CenturyLink Technology Solutions

CenturyLink Technology Solutions Service Guide

Network Legacy Services

This Service Guide sets forth a description of CenturyLink Technology Solutions' ("CenturyLink") Network Service ("Service") offerings including technical details and additional requirements, if any. This guide is subject to and incorporated into the Master Service Agreement and Service Schedule between the parties. The specific details of the Service ordered by Customer will be set forth on the relevant Service Order. Network Service offerings presented in this service guide include:

- Intelligent IP ("IIP") & Managed IP ("MIP") Service
- Managed Internet Service
- Unmanaged Internet/ Dedicated Internet Access ("DIA") Service
- High Speed Dedicated Internet Access ("HS-DIA") / Colo Bandwidth Service
- Bandwidth Connect Service

Table of Contents

Service Release: ATS 2.0

This CenturyLink Service Guide covers the ATS Service Release 2.0 which includes the following features and attributes:

- Uniform CPE, the Juniper EX3200, independent of access method.
- Ethernet to TDM interworking to allow for Uniform CPE.
- Uniform QoS with six Classes of Service independent of access method.
- Aggregated QoS between multiple service instances with ATS Managed service.
- ATS Unmanaged Service for both Public and Private offerings.
- IP Multicast protocol support (PIM-SM) within an ATS Private VPN, Managed service only.

For service installations based on ATS 1.0, please reference the prior guide NET-20091208-External-SSG-US-Network_Services.

Application Transport Service (ATS) - Private IP

Service Description

The Application Transport Service ("ATS") delivers connections ranging from T1 to GigE from a Customer Site to the CenturyLink MPLS network. The Service provides access to a fully meshed private routing context (a Virtual Routing and Forwarding instance or VRF) within the CenturyLink Global IP Network for the purpose of wide area networking. The Service connection terminates on a device that sits at the Customer site (a "CPE" device), which may be a router, a bridge, or a switch depending on the service and the options selected by the Customer. The CPE can be CenturyLink Managed (CenturyLink equipment) or Unmanaged (Customer equipment) depending on the option selected by Customer.

The ATS - Private IP Service is one of a variety of services provided under the CenturyLink ATS product family. ATS access refers to the physical connection (i.e., port, loop and CPE) that is delivered to the Customer. Once an ATS service is in place, the Customer can order additional services which can be delivered over the same physical circuit as completely independent service instances contained within VLANs. ATS can be ordered with options such as Public IP (Internet) Service and Network Based Firewall Service for additional charges.

Service Provisioning

CenturyLink Managed Service - Customer Installation

Installation of the Service will include delivery of the ATS access circuit to the Customer site. Once the ATS port on the CenturyLink Provider Edge is installed, the CenturyLink installation engineer will work with the customer on IP address space requirements and other tasks required to deliver the Service. IP addressing is subject to the CenturyLink IP Policy Document and the Customer Justification process. The CenturyLink installation engineer will then configure the services on the CenturyLink network. With CenturyLink provided and managed CPE, the installation will consists of procuring, staging, configuring, and installing a router or a bridge, along with a dial line and modem for out-of-band management at the Customer's site.

Unmanaged Service - Customer Installation

Installation of the Service will include delivery of the access circuit to the Customer site. CenturyLink will install a device to proactively monitor the access circuit and hand off Ethernet to the customer, regardless of access method. Once the ATS port on the CenturyLink Provider Edge is installed, the CenturyLink installation engineer will work with the Customer on IP addressing their CPE and other tasks required to deliver the Service. IP addressing is subject to the CenturyLink IP Policy Document and the Customer Justification process.

The CenturyLink engineer will work with the Customer to coordinate the connection from the demarcation of the CenturyLink circuit monitoring device to the appropriate Customer CPE device. CenturyLink will provide the necessary information to the Customer regarding CPE so the Customer can get the most out of their service. However with Unmanaged Service, procuring, staging, configuration and installation of CPE is the sole responsibility of the Customer. The Customer has the option of running a BGP session with the CenturyLink Provider Edge (PE) router or configure a static route.

QoS behavior with Unmanaged Service will ultimately depend on the capabilities of the CPE chosen by the Customer. For best results, the CPE's QoS capability should align with standard marking and treatment conventions as outline in ATS Uniform QoS.

