

**COMCAST ENTERPRISE SERVICES
PRODUCT-SPECIFIC ATTACHMENT
STANDARD SOFTWARE-DEFINED WIDE AREA NETWORKING (Standard SD-WAN)**

ATTACHMENT IDENTIFIER: SD-WAN, Ver. 1.1

The following additional terms and conditions are applicable to Sales Orders for Comcast's Standard SD-WAN Services:

DEFINITIONS

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

“**Architectural Confirmation Document**” or “**ACD**” means a document that contains the initial configuration for the Service, as agreed to by Customer and Comcast.

“**Customer Expectations Document**” means a document created by Comcast that identifies Comcast's and Customer's responsibilities and obligations with respect to the delivery and support of the Services.

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

“**Service(s)**” means Standard SD-WAN service(s).

“**SD-WAN**” means Software-Defined Wide Area Network.

“**Underlay Service**” means the connectivity over which the Service operates.

ARTICLE 1. SERVICES

This attachment shall apply to Standard SD-WAN Services. A further description of these Services is set forth in Schedule A-1 hereto which is incorporated herein by reference. **For the avoidance of doubt, Advanced SD-WAN shall be governed by the Comcast Managed Services PSA.**

ARTICLE 2. PROVIDER

Standard SD-WAN Service shall be provided by Comcast Business Communications, LLC (“Comcast”).

ARTICLE 3. PROVISIONING INTERVAL

Following the 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 Services by said date shall not constitute a breach of the Agreement.

ARTICLE 4. SERVICE COMMENCEMENT DATE

The Service Commencement Date shall be the date Comcast informs Customer that the Services are available and performing at at least two Service Locations in accordance with the “Performance Standards” set forth in Schedule A-1 hereto. Charges for Service shall begin to accrue as of the Service Commencement Date.

ARTICLE 5. TERMINATION CHARGES;

5.1 In the event that 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 solely on the underlying Comcast provided Underlay Service, as provided in the applicable PSA.

ARTICLE 6. ADDITIONAL INFORMATION

As necessary for the interconnection of the Service with third-party provided services, Comcast may request (as applicable), and Customer will provide to Comcast, circuit facility assignment information, firm order commitment information, and design layout records necessary to enable Comcast to make the necessary cross-connection between the Service and Customer's third-party provided service(s). Comcast may charge Customer nonrecurring and monthly recurring cross-connect charges to make such connections.

ARTICLE 7. SD-WAN CUSTOMER PORTAL

Comcast provides the Customer with a password-protected web portal to access information regarding the Customer's Standard SD-WAN Service. Customer shall have the option to use the portal to view network-related data, subject to the availability of the Service.

ARTICLE 8. TECHNICAL SPECIFICATIONS AND PERFORMANCE STANDARDS; SERVICE LEVEL AGREEMENT

The technical specifications and performance standards applicable to the Service are set forth in Schedule A-1 hereto. The service level agreement applicable to the Service is set forth in a Schedule A-2 hereto

COMCAST ENTERPRISE SERVICES
PRODUCT-SPECIFIC ATTACHMENT SOFTWARE DEFINED WIDE AREA NETWORKING

SCHEDULE A-1
SERVICE DESCRIPTIONS, TECHNICAL SPECIFICATIONS, AND PERFORMANCE STANDARDS

Comcast's Standard SD-WAN Services will be provided in accordance with the service descriptions, technical specifications, and performance standards set forth below:

1. Service Descriptions

Comcast's Standard SD-WAN provides customers with a secure connection, both point-to-point and point-to-multi-point, creating a fully encrypted overlay network to Customer's Underlay Service, regardless of whether such Underlay Service is provided by Comcast or a third-party. Standard SD-WAN enables network abstraction and the separation of the control plane and data plane.

1. Standard SD-WAN is the next generation replacement (physical or virtual) for traditional WAN routers and is agnostic to WAN transport technologies.
2. Based on business and/or application policies, Standard SD-WAN allows for dynamic routing and/or load balancing of traffic across multiple WAN connections in an efficient and dynamic fashion.
3. Standard SD-WAN assists with the management, configuration, and orchestration of WANs.
4. Standard SD-WAN provides secure VPNs and has the ability to integrate additional network services and offload Internet-destined traffic closer to the edge of the network.

