available with flexible bandwidth options from 1 Mbps to 10 Gbps. EPL enables the Customer to use any VLANs without coordination with Comcast. Comcast offers three (3) classes of EPL, as described in the Technical Specifications below.



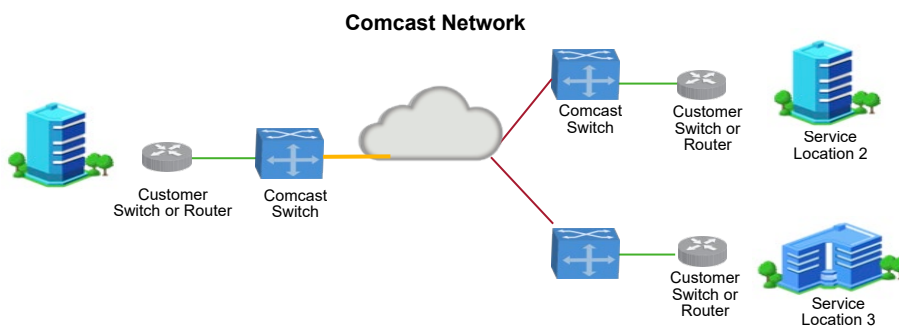
3. **Point-to-cross-connect cloud connectivity service (“P2C”)**, including Direct2Cloud, MES Direct2Cloud, MES D2C, MES Managed D2C, Versa Cloud Connect, and Fortinet Multi-Cloud, is a point-to-point transport service that provides an EVC between a Customer Service Location and a physical or virtual cross-connect at a colocation partner facility. Such cross-connect allows Customer to connect the Comcast Switch to an established direct connectivity cloud interface provided by a third-party cloud service provider (“CSP”) by Customer providing a service key from its CSP to enable the colocation partner to complete the cross-connect from Comcast’s External Network-to-Network Interface (“ENNI”) to the CSP’s cloud on-ramp. Comcast is responsible for the transport service up to and including the cross-connect at the colocation facility, which constitutes the Demarcation Point. For the avoidance of doubt, available speeds for P2C Services vary by P2C Service type and access method. A relationship between Customer and a CSP is required for the service to function. Customer shall utilize a CSP selected from Comcast’s then-current list of approved CSPs, which may vary depending on the type of P2C Service. Comcast reserves the right to modify the list of approved CSPs at its sole discretion and without prior notice. The list of approved CSPs is available upon request and may be updated from time to time to reflect changes in technology, security standards, or business requirements. Customer is solely responsible for establishing, managing, configuring, and maintaining its relationship with its CSP. Comcast does not manage, monitor, support, or assume responsibility for any portion of the service beyond the cross-connect, including the cloud on-ramp or the performance, configuration, or support of the cloud services. Comcast does not manage or assume responsibility for the performance, configuration, or support of the cloud services. Versa Cloud Connect and Fortinet Multi-Cloud are an add-on to SD WAN services and will not function without SD-WAN service.

Point-to-cross-connect cloud connectivity service (“P2C”)
Point-to-point connectivity between Service Location and cross-connect



4. **Ethernet Virtual Private Line (“EVPL”)** is a point-to-multipoint transport service that provides a connection between two (2) Service Locations similar to EPL, but supports the added flexibility to multiplex multiple EVCs on a single UNI at the Customer’s hub or aggregation Service Location (the “**Aggregation Service Location**”). Specifically, EVPL provides an EVC between the Aggregation Service Location and one or more other Service Locations by using industry standard 100 Mbps, 1 Gbps, 10 Gbps or 100 Gbps UNI to enable bidirectional connections between the Customer Switch or Router at Customer’s Aggregation Service Location and the Customer Switch or Router at one or more of Customer’s other Service Locations. The multiplexing capability is not available at Service Locations served by Comcast On-Net HFC. For clarity, in order for EVPL to enable a connection between two (2) Service Locations, one of such Service Locations must be the Aggregation Service Location. By way of example, in the diagram below, EVPL enables a bidirectional connection between Service Location 1 and Service Location 2, and between Service Location 1 and Service Location 3, but not between Service Location 2 and Service Location 3. EVPL is available with flexible bandwidth options from 1 Mbps to 10 Gbps. Comcast offers three classes of EVPL, as described in the Technical Specifications below.

