VERIZON OPTICAL NETWORKING (REGIONS 1 AND 11)

A. AVAILABILITY OF SERVICE (N)

Verizon Optical Networking Service was previously offered under FCC Tariff and is limited under this Product Guide to in-Service arrangements in Region 1 or 11 of existing Customers that (i) were grandfathered under FCC Tariff and/or (ii) are not governed by a private carriage agreement. Moves, additions, and/or changes are not permitted.

B. SERVICE DESCRIPTION

Verizon Optical Networking service provides managed optical transport of data signals of various speeds over the Company's shared network. Verizon Optical Networking architecture allows for point-to-point transmissions of varying bandwidths between Customer designated Premises or between a Customer designated location and a collocation arrangement where a Customer is provided Collocated Interconnection as described in the applicable Company FCC Tariff.

Verizon Optical Networking is provided where Company fiber optic facilities and equipment with sufficient bandwidth capacity permit.

Verizon Optical Networking service consists of 3 components, an On-Net Channel Extension, an On-Net Channel Mileage, and an Access Aggregation Port.

1. On-Net Channel Extension provides the communications path and interface termination from a Customer's Premises to the serving wire center or between the Customer Premises and the serving wire center where the Customer has Collocated Interconnection Service. The On-Net Channel Extension utilizes a Company optical network element at the Customer-designated Premises.

2. Verizon Optical Networking On-Net Channel Extensions may be available as protected or unprotected.

   a. For protected services, the Company will provision the service over diversely routed, self-healing architecture. Protected services allow for a near 100% availability and restoration in the event of a network failure.

   b. For unprotected services, the Company does not guarantee the service will be provisioned over diversely routed facilities.

3. On-Net Channel Mileage provides transport between two Company Serving Wire Centers (**SWCs**). On-Net Channel Mileage is measured in airline miles between the SWCs involved.

4. Access Aggregation Ports support multiple Ethernet, Fibre Channel, and/or FiCON signal(s) that are mapped into SONET at one end of the channel. (N)

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B. SERVICE DESCRIPTION (Cont'd) (N)

5. Channel Interfaces

The following demonstrates the number of STS1s and Access Aggregation Ports that are required for each Verizon Optical Networking Mapped Interfaces.

	SONET Mappings & Ports	
SONET Mapped Interface	STS1s	Access Aggregation Port
100 Mbps Ethernet (50Mb) Mapped to STS1	1 - STS1	OC3, OC12, OC48
100 Mbps Ethernet (Full Rate) Mapped to OC3c	3 - STS1s	OC12, OC48
1 Gbps Ethernet (50Mb) Mapped to OC3	1 - STS1	OC3, OC12, OC48
1 Gbps Ethernet (150Mb) Mapped to OC3	3 - STS1s	OC12, OC48
1 Gbps Ethernet (300Mb) Mapped to OC12	6 - STS1s	OC12, OC48
1 Gbps Ethernet (450Mb) Mapped to OC12	9 - STS1s	OC12, OC48
1 Gbps Ethernet (600Mb) Mapped to OC12	12 - STS1s	OC48
1 Gbps Ethernet (Full Rate) Mapped to OC48	21 - STS1s	OC48
1 Gbps Fibre Channel (Full Rate) Mapped to OC48	19 - STS1s	OC48
1 Gbps FiCON (Full Rate) Mapped to OC48	19 - STS1s	OC48
Aggregation Ports	Total STS1s	
OC3 Port - Supports Up to 3 Total Mapped STS1s	3 - Total STS1s	N/A
OC12 Port - Supports Up to 12 Mapped STS1s	12 - Total STS1s	N/A
OC48 Port - Supports Up to 48 Mapped STS1s	48 - Total STS1s	N/A (N)

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B. SERVICE DESCRIPTION (Cont'd) (N)

6. The Access Aggregation Port will only be permitted at a Customer designated Premises. The Access Aggregation Port is not available to a Collocated Interconnection location.

   This port must utilize a SONET interface (i.e., OC3, OC12, OC48) at the point of demarcation at the Customer designated Premises. An Access Aggregation Port can only reside at one end of a Verizon Optical Networking circuit. The end of a Verizon Optical Networking circuit that is not assigned to an Access Aggregation Port must have a native Ethernet hand-off.

