PRIVATE IP SERVICE 2013 – GLOBAL PRIVATE IP SERVICE LEVEL AGREEMENT

Global Private IP Service Level Agreement

1. **Service Level Agreement Summary.** The Private IP Service Level Agreement ("PIP SLA") covers Global Private IP Services (collectively, the "Service" or "Private IP Service"). The PIP SLA consists of several service level standards ("Service Level Standards"). Customer may qualify for credits when the Verizon PIP Network performance fails to meet the stated thresholds established for a Service Level Standard. The PIP SLA may also cover the transport components (not the CPE components) of the Managed Private IP Service product if offered as a part of a Managed Private IP solution. The managed service components of a Managed Private IP solution may be covered in a separate Managed Services, Service Level Agreement.
2. **Definitions of Terms.** Terms used in this document are defined in the Terms and Definitions section at the end of this document.
3. **Service Level Standard Performance Measures.** The PIP SLA Service Level Standards are:

Parameter	Access Type	Scope	U.S.	Global Tier A	Global Tier B	Global Tier C	Global Tier D
Availability	On-Net Platinum	End-to-End	100%	100%	100%	NA	NA
	Off-Net Gold	End-to-End	99.9%	99.9%	99.9%	99.5%	98.5%
	Off-Net Silver	End-to-End	99.5%	99.5%	99.5%	99.0%	N/A
	Off-Net Bronze	End-to-End	97.0%	97.0%	97.0%	97.0%	N/A
Time To Repair (TTR)	On-Net Platinum	End-to-End	2 Hours	4 Hours	4 Hours	NA	NA
	Off-Net Gold	End-to-End	4 Hours	5 Hours	8 Hours	8 Hours	8 Hours
	Off-Net Silver	End-to-End	4 Hours	8 Hours	8 Hours	8 Hours	N/A
	Off-Net Bronze	End-to-End	24 Hours	24 Hours	24 Hours	24 Hours	N/A
Service Installation	On-Net, Off-Net	End-to-End	≤1.5M 30 Business Days ≤ 45M 45 Business Days Others 100% by Customer's Due Date	100% by Customer's Due Date	100% by Customer's Due Date	100% by Customer's Due Date	100% by Customer's Due Date
Moves, Adds or Changes (MAC)	On-Net, Off-Net	End-to-End	10 Business Days (Excluding Local Access Requests)	100% by Customer's Due Date	100% by Customer's Due Date	100% by Customer's Due Date	100% by Customer's Due Date

Core Network Transit Delay (C-NTD) *	On-Net, Off-Net	P-Core	⩽ 36 ms	NA	NA	NA	NA

* Core Network Transit Delay (C-NTD) is only applicable to the US P-Core Network. Measurements between distinct PE pairs are given by the Packet Transit Delay (PTD) Service Level Standard in the table below.

Parameter	Access Type	Scope	EF/COS5	AF4x/COS4	AF3x/COS3	AF2x/COS2	AF1x/COS1	BE/COS0
Packet Delivery Ratio (PDR)	On-Net, Off-Net	PE-to-PE	⩾ 99.995%	⩾ 99.99%	⩾ 99.99%	⩾ 99.99%	⩾ 99.99%	⩾ 99.5%
Packet Transit Delay (PTD)	On-Net, Off-Net	PE-to-PE	See applicable Packet Transit Delay standards below					
Jitter	On-Net, Off-Net	PE-to-PE	< 5 ms	< 15 ms	NA	NA	NA	NA
Mean Opinion Score (MOS) *	On-Net, Off-Net	P-Core	⩾ 4.0	NA	NA	NA	NA	NA

* Mean Opinion Score (MOS) is only applicable to the US region

The PIP SLA Performance Measures and exclusions are defined in detail below.

4. **Coverage Categories.** Service Level Standards vary by Class of service, Access type, Outage type and Geographic location. These Service Level Standards are defined below.

4.1 **Class of Service.** The PIP SLA class of service delivery methodology and traffic priority Class of Service are identified as follows:

Private IP Layer 3 Queue	Private IP Layer 2 Queue **	Naming
EF *	COS5 *	Real Time / Voice
AF4 AF41, AF42/43	COS4	Video / Priority Data
AF3 AF31, AF32/33	COS3	Mission Critical Data
AF2 AF21, AF 22/23	COS2	Transactional Data
AF1 AF11, AF12/13	COS1	General Data
BE	COS0	General Business - Default

* The EF and COS5 queues are not designed for packets larger than 300 bytes or Bursty Traffic.

