

## SLA SERVICE SCHEDULE International Virtual Private LAN Services (IVPLS)

### 1. Support

- 1.1. VTX Telecom (VTX's) Network Operation Center (NOC) provides round-the-clock monitoring, fault reporting and maintenance of VTX data services. It is available 24 hours a day, 7 days a week to help resolve any circuit, equipment or software configuration issues.

### 2. Problem Resolution and Coverage

- 2.1. VTX will work with Customer to correct service deficiencies, provided that:
- a. Customer informs VTX of the issue by filing a trouble ticket with the NOC.
  - b. VTX can verify that a service deficiency exists and can confirm that the deficiency is caused by resources under VTX's direct control or on portions of service provided by a third party that is contracted by VTX to provide service to the customer.
- 2.2. VTX's Mean Time to Restore (MTTR) goal is four (4) hours. VTX will use reasonable commercial efforts to resolve service problems with the Customer within this time frame after the particular incident has been reported to VTX's NOC and a trouble ticket has been opened. VTX will examine its own data, and will provide applicable diagnostics to Customer as part of the trouble ticket resolution process. The trouble ticket will be closed when the service, as observed by VTX and the Customer, meets the target objectives as defined in this document.
- 2.3. The Target Objectives only cover the VTX Virtual Private LAN Services (VPLS) backbone network. Any portion of service provided by a third party that is used in conjunction with VTX to provide service to the customer, such as the Customer access link, is not covered by the Target Objectives. They also do not apply to satellite links in the backbone network.
- 2.4. The overall service availability and service outage time are calculated on a calendar monthly basis. The service outage time will be re-set to zero on the first day of each calendar month.

### 3. Service Coverage

VTX's VPLS SLA is applicable to the following countries:

Region	Countries / Cities
Asia	Hong Kong, Taiwan, Korea, Japan, Philippines, Indonesia
GMSMS*	Thailand, Vietnam, Cambodia, Malaysia, Singapore
China	Guangzhou, Shanghai, Beijing, Shenzhen
Europe	London, Frankfurt

- GMSMS shall include the countries in the Great Mekong Subregion, Malaysia and Singapore

### 4. Network Packet Delivery

- 4.1. Target Objective  
Ninety-nine point eight percent (99.8%) per month.
- 4.2. Measurements  
Packet delivery is measured by taking an aggregate average of sample measurements taken during a calendar month between VPLS POPs in a region or between regions.

### 5. Network Backbone Latency

- 5.1. Target Objectives  
All targets are for POP to POP backbone round trip delay (RTD).

Region	Maximum Average Latency in a calendar month
Intra – Asia	130 ms
Intra – GMSMS	65 ms
Hong Kong – Asia	65 ms
Hong Kong – GMSMS	90 ms
Hong Kong – China	70 ms
Hong Kong – N. America 1	180 ms
Hong Kong – N. America 2	250 ms

Hong Kong – Europe	280 ms
Asia – N. America 1	245 ms
Asia – N. America 2	315 ms
Asia – Europe	345 ms

5.2. Measurements

For each 10 minutes, the network backbone latency between two POPs is measured by averaging the time of round-trip transmissions samples of 10 packets with 25ms spacing between each interval. Records will be excluded for those in the period of Service Unavailability that defined in Section 7.3 or within exclusion events specified in Section 8.7. Valid records will be collected as "Latency Records" to calculate average network backbone latency.

The Average Latency in a Calendar Month (ALCM) is calculated by taking an aggregate average of valid network latency figures as below:

$$ALCM = (\text{sum of all Latency Records}) / (\text{total number of Latency Records})$$

6. Network Backbone Jitter

6.1. Target Objectives

No more than ten (10) milliseconds for POP to POP backbone jitter

6.2. Measurements

For each 10 minutes, the network backbone jitter between two POPs is computed by sending out 10 packets with 25ms spacing between each interval. The jitter is then calculated as the variance of the round-trip delay measurements. Records will be excluded for those in the period of Service Unavailability that defined in Section 7.3 or within exclusion events specified in Section 8.7. Valid records will be collected as "Jitter Records" to calculate average network backbone jitter.

The Average Jitter in a Calendar Month (AJCM) is calculated by taking an aggregate average of valid network jitter figures as below:

$$AJCM = (\text{sum of all Jitter Records}) / (\text{total number of Jitter Records})$$

7. Service Availability

7.1. Definition - "Service Availability" is defined as the ability of the customer site to exchange Ethernet frames from the access port to the VTX's VPLS Network.

7.2. Target Objective

Service Availability:

Ninety-nine point nine-nine percent (99.99%) per month.

7.3. Measurements

Service Availability: Measured by taking an aggregate average of sample availability information collected during a calendar month between VPLS POPs in a region or between regions.

Service Unavailability: Measured by taking the length of time that the VTX Network was not available to the Customer.

