

This template includes a Drafters Note.

U.S. PRIVATE LINE - INTRA & INTER STATE SERVICES

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1. GENERAL

1.1 **Service Definition.** U.S. Private Line (USPL) services provides private line transmission service within the U.S. Mainland. It is available in an Interstate version and an Intrastate version.

1.2 **Platforms.** These terms apply to non-optimized U.S. Private Line Services only.

1.3- **Standard Service Features**

1.3.1 **Web Digital Reconfiguration Services (Web DRS).** As of November 1, 2011, Web DRS is no longer available to new Customers. Web DRS provides Customers with a web-based platform to manage the configuration of their U.S. Private Line circuits, connecting or re-routing circuits as needed using the following Web-based tools:

1.3.1.1 **Switched DS1 Services (Web DRS SWDS1).** Web DRS SWDS1 allows Customers to temporarily access full DS1 bandwidth on demand, for example for infrequent high bandwidth applications such as video conferencing. It is available for DS1 only. Web DRS SWDS1 uses a mesh network of Inter Device Trunks (IDTs) that connects strategic Wideband Digital Cross ~~Connects~~ Connects (DXCs) in the U.S. Mainland. Tail circuits connect Customer to the Switched T1 Wideband DXC. Using the Web DRS tool, Customer selects any two Customer end points for a connection. Usage charges apply only for the time the connections are active. The connections can be enabled at the time of the request or they can be scheduled to go up and down at a later time.

1.3.1.2 **Fixed Network Reconfiguration Service (Web DRS FNR).** Web DRS FNR allows Customer to redirect its DS0, DS1 or DS3 bandwidth when they temporarily need additional capacity at another location for applications such as disaster recovery. Web DRS FNR uses a fixed network of multiple pre-defined Customer circuit routes connected to a single DXC. Using the Web DRS tool, Customer may change the route to which the current Customer capacity is assigned and reassign that capacity to a different circuit route.

1.3.2 **Echo Control.** Echo Control provides echo cancellation equipment for DS1 circuits. Echo cancellation devices monitor an incoming signal and generate a negative image which is combined with an echo signal negating the effects of echo on the line. Echo Control is required for each end of a DS1 circuit for IXC lengths of 500 miles or greater when used to transmit voice and analog data.

1.4 -Customer Responsibilities

1.4.1 **Installation.** Unless otherwise provided by Verizon under a separate Service Attachment, Customer will provide the following to support installation activities such as site surveys, testing and activation:

- **Space and power for Verizon terminating equipment if required to deliver service.**
- **All facilities and internal cabling to connect Customer's Site to the Demarcation of the Wavelength Services Solution circuit.**
- **Notice to Verizon of the existence and location of wiring or any other risk factors on the Customer's Site which may affect Verizon's installation of the Wavelength Services Solution.**

1.4.2 **Entry to Customer Site.** Where Verizon requires entry to a Customer Site in order to provide (including, but not limited to, physical changes to Wavelength Services Solution facilities), Customer shall (a) grant or shall procure the grant to Verizon of such rights of entry to each Customer Site, including any necessary licenses, waivers and consents and (b) respond promptly to notice from Verizon requiring Customer action, such as to coordinate Verizon entry to Customer Site needed for a change in facilities at a mutually convenient time within 30 days of such notice from Verizon.

2.- AVAILABLE VERSIONS

2.1 **U.S. Private Line Interstate Service.** As of October 1, 2010, orders for new circuits as well as orders for moves, adds, changes and upgrades for U.S. Private Line SONET are provided as Private Carriage Service.

2.1.1 **Service Description.** Interstate U.S. Private Line (USPL) services provides private line transmission service within the U.S. Mainland originating in a Verizon-designated Point-of-Presence (POP) in one Local Access Transport Area (LATA) and terminating in a Verizon-designated POP in another LATA via IXC transport. USPL offers a suite of analog, digital, and SONET services available on point-to-point, point-to-multi-point, and multipoint configurations. Access to these services is via dedicated Access or other compatible Verizon services.

2.1.2 **Terms.** U.S. Private Line Interstate Services are offered only on a jurisdictionally interstate basis. With respect to its use of U.S. Private Line Interstate Services, Customer agrees that more than 10 percent of Customer's per circuit traffic originates in one state and terminates in different state.