4.2 **Access Types.** The PIP SLA covers On-Net (Platinum) access and Off-Net access but does not apply to the CPLL portion of Off-Net access. Service Levels for Off-Net access are offered in three levels of performance classifications:

- Gold (Types 2*, 3, 4 and 5 network configurations)
- Silver (Standard network configuration, DSL Services)
- Bronze (DSL Services)

* Type 2 network configuration is not available for EMEA/APAC-sold Customers

4.3 **Outage Type.** The PIP SLA defines Service disruptions as:

- Hard Outage
- Service Issue

4.3.1 The Service restoration priority determines the ranking of the repair actions against other Service Issues.

Priority Level	Criteria
Priority 1	Total loss of Service or degraded Service to the extent that it is unusable by Customer and Customer is prepared to release its Service for immediate testing
Priority 2	Degraded Service, however Customer is able to use the Service and is not prepared to release its Service for immediate testing
Priority 3	A problem with the Service that does not impact the functionality of the Service; including a single non-circuit specific quality of Service inquiry.
Priority 4	Non Service affecting requests (e.g. a Customer request for an incident report) and all other queries not covered by Priority 1 – 3 above. Scheduled maintenance

4.3.2 A Hard Outage has Priority 1 Service restoration priority with the exception of Off-Net Standard and Basic Hard outages which are handled as a Priority 2 ticket. Availability and TTR apply to Hard Outages.

4.3.3 A Service Issue has Priority 2 Service restoration priority. PTD, PDR and Jitter apply to Service Issues.

4.3.4 Priority 3 and Priority 4 issues will be addressed by Verizon. However, Priority 3 and Priority 4 issues are not eligible for SLA credits.

4.4 **Geographical Location.** The PIP SLA covers Service in all countries where PIP Service is offered, except as specified in the exclusions and limitations stated below. The PIP SLA is divided into geographic regions because Service Levels available from access Providers around the world differ between countries. The location and access method of a Customer Site will determine the applicable Service Levels. As a result of continuing expansion of the Verizon Private IP Network the listing of the Global Tier countries is dynamic and changes periodically as new countries are added. At Customer's request Verizon will confirm country status and/or provide a listing of countries that fall into these categories. The countries covered under this SLA are divided into the following categories:

- **U.S. Region:** Contiguous 48 United States, Hawaii and Alaska.
- **Global Tier A:** Austria, Belgium, Canada, Denmark, Finland France, Germany, Hong Kong, Ireland, Italy, Japan, Luxembourg, Netherlands, Norway, Singapore, South Korea, Spain, Sweden, Switzerland, United Kingdom.
- **Global Tier B:** Argentina, Australia, Brazil, Bermuda, Bulgaria, Chile, China, Colombia, Costa Rica, Czech Republic, Dominican Republic, Greece, Guam, Hungary, Iceland, India, Indonesia, Israel, Kuwait, Latvia, Malaysia, Mexico, Morocco, New Zealand, Panama, Peru, Philippines, Poland, Portugal, Puerto Rico, Romania, Russia, Slovakia, Taiwan, Thailand, Turkey, Ukraine, United Arab Emirates (UAE), Uruguay, Venezuela, Alaska MVIC (via GCI), Brazil MVIC (via Embratel) and Mexico MVIC (via Axtel).
- **Global Tier C:** Bahrain, Canada MVIC (via Telus), Canada MVIC (via Allstream), China MVIC (via CNC or China Telecom), Costa Rica MVIC (via Navega), Egypt, Egypt MVIC (via TE Data), El Salvador MVIC (via Navega), Guatemala MVIC (via Navega), Honduras MVIC (via Navega) India MVIC (via Bharti or Reliance), Japan MVIC (via Softbank), Nicaragua MVIC (via Navega), Pakistan, Panama MVIC (via Navega), Qatar, Russia MVIC (via Beeline), Saudi Arabia MVIC (via STC), Slovenia, South Africa, Vietnam.
- **Global Tier D:** Ecuador, Estonia, Jordan, Kazakhstan, Lithuania, Sri Lanka. Service in Estonia and Lithuania is provided via a backhaul to the Verizon Helsinki Provider Edge, service in Jordan is provided via a backhaul to the Verizon London Provider Edge, service in Ecuador is provided via a backhaul to the Verizon Colombia Provider Edge, service in Kazakhstan is provided via a backhaul to the Verizon Frankfurt Germany Provider Edge and service in Sri Lanka is provided via backhaul to the Verizon Singapore Provider Edge. The Packet Transit Delay (PTD), Packet Delivery Ratio (PDR), and Jitter Service level standards for these locations are based on measurements at Verizon's Provider Edge device.

5. **Service Level Standards Defined.**

5.1 **Availability.**

5.1.1 **Definition.** End-to-end Circuit up-time.

5.1.2 **Standard.** See Service Level Standard for Performance Measurements above. Availability includes the local access from the Customer Edge (CE) to the Verizon PIP Provider Edge (PE) and the PIP Network. Availability excludes CPLL and the Customer CPE.