Ethernet Virtual Private Line Service (EVPL)
Point-to-multipoint connectivity



5. Multiple Access Options

The Services are available with the following access options:

- **On-Net Access** – Connectivity to Service Locations is enabled via Comcast On-Net infrastructure.
- **Off-Net Access** (Off-Net Dedicated, Off-Net Non-Dedicated) – Connectivity to Service Locations is enabled through a network-to- network interface (“NNI”) via third-party network provider.

6. EVC Area Types

The Services are available both within and between certain major metropolitan areas throughout the United States. Each EVC is assigned an EVC area type (Metro, Regional or Continental, as described below) based upon the proximity of Customer’s respective Service Locations. “**Region**” means a Comcast-defined geographical region, as determined by Comcast from time to time, within Comcast’s cable footprint. “**Metro**” means a Comcast-defined sales market, as determined by Comcast from time to time, within a Region.

- **Metro** – EVC enables connectivity between Service Locations within the same Metro.
- **Regional** – EVC enables connectivity between Service Locations that are in different Metros, but within the same Region.
- **Continental** – EVC enables connectivity between Service Locations that are in different Regions.

7. Off-Net Service Locations

Customer acknowledges and agrees that without Customer confirmation of the Service, Comcast may be unable to completely deliver the Service. Comcast shall make three (3) attempts to schedule a call during which Customer will confirm readiness to receive the Service in accordance with the Customer Responsibilities set forth in Section E of this Schedule and Article 7 (Additional Information) herein, as applicable. If Comcast’s attempts to schedule a call are unsuccessful, then Comcast may terminate the applicable Service Order at such Service Location, upon prior written notice to Customer (subject to applicable Termination Charges set forth in Section 6.2).

B. Technical Specifications

1. Ethernet User-to-Network Interface

The Services provide bidirectional, full duplex transmission of untagged ethernet frames using a standard IEEE 802.3 UNI to attach to the Customer Switch or Router. Figure 1 lists the available UNI speeds and their UNI physical interfaces, and available committed information rate (“CIR”) bandwidth increments and committed burst sizes (“CBS”). CIR increments of less than 10 Mbps are generally not available in conjunction with Off-Net Services.

UNI Speed	UNI Physical Interface	CIR Increments	CBS (bytes)
		1 Mbps	25,000
100 Mbps	100BaseT	10 Mbps	250,000
1 Gbps	1000Base T or 1000BaseSX	100 Mbps	2,500,000
10 Gbps	10GBase-SR or 10GBase-LR	1 Gbps	25,000,000
100 Gbps	100GBASE-LR4	10 Gbps	25,000,000

Figure 1: Available UNI interface types and CBS values for different CIR increments

2. Class of Service (“CoS”) Options

The Services are available with three (3) different CoS options that allow for differentiated Service performance levels for different types of network traffic. This includes Basic (Low), Priority (Medium) and Premium (High). CoS is used to prioritize customer mission-critical traffic over lower priority traffic in the network. Customer must specify a CIR for each CoS to indicate how much bandwidth should be assigned to that CoS. The performance metrics associated with each CoS are described in the SLA. As described in the following table, permissible CoS options vary by access type.

Access Type	CoS Options
On-Net	Basic, Priority & Premium
Off-Net Dedicated	Basic, Priority & Premium
Off-Net Non-Dedicated	Basic & Priority

3. CoS Identification and Marking

Customer traffic classification and forwarding is based upon CoS prioritization that is specified in the Sales Order. It is the Customer’s responsibility to shape traffic to ordered bandwidth. If the Customer only orders a single CoS solution, Customer is not required to mark Customer’s packets and all Customer packets will be forwarded based upon 802.1p value associated with the CoS level specified in the Sales Order. All packets, tagged or untagged, will be mapped into the subscribed CoS.

- If Customer implements a multi-CoS solution, or for EVPL ports with service multiplexing, the Customer must mark all packets using C-tag 802.1p CoS values as specified in the table below to ensure the Service will provide the intended CoS performance objectives.
- For multi-CoS solutions, untagged packets will be treated as if they are marked with a 0. Packets with other 802.1p values are mapped to the lowest subscribed CoS.
- For EVPL ports with service multiplexing, untagged packets will be discarded and C-tag VLAN ID values are used to map traffic to applicable EVCs. Based on Ethernet Frame 802.1p values, Customer’s traffic is mapped to the Comcast forwarding classes traffic accordingly to the table below:

CoS Type	802.1p Marking
Basic (Low)	0-1
Priority (Medium)	2-3
Premium (High)	5

4. Mac Learning and Forwarding (*ENS only*)

The ENS is capable of learning up to 2,500 MAC addresses from all interfaces connecting to the Service. It is highly recommended that routing equipment be utilized to minimize the number of MAC addresses exposed directly to the Service in larger networks. Any addresses in excess of 2,500 will not be learned and traffic directed to these addresses will be treated as “unknown unicast”.