2.1.3 **Available Services.** The following USPL interstate services are available:

2.1.3.1- **Analog and Digital.** Analog and Digital USPL provide dedicated analog or digital service capable of supporting voice, data, and video communications via dedicated DS-0 (Hubless) Access, T-1 Digital Access, or DS-3 Local Access. The following services are available:

- **Analog.** Analog service (formerly Voice Grade Private Line or VGPL) provides analog signals at 2.4, 4.8, 9.6, and 19.2 kbps speeds. Multipoint and point-to-multipoint configurations are supported at data speeds of 2.4, 4.8 and 9.6 kbps. Analog circuits support Tie Line (TL), Automatic Ringdown (ARD), Manual Ringdown (MRD), Off-Premises Extension (OPX) and Foreign Exchange (FX) configurations. Effective August 12, 2014, VGPL is grandfathered and is no longer available to new USPL customers. Existing USPL customers may add, move, change and disconnect VGPL with the understanding that renewals of VGPL will not be permitted.
- **Digital.** Digital services transmit simultaneous, full-duplex digital signals at the following speeds. Multipoint and point-to-multipoint configurations are supported at data speeds of 2.4, 4.8, 9.6 and 56 kbps.
 - **DS0 (Digital Signal Level 0).** DS0 transmits at 2.4, 4.8, 9.6, 56 and 64 kbps. Effective August 12, 2014, DS0 is grandfathered and is no longer available to new USPL customers. Existing USPL customers may add, move, change, and disconnect DS0 with the understanding that renewals of DS0 will not be permitted.
 - **Fractional DS1 (FDS1).** FDS1 transmits at 112/128 kbps through 1344/1536 kbps, in increments of 56/64 kbps.
 - **DS1 (Digital Signal Level 1).** DS1 transmits at 1.544 Mbps.
 - **DS3 (Digital Signal Level 3).** DS3 transmits at 44.736 Mbps. One DS3 channel provides the equivalent information handling capacity of 28 DS1 channels or 672 voice equivalent circuits. DS3 is available in the following circuit topologies:
- **Linear DS3.** Linear DS3 is a single DS3 IXC connecting two designated Verizon terminals on Verizon's digital fiber-optic network.
- **Restorable DS3.** Restorable DS3 is a dedicated circuit that provides redundancy as it is provisioned over a physical ring topology.

2.1.3.2- **SONET.** (Private Carriage Service) Provides dedicated, point-to-point, optical private line services with synchronous optical network (SONET) transmission at speeds from 155 Mbps to 622 Mbps. The following bandwidths are available for IXC transport between Company-designated POPs: OC3 (155.520 Mbps), and OC12 (622.08 Mbps). Linear, and Restorable circuits are available for all speeds. Concatenated services are available for OC3s and OC12s. OC-48/48c and OC-192/192c may be available on an ICB basis.

2.1.3.3- **Wave.** Provides ROADM-based layer 1 transport of point to point un-protected private line services. USPL Wave is priced ICB with customer interface options for:

2.1.3.3.1 **Customer Interfaces.** See the Verizon Wavelength Services Interface Specifications for details on the following customer interfaces.

- 1 Gb/s Wavelength Service with optical interfaces for 1000BASE-x
- 10 Gb/s Wavelength Service with standard-based optical interfaces for:
 - Ethernet:
 - ☞ 10GbE via IEEE 10GBASE-xR (10G LAN PHY ~~(10GBASE-xR)~~)
 - ☞ 10GbE via IEEE 10GBASE-xW (10G WAN PHY ~~(10GBASE-xW)~~)
 - SONET or SDH:
 - ☞ 10G Transparent Synchronous Frame (TSF) specified by the customer as SONET OC-192 or SDH STM-64