5.1.3 **Calculation.** Availability is determined by computing the total number of Eligible Hard Outage Minutes per Priority 1 trouble tickets in a calendar month for a specific Customer Circuit divided by the total number of minutes based on a 30-day calendar month. Availability is calculated after a trouble ticket is opened with Verizon and represents the percentage of time that the Circuit is available within a given calendar month.

$$\text{Availability (\%)} = \left(1 - \left(\frac{\text{Total Eligible Hard Outage Minutes per Circuit per month}}{\text{30 days * 24 hours/day * 60 minutes/hour}}\right)\right) \times 100$$

5.1.4 **Credit Structure.** The credit is based on the number of Eligible Hard Outage Minutes. Availability applies only in those cases in which a PIP trouble ticket is opened with Verizon and the Customer subsequently allows the necessary physical or logical access to its premises and facilities for testing if required by Verizon.

Availability credit table:

Availability				**Credits as a percent of MRC**				
PIP Network Down Time		**% of Up Time**		**All Global Tiers and US**	**U.S. and Global Tier A**	**Global Tier B**	**Global Tier C**	**Global Tier D**
From (Mins)	**To (Mins)**	**From %**	**To %**	**On-Net (Platinum)**	**Off-Net (Gold, Silver or Bronze)**	**Off-Net (Gold, Silver or Bronze)**	**Off-Net (Gold, Silver or Bronze)**	**Off-Net (Gold, Silver or Bronze)**
1	43	< 100%	≥ 99.9%	5%	NA	NA	NA	NA
44	86	< 99.9%	≥ 99.8%	10%	10%	5%	NA	NA
87	216	< 99.8%	≥ 99.5%	15%	10%	5%	NA	NA
217	432	< 99.5%	≥ 99.0%	25%	15%	10%	5%	NA
433	648	< 99.0%	≥ 98.5%	30%	15%	10%	10%	NA
649	864	< 98.5%	≥ 98.0%	40%	20%	10%	10%	5%
> 864		< 98.0%		50%	20%	10%	10%	10%

5.1.5 **Exclusions.** In addition to the General Exclusions, as set out in the General Exclusion Section below, Availability Service Level Standard measurements do not include the following:

- Any act or omission on the part of any third party other than a local access provider over which Verizon exercises control.
- Periods of Service degradation, such as slow data transmission, where a Priority 1 trouble ticket has not been opened with Verizon and Customer has not released its Service for immediate testing.
- Customer inquiry for circuit monitoring purposes only.
- Availability Service Level Standards for MVIC services are only applicable for MVIC locations where local access is provided by one of the corresponding MVIC partners identified above.
- Off-Net Standard and Basic hard outage to be handled as a Priority 2 ticket.

5.2 **Time To Repair (TTR).**

5.2.1 **Definition.** Time taken to restore end-to-end Services during a Hard Outage on a specific Circuit.

5.2.2 **Standard.** See Service Level Standard Performance Measurements table above. TTR includes the On-Net and Off-Net Local Access from the Customer Edge (CE) to the Verizon PIP Provider Edge (PE) and the PIP Network. TTR excludes CPLL and the Customer CPE.

5.2.3 **Calculation.** TTR is determined by computing the time taken to repair each Eligible Hard Outage Priority 1 trouble ticket in a calendar month for a specific Customer Circuit with the exception of Hard Outages for Off-Net Standard and Off-Net Basic which are handled as a Priority 2 ticket. The duration of each Hard Outage on a specific Circuit is calculated after a trouble ticket is opened with Verizon. TTR (Hrs) = Time taken to repair a specific Circuit experiencing an Eligible Hard Outage Priority 1 trouble. Off-Net Standard and Basic hard outage to be handled as a Priority 2 ticket.

5.2.4 **Credit Structure.** The credit is based on the number of Eligible Hard Outage Minutes. TTR applies only in those cases in which a PIP Hard Outage Priority 1 trouble ticket is opened with Verizon and the Customer subsequently allows the necessary physical or logical access to its premises and facilities for testing if required by Verizon and with the exception of Hard Outages for Off-Net Standard and Off-Net Basic which are handled as a Priority 2 ticket. Circuits may qualify for the TTR Service Level Standard in addition to the Availability Service Level Standard.