5. Traffic Management

Comcast’s Network traffic-policing policies restrict traffic flows to the subscribed CIR for each CoS. Comcast will discard non-conforming packets if (a) the Customer transmitted bandwidth rate for any CoS exceeds the subscribed CIR and CBS or (b) 64 byte frames comprise more than 50% of the CIR. For packets marked with a non-conforming CoS marking, the Service will transmit such packets using the Basic CoS without altering the Customer’s CoS markings. Traffic management policies associated with Off-Net Services will conform to the policies enforced by the third-party service provider. Encrypted tunnels cannot exceed 30Gbps for Regional or Continental EVC area types.

6. Maximum Frame Size

The Service supports a maximum transmission unit (“MTU”) frame size of 2,000 bytes for untagged, tagged and Q- in-Q traffic with IEEE 802.1q or IEEE 802.1ad encapsulation types.

- On-Net Services may, if set forth in a Sales Order or change order thereto, support an MTU up to 9,100 bytes for untagged, tagged and Q-in-Q frame sizes.
- Off-Net Dedicated Services may, if set forth in a Sales Order or change order thereto, support an MTU up to 9,100 bytes for untagged, tagged and Q-in-Q frame sizes, but only, and solely, to the extent the applicable Off-Net provider can support such MTU frame size.
- Off-Net Non-Dedicated Services may, if set forth in a Sales Order or change order thereto, support an MTU up to 1,600 bytes for untagged, tagged and Q-in-Q frame sizes, but only, and solely, to the extent the applicable Off-Net provider can support such MTU frame size.

All frames that exceed specifications shall be dropped.

Transport Type	MTU Size
On-Net and Off-Net Dedicated	1,600-9,100 bytes
Off-Net Non-Dedicated	1,522 -1,600 bytes

7. Customer Traffic Transparency

All fields within a Customer’s ethernet frames (unicast, multicast and broadcast, except L2CP) from the first bit of payload are preserved and transparently transported over UNI to UNI connections, as long as the ethernet frames are mapped into the EVC.

8. Ethernet Service Frame Disposition

The Services process different types of ethernet frames differently. Ethernet frames may pass unconditionally through the Network or may be limited, as indicated in the table below. The following table illustrates Comcast’s service frame disposition for each service frame type.

Service Frame Type	ENS Frame Delivery	EPL and EVPL Frame Delivery
Unicast	All frames delivered unconditionally	All frames delivered unconditionally
Multicast	All frames delivered conditionally	All frames delivered unconditionally
Broadcast	All frames delivered conditionally	All frames delivered unconditionally

ENS only:

- Unicast Traffic. Unicast traffic must be bidirectional in order to facilitate mac-learning and avoid restriction.
- Multicast Traffic. By default, every ENS port is able to support up to 2 Mbps of multicast traffic. If an ENS Customer requires greater than 2 Mbps of multicast bandwidth, Customer must uniquely specify the bandwidth Customer requires for each root site and associated CoS at the time of contracting the ENS.
- Broadcast Traffic. Broadcast and unknown unicast traffic are restricted to 1.2mb or 300pps on ingress to the network.

EVPL only:

- Customer is responsible for mapping multicast, broadcast and unknown unicast traffic to specific Customer VLANs.

C. Transmission Protocols

User data protocol (“UDP”) is the default protocol for communication between two (2) Service Locations. If Customer elects to change from UDP to another protocol (e.g., transmission control protocol (“TCP”)), Customer does so at its own risk and acknowledges and agrees that the transmission speed may be negatively impacted.