- TSF allows transparent transport of the customer's Data Communications Channel (DCC) (Overhead bytes D1-3 and D4-12) as well as the K1 and K2 line overhead bytes used for APS in customer BLSRs. It also supports OC-192c.
 - OTN:
 - OTU2 (10.7Gb/s) as OTM-0.2 via ITU-T G.959.1 Application Code P111-2D1. This is an ITU-T G.709 compliant interface.
 - OTU2E (11.09 Gb/s) via ITU-T G.959.1 Application Code P111-2D1
- 40 Gb/s Wavelength Service with optical interfaces for:
 - 40GbE via IEEE standard 40GBASE-LR4
 - OTU3 (43.01 Gb/s) as OTM-0.3 via ITU-T G.695 Application Code C4S1-2D1 is no longer available for new service.
 - OC-768c/40G TSF is no longer available for new service.
- 100 Gb/s Wavelength Service with optical interfaces for:
 - 100GbE via IEEE standard 100GBASE-LR4
 - OTU4 (112 Gb/s) as OTM-0.4 via ITU-T G.695 Application Code 4I1-9D1F.
- Access to USPL Wave service is by either:
 - Type 1 access circuits are those for which the local loop is furnished wholly via either: (a) MCI Legacy Company facilities, (b) facilities which are collocated in MCI Legacy Company facilities, or (c) other Verizon facilities designated as Type 1 in the Guide.
 - The type 1 on-net Access to Verizon lit buildings (for the USPL Wave product) is provided via the Metro Private Line Access Services product in the Guide.
 - On-net access to Multi-tenant Data Centers and Carrier Hotels (for the USPL Wave product) is also available with special rates per the Metro Private Line Access Services product in the Guide.
 - On-net access (for the USPL Wave product) via fMCI legacy company dedicated rings uses the MPL DMS product as described in the Metro Private Line Access Services product in the Guide.
 - On-net access (for the USPL Wave product) via Verizon ILEC dedicated rings using the IOS (Integrated Optical Services) product is also available.;
 - Type 3 access circuits are those for which the local loop is not furnished via provisioned on third party networks MCI Legacy Company facilities but are ordered and billed on Customer's behalf by Verizon.
 - The on-net Access to fMCI legacy company lit buildings (for the USPL Wave product) is provided via the Metro Private Line Access Services product in the Guide.
 - On-net access to Multi-tenant Data Centers and Carrier Hotels (for the USPL Wave product) is also available with special rates per the Metro Private Line Access Services product in the Guide.
 - On-net access (for the USPL Wave product) via fMCI legacy company dedicated rings uses the MPL DMS product as described in the Metro Private Line Access Services product in the Guide.
 - On-net access (for the USPL Wave product) via Verizon ILEC dedicated rings using the IOS (Integrated Optical Services) product is also available.
- Customer Provided Access (for the USPL Wave product) is also allowed when the Customer is co-located at Verizon serving LD POPs, where, Verizon cross-connects are made to the intra-building customer premises location per the Metro Private Line Access Services in the Guide.

2.2 U.S. Private Line Intrastate Service

2.2.1 Service Description. Intrastate U.S. Private Line services provides private line transmission service within the state originating in a Verizon-designated Point-of-Presence (POP) in one Local Access Transport Area (LATA) and terminating in a Verizon-designated POP in another LATA within the state. Intrastate USPL offers a suite of analog, digital, and SONET services available on point-to-point, point-to-multi-point, and

multipoint configurations. Access to these services is via dedicated Access or other compatible Verizon services.

2.2.2 Available Services. The following USPL services are available:

2.2.2.1 Analog and Digital Services. Analog and Digital services provide dedicated analog or digital service capable of supporting voice, data, and video communications via dedicated Intrastate Analog Local Access, Intrastate DS-0 (Hubless) Access, Intrastate T-1 Digital Access, or Intrastate DS-3 Local Access. The following services are available:

- **Analog.** Analog service (formerly Voice Grade Private Line or VGPL) provides analog signals at 2.4, 4.8, 9.6, and 19.2 kbps speeds. Multipoint and point-to-multipoint configurations are supported at data speeds of 2.4, 4.8 and 9.6 kbps. Analog circuits support Tie Line (TL), Automatic Ringdown (ARD), Manual Ringdown (MRD), Off-Premises Extension (OPX) and Foreign Exchange (FX) configurations. Effective November 4, 2013, VGPL is grandfathered and is no longer available to new USPL customers. Existing USPL customers may add, move, change and disconnect VGPL with the understanding that renewals of VGPL will not be permitted.
- **Digital.** Digital services transmit simultaneous, full-duplex digital signals at the following speeds. Multipoint and point-to-multipoint configurations are supported at data speeds of 2.4, 4.8, 9.6 and 56 kbps.
- **DS0 (Digital Signal Level 0).** DS0 transmits at 2.4, 4.8, 9.6, 56 and 64kbps. Effective November 4, 2013, DS0 is grandfathered and is no longer available to new USPL customers. Existing USPL customers may add, move, change, and disconnect DS0 with the understanding that renewals of DS0 will not be permitted.
- **Fractional DS1 (FDS1).** FDS1 transmits at 112/128 kbps through 1344/1536 kbps, in increments of 56/64 kbps.
- **DS1 (Digital Signal Level 1).** DS1 transmits at 1.544 Mbps.
- **DS3 (Digital Signal Level 3).** DS3 transmits at 44.736 Mbps. One DS3 channel provides the equivalent information handling capacity of 28 DS1 channels or 672 voice equivalent circuits. DS3 is available in the following circuit topologies:
- **Linear DS3.** Linear DS3 is a single DS3 IXC connecting two designated Verizon terminals on Verizon's digital fiber-optic network.
- **Restorable DS3.** Restorable DS3 is a dedicated circuit that provides redundancy as it is provisioned over a physical ring topology.

2.2.2.3 SONET. SONET provides dedicated, point-to-point, simultaneous full-duplex optical private line services with synchronous optical network (SONET) transmission at speeds from 45 Mbps to 622 Mbps. The following bandwidths are available for IXC transport between Verizon-designated POPs: DS3 (44.736 Mbps), OC3 (155.520 Mbps), and OC12 (622.08 Mbps). Linear, and Restorable circuits are available for all speeds. Concatenated services are available for OC3 and OC12 bandwidths. Other speeds may be available on an ICB basis.

2.2 Optional Service Features

2.2.1 Special Routing. Special routing include a circuit path for one or two circuits that is specified at the POP to POP level of granularity. The routing of the outside plant fiber for each circuit with special routing (a single Mandatory Route or a Diverse Mated Pair) a POP to POP segment level circuit routing will be provision and maintained with special routing.—

For circuits that include special routing, Verizon will periodically check the circuit routing throughout the circuit term to verify whether special routing has been maintained. If Verizon learns that special routing has been jeopardized, then Verizon will use commercially reasonable efforts to restore special routing. If Verizon cannot restore special routing within sixty (60) days after discovering a problem, Verizon will notify Customer that special routing cannot be restored and Customer has the option within sixty (60)

days from such notification from Verizon to disconnect the circuit subject to the special routing requirement without any early termination liability.

2.2.2 Protected Access. This option is available for type 1 on-net access circuits and only where supported by the network. With the Electronic Network Protection, the Customer traffic for a single circuit is bridged to a dedicated working and a dedicated protect channel. The 1+1 Automatic Protection Switching used in Electronic Network Protection allows the circuit to automatically switch from the working channel to the protect channel upon electronics module failures on either channel. The objective is to protect against outages due to single electronics module failures in the access circuit when the network supports two degrees of freedom from the customer premises location to the LD POP. Diversity between the working channel and the protect channel is not guaranteed but provisioned where the shared Verizon metro transport network topology supports it. The switching time is not guaranteed but is typically less than 50 ms after systematic fault detection. Switching is typically non-revertive, so upon repair of failures, the traffic wouldn't revert back to the original channel. Customers with access loops that are single threaded may opt for protected access and it will be done via a single ROADM degree but in this case, only the ROADM transponders are protected and not the outside plant fiber or ROADM amplifiers.

2.2.3 1+1 Protected IXC Transport. The Customer traffic for a single circuit in the IXC transport network is bridged to a dedicated working channel and a protect channel dedicated to that service. 1+1 Automatic Protection Switching is used to allow the circuit to switch from working to protect, which protects against electronics module failures in the IXC transport circuit. The routing of the working and protect channel and the Route Diversity of the outside plant fiber between the working channel and the protect channel (in the IXC transport) is provided as designed by Verizon for the routing of the working and protect channels per the POP to POP string as provided in this agreement. With level 2 NDA, the customer may also examine street level maps of their proposed or provisioned circuit as part of their due diligence. The switching time is not guaranteed but is typically less than 50 ms after systematic fault detection.