TTR credit table:

TTR		**Credit as a Percent of MRC**					
PIP Network Outage Time		**U.S.**	**Global Tiers A & B**	**U.S.**	**Global Tier A**	**Global Tier B**	**Global Tiers C & D**
From Hr:Min:Sec	**To Hr:Min:Sec**	**On-Net (Platinum)**	**On-Net (Platinum)**	**Off-Net (Gold, Silver or Bronze)**	**Off-Net (Gold, Silver or Bronze)**	**Off-Net (Gold, Silver or Bronze)**	**Off-Net (Gold, Silver or Bronze)**
2:00:00	3:59:59	4%	NA	NA	NA	NA	NA
4:00:00	4:59:59	4%	4%	2%	NA	NA	NA
5:00:00	7:59:59	10%	10%	4%	4%	NA	NA
8:00:00	11:59:59	10%	10%	4%	4%	4%	4%
≥ 12:00:00		10%	10%	4%	4%	4%	4%

5.2.5 **Exclusions.** In addition to the General Exclusions, as set out in the General Exclusion Section below, TTR Service Level Standard measurements do not include the following:

- Any act or omission on the part of any third party, other than a Local Access provider over which Verizon exercises control.
- Periods of Service degradation, such as slow data transmission, where a Priority 1 trouble ticket has not been opened with Verizon and Customer has not released its Service for immediate testing.
- Customer inquiry for circuit monitoring purposes only.
- TTR Service Level Standards for MVIC services are only applicable for MVIC locations where Local Access is provided by one of the corresponding MVIC partners identified above.
- Off-Net Standard and Basic hard outage to be handled as a Priority 2 ticket.

5.3 **Core Network Transit Delay (C-NTD).**

5.3.1 **Definition.** Core Network round trip delay average between Verizon-designated core backbone network nodes across a specific region.

5.3.2 **Standard.** See Service Level Standard Performance Measurements table above.

5.3.3 **Calculation.** Verizon calculates the C-NTD by using 64-byte packets for measuring round trip transit delay in milliseconds between Verizon-designated backbone network nodes across a specific region and averaging the results over a 30 day period. The measurements exclude any traffic that is re-routed as a result of a network outage or scheduled maintenance. The monthly measurements are available at the following link: http://www.verizonbusiness.com/about/network/pip/

5.3.4 **Credit Structure.** To receive a credit, Customer must submit their request within 30 business days after the month in which the C-NTD Service Level Standard was not met. Such credit will equal the pro-rated charges for one day of the MRC for the Customer's Connections within the specific region during the calendar month in which the C-NTD Service Level Standard was not met.

C-NTD credit table:

For Standard not met	**Credit**
Core Network Transit Delay (C-NTD)	The pro-rated charges equal to one day's MRC for the Customer's Connections

5.3.5 **Exclusions.** In addition to the General Exclusions, as set out in the General Exclusion Section below, C-NTD Service Level Standard measurements do not include the following:

- All Customer data traffic that is marked EF/COS5 by Customer and is not compliant with the subscribed EF/COS5 Real Time CAR or any other data traffic that is not compliant with the applicable subscribed CAR.
- All Customer data traffic that is marked by Customer using IP Precedence/DSCP settings not supported by the Verizon PIP Network.
- Core Network Transit Delay (C-NTD) is only applicable to the US P-Core Network

5.4 **Packet Transit Delay (PTD).**

5.4.1 **Definition.** Round trip data packets delay between origination and destination Ports.

5.4.2 **Standard.**

- PE PTD is the provider edge PE-to-PE monthly average round trip transit delay in milliseconds between respective Provider Edge device pairs on the Verizon PIP Network.
- The PE PTD Service Level Standards is applicable for the following traffic priority classes:
  - Standard PIP Service
  - Enhanced Traffic Management (ETM) option
- PE PTD Service Level Standard Performance Measurements for international and U.S. locations are stated in the PIP PTD Matrix located in the Verizon Secure Guide portal at: http://www.verizonbusiness.com/us/publications/service_guide/secure/cp_pip_sla_matrix_SG.xls.

5.4.3 **Calculation.** 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, Local Access issues, are excluded from the measurement.

5.4.4 **Credit Structure.** If the PTD Service Level Standard is not met, it is a Service Issue and is considered a Service Restoration Priority 2. If the PTD metric for a pair of Customer Connections or Customer Sites is not being met, Customer may be eligible for a credit. To obtain a credit, a trouble ticket must be opened with Verizon when a PTD Service Level Standard 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 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 credit table:

For Standard not met	Credit as % of MRC
Packet Transit Delay (PTD)	20%

5.4.4.1 Service Issues occur between pair Ports of the Private IP Network. Consequently, two Customer connections will be impacted by each Service Issue. For Service Issue Service Level Standard credit purposes, the MRC will be defined as the average of the MRCs for each of the two impacted Customer Connections.

5.4.5 **Exclusions.** In addition to the General Exclusions, as set out in the General Exclusion Section below, PTD Service Level Standard measurements do not include the following:

- All Customer data traffic that is marked EF/COS5 by Customer and is not compliant with the subscribed EF/COS5 Real Time CAR or any other data traffic that is not compliant with the applicable subscribed CAR.
- All Customer data traffic that is marked by Customer using IP Precedence/DSCP settings not supported by the Verizon PIP Network.
- PTD Service Level Standards for MVIC locations are based on measurements at the Verizon owned Provider Edge devices and not the MVIC partner location.