2. Service Requirements

In order to provide the Services to a Customer Service Location, such Service Location must have internet connectivity. The connectivity may be pre-existing or ordered in conjunction with the Services. Comcast supports the Services over Comcast EDI Service, Comcast Business Internet Service, or internet connectivity services provided by a third-party service provider. If the underlying connectivity is terminated at a Service Location or unavailable for any reason at any time, the Services at said Service Location will be inoperable.

3. Technical Specifications

- a. **Underlay connectivity.** The Services leverage Public Internet (Comcast on-net Layer 3 internet access services over fiber and DOCSIS, Comcast provided off-net Layer 3 internet access, or third-party-provided internet access) to provide connectivity between Service Locations.
- b. **Hybrid WAN connectivity.** The Services will work with any third-party Layer 3 IP technology (e.g. IP VPN and MPLS) as a LAN service via Customer-provided routers and connectivity.
- c. **SD-WAN Overlay.** The overlay service uses underlay access to establish IPSec VPN tunnels using AES-256 encryption between Comcast provided uCPEs as well as to provide control plane access from the uCPE to the SD-WAN controller.
- d. **SD-WAN uCPE.** Comcast will provide robust, flexible, high powered Universal Customer Premise Equipment ("uCPEs") based on x86 hardware that is service agnostic and can deploy Virtualized Network Functions ("VNFs") as needed based on Customer requirements.
- e. **SD-WAN Firewall.** Comcast will provide a Layer 3/Layer 4 Stateful Firewall VNF as part of the Services.
- f. **Local Internet Breakout.** Comcast can configure a local internet breakout at each Customer Service Location with the purpose of routing traffic directly to the internet as needed. Local internet breakout is not a connectivity service and is solely a route configuration inside the uCPE to allow the local host to access the internet through the VPN.

- g. Service Orchestration.** Provisioning and configuration of connectivity, routing policies, security, and application aware traffic steering is provided through centralized, public internet accessible SD-WAN controllers that are logically segregated per Customer.
- h. Digital Experience.** Service visibility and reporting is provided via Comcast Business Digital Experience web portal (“Portal”).
- i. Traffic Management.** Comcast’s network traffic-policing policies restrict traffic flows to the subscribed, Committed Information Rate (“CIR”). Comcast Business SD-WAN can mark traffic based on IP Address or Port and map the marked traffic into the 6 prioritization queues available. Prioritization only occurs on the egress of the uCPE.
- j. IP Address Allocation.** The uCPE will use a single IP address provided from the Underlay service.
- k. Border Gateway Protocol (“BGP”) Routing.** The Services support private peering BGP-4 routing to efficiently multi-home across multiple Service Locations. The Service can use a public Autonomous System Number (ASN) or a private ASN provided by the Customer.

4. SD-WAN Service Delivery and Service Management

- a. Kick-off call:** Comcast will sponsor a kick-off call with the Customer to explain the Standard SD-WAN delivery process and Comcast and Customer will review the Customer Expectations Document.
- b. Technical interview:** Comcast will engage Customer in one or several interviews related to Customer’s network design initiatives. Comcast will document the technical information discovered through the interview process into an Architectural Confirmation Document and the Customer will review and confirm that the ACD is correct. The ACD shall be available via the Portal.
- c. Managed Install, Test and Turn-up:** When Comcast installs the Standard SD-WAN equipment, the configuration created for the Customer will be loaded on the equipment and Comcast will test the Services.
- d. Network Monitoring and Management:** On and after the Service Commencement Date, Comcast will monitor the Standard SD-WAN Service 24/7/365 and pull alarms from the equipment related to the availability and performance of the Services. Comcast will send an alert to the Customer for specific, Service impacting alarms. After receiving such an alarm, Comcast will open an internal ticket and begin to troubleshoot the issue. It is recommended the Customer open a customer trouble ticket with Comcast to confirm that Customer is being impacted by the issue.
- e. On-Going Solution Support:**
 - i.** Comcast will support Customer’s requested configuration changes, in accordance with Comcast’s then current configuration change policy (the “Configuration Change Policy”). Upon request, Comcast shall provide Customer with its then current Configuration Change Policy. Any moves, additions, changes, or deletions to the Services shall be requested via the Portal or over the phone. This includes any changes to the Service configuration as initially outlined in the ACD. Comcast has the following configuration change response objectives:

Category	Objective
Simple Configuration Change	4 hours
Complex Configuration Change	48 hours

“Simple Configuration Change” means changes such as firewall updates, traffic steering policies, quality of service changes, adding and removing IP addresses, and NAT and PAT changes.