Verizon will periodically check the circuit's working channel and protect channel routing throughout the circuit term to verify whether the special routing has been maintained. If Verizon learns that special routing has been jeopardized, then Verizon will use commercially reasonable efforts to restore special routing. If Verizon cannot restore special routing within sixty (60) days after discovering a problem, Verizon will notify Customer that special routing cannot be restored and Customer has the option within sixty (60) days from such notification from Verizon to disconnect the circuit subject to the special routing requirement without any early termination liability.

3.- SUPPLEMENTAL TERMS.

3.1 Local Access Service. Local access service is required for USPL and is not included.

3.2 Special Routing. ~~For circuits that include special routing, Verizon will periodically check the circuit routing throughout the circuit term to verify whether special routing has been maintained. If Verizon learns that special routing has been jeopardized, then Verizon will use commercially reasonable efforts to restore special routing. If Verizon cannot restore special routing within sixty (60) days after discovering a problem, Verizon will notify Customer that special routing cannot be restored and Customer has the option within sixty (60) days from such notification from Verizon to disconnect the circuit subject to the special routing requirement without any early termination liability.~~

Drafter's Note: This is a sample chart for IXC POP to POP diversity. If this is requested by the customer, the pre-sales team should give data to populate this chart for one circuit (mandatory route) or two circuits (route diversity) and deal legal shall revise accordingly.

	POP to POP Segment Level Routing of Each Circuit to be Provisioned and Maintained with Special Routing:
Ckt 1	GSO-CI3-CEZ-KNA-KQR-NAA-MEW-MEJ-PUL-ELK-STQ-CRJ-IDC-FJW-TJW-HJW-CYE-SJQ-CVK-LSK-WIT-BKE-PHQ
Ckt 2	GNJ-GRE-DD2-RSO-RLP-RLJ-FSO-FLN-COM-FRE-SVH-JKW-JAP-BAL-MNO-TT7-CPY-PNN-MBJ-GUF-HMD-BTW-DQU-BMW-HSJ-SAJ-ELP-TUC-P1B

3.23- Special Access Surcharges for Analog and Digital USPL. Will not be applied after receipt of an Exemption Certificate from Customer. A credit, not to exceed three months, will be given for a private line surcharge imposed during the period prior to the receipt of the Exemption Certificate.

3.34- Minimum Service Term. —The minimum service term requirement for all SONET and Wave circuits is 12 months. If Customer terminates any SONET or Wave circuit before its 12-month commitment has expired, except for termination for Cause, such termination shall not be effective until 30 days after Verizon receives written notice of termination (Termination Date). In addition to paying all accrued but unpaid charges for the service incurred through the Termination Date, for each circuit terminated Customer may be required to pay, within 30 days after such Termination Date: (a) an amount equal 75 percent of the monthly recurring charges for the terminated circuit remaining in the 12-month commitment, if any; plus (b) all fees or early termination fees imposed by the access line provider, if any; plus (c) a pro rata portion of any and all credits received by Customer. However, in no event will Customer's total termination liability exceed the full contract value of the terminated SONET or Wave circuit.

3.45 Third Party Vendor Charges for Cross-Connection and Extended Wiring. Section 1.4.1 above requires Customer to provide all facilities and internal cabling to connect Customer's site to the Demarcation of the Wavelength Service Solution circuit. In some instances Customer's site may be located at a data center or other facility owned by a third party and the third party may not permit Verizon to connect directly to Customer's site. In such instances, a third party data center/facility owner may only permit the third party to install a cross-connection from the Verizon Demarcation to Customer's site. If the third party data center/facility owner charges for that Cross-Connection and Customer does not directly pay the third party for such connection, Verizon will pay the third party for the cross-connection and Customer will be billed by Verizon for such charges. Customer is responsible for any Verizon or third party early termination charges associated with any moves, adds, changes, disconnections or cancellation of the cross-connects. The specific Cross-Connect type selected by Customer will be specified in the Amendment to the Service Attachment.

3.3.65- Interstate Certification. U.S. Private Line is offered only on a jurisdictionally interstate basis. With respect to its use of U.S. Private Line, Customer warrants and represents that more than 10 percent of the traffic transported over the U.S. Private Line is interstate in nature.

