

**COMCAST ENTERPRISE SERVICES
PRODUCT SPECIFIC ATTACHMENT
MASERGY UNDERLAY CONNECTIVITY SERVICES**

ATTACHMENT IDENTIFIER: Masergy Underlay Connectivity, Version 1.0

The following additional terms and conditions are applicable to Sales Orders for Masergy Connectivity Services (“Masergy Underlay”) to be used as the underlay connectivity to Masergy SD-WAN, SDN, and Secure Network Edge Services ordered under an Enterprise Master Services Agreement:

DEFINITIONS

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

“**Backup Service**” is a secondary internet connection at a Service Location that provides connectivity when the primary Underlay connection is unavailable.

“**Customer Premises Equipment**” or “**CPE**” means the hardware appliance or other endpoint device installed at the Service Location. CPE constitutes Comcast Equipment.

“**Estimated Availability Date**” means the target Service Commencement Date for the Service.

“**Overlay Service**” means the SD-WAN, SDN or Secure Network Edge service on top of the existing physical network.

“**Service**” or “**Underlay Service**” means the connectivity service of Ethernet Transport, Dedicated Internet Access, Broadband, or xG Fixed Wireless over which the Overlay Service operates.

“**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.

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

ARTICLE 1. SERVICES

This attachment shall apply to Masergy Underlay Services. A further description of the Services are set forth in Schedule A, B, C and D hereto, which are incorporated herein by reference.

ARTICLE 2. PROVIDER

On-Net Service shall be provided by Comcast’s affiliate Masergy Communications, Inc. or one of its applicable operating affiliates or subsidiaries (“Comcast”).

Off-Net Service shall be provided by third-party service providers, managed by Comcast.

ARTICLE 3. SERVICE PROVISIONING INTERVAL

Following Customer’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 4. SERVICE COMMENCEMENT DATE

Charges for the Services shall begin to accrue on the Service Commencement Date. The Service Commencement Date shall be the date Comcast confirms that the circuit is ready to route IP packets from the Comcast hub to the Service Location or point of demarcation. A single Sales Order containing multiple Service Locations or Services may have multiple Service Commencement Dates.

ARTICLE 5. TERMINATION CHARGES

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

5.2 Termination Charges for On-Net Services.

A. Subject to Sections 5.2(E) and 5.2(F), in the event that a 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 Service.

B. Subject to Sections 5.2(E) and 5.2(F), in the event that a 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.

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 such cancellation or termination.

C. Termination Charges for Off-Net Services. Subject to Section 5.2 (E) and Section 5.2 (F), 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 (120%) of the costs and expenses incurred by Comcast in installing or preparing to install the Off-Net Service, including any third-party costs incurred by Comcast as a result of the early termination of the Service.

D. Subject to Section 5.2 (E) and Section 5.2 (F), 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.

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

F. Customer acknowledges and agrees that termination of the Underlay Service shall constitute a termination of the Underlay and Overlay Services and Customer shall pay Termination Charges with respect to the Underlay Services as provided herein; provided, that, if Customer terminated such Underlay Service as a result of Comcast's material and uncured breach in accordance with the General Terms and Conditions applicable hereto, then Customer will not be obliged to pay Termination Charges with respect to the Service.

ARTICLE 6. TECHNICAL SPECIFICATIONS

The technical specifications applicable to the Services are set forth in Schedule A-D. In order to provide the Underlay Service to a Customer Service Location, such Service Location must have an Overlay Service. The Overlay may be pre-existing or ordered in conjunction with the Underlay Service. If the underlying connectivity is terminated at a Service Location or unavailable for any reason at any time, the Overlay Service at such Service Location will be inoperable.

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**SCHEDULE A
MASERGY PRIVATE ETHERNET TRANSPORT
SERVICE DESCRIPTIONS AND TECHNICAL SPECIFICATIONS**

The Masergy Private Ethernet Transport Underlay Service will be provided in accordance with the service descriptions and technical specifications set forth below:

1. Service Description

Private Ethernet Transport is a point-to-point transport service between two (2) Service Locations using industry standard 100 Mbps, 1 Gbps, 10 Gbps or 100 Gbps UNIs to enable bidirectional connections between such Service Locations. Private Ethernet Transport is available with flexible bandwidth options from 1 Mbps to 10 Gbps.