Monitoring, Fault Reporting and Service Restoration

CenturyLink Managed Service Customer Support

Once the service is operational, CenturyLink will ping the CPE on 12 second intervals. If 15 consecutive ping attempts fail, this implies the device will have been off-line for three minutes. The site will be reported as "unresponsive" and the Customer will be notified. CenturyLink will begin troubleshooting subject to applicable SLAs.

Service note: CenturyLink uses a TDM multiplexing protocol called GFP (Generic Framing Procedure) for delivering Ethernet over nxT1 bonded access service. If any of the T1's in an nxT1 bundle happen to fail, CenturyLink will be notified automatically through the circuit monitoring process and begin troubleshooting subject to applicable SLAs. The remaining T1's will continue to carry customer traffic, though at reduced capacity, until such time that service is fully restored. This is applicable to all CenturyLink ATS offerings, whether Managed or Unmanaged, where CenturyLink provides the circuit.

Unmanaged Service Customer Support

In the case of Unmanaged service, CenturyLink will provide an access circuit to the Customer site along with a demarcation device used for proactive circuit monitoring. Once the service is operational, CenturyLink will ping the demarcation device on 12 second intervals. If 15 consecutive ping attempts fail, this implies the device will have been off-line for three minutes. The site will be reported as "unresponsive" and the Customer will be notified. CenturyLink will begin troubleshooting subject to applicable SLAs.

Optional Add-ons

Customer may order the following optional features (subject to additional charges where applicable) in connection with ATS - Private IP Service:

Service Add-On	Description
VRRP/HSRP	A routing protocol for failover routing between two CenturyLink managed connections at a single site. This option is only available with CenturyLink Managed service.
DHCP & DHCP Relay	Private IP Service will support DHCP and DHCP Relay as an add-on service for those customers that require it.
Quality of Service (QoS) Options	Customers have the ability to separate Private IP traffic into six Classes of Service per service instance: Normal, Priority, Signaling & Network Control, Business, Interactive, and Real time. Normal, Priority, Signaling & Network Control, and Business are offered at no additional charge, while Interactive and Real time are offered for an additional charge. All Classes of Service come with a customer defined CIR (committed information rate). Hierarchical QoS within a single service instance is standard. Aggregated QoS between ATS services instances is standard and offered at no extra charge.

Service Add-On	Description
Network Based Firewall Service (NBFS)	NBFS is a rule-based, stateful inspection firewall service within the CenturyLink network cloud and is offered at every ATS P1 and P2 node. CenturyLink offers Network-based Firewall Service for an additional charge between sites that are part of the same ATS - Private network.
IP Multicast within a VPN (mVPN)	Customers may request support for IP multicast within their VPN, which then becomes a multicast-enabled VRF. The multicast protocol supported in mVPN in PIM-Sparse Mode. PIM-Source Specific Multicast is also supported. Multicast Rendezvous Points must be contained within the Customer's enterprise network. mVPN is offered at no extra charge. This option is offered with CenturyLink Managed Service only.

Application Transport Service (ATS) - Private IP + Internet

Service Description

The ATS - Private IP + Internet Service is identical to ATS - Private IP with the addition of Network-based Firewall Service (NBFS) that allows secure Internet access out to a Customer's site via the ATS - Private network. ATS - Private IP + Internet is offered within a single ATS service instance and NBFS is offered at an additional charge.

All other aspects of ATS - Private IP + Internet Service including Service - Provisioning, Monitoring, Fault Reporting and Service Restoration - are identical to ATS - Private IP, as noted in the section above.

Optional Add-ons

Customer may order the following optional features (subject to additional charges where applicable) in connection with the Private IP Service:

