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NETWORK AS A SERVICE SOLUTIONS
SERVICE LEVEL AGREEMENT

1.   **SERVICE LEVEL STANDARDS**

1.1   **Overview.**   This Service Level Agreement (SLA) identifies the service level standards for Network as a Service Solutions (NaaS) at each Covered Site and for Verizon-managed Network Components. The Covered Site service level standards below depend on the design and specific configuration requirements for each Covered Site (including any required diversity, transport type, access Performance Grade and CPE maintenance), and apply to Covered Sites that meet the minimum requirements set forth in the Service Attachment.

1.2   **Availability of Covered Sites.**   Verizon will maintain the Availability for each Site Type as detailed below, with MLAN and MWLAN Network Components meeting the Functionality Threshold, if applicable.

Highly Available	Large	Medium	Small	Extra Small
100%	99.95%	99.90%	99.50%	99.00%

1.3   **Repair of Network Components.**   Verizon will provide each Network Component to Customer consistent with the Time to Repair (TTR) standards detailed below.

Network Component	TTR Standard
Managed Devices used for MWAN, MWLAN, MWOS, and SCI, LAN Switches, and Managed VNFs for Security	3.5 hours (US) 4 hours (rest of world)

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	4 hours (Platinum/Gold Performance Grade Access) 8 hours (Silver Performance Grade Access) Next Business Day (Bronze Performance Grade Access)
Circuits and other transport (wireless and wireline) Private IP, Ethernet E-Line, Ethernet E-LAN, IDS, Secure Hybrid Network, and Broadband	
Small and Extra Small Sites with no OOB Access	Next Business Day

1.4 **Proactive Outage Notification.** Verizon will open a Trouble Ticket for each Priority 1 incident and send a Proactive Outage Notification to Customer within 15 minutes of opening such Priority 1 Trouble Ticket (except where Customer is required to open a Trouble Ticket, e.g., with Secure Cloud Interconnect (SCI) or with a Customer Provided Access or Transport provider).

1.5 **Network Performance.** For each Covered Site (except Extra Small) with Private IP or Ethernet, Verizon will provide the following PE to PE backbone network performance metrics.

1.5.1 **Jitter.** (Expedited Forwarding (EF) class only):

Access Performance Grade	Scope	Metric
Platinum, Gold, Silver or Bronze	PE to PE	< 5 ms

1.5.2 **Packet Delivery Ratio**

Access Performance Grade	Scope	Expedited Forwarding (EF)	Assured Forwarding (AF)	Best Effort (BE)
Platinum, Gold, Silver or Bronze	PE to PE	99.995%	99.99%	99.5%

Verizon will also deliver Packet Delivery Ratio within SCI at 99.5% for all traffic classes.

1.5.3 **Packet Transit Delay (PTD).** Verizon will provide the backbone network with a PTD for Standard and Enhanced Traffic Management (ETM) as shown by the PTD Matrix located in the Verizon Secure Guide portal at: www.verizon.com/business/service_guide/secure/cp_pip_sla_matrix_SG.xlsx

2. **CALCULATION OF CREDITS**

2.1 **Credits for Availability.** For any month, the Availability percentage for a Covered Site is calculated by dividing (a) the total number of Availability hours (AH), derived from total minutes of Availability as defined below by (b) the total number of hours in the month (HM) multiplied by 100.

Example: (AH / HM) x 100 = Availability %

When the Availability percentage falls below the applicable service level standard, Customer may be eligible for credits. Verizon will calculate credits by multiplying (i) the MRC for the impacted Covered Site by (ii) the credit percentage specified below (CP) and (iii) the number of eligible periods (EP) or portions thereof.

	Highly Available	Large	Medium	Small	Extra Small
Eligible Periods Per hour	10%	8%	6%	6%	5%

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(max. 5 hours)					
Maximum Credit	50%	40%	30%	30%	25%

Example: MRC x CP x EP = Credit Amount

2.2 **Credits for Repair.** When the measure of TTR is above the service level standard, Customer may be eligible for credits. Verizon will calculate credits by multiplying (i) the MRC for the impacted Network Component by (ii) the percentage specified below and (iii) the number of eligible periods. The Network Component MRC for Managed Devices is the related management and maintenance MRCs for that Network Component. The Network Component MRC for circuits is the related management, Access, and port MRCs for that Network Component.

	Highly Available	Large	Medium	Small	Extra Small
Eligible Periods Per 4 hours (max. 24 hours)	5%	5%	5%	3%	3%
Maximum Credit	30%	30%	30%	18%	18%

2.3 **Credits for Proactive Outage Notification.** For any failure to send a Proactive Outage Notification within the committed time period, credits will be calculated by multiplying (i) the MRC (as defined above), for those Network Components where a Proactive Outage Notification was not sent by (ii) 10%.