“Complex Configuration Change” means changes such as WAN/LAN reconfiguration, DHCP scope changes, DNS changes, and changes to routing policies.

- ii.** If a Comcast vendor develops software updates and/or security patches for such vendor’s equipment which Comcast uses to provide the Services, Comcast will upload such software updates and/or security patches to the applicable equipment to

the extent Comcast determines, in its sole discretion, that such software updates and/or security patches are necessary. Updates or patches that are viewed as critical may require immediate action with a maintenance window. For the avoidance of doubt, Comcast shall have no obligation to develop software updates or security patches and its only obligation under this paragraph is to install updates and security patches developed by its applicable vendors to the extent Comcast determines, in its sole discretion, that such software updates and/or security patches are necessary.

5. Security Monitoring and Mitigation.

For the Services, Comcast monitors the equipment. **COMCAST DOES NOT PROVIDE MONITORING OF SECURITY EVENTS, ANY SECURITY EVENT MITIGATION, OR ADVICE REGARDING SECURITY ISSUES OR THREATS.** Upon request by Customer, Comcast will modify the configuration of the Standard SD-WAN Service in accordance with specifications provided by Customer to attempt to mitigate security events and security threats identified by Customer. Comcast's sole obligation is to implement the configuration settings requested by Customer. This Service is provided on a commercially reasonable efforts basis only and Comcast makes no guarantees with respect to the detection or blocking of viruses/worm/malware or any other types of attacks and is not responsible for any such malicious data that may be transmitted over the provided network.

**COMCAST ENTERPRISE SERVICES
PRODUCT-SPECIFIC ATTACHMENT
STANDARD SD-WAN SERVICES**

**SCHEDULE A-2
SERVICE LEVEL OBJECTIVES**

Comcast’s Standard SD-WAN Services are backed by the following Service Level Objectives:

1. Definitions:

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

“**Planned Service Interruption**” means any Service Interruption caused by planned work such as scheduled maintenance or planned enhancements or upgrades to the network.

“**Service Interruption**” means a complete loss of signal that renders the Service unusable or the output signal presented to Customer by Comcast does not conform to the technical specification in Schedule A-1.

2. Performance Standards

“Performance Standards” are set forth in Schedule A-1 to the Product-Specific Attachment for Standard SD-WAN.

3. SD-WAN Service Level Agreement (SLA)

The Credit allowance available to Customer for Service Interruptions shall be limited to the amounts set forth in the Table below (“Credits”). For the purposes of calculating Credits for any such Service Interruption, the Service Interruption begins when the Customer reports to Comcast an interruption in the portion of the Service, provided that the interruption is reported by Customer during the duration of the interruption, and, a trouble ticket is opened; the Service Interruption shall be deemed resolved upon closing of the same trouble ticket or the termination of the interruption, if sooner, less any time Comcast is awaiting additional information or premises testing from the Customer. In no event shall the total amount of 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. Service Interruptions will not be aggregated for purposes of determining credit allowances. To qualify, Customer must request the Credit from Comcast within thirty (30) days of the interruption. Customer will not be entitled to any additional credits for Service Interruptions. Comcast shall not be liable for any Service Interruption caused by force majeure events, Planned Service Interruptions, or Customer actions, omissions, or equipment.

Length of Service Interruption:	Amount of 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
At least 24 hours or greater	50% of Total MRC

THE TOTAL CREDIT ALLOWANCES PER MONTH IS CAPPED AT 50% OF THAT MONTH’S MRC FOR THE INTERRUPTED PORTIONS OF SERVICE. SEPARATELY OCCURRING SERVICE INTERRUPTIONS ARE NOT AGGREGATED FOR THE PURPOSES OF DETERMINING CREDIT ALLOWANCES.