8. Service Outage Credit Conditions

8.1. If there shall be a Service Outage in any calendar month, the Customer shall have the right to request a Service Outage Credit in accordance with the terms of this Section 7. Such Service Outage Credit shall be reflected on the Customer's invoice for the following month of service.

8.2. "Service Outage" is defined as the occasion where, in respect of an IP port used by the Customer, there is total loss of connectivity to any other IP port used by the Customer.

8.3. Service Outage Credit Schedule:

A Service Outage Credit is calculated as a percentage (%) (as stated in table below) of the monthly circuit charge applicable to the relevant circuit. The maximum Service Outage Credit which may be granted in a single month shall in no event be greater than Ten percent (10%) of the monthly circuit charge payable that month, which for the avoidance of doubt does not include local loop or other third party charges.

SERVICE OUTAGE TIME (Monthly)	SERVICE OUTAGE CREDIT
>44 minutes – 4 hours	2%
>4 hours – 8 hours	3%
>8 hours – 12 hours	5%

>12 hours	10%
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- 8.4. The Customer shall be entitled to set off the Service Outage Credit granted during a particular month against the monthly service charge payable by it to VTX for the next following month provided that the Customer has duly paid in full all charges payable to VTX up to such time.
- 8.5. In the event of a Service Outage, the Customer should contact the VTX NOC. The granting of Service Outage Credit is contingent upon (i) the Customer having filed a trouble ticket with VTX and (ii) VTX having verified that the Service Outage is caused by resources under VTX's direct control or on portions of services provided by a third party that are contracted by VTX to provide service to customer or for problems for which VTX has notified the Customer. If the Customer does not notify VTX within four (4) hours after the problem is detected, the start of the problem occurrence will be considered to begin when the trouble ticket is sent to VTX for the purpose of Service Outage Credits.
- 8.6. The duration of the Service Outage will be determined at the sole discretion of VTX, based upon VTX's internal records and the NOC trouble ticket.
- 8.7. No Service Outage Credit shall be granted if the Service Outage arises from or is caused wholly or in part by the following:
  - a. Maintenance: Any impact on service resulting from maintenance actions requested by or attributed to the Customer, or from scheduled or routine VTX maintenance or network enhancement operations. VTX will notify the Customer ten (10) days in advance of a scheduled maintenance period. VTX will endeavour to schedule maintenance at a time agreeable to the Customer.
  - b. Third party local or international customer access circuits.
  - c. Failure or fault of applications, equipment or facilities located on Customer's premises, whether or not supplied by VTX, and failure or fault of the Customer's applications, equipment or facilities wherever located.
  - d. Acts or omissions of the Customer or its agents, subcontractors or employees or any user of the service authorized by the Customer, or any use of the service authorized by the Customer.
  - e. Force Majeure or other reasons beyond VTX's reasonable control.
  - f. Failure of the Customer to give VTX reasonable support for the purpose of investigating or rectifying any fault.
  - g. Major cable fault caused by negligence or default of third parties.
- 8.8. If there are multiple Service Outages resulting from a single incident or during one specific time frame, these multiple Service Outages shall not be aggregated for the purpose of calculating the Service Outage Credit. Instead, only the single failure resulting from such single incident or during that one specific time frame which produces the maximum Service Outage Credit will be taken into account for such purpose.
- 8.9. Service Outage Credit will be granted for cumulative service outage incidents in a month that are verifiable by VTX.
- 8.10. Any request for Service Outage Credits must be in writing and must be received by VTX by no later than thirty (30) days after the relevant Service Outage.
- 8.11. Unless otherwise defined in the order or contract applicable to the circuit in question, "Force Majeure" shall for the purpose of this SLA mean events or circumstances that is beyond the reasonable control of the party sought to be held liable for performance (the "Responsible Party"), including, but not limited to, any: (i) delay in obtaining or failure to obtain or renew any permit or governmental authorization required for the performance of the relevant order or contract or this SLA, so long as such delay is not caused by or due to any act or omission of the Responsible Party, (ii) act of God or of the public enemy, (iii) action, or failure to act, of any governmental authority, (iv) war or warlike operations, (v) civil war or commotion, mobilization, military call-up and acts of similar nature, (vi) revolution, rebellion, sabotage, insurrection or riot, (vii) draught, fire, flood, lightning, epidemic or quarantine restriction, (viii) strike or other labor action, (ix) freight embargo, (x) unworkable weather, (xi) trawler or anchor damage, (xii) damage caused by other marine activity such as fishing, marine research or marine development, (xiii) failure or shortage of power supplies or general unavailability of any raw materials or components not caused or contributed to by the Responsible Party's failure to timely upgrade or order such power or materials, (xiv) act or omission of transporters, (xv) act, or failure to act, of the other party or any of its employees, representatives or agents).

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