D. Monitoring, Technical Support and Maintenance

1. **Network Monitoring.** Comcast monitors On-Net Services on a 24x7x365 basis.
2. **Technical Support.** Comcast provides a toll-free trouble reporting telephone number to the Comcast Business Services Network Operations Center that operates on a 24x7x365 basis. Comcast provides technical support for Service-related inquiries. Comcast Business Services Network Operations Center will not offer consulting or advice on issues relating to non-Comcast Equipment.
 - (a) **Escalation.** Reported troubles are escalated within the Comcast Business Services Network Operations Center to meet the response/restoration objectives described below (Response and Restoration Standards). Service issues are escalated within the Comcast Business Services Network Operations Center as follows: to a Supervisor at the end of the applicable objective time interval plus one (1) hour; to a Manager at the end of the applicable objective time interval plus two (2) hours; and to a Director at the end of the applicable objective time interval plus four (4) hours.
 - (b) **Maintenance.** Comcast’s standard maintenance window for On-Net Services is Sunday to Saturday from 12:00am to 6:00am local time (“**Maintenance Window**”). Scheduled maintenance for On-Net Services is performed during the Maintenance Window and will be coordinated between Comcast and the Customer. The scheduled maintenance date will be determined by Comcast in its sole discretion; provided, that Comcast provides a minimum of seven (7) days’ notice for On-Net Service impacting planned maintenance. Emergency maintenance is performed as needed without advance notice to Customer. Maintenance for Off-Net Services shall be performed in accordance with the applicable third party service provider rules. Therefore, maintenance for Off-Net Service may be performed without advance notice to Customer.
3. **Transport and Circuit Updates.** Following completion of a grooming event that changes transport and/or circuit identifiers, Comcast will provide Customer the updated circuit ID(s) and demarcation details. Where practicable, Comcast will maintain existing IP addressing; however, Comcast may reassign IP addressing consistent with ARIN guidelines and Comcast policy where required by network design, with reasonable advance notice.
4. **Comcast Equipment.** Comcast provides certain Comcast Equipment for provisioning its Services and the delivery of the UNI, which will reside at the Service Location. Comcast will retain ownership and management responsibility for this Comcast Equipment. This Comcast Equipment must be used only for receipt of Services. Customers are required to shape their egress traffic to the CIR identified in the Sales Order. Comcast will be excused from paying SLA credits, as set forth in Schedule A-2, if the Service Interruption (as defined in Schedule A-2) is the result of Customer’s (a) failure to shape Customer’s traffic to the contracted CIR or (b) utilization of Comcast Equipment for non-Comcast provided services.
5. **Response and Restoration Standards.** Comcast has the following response and restoration objectives:

CATEGORY	OBJECTIVE	MEASUREMENT	REMEDIES
<i>Mean Time to Respond Telephonically to Call</i>	15 minutes	Averaged Over A Month	Escalation (see above)
<i>Mean Time to Restore On-Net Comcast Equipment</i>	4 hours	Averaged Over A Month	Escalation (see above)
<i>Mean Time to Restore Off-Net Equipment</i>	4 hours	Averaged Over A Month	Escalation (see above)
<i>Mean Time to Restore On-Net Services</i>	6 hours	Averaged Over A Month	Escalation (see above)

<i>Mean Time to Restore Off-Net Services</i>	6 hours	Averaged Over A Month	Escalation (see above)
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Customer shall bear any expense incurred, e.g., dispatch/labor costs, where a Service Interruption is found to be the fault of Customer, its end users, agents, representatives or third-party suppliers.

E. Customer Responsibilities

Comcast will retain ownership and management responsibility for the Comcast Switch. As a result, the Comcast Switch must be used only for delivering Comcast Services. Customer is responsible for providing the Customer Switch or Router to connect to the UNI. To ensure proper performance, Customer is required to shape its egress traffic to the contracted CIR.

Customers have the following responsibilities related to the installation, support, and maintenance of the Service:

- Provide an operating environment with temperatures not below fifty-five (55) or above eighty-five (85) degrees Fahrenheit. Humidity shall not exceed ninety (90) percent at eighty-five (85) degrees Fahrenheit.
- Provide secure space sufficient for access to one (1) standard, freestanding, equipment cabinet at each of the Service Locations, no further than fifty (50) feet from the Customer Switch or Router interface.
- Provide outside cable entry conduit(s), entry cable ground point, and internal building conduit to allow Comcast the ability to rod/rope a fiber optic cable to the Demarcation Point.
- Locate and mark all private underground utilities (water, electric, etc.) along path of new underground placement not covered by utility companies.
- Provide a pull rope in any existing duct that Comcast is to use and ensure existing duct is serviceable for Comcast use.
- Obtain “right-of-way” entry easement for Comcast facilities and equipment from property owners at each Service Location.
- Coring of the Service Location’s outside wall and internal walls. Upon request, Comcast can perform this activity on an “as needed” basis for an additional fee.
- Provide backup battery power equipment.
- Emergency local generator backup service, if applicable.
- Provide access to the buildings and Demarcation Point at each Service Location to allow Comcast and its approved contractors to install the Service and for regular (8am - 5pm) and emergency (24 hour) service and maintenance of Comcast’s equipment and facilities.