2. Technical Specifications

A. Ethernet User-to-Network Interface. The Service provides 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. CIR increments of less than 10 Mbps are generally not available in conjunction with Off-Net Services.

UNI Speed	UNI Physical Interface	CIR Increments
-		
100 Mbps	100BaseT	1 Mbps
1 Gbps	1000Base T or 1000BaseSX	10 Mbps
10 Gbps	10GBase-SR or 10GBase-LR	100 Mbps
100 Gbps	100GBASE-LR4	1 Gbps
		10 Gbps

Figure 1: Available UNI interface types for different CIR increments

B. Multiple Access Options

The Services are available with the following access options:

- On-Net Fiber Access – Connectivity to Service Locations is enabled via Comcast On-Net Fiber infrastructure.
- On-Net HFC Access – Connectivity to Service Locations is enabled via Comcast On-Net HFC infrastructure.
- Off-Net Access – Connectivity to Service Locations is enabled through third-party network providers.

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**SCHEDULE B
MASERGY DEDICATED INTERNET ACCESS
SERVICE DESCRIPTIONS AND TECHNICAL SPECIFICATIONS**

The Masergy Dedicated Internet Access Underlay Services will be provided in accordance with the service descriptions and technical specifications set forth below:

1. Service Descriptions

- A. **Dedicated Internet Access Service (“DIA”)**. The On-Net Service is offered in the Ethernet User-to-Network Interfaces (“UNI”) increments identified in Figure 1 below and is available in Committed Information Rate (“CIR”) speed increments starting at 100 Mbps, subject to available capacity. The Service provides a dedicated Internet connection from the Customer Service Location to a Comcast Point of Presence (“POP”) router.
- B. **Off-Net Dedicated Internet Access (“Off-Net DIA”)**. The Service is offered in the UNI increments identified in Figure 1 below and is available in CIR speed increments starting at 100 Mbps, subject to availability. The Service provides an Internet connection from the Customer Service Location to an Off-Net Service provider POP router.

2. Technical Specifications.

- A. Ethernet User-to-Network Interface. The Service provides the bidirectional, full duplex transmission of ~~untagged~~ Ethernet frames using a standard IEEE 802.3 Ethernet interface (UNI) to attach to the Customer’s Service Location. Figure 1 lists the available UNI speed and their UNI Physical Interfaces, and available CIR bandwidth increments. CIR increments of less than 10 Mbps are generally not available in conjunction with Off-Net Services.

UNI Increments	UNI Physical Interface	CIR Speeds
100 Mbps	100BaseT	1 Mbps
1 Gbps	1000Base T or	10 Mbps
	1000BaseSX	100 Mbps
10 Gbps	10GBase-SR or	1 Gbps
	10GBase-LR	10 Gbps

Figure 1: Available UNI interface types and CIR Increments

- B. Traffic Management. Comcast’s network traffic-policing policies restrict traffic flow to the subscribed, CIR. If the Customer-transmitted bandwidth rate exceeds the subscription rate CIR, Comcast will discard the non-conformant packets. The Customer’s router must shape traffic to the contracted CIR. Traffic management policies associated with any Off-Net portions of Service will conform to the policies enforced by the third-party service provider.
- C. Maximum Frame Size. The Service supports a maximum transmission unit (“MTU”) frame size of 1518 bytes including Layer 2 Ethernet header and FCS.

- D.** Layer 2 Control Protocol (“L2CP”) Processing. All L2CP frames are discarded at the UNI.
- E.** IP Address Allocation. IP address space is a finite resource that is an essential requirement for all Internet access services. Comcast assigns up to two (2) routable IP addresses to each customer circuit. Customer can obtain additional IP addresses if required based on American Registry for Internet Numbers (“ARIN”) guidelines and by completing an IP address request form; additional charges may apply.

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**SCHEDULE C
MASERGY BROADBAND**

The Masergy Broadband Underlay Services will be provided in accordance with the service descriptions and technical specifications set forth below:

Service Descriptions

The On-Net Service is offered in the Ethernet User-to-Network Interfaces (“UNI”) increments identified in Figure 1 below and is available in Committed Information Rate (“CIR”) speed increments starting at 1Mbps, subject to available capacity. The Service provides Best-effort Internet Connectivity from the Customer Service Location to a Comcast Internet Point of Presence (“POP”) Router.