5.5 **Packet Delivery Ratio (PDR).**

5.5.1 **Definition.** Effectiveness in transporting and delivering customer packets across the PIP Network

5.5.2 **Standard.**

- PE PDR is the PE-to-PE monthly average Packet Delivery Ratio. The PE PDR Service Level Standards is applicable for the following traffic priority classes: Standard PIP Service and Enhanced Traffic Management (ETM) option.
- PE PDR Service Level Standard is:
  -]For the EF/COS5 traffic priority class: 99.995%
  - For the AF/COS4, COS3, COS2, COS1 traffic priority class: 99.99%
  - For the BE/COS0 traffic priority class: 99.5%

5.5.3 **Calculation.**

- PDR is determined by using 64-byte packets for measuring the number of packets within a specified traffic priority class that are successfully delivered divided by the total number of packets sent within the specified traffic priority class during a calendar month. For data consisting of packets within the specified traffic priority class, the PDR is as follows:

$$\text{PDR (\%)} = \frac{\text{Packets Delivered}}{\text{Packets Offered}} \times 100$$

- PE PDR 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, Local Access issues, are excluded from the measurement.

5.5.4 **Credit Structure.** If the PDR Service Level Standard is not met, it is a Service Issue and is considered Service Restoration Priority 2. If the PDR metric for a pair of Customer Connections or Customer Sites is not being met, Customer may be eligible for a credit. To obtain a credit, a trouble ticket must be opened with Verizon when a PDR Service Level Standard is not being met or if a Service Issue is identified. Verizon will work with Customer to confirm that a PDR issue exists and repair the problem(s), as applicable. Once Verizon confirms that the PDR Service Level Standard is not being met, Verizon will have 30 calendar days to repair the Service to meet the PDR 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 PDR Service Level Standard continues to not be met, Customer will qualify for a credit. Customer's measurement of PDR prior to opening a trouble ticket may be considered by Verizon in determining the need to repair the Service.

PDR credit table:

For Standard not met	Credit as % of MRC
Packet Delivery Ratio (PDR)	20%

5.5.4.1 Service Issues occur between pair Ports of the Private IP Network. Consequently, two Customer connections will be impacted by each Service Issue. For Service Issue Service Level Standard credit purposes, the MRC will be defined as the average of the MRCs for each of the two impacted Customer Connections.

5.5.5 **Exclusions.** In addition to the General Exclusions, as set out in the General Exclusion Section below, PDR Service Level Standard measurements do not include any of the following:

- Packets that are not delivered due in whole or in part to factors unrelated to Verizon's PIP/PIPL2 Network.
- Packets dropped at infrastructure ingress or egress due to improper Customer Port speed specifications of Customer Port speeds.
- All Customer data traffic that is marked EF/COS5 by Customer and is not compliant with the subscribed EF/COS5 Real Time CAR or any other data traffic that is not compliant with the applicable subscribed CAR.
- All Customer data traffic that is marked by Customer using IP Precedence/DSCP settings not supported by the Verizon PIP Network.
- PDR Service Level Standards for MVIC locations are based on measurements at the Verizon owned Provider Edge devices and not the MVIC partner location.

5.6 **Jitter.**

5.6.1 **Definition.** Displacement of data packets from their ideal sequence or position in time.

5.6.2 **Standard.**

- PE Jitter is the monthly average mean deviation of the difference in packet arrival time at the receiver compared to the sender for a pair of packets one-way between respective Provider Edge Devices. The Jitter Service Level Standards is applicable for the following traffic priority classes:
- Enhanced Traffic Management (ETM) option:
  - PE Jitter is applicable to data packets marked EF by Customer and compliant with the subscribed EF Real Time CAR.
  - PE Jitter is applicable to data packets in the AF4 traffic class and compliant with the AF4 forwarding priority.
  - Other traffic classes are not available for PE Jitter Service Level Standards.
- PE Jitter Service Level Standard provides that the maximum delay variance between Verizon Private IP PE devices is less than 5 ms one-way for the EF traffic class and less than 15 ms one-way for the AF4 traffic class.
- If a Jitter issue is identified, packet fragmentation technologies or similar capability may be required to remedy the issue.

5.6.3 **Calculation.**

- Jitter is determined by using 64-byte packets for measuring the mean deviation of the difference in packet spacing at the receiver compared to the sender for a pair of packets. The mean is determined by sampling the PIP Network frequently and averaging the results over a thirty day period. The calculation for Jitter (Ji) for two consecutive packets i and i+1 is as follows: Jitter (Ji) = ΔTi - ΔTi'
  Where:
  Ti = time 1st byte of packet i is received by the source Port (ingress time)
  Ti+1 = time 1st byte of packet i+1 is received by the source Port (ingress time)
  Ti' = time 1st byte of packet i is received at the destination Port (egress time)
  Ti+1' = time 1st byte of packet i+1 is received at the destination Port (egress time)
  And:
  ΔTi = Ti+1 - Ti (ΔTi is the time interval between packets at ingress)
  ΔTi' = Ti+1' - Ti' (ΔTi' is the time interval between packets at egress)
  The Average Jitter (J-avg) is calculated as follows:
  Average Jitter (J-avg) = $\sum$ | Ji | / (N-1)
  Where:
  N is the number of sample packets over 30 day period
- PE Jitter 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, Local Access issues, are excluded from the measurement.