LAN.

- Customer must provide a point of contact (“**POC**”) for installation, service activation and any maintenance activities.
- Customer shall not move, disconnect, remove or otherwise tamper with any Comcast Equipment.

**COMCAST ENTERPRISE SERVICES
PRODUCT-SPECIFIC ATTACHMENT
ETHERNET TRANSPORT SERVICES**

**SCHEDULE A-2
SERVICE LEVEL AGREEMENT**

The Services are backed by the following Service Level Agreement:

A. Definitions

Capitalized terms not otherwise defined herein shall have the meaning ascribed to them in the Ethernet Transport Services PSA or the General Terms and Conditions.

“**Jitter**” means the short-term variations for a portion of successfully delivered service frames. Jitter may also be referred to as Frame Delay Variation.

“**Latency**” means the average delay for a portion of successfully delivered service frames. Latency may also be referred to as Frame Delay.

“**Market**” means the Comcast geographic region where the applicable Service Location is located, as identified on the Sales Order.

“**Packet Loss**” means the difference between the number of service frames transmitted at the ingress UNI and the total number of service frames received at the egress UNI. Packet Loss may also be referred to as Frame Loss.

“**Planned Service Interruption**” means any Service Interruption caused by planned work such as scheduled maintenance or planned enhancements or upgrades to the network and includes scheduled network grooming that transitions transport from HFC to Fiber where Comcast has provided the advance notice required by Schedule A-1, Section D.2.(b).

“**Service Interruption**” means an interruption in transmission that renders the Service unusable due to a total loss of signal for the Service. The Service shall be “Available” in the absence of a Service Interruption.

B. Ethernet Transport Service Level Agreements

1. Availability SLA

Comcast’s liability and Customer’s sole remedy for Service Interruptions, and errors, omissions, interruptions, delays, outages, or defects in transmission or switching of any Service (individually or collectively, “**Liability**”), shall be limited to the amounts set forth in the Tables below with the stated percentages to be applied against the MRC (as defined below) associated with the impacted portion of the Service set forth in the Sales Order (“**Availability Credit**”). For the purposes of calculating credit for a Service Interruption, the “**Length of Service Interruption**” begins when the Customer reports such Service Interruption and a trouble ticket is opened, and concludes upon the closing of the same trouble ticket or, if sooner, the termination of the Service Interruption, less any time Comcast is awaiting additional information or premises testing from the Customer. In no event shall the total amount of Availability Credit issued to Customer’s account on a per-month basis exceed 50% of the total monthly recurring charge (“**MRC**”) associated with the impacted portion of the Service set forth in the Sales Order. The Length of Service Interruptions for separately occurring Service Interruptions will not be aggregated for purposes of determining Availability Credit allowances. To qualify, Customer must request the Availability Credit from Comcast within thirty (30) days of the beginning of the Service Interruption. Comcast shall not incur any Liability, including Availability Credit, for any failure of the Services caused by force majeure events, Planned Service Interruptions, Customer actions, omissions or equipment (including Customer-Provided Equipment), a Customer Switch or Router, or any other items set forth in the “Exceptions to Credit Allowances” section below.

TABLE 1: Availability SLA (99.99% Availability)

Length of Service Interruption:	Availability Credit:
Less than 4 minutes	None
At least 4 minutes but less than 4 hours	5% of Total MRC
At least 4 hours but less than 8 hours	10% of Total MRC
At least 8 hours but less than 12 hours	20% of Total MRC
At least 12 hours but less than 16 hours	30% of Total MRC
At least 16 hours but less than 24 hours	40% of Total MRC
24 hours or greater	50% of Total MRC

SEPARATELY OCCURRING SERVICE INTERRUPTIONS ARE NOT AGGREGATED FOR THE PURPOSES OF DETERMINING CREDIT ALLOWANCES.

2. Performance Objectives SLA

The performance objectives associated with traffic flows between any two (2) Service Locations are dependent upon the performance tier, which is determined by Comcast, in its sole discretion, based on the locations of the respective Service Locations, designated as “Service Location A” and “Service Location Z” on the applicable Sales Order (“**Performance Tier**” or “**PT**”). Traffic flow between Service Location A and Service Location Z is a “**Service Location Pairing**.”