Service Add-On	Description
VRRP/HSRP	A routing protocol for failover routing between two CenturyLink managed connections at a single site. This option is only available with CenturyLink Managed service.
DHCP & DHCP Relay	ATS - Private IP + Internet Service will support DHCP and DHCP Relay as an add-on service for those customers that require it.
Quality of Service ("QoS") Options	Customers have the ability to separate Private IP traffic into six Classes of Service per service instance: Normal, Priority, Signaling & Network Control, Business, Interactive, and Real time. Normal, Priority, Signaling & Network Control, and Business are offered at no additional charge, while Interactive and Real time are offered for an additional charge. All Classes of Service come with a customer defined CIR (committed information rate). Hierarchical QoS within a single service instance is standard. Aggregated QoS between ATS services instances is standard and offered at no extra charge.
Network Based Firewall Service (NBFS)	NBFS is a rule-based, stateful inspection firewall service within the CenturyLink network cloud and is offered at every ATS P1 and P2 node. CenturyLink offers Network Based Firewall Service for an additional charge for secure access to the Internet as well as between sites that are part of the same ATS - Private network.
IP Multicast within a VPN (mVPN)	Customers may request support for IP multicast within their VPN, which then becomes a multicast-enabled VRF. The multicast protocol supported in mVPN is PIM-Sparse Mode (PIM-SM). PIM-Source Specific Multicast (PIM-SSM) is also supported. Multicast Rendezvous Points (RPs) must be contained within the Customer's enterprise network. All multicast traffic within a VRF will must share the same Class of Service. If more than one Class of Service is required for multicast traffic, an additional service instance can be configured for that traffic. mVPN is offered at no extra charge. This option is offer with CenturyLink Managed Service only.

Application Transport Service (ATS) - Public IP

Service Description

ATS - Public IP Service gives the Customer access to the CenturyLink Tier 1 ISP network, AS3561, for the purpose of accessing Internet content or making content available over the Internet. ATS - Public IP Service offers connections ranging from T1 to GigE from a Customer Site to the CenturyLink Tier 1 ISP network. The Service connection terminates on a device that sits at the Customer site (a "CPE" device), which is generally a router. The CPE can be CenturyLink Managed (CenturyLink owned equipment) or Unmanaged (Customer owned equipment) depending on the option selected by Customer. All ATS - Public IP Service is offered with Best Effort QoS.

Once ATS - Public Service is in place, the Customer can order additional services which can be delivered over the same physical circuit as completely independent service instances contained within VLANs. ATS - Public Service can be ordered with options such as Network Based Firewall Service for an additional charge.

Service Provisioning

CenturyLink Managed Service Customer Installation

Installation of ATS - Public Service will include delivery of the ATS access circuit to the Customer site. Once the ATS port on the CenturyLink Provider Edge is installed, the CenturyLink installation engineer will work with the customer on IP address space requirements and other required tasks to deliver the Service. IP addressing is subject to the CenturyLink IP Policy Document and the Customer Justification process. The CenturyLink installation engineer will then configure the services on the CenturyLink network. With CenturyLink provided and managed CPE, the installation will consists of procuring, staging, configuring, and installing a router or a bridge, along with a dial line and modem for out-of-band management at the Customer's site. The CenturyLink managed CPE runs a BGP session with the CenturyLink PE.

Unmanaged Service Customer Installation - CenturyLink Provided Access

Installation of the ATS - Public Service will include delivery of the access circuit to the Customer site. CenturyLink will install a device used to proactively monitor the access circuit and hand off Ethernet to the Customer, regardless of access method. Once the ATS port on the CenturyLink Provider Edge is installed, the CenturyLink installation engineer will work with the Customer on IP addressing their CPE and other required tasks to deliver the Service. IP addressing is subject to the CenturyLink IP Policy Document and the Customer Justification process.

The CenturyLink engineer will work with the Customer to coordinate the connection from the demarcation of the CenturyLink circuit monitoring device to the appropriate Customer CPE device. CenturyLink will provide the necessary information to the Customer regarding CPE so the Customer and can run a BGP session with the CenturyLink PE. Static routing is also an available option. With Unmanaged Service, procuring, staging, configuration and installation of CPE is the sole responsibility of the Customer.

Unmanaged Service Customer Installation - Customer Provided Access

As an option, installation of the ATS - Public Service can be delivered over a Customer provided access circuit. The CenturyLink installation engineer will work with the Customer on terminating both ends of the Customer provided circuit. One end will be terminated at the Customer site and the other end will be terminated in a CenturyLink assigned ATS Point-of-presence (Pop). Once both ends of the Customer provided circuits are in place, the CenturyLink installation engineer will work with the Customer on IP addressing their CPE and other required tasks to deliver the Service. IP addressing is subject to the CenturyLink IP Policy Document and the Customer Justification process. CenturyLink will provide the necessary information to the Customer regarding CPE so the Customer and can run a BGP session with the CenturyLink PE. Static routing is also an available option.