5.6.4 **Credit Structure.** If the Jitter Service Level Standard is not met it is a Service Issue and is considered Service Restoration Priority 2. If the Jitter metric for a pair of Customer Connections or Customer Sites is not being met, Customer may be eligible for a credit. To obtain a credit, a trouble ticket must be opened with Verizon when a Jitter Service Level Standard is not being met or if a Service Issue is identified. Verizon will work with Customer to confirm that a Jitter issue exists and repair the problem(s), as applicable. Once Verizon confirms that the Jitter Service Level Standard is not being met, Verizon will have 30 calendar days to repair the Service to meet the Jitter 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 Jitter Service Level Standard continues to not be met, Customer will qualify for a credit. Customer's measurement of Jitter prior to opening a trouble ticket may be considered by Verizon in determining the need to repair the Service.

Jitter credit table:

For Standard not met	Credit as % of MRC
Jitter	20%

5.6.4.1 Service Issues occur between pair Ports of the Private IP Network. Consequently, two Customer connections will be impacted by each Service Issue. For Service Issue Service Level Standard credit purposes, the MRC will be defined as the average of the MRCs for each of the two impacted Customer Connections.

5.6.5 **Exclusions.** In addition to the General Exclusions, as set out in the General Exclusion Section below, Jitter Service Level Standard measurements do not include any of the following:

- PE Jitter applicable to the AF4 traffic class is available only for Video traffic that uses either AF41 or CS4 classification when the AF4 queue facilitating such Video traffic is not mixed with any other type of traffic.
- All Customer data traffic that is marked EF by Customer and is not compliant with the subscribed EF Real Time CAR or any other data traffic that is not compliant with the applicable subscribed CAR.
- All Customer data traffic that is marked by Customer using IP Precedence/DSCP settings not supported by the Verizon Private IP Network.
- Jitter Service Level Standards for MVIC locations are based on measurements at the Verizon owned Provider Edge devices and not the MVIC partner location.
- Jitter Service Level Standard is not applicable to Private IP Layer 2 services

5.7 **Service Installation.**

5.7.1 **Definition.** Period of time beginning on the Order Acceptance date and ending on the date Verizon completes installation of the Service and the Service is up and billable. Customer's Due Date is defined as the date to which Verizon commits to deliver the Service.

5.7.2 **Standard.** See Service Level Standard Performance Measurements table above.

5.7.3 **Calculation.** The Service Installation Service Level Standard is calculated by computing the period of time beginning on the Order Acceptance date and ending on the date Verizon completes installation of the Service and the Service is up and billable.

5.7.4 **Credit Structure.** To obtain a credit, Customer must report the delay in Service installation to the Verizon account team as described in the in the Credit Section of the SLA.

Service Installation credit table:

For Standard not met	U.S.	Global Tier A	Global Tier B	Global Tier C & D
Service Installation	50% of the first month's MRC on the applicable Connection	50% of the first month's MRC on the applicable Connection	50% of the first month's MRC on the applicable Connection	50% of the first month's MRC on the applicable Connection

5.7.5 **Exclusions.** In addition to the General Exclusions, as set out in the General Exclusion Section below, the Service Installation Service Level Standard does not include any minutes associated with the following:

- Delays in installation related to Customer actions, moves or scheduling difficulties.
- Delays resulting from changes to a previously accepted order for Service from Customer, its agents or vendors.
- Any delays resulting from unavailability of Customer's premises, equipment, or facilities required to install the Service.
- Delays attributed to extending the Local Access demarcation point.
- Delays resulting from inaccurate or incorrect order information from Customer.
- Delays resulting from an order suspension due to credit issues involving Customer.

Any periods of delay attributable to the reasons above will be deducted from the Service Installation time period.

5.8 **Moves, Adds or Changes (MAC).**

5.8.1 **Definition.** The MAC interval is the period of time beginning on the Order Acceptance date and ending on the date Verizon completes the Order for the Service. Customer's Due Date is defined as the date to which Verizon commits to deliver the Service.

5.8.2 **Standard.** See Service Level Standard Performance Measurements table above.

5.8.3 **Calculation.** The MAC Service Level Standard is calculated by computing the period of time beginning on the Order Acceptance date and ending on the date Verizon completes the order for the Service.