For any Sales Order accepted by Comcast on or before June 15, 2023, the PT for a particular Service Location Pairing is assigned by Comcast, in its sole discretion, based on the Market of each Service Location in a Service Location Pairing.

For any Sales Order accepted by Comcast after June 15, 2023, the PT for a particular Service Location Pairing is assigned by Comcast, in its sole discretion, based on the mileage between Service Location A and Service Location Z (“**Mileage Band**”). For clarity and avoidance of doubt, the below table is intended only as a guide and Comcast reserves the right to assign or re-assign a particular Service Location Pairing a different PT than the PT corresponding to the applicable Mileage Band in the table below based on certain factors, including, but not limited to, Force Majeure, Market, the geographic landscape, terrain, and particular fiber route(s).

Performance Tiers	PT0	PT1	PT2	PT3	PT4
Mileage Band	0-50 miles	51-150 miles	151-750 miles	751-2,500 miles	2,501-4,300 miles

Access Types

- 1. On-Net Access.** For On-Net access, the Mileage Band will be determined by multiplying (A) the total number of direct air miles “as the crow flies” (“**Direct Miles**”) between Service Location A and Service Location Z, by (B) 1.25.
- 2. Off-Net Access.** In addition to On-Net access, Comcast enables Off-Net access to Ethernet Transport Services via one or more third party provider(s). The Performance Tier for Off-Net Service is based upon the location of the Off-Net Service Location, the location of the NNI between Comcast and the third-party provider and the performance commitment from the third party provider. For Off-Net Access, the Mileage Band will equal the sum of: (A) (the Direct Miles between Service Location A and NNI * 1.25), plus (B) (Direct Miles between NNI and Service Location Z * 2).

Performance Tiers and Performance Objectives

Comcast collects continuous in-band performance measurements for the Services. The calculation of all Latency, Jitter and Packet Loss performance metrics for each calendar month for purposes of this performance objectives service level agreement are based upon the average of sample round trip measurements taken by Comcast during the applicable calendar month, excluding any period during which there is a Service Interruption. The below charts indicate the performance objectives for each of the performance metrics over each calendar month based on the applicable Performance Tier and CoS.

1. Performance Tier 0 (PT0) Agreements

Performance Metric	Class of Service (CoS)		
	Basic	Priority	Premium
Latency (Round Trip Network Delay)	45ms	24ms	4ms
Jitter (Network Delay Variation)	20ms	10ms	1ms
Packet Loss	<1%	<0.01%	<0.001%

2. Performance Tier 1 (PT1) Agreements

Performance Metric	Class of Service (CoS)		
	Basic	Priority	Premium
Latency (Round Trip Network Delay)	90ms	46ms	14ms
Jitter (Network Delay Variation)	20ms	10ms	2ms
Packet Loss	<1%	<0.01%	<0.001%

3. Performance Tier 2 (PT2) Agreements

Performance Metric	Class of Service (CoS)		
	Basic	Priority	Premium
Latency (Round Trip Network Delay)	160ms	90ms	46ms
Jitter (Network Delay Variation)	25ms	15ms	5ms
Packet Loss	<1%	<.02%	<.01%

4. Performance Tier 3 (PT3) Agreements

Performance Metric	Class of Service (CoS)		
	Basic	Priority	Premium
Latency (Round Trip Network Delay)	200ms	160ms	90ms
Jitter (Network Delay Variation)	30ms	20ms	10ms
Packet Loss	<1%	<.04%	<.02%

Performance Tier 4 (PT4) Agreements

Performance Metric	Class of Service (CoS)		
	Basic	Priority	Premium
Latency (Round Trip Network Delay)	240ms	200ms	160ms
Jitter (Network Delay Variation)	35ms	25ms	15ms
Packet Loss	<1%	<.05%	<.04%

Credit Allowance

Customer’s sole remedy for Comcast’s failure to achieve the applicable performance metric standards above over a given calendar month for the Service are the receipt of the following credit amounts with the stated percentages to be applied against the MRC associated with the impacted portion of the Service set forth in the Sales Order (“**Performance Objective Credits**”).