4.- SERVICE LEVEL AGREEMENTS. The following Service Level Agreement (SLA) applies:

4.1- VBS III U.S. Private Line Service. —The U.S. Private Line SLA for VBS III can be found at the following URL: https://enterprise.verizon.com/service_guide/reg/cp_uspl_service_level_agreement_11_01_07.htm

4.2- **Pre-VBS III U.S. Private Line Service.** The U.S. Private Line SLA for pre-VBS III can be found at the following URL: https://enterprise.verizon.com/service_guide/reg/cp_uspl_service_level_agreement.htm

5.- **FINANCIAL TERMS.** Customer will pay the charges for U.S. Private Line Services specified in the Agreement and at the following URL: <https://enterprise.verizon.com/service/cp-uspl-rates-charges.pdf>

5.1- **Special Pricing.** Special Pricing may apply to Special Routing, Protected Access, 1+1 Protected IXC Transport and Third Party Vendor Charges for Cross-Connection and Extended Wiring.

6.- **DEFINITIONS.** The following definitions apply to U.S. Private Line Service, in addition to the definitions identified in the Agreement, and the administrative charge definitions at the following URL www.verizonenterprise.com/service_guide/reg/definitions_toc_2017DEC01.htm.

Term	Definition												
<u>Automatic Ringdown (ARD) Tie Line (TL)</u>	<u>A dedicated circuit connecting two locations to provide immediate voice connection automatically.</u> A dedicated circuit connecting two locations to establish an internal voice network by interconnecting into each location's PBX or other voice switching device.												
<u>Foreign Exchange (FX) Automatic Ringdown (ARD)</u>	<u>A dedicated circuit connecting a distant city to provide a 'local presence' to callers without the expense of maintaining a physical location in a distant city</u> A dedicated circuit connecting two locations to provide immediate voice connection automatically.												
<u>IEEE</u>	<u>Institute of Electrical and Electronics Engineers. A U.S. based non-profit corporation standardizing many electrical, electronics and computer science fields.</u>												
<u>ITU-T</u>	<u>International Telecommunications Union — Standardization Sector</u>												
<u>IXC</u>	<u>Inter-Exchange Transport. Describes the Verizon long haul transport network used to deliver circuits between LATAs.</u>												
<u>LATA</u>	<u>Local Access and Transport Area. Fixed boundaries in the U.S. standardized by the FCC for local exchange carriers to define local vs. long distance communications.</u>												
<u>Manual Ringdown (MRD)</u>	<u>A dedicated circuit connecting two locations to provide immediate voice connection by manual signaling.</u>												
<u>Mileage Band</u>	<u>The airline mileage between two cities can be calculated using the Vertical (V) and Horizontal (H) Coordinates of the serving wire centers associated with Verizon's Terminal Locations.</u> <u>$\sqrt{((V_1-V_2)^2+(H_1-H_2)^2)}/10$</u> <u>Where V₁ and H₁ correspond to the V & H coordinates of City 1 and V₂ and H₂ correspond to the V & H coordinates of City 2.</u> <u>-</u> <u>Example:</u> <table><tr><td></td><td><u>V</u></td><td><u>H</u></td><td><u>City 1 - New York</u></td></tr><tr><td></td><td><u>4997</u></td><td><u>1406</u></td><td><u>City 2 - Chicago</u></td></tr><tr><td></td><td><u>5986</u></td><td><u>3426</u></td><td></td></tr></table> <u>-</u> <u>V₁ V₂ H₁ H₂</u> <u>$\sqrt{((4997-5986)^2+(1406-3426)^2)}/10$</u> <u>$\sqrt{(505852.1)}=711.2328$</u> <u>Airline Mileage = 712 miles*</u>		<u>V</u>	<u>H</u>	<u>City 1 - New York</u>		<u>4997</u>	<u>1406</u>	<u>City 2 - Chicago</u>		<u>5986</u>	<u>3426</u>	
	<u>V</u>	<u>H</u>	<u>City 1 - New York</u>										
	<u>4997</u>	<u>1406</u>	<u>City 2 - Chicago</u>										
	<u>5986</u>	<u>3426</u>											