With Unmanaged Service, procuring, staging, configuration and installation of CPE is the sole responsibility of the Customer. There is no proactive circuit monitoring by CenturyLink in the case of Customer Provided Access and SLAs are adjusted accordingly.

Monitoring, Fault Reporting and Service Restoration

CenturyLink Managed Service Customer Support

Once the service is operational, CenturyLink will ping the CPE on 12 second intervals. If 15 consecutive ping attempts fail, this implies the device will have been off-line for three minutes. The site will be reported as “unresponsive” and the customer will be notified. CenturyLink will begin troubleshooting subject to the applicable SLAs.

CenturyLink Unmanaged Service Customer Support - CenturyLink Provided Access

In the case of Unmanaged Service with a CenturyLink Provided Access, CenturyLink will install a demarcation device for monitoring the access circuit. Once the service is operational, CenturyLink will ping the monitoring device on 12 second intervals. If 15 consecutive ping attempts fail, this implies the device will have been off-line for three minutes. It will be reported as “unresponsive” and the customer will be notified. CenturyLink will begin troubleshooting the issue subject to the applicable SLA.

CenturyLink will not be responsible for the management of BGP routing in the event customer chooses to multi-home between CenturyLink and another provider. CenturyLink will, at the Customer’s request, take reasonable steps to enable Customer’s implementation of BGP routing. Customer is required to maintain an Autonomous System (AS) number and explicitly request that CenturyLink enable BGP routing. If necessary, CenturyLink can assist the Customer in establishing an AS number.

CenturyLink Unmanaged Service Customer Support - Customer Provided Access

In the case of Unmanaged Service - Customer Provided Access, the only proactive monitoring that CenturyLink offers is of the BGP session with the Customer. At the loss of the BGP session, CenturyLink will begin troubleshooting the issue subject to the applicable SLAs.

Optional Add-ons

Customer may order the following optional features (subject to additional charges where applicable) in connection with the Private IP Service:

Service Add-On	Description
VRRP/HSRP	A routing protocol for failover routing between two CenturyLink managed connections at a single site. This option is only available with CenturyLink Managed service.
Network Based Firewall Service	NBFS is a rule-based, stateful inspection firewall service within the network cloud and is offered at every ATS P1 and P2 node. CenturyLink offers Network-based Firewall Services for an additional charge for secure access to the Internet.

ATS Broadband and IPSec Access

Service Description

The Application Transport Service ("ATS") delivered over IPSec, Cable, or DSL access offers asymmetric and symmetric connections with upload speeds ranging from .128k to 5M from a Customer Site to the CenturyLink MPLS network. The access method provides a connection to a fully meshed private routing context (a Virtual Routing and Forwarding instance or VRF) within the CenturyLink Global IP Network for the purpose of wide area networking. The connection terminates on a device that sits at the Customer site (a "CPE" device), which may be a router, a bridge, or a switch depending on the access type and the options selected by the Customer. The CPE will be provided and managed by CenturyLink (CenturyLink equipment).

ATS Broadband / IPSec access is an available loop type for ATS Private IP and ATS Private IP + Internet Services (Network Based Firewall Service required for Private IP plus Internet). ATS Broadband / IPSec access is not available for ATS Public IP.
DSL Service Pre-Qualification
Site pre-qualification for broadband access is the result of an analysis of service availability at each site. Actual service availability at each site may vary and cannot be absolutely determined before actual installation or site survey. If the selected type of broadband access is not available at a particular site, Customer may authorize CenturyLink to provide an alternative type of broadband access.

Service Provisioning

Installation

- Connecting Customer supplied wiring to MPOE.
- Installation of jack at CPE location and connecting it to Customer supplied inside wiring (except cable).
- Procuring, configuring and connecting CPE.
- The CenturyLink Installation Engineer will then configure the services on the CenturyLink network.
- Verification that circuit can pass traffic.
- For cable only: install a two-way splitter on the cable line.
- No more than two hours on site to complete above listed work; additional on site work or time will incur additional charges.
- For line shared DSL only: installation of NID splitter as required.