The Off-Net Service is offered in the UNI increments identified in Figure 1 below and is available in CIR speed increments starting at 1 Mbps, subject to availability. The Service provides an Internet connection from the Customer Service Location to an Off-Net Service provider.

Technical Specifications.

1. Ethernet User-to-Network Interface. The Service provides the bidirectional, full duplex transmission of Ethernet frames using a standard IEEE 802.3 Ethernet interface (UNI) to attach to the Customer’s router. Figure 1 lists the available UNI speed and their UNI Physical Interfaces, and available CIR bandwidth increments.

UNI Increments	UNI Physical Interface	CIR Speeds
-		
100 Mbps	100BaseT	1 Mbps
1 Gbps	1000Base T or 1000BaseSX	10 Mbps
10 Gbps	10GBase-SR or 10GBase-LR	100 Mbps
100 Gbps	100GBASE-LR4	1 Gbps
		10 Gbps

Figure 1: Available UNI interface types and CIR Increments

2. Traffic Management. Comcast’s network traffic-policing policies restrict traffic flow to the subscribed, CIR. If the Customer-transmitted bandwidth rate exceeds the subscription rate CIR, Comcast will discard the non-conformant packets. The Customer’s router must shape traffic to the contracted CIR. Traffic management policies associated with any Off-Net portions

of Service will conform to the policies enforced by the third-party service provider.

3. **Maximum Frame Size.** The Service supports a maximum transmission unit (“MTU”) frame size of 1518 bytes including Layer 2 Ethernet header and FCS.
4. **Layer 2 Control Protocol (“L2CP”) Processing.** All L2CP frames are discarded at the UNI.
5. **IP Address Allocation.** IP address space is a finite resource that is an essential requirement for all Internet access services. Comcast assigns up to two (2) routable IP addresses to each customer circuit. Customer can obtain additional IP addresses if required based on American Registry for Internet Numbers (“ARIN”) guidelines and by completing an IP address request form; additional charges may apply.

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**SCHEDULE D
MASERGY LTE WIRELESS BACKUP**

The Masergy Wireless Underlay Services will be provided in accordance with the service descriptions and technical specifications set forth below:

Service Descriptions

This Backup Service is offered as a pooled bandwidth plan for wireless underlay access as identified in Figure 1 below. The Service provides wireless connectivity from the Customer Service Location to a Comcast Internet Point of Presence (“POP”) router and is intended to be used only as a backup circuit for Underlay services.

Technical Specifications.

4G LTE Wireless

The Service includes a 4G LTE wireless modem with a SIM card programmed by Comcast. The available service Plans are shown in the table in Figure 1.

Wireless Plan
2 GB
5 GB
20 GB

Figure 1. Available wireless data plans.

1. Customer may incur additional charges, including without limitations, certain usage-based charges and third-party pass-through fees.
2. Ethernet User-to-Network Interface on the Wireless Modem – This interface provides the bidirectional, full duplex transmission of Ethernet frames using a standard IEEE 802.3 Ethernet interface (UNI) to attach to the CPE WAN Port.
3. Traffic Management. Comcast’s network traffic-policing policies restrict traffic flow to the subscribed, CIR. If the Customer-transmitted bandwidth rate exceeds the subscription rate CIR, Comcast will discard the non-conformant packets. The Customer’s router must shape traffic to the contracted CIR.
4. Maximum Frame Size. The Service supports a maximum transmission unit (“MTU”) frame size of 1518 bytes including Layer 2 Ethernet header and FCS.
5. IP Address Allocation. IP address space is a finite resource that is an essential requirement for all Internet access services. Comcast assigns up to two (2) routable IP addresses to each customer circuit. Customer can obtain additional IP addresses if required based on American Registry for Internet Numbers (“ARIN”) guidelines and by completing an IP address request form; additional charges may apply.

5G Modem

Backup Service is available for customers with 5G modems. Customers will be required to purchase a (i) 5G modem, (ii) third-party wireless service plan and (iii) SIM card. Traffic management policies associated with any portions of backup Service for 5G modems will conform to the policies enforced by the third-party service provider.