	Result will always be rounded to the next highest mile.
Off-Premises Extension (OPX)	A dedicated circuit connecting a distant location to a main PBX to provide the same voice capabilities available at the main Customer location.
OTN Foreign Exchange (FX)	Optical Transport Network. An ITU standard network via ITU-T G.709. OTN is also a layer 1 protocol that administers multi-wavelength transmission systems. A dedicated circuit connecting a distant city to provide a 'local presence' to callers without the expense of maintaining a physical location in a distant city.
OTU	Optical Transport Unit. An ITU-T G.709 standard interface. Verizon OTU-n customer handoffs are made via ITU-T standard OTM-0.n standards at their respective 10Gb/s or 100 Gb/s speeds. See the Verizon Wavelength Interface Specifications for details.
Private Carriage Service	A Service provided to Customer on an individual basis, with rates, terms and conditions that are subject to negotiation between Verizon and Customer, and not offered for sale ubiquitously to the general public at publicly posted rates. If rates, terms and conditions cannot be satisfactorily negotiated with Customer, Verizon reserves the right not to sell such Private Carriage Service to Customer.
SDH	Synchronous Digital Hierarchy. An international protocol similar to SONET. The SDH standard was originally defined by the European Telecommunications Standards Institute (ETSI), and is formalized as International Telecommunication Union (ITU) standards G.707, G.783, G.784 and G.803.
STM	Synchronous Transfer Mode. A SDH standard interface STM-n where n is a multiple of the 51.84 Mb/s frame to achieve various speeds.
SONET	Synchronous Optical Network. The SONET standard was originally defined by Telcordia and later standardized by the American National Standards Institute (ANSI) standard T1.105.
SONET Concatenated circuit	A dedicated circuit where several fibers are joined together end-to-end resulting in full bandwidth. Concatenated circuits are noted by a "c", e.g., OC3c.
SONET Linear circuit	A dedicated circuit provisioned as a logical SONET ring over a single physical connection.
SONET Restorable circuit	A dedicated circuit that provides redundancy as it is provisioned over a physical SONET ring topology.
Tie Line (TL)	A dedicated circuit connecting two locations to establish an internal voice network by interconnecting into each location's PBX or other voice switching device.
Wave	Wavelength Services are point to point or point to multi-point layer 1 circuits that are dedicated to the customer of record and transported between customer-specified locations. They are provisioned to operate at a customer-specified speed (in bits per second) and use a customer-specified standards-based layer 1 transport protocol (e.g. Ethernet PHY, OTN, SONET) for their handoff. Wave circuits, at Verizon's discretion, may consume an entire Wavelength on Verizon's shared or dedicated transport networks. A Wave circuit may also be OTN multiplexed with other circuits within the electrical stream that is