Customer Requirements

Required End-User-Provided Facilities

Each broadband access type requires specific facilities at the End-User premises. The Customer is responsible to ensure the facilities, devices, services and/or equipment set forth below are available. The cost of these Customer provided facilities is not included in either the MRC or the Activation or Installation fees charged by CenturyLink.

- **ILEC Phone Line (Required For ADSL), Customer shall ensure:**

- Customer has a regular phone line available at the Customer Premises (note: this phone line is shared, i.e. it can continue to be used for regular voice service). This phone line must be provided

directly by the ILEC and not a Competitive Local Exchange Carrier. It must also be separate from any “hunting group” or “PBX”.

- Customer shall provide a jack for this phone line at the appropriate location for the CPE.
- Customer shall pay all costs (both installation and monthly) associated with such phone line.
- **One Pair (Required For ADSL Dedicated Line, IDSL, and SDSL), Customer shall ensure:**
- At least one unused pair of wires is available from the Independent Local Exchange Carrier (ILEC) at the MPOE. If trenching or other construction work is required in order to deliver such an unused pair, the Customer is responsible for arranging, and paying the costs associated with, such trenching or construction. CenturyLink will not order such trenching or construction on behalf of Customer.
- Inside wiring (one pair of wires) is available from the MPOE to the desired location of the CPE. The installation technician can typically do this inside wiring, but at an extra charge.

Monitoring, Fault Reporting and Service Restoration

CenturyLink Customer Support

Once connectivity is reported as non-responsive or determined to be down, CenturyLink will notify the Customer and begin troubleshooting the access service subject to applicable SLAs.

Conditions Upon Service Delivery

Data Throughput

If Customer receives net data throughput rates under the Maximum Data Transfer Rate, the Customer may request a review of throughput rates. If the causes found are within the reasonable direct or indirect control of CenturyLink, then CenturyLink will correct the problem. However, if the cause of the problem is not within the direct or indirect control of CenturyLink, i.e. the problem lies outside infrastructure owned or contracted for by CenturyLink, or if the cause of the problem cannot be determined, then CenturyLink shall have no liability for such problem and Customer shall continue to be bound by the terms of their Agreement.

Customer Installation Process and Customer Requirements

Delivery of any circuit is completed by a CenturyLink-contracted technician who installs internal wiring required for the circuit, connects the CPE, and tests the entire circuit for proper operation. If the circuit functions at the speed originally ordered by Customer, then Customer is deemed to have accepted this circuit when the technician completes testing.

During installation, if the circuit cannot function at the originally ordered speed or speed range, but does operate reliably at some lower speed or speed range, CenturyLink will inform Customer of the actual speed obtainable. Customer shall have five business days in which to either accept or reject the circuit at the lower speed ("Test Period"). If Customer fails to respond within that period, Customer shall be deemed to have accepted the circuit at the lower speed or speed range. If the circuit cannot function at the originally ordered speed or speed range and Customer accepts the circuit at a lower speed, then CenturyLink will provide new order documentation to be signed and executed at the new appropriate MRC. However, if the circuit was originally ordered with the lowest speed possible, then the MRC will not be changed.

If the circuit cannot function at the originally ordered speed or speed range and Customer chooses to reject the circuit within the Test Period, Customer may cancel the circuit and CenturyLink shall impose no cancellation or early termination fee. CenturyLink will provide Customer with a Return Merchandise Authorization ("RMA") number and return address, and Customer shall return any CPE, with the RMA number clearly visible on the outside of the packaging, to the specified address within 15 business days. If the CPE is not returned in working condition within 15 business days, CenturyLink may charge Customer for the full cost of the CPE and Customer shall remit payment for such charge as invoiced by CenturyLink.

Common Service Description

Service Guide Release

This CenturyLink Service Guide updates the following legacy service guide for ATS 1.0:

- NET-20091208-External-SSG-US-Network_Services

Service Requirements

If any third party software, including any corresponding documentation, is provided to Customer by CenturyLink in connection with the Service, Customer agrees to use such third party software strictly in accordance with all applicable licensing terms and conditions. CenturyLink makes no representations or warranties whatsoever with regard to such third party software.

If ordered by Customer, CenturyLink will use good faith efforts to assign Internet address space for the benefit of Customer during the Service Term. Any IP addresses and space provided to Customer by CenturyLink are solely for Customer's use with the Service, and are non-portable and non-transferable. Neither Customer nor any End Users will own or route any IP addresses or space provided by CenturyLink, and, upon any termination of Service, Customer's access to such IP addresses and space will cease.