2.4 **Credits for Network Performance**

2.4.1 **Jitter and Packet Delivery Ratio.** For any failure to meet the Jitter or Packet Delivery Ratio service level standards, credits will be calculated by multiplying (i) the MRC for all impacted Covered Sites collectively by (ii) 10%.

2.4.2 **Packet Transit Delay.** If the PTD metric for a pair of Covered Sites is not being met, Customer may be eligible for a credit. To obtain a credit, a Trouble Ticket must be opened either by Customer or Verizon when a PTD SLC is not being met or if a Service issue is identified. Verizon will work with Customer to confirm that a PTD issue exists and repair the problem(s), as applicable. Once Verizon confirms that the PTD service level standard is not being met, Verizon will have 30 calendar days to repair the Service to meet the PTD service level standard and close the applicable Trouble Ticket, and in such an event, Customer will not be eligible for a credit. If, after 30 calendar days of opening the Trouble Ticket, the PTD Service Level Standard continues to not be met, Customer will then qualify for a credit. Customer's measurement of PTD prior to opening a trouble ticket may be considered by Verizon in determining the need to repair the Service.

PTD Issues occur between pair ports of the Private IP Network. Consequently, two Covered Sites will be impacted by each PTD Issue. For PTD SLA credit purposes, the credit will be calculated by multiplying (i) the average of the MRCs for each of the two impacted Covered Sites by (ii) 10%.

3. **PROCESS FOR CREDITS**

3.1 **Required Steps.** Verizon will create a Trouble Ticket for most incidents (except for incidents with SCI or with a Customer Provided Access or Transport provider where it is Customer's responsibility to open a Trouble Ticket via the VEC or by contacting Verizon Help Desk (or Customer Service Center)). For Availability, TTR and Proactive Outage Notification, the measurement period for any service level standard starts from the time the Priority 1 Trouble Ticket is created. Customer must make a written claim for credits

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within 30 days of the end of the month where the incident occurred and specify the Trouble Ticket number.

3.2   **Issuing Credits.**   Upon Customer's request, Verizon will review any failure to meet the service level standards to determine the appropriate amount of credits. The appropriate amount will be credited to the Customer's within 90 calendar days following Customer's request. Credits or equivalent payments made by Verizon to Customer under this SLA are the sole and exclusive remedy available to Customer from any failure to meet a service level standard. For Availability, TTR and Proactive Outage Notification, credits will be determined based on the time that the Priority 1 Trouble Ticket is created.

4.   **EXCLUSIONS**

4.1   **Credit Restrictions.**   If Customer receives credit for Availability SLA, no additional credits will be due or payable for the same SLA failure incident. Credits for any Covered Site will not exceed the MRC for such Covered Site. Credits are not available to Customers with a Service Commitment of less than one year. This SLA only applies to Verizon managed NaaS components on a NaaS Order. Credits are limited to the SLA metrics found here. Except for Customer Provided Access or Transport, as defined below, Verizon will not pay credits for any service where Verizon is not the billing entity. All measurements of service level standards will be suspended during scheduled maintenance. The scheduled maintenance procedure can be found at: www.verizon.com/business/support/service-assurance-user-guides/

4.2   **General Exclusions.**   No credits will be owed for any failure that results from a Force Majeure event. In order to qualify for credits, a Trouble Ticket must be timely and properly opened and Customer must refrain from causing any delays.   Credits will not be available for any failure that results from: (a) Customer providing incorrect or incomplete information; (b) Customer failing to arrange for Verizon's access to CPE or Network Components at a Customer Site; (c) Customer failing to release a circuit for testing; (d) Customer failing to provide confirmation when needed to close a Trouble Ticket; (e) Customer's use of a non-supported configuration or access type; (f) a Customer modification of a configuration or policy; (g) a fiber cut outside of Verizon's control; or (h) issues from Customer provided public cloud tenant space or from equipment or services not provided or managed by Verizon. Any Customer Site that fails to maintain the minimum site requirements shall be excluded from this SLA. All SLA calculations exclude the amount of time that (i) Verizon is awaiting feedback or an approved maintenance window from Customer, (ii) the Trouble Ticket is on hold as requested by Customer or (iii) the problem is caused by a software bug for which no workaround or patch is available. No credit will be due if the service level standard is not met because of an act or omission on the part of the Customer, its contractors or vendors (or any other entity over which the Customer exercises control or has the right to exercise control).

4.3   **Specific Exclusions.**   Credits are excluded based on the conditions described below. Credits will not be available if the Covered Site configuration fails to meets the specifications for all of the Network Components. Customer must use a supported Access type in order to be eligible for credits.