TABLE 1: Credit Allowance for Latency Performance Metric

		Performance Tier									
		PT0		PT1		PT2		PT3		PT4	
		Measurement (ms)	Credit	Measurement (ms)	Credit	Measurement (ms)	Credit	Measurement (ms)	Credit	Measurement (ms)	Credit
Class of Service	Premium	0 -4	No Credit	0 -14	No Credit	0 - 46	No Credit	0 - 90	No Credit	0 to 160	No Credit
		4.01 - 24	10%	14.01 - 46	10%	46.01 - 90	10%	90.01 - 160	10%	160.01 - 200	10%
		24.01 - 45	25%	46.01 - 90	25%	90.01 - 160	25%	160.01 - 200	25%	200.01 - 240	25%
		>45	50%	>90	50%	>160.01	50%	>200	50%	>240	50%
	Priority	0 - 24	No Credit	0 - 46	No Credit	0 - 90	No Credit	0 to 160	No Credit	0 to 200	No Credit
		24.01 - 45	10%	46.01 - 90	10%	90.01 - 160	10%	160.01 - 200	10%	200.01 - 240	10%
		45.01 - 60	25%	90.01 - 160	25%	160.01 - 200	25%	200.01 - 240	25%	240.01 - 300	25%
		>60	50%	>160.01	50%	>200	50%	>240	50%	>300	50%
	Basic	0 - 45	No Credit	0 - 90	No Credit	0 to 160	No Credit	0 to 200	No Credit	0 to 240	No Credit
		45.01 - 60	10%	90.01 - 160	10%	160.01 - 200	10%	200.01 - 240	10%	240.01 - 300	10%
		60.01 - 90	25%	160.01 - 200	25%	200.01 - 240	25%	240.01 - 300	25%	300.01 - 360	25%
		>90	50%	>200	50%	>240	50%	>300	50%	>360	50%

TABLE 2: Credit Allowance for Jitter Performance Metric

		Performance Tier									
		PT0		PT1		PT2		PT3		PT4	
		Measurement (ms)	Credit	Measurement (ms)	Credit	Measurement (ms)	Credit	Measurement (ms)	Credit	Measurement (ms)	Credit
Class of Service	Premium	0 - 1	No Credit	0 - 2	No Credit	0 - 5	No Credit	0 - 10	No Credit	0 - 15	No Credit
		1.01 - 3	10%	2.01 - 3	10%	5.01 - 10	10%	10.01 - 15	10%	15.01 - 20	10%
		3.01 - 5	25%	3.01 - 5	25%	10.01 - 15	25%	15.01 - 20	25%	20.01 - 30	25%
		>5	50%	>5	50%	>15	50%	>20	50%	>30	50%
	Priority	0 - 10	No Credit	0 - 10	No Credit	0 - 15	No Credit	0 - 20	No Credit	0 - 25	No Credit
		10.01 - 15	10%	10.01 - 15	10%	15.01 - 20	10%	20.01 - 30	10%	25.01 - 40	10%
		15.01 - 20	25%	15.01 - 20	25%	20.01 - 30	25%	30.01 - 50	25%	40.01 - 60	25%
		>20	50%	>20	50%	>30	50%	>50	50%	>60	50%
	Basic	0 - 20	No Credit	0 - 20	No Credit	0 - 25	No Credit	0 - 30	No Credit	0 - 35	No Credit
		20.01 - 30	10%	20.01 - 30	10%	25.01 - 40	10%	30.01 - 50	10%	35.01 - 60	10%
		30.01 - 50	25%	30.01 - 50	25%	40.01 - 60	25%	50.01 - 80	25%	60.01 - 90.01	25%
		>50	50%	>50	50%	>60	50%	>80	50%	>90	50%