Definitions

The following service definitions apply to all CenturyLink service offerings describe in this service guide. Any Service definition specific to individual Service offerings will be defined within the body of the Service offering.

Asymmetric DSL or "ADSL"	ADSL is the most widely available form of DSL. ADSL broadband access is provided via a two-wire circuit from the customer's premises to DSL equipment located in a nearby CO. The circuit is shared with a regular telephone line, or for ADSL Dedicated Line is delivered on its own pair of wires. The circuit is terminated at the customer's premises via CPE provided by CenturyLink.
ATS	Application Transport Service is the CenturyLink product name for the physical connection (loop & port) delivered to a customer premise. There is a family of optional Service offerings available under Application Transport Service.
Aggregated QoS	A-QoS is a Quality of Service mechanism that allows adjacent ATS service instances to share unused bandwidth in the access channel.
Backhaul Option	Wavelengths are available for backhaul connections at bandwidths of 10 Gbps. Customers can take a standard backhaul circuit, which provides a connection from a cable landing station to an access point-- usually a CenturyLink node. Alternatively, customers can extend their backhaul connection to their required site, combining the backhaul and access options. Customers requiring protection for their service also have the option of diverse routing. This option provides a very high level of protection for customer's traffic. In the event of a failure, traffic can be switched from one connection to the other quickly and easily.
BLSR	Should a fiber be cut or other network outage occur, traffic is rerouted back around the ring in milliseconds, so service continues uninterrupted. BLSR is available as two fiber or four fiber.
BLSR 2 Fiber	Both rings in the ring carry working traffic and half the capacity of each fiber is reserved for protection.
BLSR 4 Fiber	Each working fiber is assigned a protection fiber. If a working fiber is cut, it switches to the protection fiber on that span only.
BPDU	Enables switches that participate in a spanning tree protocol to gather information about each other
Broadband	A transmission facility that has bandwidth (capacity) greater than a voice line of 3 kHz.
Business Hours	Monday to Friday 0900 to 1700 local time, excluding public holidays.
Card Protection	CenturyLink offers 1+1 card protection, which means that one working optical port is protected by another optical port on a different card.

CenturyLink Network / Metro Network	The fiber optic telecommunication network operated by CenturyLink, including such telecommunication capacity as CenturyLink may obtain from other network providers and integrate into its own network and including any cable system.
Colocation	The provision of space at a CenturyLink Location for the housing of Customer's equipment.
Committed Bandwidth	The level of usage that the customer commits to on a connection. Competitive Local Exchange Carrier is a company authorized to provide local exchange services in competition with an ILEC
Core Network	The CenturyLink owned and operated network between CenturyLink Points of Presence (PoPs). Local access and customer premise equipment are specifically excluded.
Core Protection	The CenturyLink US network has a mesh design allowing traffic to be easily rerouted around a fault. For SONET circuits of OC-3 or above, CenturyLink uses a protection mechanism called Dedicated Transit Line (DTL) in the core to reroute the traffic. DTL is custom designed, diverse routed protection used for 155 Mbps and higher circuits. It uses simple static routes, meaning that the primary and protection paths are predetermined, which means that the switch over time is faster than OSRP. For circuits OC-3 and above we offer 1+1 protection. For SONET circuits of DS3 and below, CenturyLink uses Optical Signaling & Routing Protocol (OSRP) to reroute traffic. OSRP does not determine the protection path until it is needed which makes the switch over slightly slower than DTL. CenturyLink tries to avoid delayed failover or dropped circuits wherever possible by not allowing the network to become over-utilized (50 percent is policy). For circuits DS3 and below we offer 1:n protection. For all SONET circuits, CenturyLink uses non-revertive switching, meaning that once the failed path is restored traffic is not moved back to the original path and the protect path becomes the primary path. CenturyLink can offer protection for 2.5 Gbps wavelength circuits; although wavelengths are normally unprotected. For our 2.5 Gbps offering, we can offer protection using Automatic Protection Switching (APS).
Customer Location	The premises designated by the Customer for the delivery of Capacity.
Customer Premise Equipment (CPE)	The terminating device that is located at a Customer Site and terminates the Application Transport Service connection. This equipment can be defined as a router, and bridge or a switch depending on the Service options selected by the customer.
Customer Demarcation	The ATS demarcation point is service dependent. For ATS Managed service, the demarcation point is the Ethernet port on the CenturyLink CPE device. For Unmanaged service with a CenturyLink provided circuit, the demarcation point is the Ethernet port from the CenturyLink circuit monitoring device at the Customer site. For Unmanaged service, with a Customer provided circuit, the demarcation point is the Ethernet port on the CenturyLink Provider Edge equipment.
Dense Wave Division Multiplexing (DWDM)	Works by combining and transmitting multiple signals simultaneously at different wavelengths on the same fiber, allowing one fiber to be transformed into multiple virtual fibers.