5.8.4 **Credit Structure.** To obtain a credit, Customer must report the delay in Service order completion to the Verizon account team as described in the Credit Section of the SLA.

MAC credit table:

For Standard not met	U.S.	Global Tier A	Global Tier B	Global Tier C & D
MAC	50% of MRC on the	50% of MRC on the	50% of MRC on the	50% of MRC on the

	applicable Connection	applicable Connection	applicable Connection	applicable Connection

5.8.5 **Exclusions.** In addition to the General Exclusions, as set out in the General Exclusion Section below, the MAC Service Level Standard does not include any minutes associated with the following:

- Delays in installation related to Customer actions, moves or scheduling difficulties.
- Delays resulting from changes to a previously accepted order for Service from Customer, its agents or vendors.
- Any delays resulting from unavailability of Customer's premises, equipment, or facilities required to install the Service.
- Delays attributed to extending the Local Access demarcation point.
- Delays resulting from inaccurate or incorrect order information from Customer.
- Delays resulting from an order suspension due to credit issues involving Customer.
- MAC problems for services provided pursuant to any promotional Move, Add or Change offerings might not be eligible for credit refunds.

Any periods of delay attributable to the reasons above will be deducted from the MAC installation time period.

5.9 **Mean Opinion Score (MOS).**

5.9.1 **Definition.** Quality level of the audio fidelity and clarity of a voice call.

5.9.2 **Standard.** See Service Level Standard Performance Measurements table above.

5.9.3 **Calculation.** Verizon calculates MOS by sampling performance scores for the EF traffic class, using the standards based ITU-T G.107 (E-model) and assuming a G.711 codec, between Verizon-designated core backbone network nodes and averaging the results over a thirty day period. The monthly measurements are available at the following link: http://www.verizonbusiness.com/about/network/pip/

5.9.4 **Credit Structure.** To receive a credit, Customer must submit their request within 30 business days after the month in which the MOS Service Level Standard was not met. Such credit will equal the pro-rated charges for one day of the MRC for the Customer's Connections within the specific region during the calendar month in which the MOS Service Level Standard was not met.

MOS credit table:

For Standard not met	Credit
Mean Opinion Score (MOS)	The pro-rated charges equal to one day's MRC for the Customer's Connections

5.9.5 **Exclusions.** In addition to the General Exclusions, as set out in the General Exclusion Section below, MOS Service Level Standard measurements do not include the following:

- The MOS Service Level Standard applies only to data packets marked EF by Customer and compliant with the Customer's subscribed EF Real Time CAR.
- The MOS Service Level Standard applies only to the US region
- The MOS Service Level Standard is not applicable to the Private IP Layer 2 services

6. **Credit Requests and Application Process.**

6.1 **Service Level Agreement Credit Application Structure.**

- For any calendar month in which Verizon fails to meet any of the Service Level Standards stated in this document the credit structure for the Service Level Standards listed above will be applied to the corresponding net billing MRC for the specific Connection(s) affected by a PIP Network Hard Outage(s) or Service Issue(s).
- The total of all credits within any one month is limited to a maximum of 100% of the MRC for the specific Connection or Site, as applicable, which was impacted by any non-compliance with the Service Level Standard(s). Credits are not cumulative month to month.
- Credits for Hard Outages are determined based on Eligible Hard Outage Minutes and Customer may claim the TTR Service Level Standard credit in addition to the Availability Service Level Standard credit in a given calendar month. Customer may claim only one credit within a particular Service Issue Service Level Standard category during a given month. Customer cannot claim credits from both the Hard Outage and Service Issue categories for the same event. Customer can request to have compliance checked for all of the standard Service Level Standard commitments when requesting credits in any given month.

- To receive a credit, a trouble ticket must be opened with Verizon and Customer must submit their credit request no later than the stipulated time allowed to claim the specific Service Level Standard credit. The appropriate refund amount will be credited to the Customer's account at the billing account number (BAN) level in one lump sum, as opposed to each individual circuit or all circuits under multiple BANs. The appropriate refund amount will be appearing as a line item on a bill delivered within 90 calendar days following Verizon's confirmation of non-compliance with the Service Level Standard.
- Credits do not apply to Local Access or backhaul charges.

6.2 **Process for Customer to Apply for Service Level Agreement Credits.** The process to apply for SLA credits is provided below for each of the Service Level Standards.

6.2.1 **Opening a Trouble Ticket.** In the case that a trouble ticket is required to document an outage or service event for credit compliance, this can be done either through the Customer Service Center or through the web-based Verizon Enterprise Center. The number for the assigned Customer Service Center is printed on Customer's invoice. Access to the Verizon Enterprise Center can be requested at the first use by registering at the Verizon Enterprise Center portal https://enterprisecenter.verizon.com/

6.2.2 **Submitting a Service Level Agreement Credit Request.** The request for a SLA credit is submitted in writing from Customer to the account team. The timing and content of the request varies by Service Level Standard. This communication can be through email or by fax.