4.3.1   **Maintenance and Equipment Exclusions.**   All TTR service level standards which require a physical device replacement will be limited to the device maintenance providers' level of service ordered. If CPE is not under 24x7 maintenance coverage with a 4 hour response time delivered by Verizon, then (i) any calculation of Availability, TTR will include only logical faults and exclude physical faults and (ii) Verizon will not be responsible for any failure to meet a service level standard that results from such lack of coverage.   If third-party provided maintenance is modified pursuant to the provider's maintenance contract with Customer, Verizon may similarly adjust the associated service level standards set forth herein to reflect the revised service levels provided by such provider.

4.3.2   **Proactive Outage Notification Exclusions.**   The following are excluded from all calculations involving a Proactive Outage Notification: (a) periods where Customer is still able to exchange data between the

Customer edge router and the Provider edge router, (b) events that affect multiple customers including without limitation cable or fiber cuts and (c) Customer point of contact unavailability due to incorrect contact information or other cause. Slow service or other service degradation will not require a Proactive Outage Notification

4.3.3 **Performance Exclusions.** The calculation of credits for Jitter, PDR, and PTD excludes (a) IP packets that are dropped due to improper specifications provided by Customer, (b) IP packets dropped due to congestion caused by EF traffic exceeding subscription parameters, and (c) Customer data traffic that is marked by Customer using IP Precedence/DSCP settings not supported by the Verizon Network.

4.3.4 **Managed LAN Exclusions.** The calculation of credits for Managed LAN excludes any incident that is caused by (a) faulty internal wiring for which Verizon is not responsible, or (b) Customer Equipment, Customer wiring or any other LAN device for which Verizon is not responsible. A LAN Switch is available if (i) no alarm events have occurred on the Network Operations Center's (NOC) Network Management System and (ii) no Trouble Ticket has been opened. If multiple LAN Switches are unavailable because of a LAN Switch issue, then Verizon will only consider the outage of the affected LAN Switch in its calculation of Availability (and LAN Switches attached logically or physically to that LAN Switch will not be considered unavailable). Availability calculations are also subject to the Functionality Threshold. LAN Switches are not considered unavailable during incidents resulting in whole or in part from Managed LAN degradation, such as slow data transmission, but may be in scope for other service level standards. The Availability service level standard does not apply to LAN Switches installed for less than one full calendar month or to LAN Switches under Cloud-Controlled Switching.
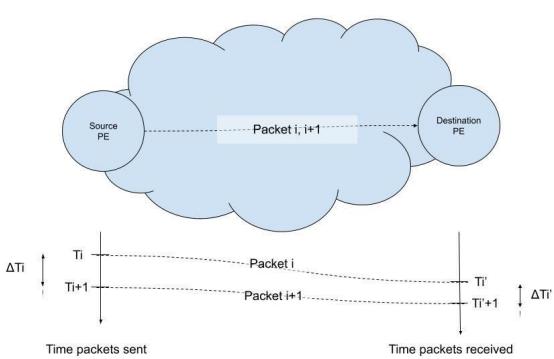
4.3.5 **Managed WLAN Exclusions.** WLAN incidents are excluded from the Availability calculations and only considered for Network Component calculations. Devices are not considered unavailable during incidents resulting in whole or in part from the degradation of Customer's WLAN, such as slow data transmission. WLAN Controllers are not considered unavailable if Verizon did not receive from Customer the login credentials of the devices for troubleshooting purposes. Virtual Controllers with Aruba IAP Management, Lightweight Access Points, Aruba Instant Access Points, Cloud-Controlled Access Points and Software-defined Wireless LAN are excluded from this SLA. WLAN Controllers are not considered unavailable if the WLAN Controllers are deployed in High Availability (HA) mode and the WLAN Controller function will be taken over by one of the other WLAN Controllers in the Customer's network. A WLAN Controller is available if (i) no alarm events is occurring on the NOC Network Management System and (ii) no Trouble Ticket has been opened by Customer. If multiple WLAN Controllers are unavailable because of a single WLAN Controller issue, Verizon will only consider the outage of the single WLAN Controller in its calculation of the Availability SLA; other WLAN Controllers and Local Access Points attached logically or physically to that single WLAN Controller will not be considered unavailable. Availability calculations are also subject to the Functionality Threshold.

5. **DEFINITIONS**

Term	Definition
Availability	Availability for a Covered Site means (i) at least one access circuit is not experiencing a Priority 1 incident and (ii) the Covered Site meets the Functionality Threshold.
Broadband	Refers to one of the following: (i) LTE Business Internet, (ii) 5G Business Internet, or (iii) other services provided pursuant to Verizon's Internet Broadband Services.
Covered Site	An individual Customer Site designated in the Customer Design Document to receive a NaaS SLA. A site will not qualify as a Covered