Etherchannel	A port-trunking technology which allows grouping of several physical Ethernet links to create one logical Ethernet link for the purpose of providing fault-tolerance and high-speed links between switches, routers and servers.
Incumbent Local Exchange Carrier (ILEC)	ILEC is a telephone company that was providing local telephone exchange service when the Telecommunications Act of 1996 was enacted.
LACP	Allows for the bundling of several physical ports together to form a single logical channel.
Leased Capacity or Capacity	Any portion of the capacity specified as such in the applicable Service Order.
Local Access Facilities	The domestic facilities and related equipment required to connect the CenturyLink network to the Customer's premises. Local Access Facility termination points are located at the Customer's premise.
Local Access (Local Loop)	A physical circuit that connects from the demarcation point of the Customer premises to the edge of a service provider's network.
Maximum Transmission Unit (MTU)	The largest size packet or frame that can be sent in a packet-based network, usually refers to Ethernet packet size.
Meet Me Room	A central location within a colocation center or carrier hotel where multiple carriers and/or customers can interconnect with each other via a cross connect.
METRO Ethernet Virtual Private Line (EVPL)	A Layer 2 point-to-point connection between two fixed points within a CenturyLink Metro Network.
Minimum Point of Entry (MPOE)	MPOE is the location at the Customer premises where the ILEC places the equipment needed to connect its wires to the End-User's inside wiring.
MPLS Network	The CenturyLink owned and operated network between CenturyLink Points of Presence (PoPs). Local access and customer premise equipment are specifically excluded.
Network Termination Point	The telecommunication network interface at the Customer's premises, as provided by the local exchange carrier, if CenturyLink orders the local loop on behalf of the customer.
On-net	Refers to the Services or any part of them supplied over infrastructure owned or controlled by CenturyLink or its Affiliates.
Off-net	Refers to the Services or any part of them supplied over a third party's local loop.
Point-of-presence (Pop)	A direct point of entry and departure on the CenturyLink network. Pops provide the infrastructure to enable the Customer to connect to the CenturyLink network.
Protection in the Access Circuit	Most local loop providers offer a protection mechanism called Bi-Directional Line Switching Ring (BLSR) although Uni-Directional Path Switched Ring (UPSR) is often used instead.
Provider Edge (PE)	Provider Edge is a router or switch on the CenturyLink network on which a customer's connection terminates.
Public IP	An option of the Application Transport Service (ATS) that delivers Internet access service.

Spanning Tree Protocol (STP)	A link management protocol that provides path redundancy while preventing undesirable loops in the network.
Symmetric DSL (SDSL)	SDSL provides symmetric speeds enabling high-speed communications both to and from the customer's premises. SDSL broadband access is provided via a two-wire circuit from the customer's premises to DSL equipment located in a nearby CO. Depending on the actual Last-Mile Carrier, this circuit may be shared with a regular telephone line or be delivered on a separate pair of wires. The circuit is terminated at the customer's premises via CPE provided by CenturyLink.
Uniform QoS	The standard within ATS for marking and treatment of packets at Layer 3 based on Differentiated Services or DiffServ Code Points (DSCP) in the access channel and Exp Bits on the backbone.
+VLAN or logical connection	Refers to the Layer 2 separation utilized on the Application Transport Service to separate various traffic types (e.g., Public and Private traffic).
WAN Ethernet Virtual Private Line (EVPL)	Layer 2 point-to-point connection between two fixed points across the CenturyLink Core Network.