TABLE 3: Credit Allowance for Packet Loss Performance Metric

		Performance Tier									
		PT0		PT1		PT2		PT3		PT4	
		Measurement	Credit	Measurement	Credit	Measurement	Credit	Measurement	Credit	Measurement	Credit
Class of Service	Premium	0% - 0.001%	No Credit	0% - 0.001%	No Credit	0% - 0.01%	No Credit	0% - 0.02%	No Credit	0% - 0.04%	No Credit
		0.001% - 2.00%	10%	0.001% - 2.00%	10%	0.01% - 2.00%	10%	0.02% - 2.00%	10%	0.04% - 2.00%	10%
		2.01% - 4.00%	25%	2.01% - 4.00%	25%	2.01% - 4.00%	25%	2.01% - 4.00%	25%	2.01% - 4.00%	25%
		>4.00%	50%	>4.00%	50%	>4.00%	50%	>4.00%	50%	>4.00%	50%
	Priority	0% - 0.01%	No Credit	0% - 0.01%	No Credit	0% - 0.02%	No Credit	0% - 0.04%	No Credit	0% - 0.05%	No Credit
		0.01% - 2.00%	10%	0.01% - 2.00%	10%	0.02% - 2.00%	10%	0.04% - 2.00%	10%	0.05% - 2.00%	10%
		2.01% - 4.00%	25%	2.01% - 4.00%	25%	2.01% - 4.00%	25%	2.01% - 4.00%	25%	2.01% - 4.00%	25%
		>4.00%	50%	>4.00%	50%	>4.00%	50%	>4.00%	50%	>4.00%	50%
	Basic	0% - 1.00%	No Credit	0% - 1.00%	No Credit	0% - 1.00%	No Credit	0% - 1%	No Credit	0% - 1%	No Credit
		1.01% - 2.00%	10%	1.01% - 2.00%	10%	1.01% - 2.00%	10%	1.01% - 2.00%	10%	1.01% - 2.00%	10%
		2.01% - 4.00%	25%	2.01% - 4.00%	25%	2.01% - 4.00%	25%	2.01% - 4.00%	25%	2.01% - 4.00%	25%
		>4.00%	50%	>4.00%	50%	>4.00%	50%	>4.00%	50%	>4.00%	50%

Customer shall be entitled to receive a Performance Objective Credit only for one performance metric failure per affected portion of the Service per calendar month. For example, if the applicable metric for Jitter and Latency were missed for the same transport connection (Service Location A to Service Location Z) in a given calendar month, Customer will be entitled only to the Performance Objective Credit associated with either the Jitter or Latency failure for such portion of the Service. In addition, Customer may not receive both the Performance Objective Credit and an Availability Credit for the same portion of the Service in the same calendar month. To qualify for a Performance Objective Credit, Customer must request the applicable Performance Objective Credit from Comcast within thirty (30) days of the end of the applicable calendar month in which the applicable Performance Metric standard was not achieved. Comcast shall not incur any Liability, including Performance Objective Credit, for any failure of the Services caused by force majeure events, Planned Service Interruptions or other scheduled maintenance events, Customer actions or omissions, Customer-provided power or equipment, including Customer-Provided Equipment, a Customer Switch or Router or any other items set forth in the “Exceptions to Credit Allowances” section below.

C. Exceptions and Terms Applicable to All SLAs

1. Emergency Blocking

The parties agree that if either party hereto, in its reasonable and sole discretion, determines that an emergency action is necessary to protect its own network, the party may, after engaging in reasonable and good faith efforts to notify the other party of the need to block, block any transmission path over its network by the other party where transmissions do not meet material standard industry requirements. The parties further agree that none of their respective obligations to one another under the Agreement will be affected by any such blockage except that the party affected by such blockage will be relieved of all obligations to make payments for charges relating to the circuit(s) which is so blocked and that no party will have any obligation to the other party for any claim, judgment or liability resulting from such blockage.

2. Remedy Processes

All claims and rights arising under this Service Level Agreement must be exercised by Customer in writing within the time period set forth in Sections B.1 and B.2 of this Service Level Agreement, as applicable. The Customer must submit the following information to the Customer’s Comcast account representative with any and all claims for credit allowances: (a) Organization name; (b) Customer account number; and (c) basis of credit allowance claim (including date and time, if applicable). Comcast will acknowledge and review all claims promptly and will inform the Customer by electronic mail or other correspondence whether a credit allowance will be issued or the claim rejected, with the reasons specified for the rejection.

3. Exceptions to Credit Allowances

Comcast’s failure to meet either of the SLAs set forth on this Schedule A-2 shall not qualify for the remedies set forth herein if such failure is related to, associated with, or caused by: Planned Service Interruptions or other scheduled maintenance events; Customer actions or omissions; a Customer Switch or Router; Customer-provided power or equipment, including Customer-Provided Equipment; any third party not contracted through Comcast, including, without limitation, Customer’s users, third-party network providers, any power, equipment or services provided by third parties; or an event of force majeure as defined in the Agreement.

4. Other Limitations

THE TOTAL CREDIT ALLOWANCE PER CALENDAR MONTH UNDER THIS SCHEDULE A-2 IS CAPPED AT 50% OF THAT MONTH’S MRC FOR THE IMPACTED PORTIONS OF SERVICE. In addition, the remedies set forth in this Service Level Agreement shall be Customer’s sole and exclusive remedies for any Service Interruption, outage, unavailability, delay, or other degradation, or any Comcast failure to meet the service objectives or otherwise comply with this SLA.