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	Site unless it meets the minimum requirements including Network Component requirements.
Customer Provided Access or Transport	Customer remits payment for Access or Transport charges directly to their provider and Verizon does not invoice Customer such charges. The current Verizon approved Access or Transport providers are AT&T, BellSouth, CenturyLink, Equant, British Telecom, Deutsche Telekom, and NTT.
Functionality Threshold	The Functionality Threshold is met for a group of LAN Switches or MWLAN Managed Devices (of the same type measured together) when either (a) at least 90% of such devices are performing their intended function or (b) only a single LAN Switch or MWLAN Managed Device failed. A LAN Switch or MWLAN Managed Device is considered available and able to perform its function as long as it is able to pass data as designed.
Jitter	Variation or unsteadiness in IP Packet Delivery and applies only to the EF Traffic Priority Class within Private IP. Jitter is calculated by measuring the mean deviation of the difference in time of sample IP packet spacing at the destination PE compared to the source PE for a pair of sample IP packets. Jitter is measured between two PEs. Verizon calculates Jitter by sampling the network frequently and averaging the results over a calendar month. The figure below illustrates sample IP Packets sent between the source and destination PEs and how the time the packets are sent and received is being measured. The calculation for Jitter (Ji) for two consecutive packets i and i+1 is as follows: $Ji = \Delta Ti - \Delta Ti$ Ti = time 1st byte of packet i is sent by the source PE Ti+1 = time 1st byte of packet i+1 is sent by the source PE Ti' = time 1st byte of packet i is received by the destination PE Ti+1' = time 1st byte of packet i+1 is received by the destination PE $\Delta Ti = Ti+1 - Ti$ (ΔTi is the time difference between the time packet i and i+1 are sent by the source PE)$\Delta Ti' = Ti+1' - Ti'$ ($\Delta Ti'$ is the time

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Ji = ΔTi - ΔTi'¶

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	difference between packet i and i+1 are received by the destination PE) The average jitter is calculated as follows: Jitter = Σ J i /(N-1) N is the number of sample packets over 30 day period
Network Component	A Managed Device, Managed VNF, LAN Switch, circuits and other transport (wireless and wireline) identified in the Customer invoice as a part of NaaS.
Out of Band (OOB)	Access provided over a separate PSTN line (analog OOB) or cellular wireless connection (wireless OOB).
Packet Delivery Ratio (PDR)	Packet Delivery Ratio is calculated over the calendar month as the number of sample IP packets offered within a specified traffic class of service (i.e. EF, AF, or BE) that are successfully delivered by Private IP divided by the total number of sample IP packets sent within the specified class of Private IP service. It is measured between PEs for each class of service. Packet Delivery Ratio = Packets Delivered / Packets Offered
Packet Transit Delay (PTD)	PTD is determined by using 64-byte packets for measuring transit delay in milliseconds across the Verizon PIP Network and averaging the results over a thirty day period. PTD calculation is as follows: PTD = T2 – T1. Where: T1 is the time in milliseconds when an IP packet leaves the ingress reference point (i.e., Packet exit event) and T2 is the time in milliseconds when an IP packet arrives back at the ingress reference point (i.e., Packet return event). PE PTD is measured between the respective origination and destination infrastructure ports, i.e., between the points where the packet enters and exits Verizon's PIP Network, regardless of the mode of access to Verizon's PIP Network. External factors, including, but not limited to, Access issues, are excluded from the measurement.
Performance Grade	<table><tr><td></td><td>Platinum</td><td>Gold</td><td>Silver</td><td>Bronze</td></tr><tr><td>Availability</td><td>0.99999</td><td>0.999</td><td>0.995</td><td>0.99</td></tr><tr><td>TTR</td><td><4 hours</td><td><4 hours</td><td><8 hours</td><td><24 hours</td></tr></table>
Priority Level	Represents the severity of the incident, after taking into account the facts reported in the Trouble Ticket. Distinctions are as follows: **Priority 1** represents a total loss of functionality of a Covered Site or Network Component (i.e., the Customer is unable to use it and is prepared to release it for immediate testing). **Priority 2** represents a substantially degraded Covered Site or Network Component (i.e., the Customer is able/still wants to use the Covered Site or Network Component and is not prepared to release it for immediate testing).
Proactive Outage Notification	A notification to Customer of a Priority 1 incident. For a Network Component, Verizon will notify Customer of a Priority 1 incident by electronic means. The calculation of the notification period begins with the opening of a Priority 1 Trouble Ticket.
Time To Repair (TTR)	The amount of time required to address a Priority 1 incident or repair

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ΔTi' = Ti+1' - Ti' (ΔTi' is the time difference between packet i and i+1 are received by the destination PE)¶

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	request. The TTR is measured using Verizon's Trouble Ticket system. The TTR time starts when a Priority 1 Trouble Ticket is opened, and concludes when the Priority 1 incident is resolved.
Trouble Ticket	The record initiated by either Customer or Verizon to track a Priority 1 or 2 incident. Each Trouble Ticket will contain a unique reference number (allowing Customer to call in to the Help Desk for an incident update, where applicable).

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