6.2.3 **Trouble Ticket and Credit Request by Service Level Agreement.**

6.2.3.1 **Availability and Time To Repair (TTR).** In order for the outage to qualify for an SLA credit Customer must do the following:

6.2.3.1.1 A trouble ticket is opened with Verizon within 72 hours of the time the outage.

6.2.3.1.2 Customer submits SLA credit request to their Verizon account team in writing within 15 days of opening the trouble ticket. The written request must contain the following information:

- The date the outage occurred.
- The time the outage began and ended.
- The circuit ID(s) for each circuit(s) that was impacted.

6.2.3.2 **Packet Transit Delay (PTD), Packet Delivery Ratio (PDR) and Jitter.** In order for the outage to qualify for an SLA credit Customer must do the following:

6.2.3.2.1 A trouble ticket is opened with Verizon within 72 hours of the time the Service Issue arose.

6.2.3.2.2 Customer submits SLA credit request to the Account Team in writing within 15 days of the end of the repair period. The written request must contain the following information:

- The date the Service Issue occurred.
- The time the Service Issue began and ended.
- The circuit ID(s) for each circuit(s) that was impacted.

6.2.3.3 **Core Network Transit Delay (C-NTD) and Mean Opinion Score (MOS).** To receive a credit, Customer must make a credit request in writing (e-mail or fax) to the Verizon account team within 30 business days after the month in which the C-NTD or MOS Service Level Standard was not met.

6.2.3.4 **Service Installation and Moves, Adds, or Changes (MAC).** Customer must report the delay in Service installation or MAC to the appropriate Customer Service Center when the target date is missed. Customer must make a credit request in writing (e-mail or fax) to Verizon account team within 15 days of the date that Verizon completes the installation of the circuit. Customer must document the following information when requesting the credit:

- The date on which the Service Installation Period or MAC interval began.
- The date specified for Service Installation or Service order completion in the Customer's order.
- The date installation or Service order was completed.
- The Port and Local Access ID numbers for the installed Service or the related Service order.

6.3 **Service Level Agreement Credit Time Limitation.** Service Credits made by Verizon to Customer under this Service Level Agreement are the sole and exclusive remedy available to Customer in respect of any failure to meet a Service Level Standard. Notwithstanding the preceding sentence, Customer may pursue the following options after three consecutive months of non-compliance with the PIP Service SLA:

6.3.1 Customer may elect to continue the Service for the affected connection inclusive of the credit. Customer can only receive a maximum of six months of credits for any individual Service Level Standard within a 12-month period regardless of the number of Connections.

6.3.2 Customer may elect to discontinue all PIP Service for an affected Connection without liability except for charges incurred prior to discontinuation of the Service. To cancel the Service for a Connection, Customer must submit a written disconnect notice to its Verizon account team within 30 days following the end of either the third or subsequent consecutive month of Verizon's failure to meet the Service Level Standard.

7. **General Exclusions.** The following exclusions apply to all Service Level Standards contained in this document:

7.1 Service Level Standards is limited to measurements taken at and service events occurring at or within the Provider Edge for Private IP services delivered when using the following access methods to Private IP:

- ILEC Fast Packet Service
- Frame Relay Extension (FRE)
- Network to network interface (NNI) partner
- Satellite
- DSL
- Wireless
- ISDN
- Customer Provided Local Loops (CPLL)
- Cross Border Lease Line (CPLL)
- International Private Line (IPL)

7.2 No Service Level Standards are provided for the following nor will any Service level standard not met be considered for:

- Service installations prior to acceptances by Customer.
- Packets marked EF/COS5 by Customers that are larger than 300 bytes.
- Bursty Traffic in the EF/COS5 queue.

7.3 Private IP Layer 2 Specific Exclusions:

- Private IP Layer 2 excludes Mean Opinion Score (MOS) and Jitter Service Level Standards.
- Private IP Layer 2 Coverage Exclusions:
  - All MVIC locations.
  - All Frame Relay Extension (“FRE”) network to network interface (“NNI”) partner networks
  - The following countries: Argentina, Brazil, Canada, Chile, Colombia, Mexico, Panama, Peru, Puerto Rico and Venezuela,

7.4 Service Level Standard measurements do not include periods of PIP Network outage resulting in whole or in part from one or more of the following causes:

- Any Hard Outage minutes associated with failure of CPLL.
- CPE associated with the PIP Service.
- Any 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.
- Any scheduled maintenance on the part of Customer, Customer contractors or Customer vendors.
- Any scheduled maintenance on the part of Verizon or Verizon Service partners which are within Verizon’s maintenance windows.
- Any scheduled maintenance on the part of Verizon’s Service partners, including without limitations, MVICs.
- Any Force Majeure events as defined in the Contract.