	<u>converted to an optical signal on a Wavelength over Verizon's network. Individual Wave circuits do not mix packets from multiple customers (no packet aggregation or packet switching).</u>																
<u>Term</u>	<u>Definition</u>																
<u>1+1 Automatic Protection Switching</u>	<u>A protection switching scheme where the customer traffic is bridged into a working and protect channel that is dedicated to the service and then the receive end equipment performs an automatic switch from working to protect if the working channel fails. Switching may be revertive or non-revertive back to the working channel after the outage is repaired. Switching time is typically 50 ms or less after systematic fault detection.</u>																
<u>Automatic Ringdown (ARD)</u>	<u>A dedicated circuit connecting two locations to provide immediate voice connection automatically.</u>																
<u>Corridor Service</u>	<u>A geographic area in the United States whereby Inter-LATA services are provided between two defined LATAs, but are considered metro service for provisioning and usually for pricing purposes. Corridors are an optional Verizon solution.</u>																
<u>Cross-Connection</u>	<u>A single (or series of) fiber jumpers between specific ports on customer and carrier equipment used to transmit the Wave datastream to each other across the demarcation point.</u>																
<u>Diverse Mated Pair</u>	<u>The option to retain geographically diverse or other specific Wave circuit routing in the long haul network for the term of the service.</u>																
<u>Electronic Network Protection</u>	<u>The protection against electronics module failures using a 1+1 automatic protection switching scheme such as the ITU-T G.709 Subnetwork Controller Path (SNCP) scheme or the proprietary Y-Cable scheme. The schemes can also typically protect against fiber outages if the network supports the provisioning over two ROADM degrees and the outside plant fiber is routed diversely between all nodes.</u>																
<u>Foreign Exchange (FX)</u>	<u>A dedicated circuit connecting a distant city to provide a 'local presence' to callers without the expense of maintaining a physical location in a distant city</u>																
<u>Metropolitan Service Area</u>	<u>A Verizon defined list of cities or suburbs that are served as a metro geographic type and provisioned on metro transport equipment.</u>																
<u>Mandatory Route</u>	<u>An option that retains the Wave circuit routing at the site level in the long haul DWDM transport network or the term of the service.</u>																
<u>Mileage Band</u>	<u>The airline mileage between two cities can be calculated using the Vertical (V) and Horizontal (H) Coordinates of the serving wire centers associated with Verizon's Terminal Locations.</u> <u>$\sqrt{(V_1-V_2)^2+(H_1-H_2)^2}/10$</u> <u>Where V₁ and H₁ correspond to the V & H coordinates of City 1 and V₂ and H₂ correspond to the V & H coordinates of City 2.</u> <table><tr><td>Example:</td><td>V</td><td>H</td><td>City 1 - New York</td></tr><tr><td></td><td>4997</td><td>1406</td><td>City 2 - Chicago</td></tr><tr><td></td><td>5986</td><td>3426</td><td></td></tr></table> <table><tr><td>V₁</td><td>V₂</td><td>H₁</td><td>H₂</td></tr></table>	Example:	V	H	City 1 - New York		4997	1406	City 2 - Chicago		5986	3426		V ₁	V ₂	H ₁	H ₂
Example:	V	H	City 1 - New York														
	4997	1406	City 2 - Chicago														
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V ₁	V ₂	H ₁	H ₂														

	$\sqrt{((4997-5986)^2+(1406-3426)^2)}/10$ $\sqrt{(505852.1)}=711.2328$ <p>Airline Mileage = 712 miles*</p> <p>Result will always be rounded to the next highest mile.</p>
<u>Non-Disclosure Agreement (NDA)</u>	<u>An agreement of confidentiality between Verizon and the customer that can vary in its depth.</u>
<u>Off-Premises Extension (OPX)</u>	<u>A dedicated circuit connecting a distant location to a main PBX to provide the same voice capabilities available at the main Customer location.</u>
<u>Optical Transport Network</u>	<u>OTN is a standards-based transport architecture for data communications with a specific protocol defined by the ITU-T via the G.709 recommendation.</u>
<u>Private Carriage Service</u>	<u>A Service provided to Customer on an individual basis, with rates, terms and conditions that are subject to negotiation between Verizon and Customer, and not offered for sale ubiquitously to the general public at publicly posted rates. If rates, terms and conditions cannot be satisfactorily negotiated with Customer, Verizon reserves the right not to sell such Private Carriage Service to Customer.</u>
<u>Protocol Specific</u>	<u>A circuit where the customer interface is specific to a standards-based data communication protocol (e.g. IEEE 802.3 Ethernet or ITU-T G.709 Optical Transport Network standard) and bit rate (e.g. 10 Gb/s).</u>
<u>Point to Point Service</u>	<u>Point to Point Service is a full time data transmission service utilizing the Company's facilities to connect two or more Customer designated locations.</u>
<u>SONET Concatenated circuit</u>	<u>A dedicated circuit where several fibers are joined together end-to-end resulting in full bandwidth. -Concatenated circuits are noted by a "c", e.g., OC3c.</u>
<u>SONET Linear circuit</u>	<u>A dedicated circuit provisioned as a logical SONET ring over a single physical connection.</u>
<u>SONET Restorable circuit</u>	<u>A dedicated circuit that provides redundancy as it is provisioned over a physical SONET ring topology.</u>
<u>Tie Line (TL)</u>	<u>A dedicated circuit connecting two locations to establish an internal voice network by interconnecting into each location's PBX or other voice switching device.</u>
<u>Transparent Synchronous Frame</u>	<u>A SONET OC-n customer interface with transparent transport of the customer's D bytes and K bytes in the SONET line overhead. It is protocol specific as either a SONET OC-n or a Synchronous Digital Hierarchy STM-n.</u>