4. Additional Service Level Objectives

Comcast provides Service Level Objectives for the Service, including network availability, mean time to respond, and mean time to restore. The service objectives are measured monthly from the Comcast point of demarcation.

Service availability is also affected by the choice of Underlay Service.

- a. **Mean Time to Respond.** Mean Time to Respond is the average time required for the ETS to begin troubleshooting a reported fault. The Mean Time to Respond objective is fifteen (15) minutes upon receipt of a fault notification or from the time a trouble ticket is opened with the ETS.
- b. **Mean Time to Restore.** Mean Time to Restore is the average time required to restore service to an operational condition as defined by the technical specifications in Section 1 of this document. The Mean Time to Restore objective is four (4) hours for electronic equipment failure or six (6) hours for fiber optic facilities failure from the time a trouble ticket is opened with the ETS.

Mean Time to Restore Equipment

On-Net Services	Same day replacement
Off-Net Services	Next day replacement

5. Customer Responsibilities

In addition to the responsibilities and obligations identified in the Customer Expectations Document, Customer shall have the following responsibilities related to the installation, support, and maintenance of the Service:

- a. 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.
- b. Provide secure space sufficient for access to one (1) standard, freestanding, equipment cabinet at each of the Customer facilities, no further than fifty feet from the Customer router or switch interface.
- c. Provide power including UPS AC power equipment, circuit sizing to be determined, if applicable.
- d. Provider Emergency local generator backup service, if applicable.
- e. Provide access to the buildings and point of demarcation at each Customer Service Location to allow Comcast and its approved Contractors to install Universal Customer Premise Equipment. Provide access to each location for regular (8am - 5pm) and emergency (24 hour) service and maintenance of Comcast's equipment and facilities.
- f. If interfacing with a third-party IP service: provide, install and maintain a device that is capable of routing network traffic between the Service and the Customer's Wide Area Network (WAN).
- g. Customer must provide a point of contact (POC) for installation, service activation, notices for Service Interruptions, and any maintenance activities.
- h. Customer must approve the final Architecture Configuration Document (ACD) prior to installation of the Services.
- i. Customer must ensure that any Customer-provided or existing underlays installed and operational prior to installation of the Services.
- j. The demarcation point of the Standard SD-WAN Service is the ActiveCore uCPE. Customer shall have sole responsibility for installing, configuring, providing and maintaining all customer LAN equipment.

6. Monitoring, Technical Support, and Maintenance

- a. **Network Monitoring.** Comcast monitors all Comcast Services purchased by a Customer on a 24x7x365 basis. Customers who maintain an account on the Customer portal shall receive SMS messages and/or email alerts from Comcast upon discovery of a Service Interruption related to the Equipment or Comcast port.

- b. Technical Support.** Comcast provides Customers a toll-free trouble reporting telephone number to the Customer Enterprise Technical Support (ETS) that operates on a 24x7x365 basis. Comcast provides technical support for service-related inquiries. Technical support will not offer consulting or advice on issues relating to CPE not provided by Comcast.
- c. Escalation.** Reported troubles are escalated within the Comcast ETS to meet the standard restoration interval described in the Service Level Objectives. Troubles are escalated within the Comcast ETS as follows: Supervisor at the end of the standard interval plus one hour; to the Manager at the end of the standard interval plus two hours, and to the Director at the end of the standard interval plus four hours.
- d. Maintenance.** Comcast's standard maintenance window is Sunday to Saturday from 12:00am to 6:00am local time. Scheduled maintenance is performed during the maintenance window and will be coordinated between Comcast and the Customer. Comcast provides a minimum of forty-eight (48) hour notice for non-service impacting scheduled maintenance. Comcast provides a minimum of seven (7) days' notice for service impacting planned maintenance. Emergency maintenance is performed as needed.

7. Emergency Blocking

The parties agree that if either party hereto, in its reasonable 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.

8. Remedy Processes

All claims and rights arising under this Service Level Agreement must be exercised by Customer in writing within thirty (30) days of the event that gave rise to the claim or right. 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.

9. Exceptions to Credit Allowances

A Service Interruption shall not qualify for the remedies set forth herein if such Service Interruption is related to, associated with, or caused by: scheduled maintenance events; Customer actions or inactions; Customer-provided power or 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.

10. Other Limitations

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.