7. Verizon Optical Networking service transmissions are provided in the following protocols/data interfaces:

   - Ethernet: transmits Ethernet at 10 Mbps
   - Fast Ethernet: transmits at 100 Mbps
   - Gigabit Ethernet: transmits at 1 Gbps
   - Ethernet Mapped to STS1
   - Fast Ethernet Mapped to STS1
   - Fast Ethernet Mapped to OC3c
   - Gigabit Ethernet Mapped to OC3
   - Gigabit Ethernet Mapped to OC12
   - Gigabit Ethernet Mapped to OC12c
   - Gigabit Ethernet Mapped to OC48
   - Gigabit Fibre Channel Mapped to OC48
   - Gigabit FiCON Mapped to OC48
   - Verizon Optical Networking Services Mapped to OC3 Access Aggregation Port
   - Verizon Optical Networking Services Mapped to OC12 Access Aggregation Port
   - Verizon Optical Networking Services Mapped to OC48 Access Aggregation Port

8. Verizon Optical Networking may be connected to the following Company provided services, where such connections are technically and operationally feasible, as determined by the Company.

   - dedicated SONET ring service
   - point-to-point SONET service
   - optical hubbing service
   - DWDM ring service
   - SONET entrance facility service
   - switched ethernet service (N)

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C. TECHNICAL SPECIFICATIONS (N)

The technical specifications for the protocols transmitted over Verizon Optical Networking are delineated in the following technical publications:

Protocol	Publication
SONET	GR-253-CORE, Issue 4
10Mbps Ethernet	IEEE 802.3-2005/Cor2/D2.0-2007
100 Mbps Fast Ethernet	IEEE 802.3u-1995
1 Gbps Gigabit Ethernet	IEEE 802.3z-1998
1 Gbps Gigabit Fibre Channel	ANSI INCITS 303-1998 (R2003)
1 Gbps Gigabit FiCON	ANSI INCITS 296-1997 (R2007)

D. TERMS AND CONDITIONS

1. Where distance limitations affect the Company's ability to engineer end-to-end transport of some protocols, the Company will notify the Customer that it cannot provide the requested service.

2. All signals generated by the Customer's equipment (CPE/Customer provided equipment) must meet industry standards and specifications. See (C) of this section preceding.

3. The Customer is responsible to ensure that its equipment meets any applicable technical requirements or limitations for the protocol being transmitted.

4. The Customer is responsible for any error detection and error correction of the data generated by its equipment.

5. The Company assumes no responsibility for the quality of the signal generated by CPE and will deliver the signal in the format provided by the Customer. (N)

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D. TERMS AND CONDITIONS (Cont'd) (N)

6. When requested by the Customer, one or more Verizon Optical Networking Ethernet, Fast Ethernet, Gigabit Ethernet, Gigabit Fibre Channel, and/or FiCON signal(s) may be mapped into a SONET signal. The options for mapping a single signal are:

   a. The options for mapping a single signal are:
      - 10 Mbps Ethernet to STS1
      - 100 Mbps Fast Ethernet to STS1 and/or OC3c
      - 1 Gbps Gigabit Ethernet to OC3, OC12, OC12c, and/or OC48
      - 1 Gbps Fibre Channel to OC48
      - 1 Gbps FiCON to OC48

   b. The options for mapping multiple signals are:
      - 10 Mbps Ethernet to OC3, OC12, and/or OC48
      - 100 Mbps Fast Ethernet to OC3, OC12, and/or OC48
      - 1 Gbps Gigabit Ethernet to OC3, OC12, and/or OC48
      - 1 Gbps Fibre Channel to OC48
      - 1 Gbps FiCON to OC48

   c. Only one end of a Verizon Optical Networking channel may be Ethernet-to-SONET mapped. The mapping of multiple signals requires placement of a Verizon Optical Networking Access Aggregation Port.

   d. An Ethernet-to-SONET mapped option is not available on any Verizon Optical Networking circuit which connects to a Collocated Interconnection arrangement. A Verizon Optical Networking circuit which connects to a Collocated Interconnection arrangement is not allowed to connect to any other Company service. When a Verizon Optical Networking circuit connects to a Collocated Interconnection arrangement, no additional Channel Extension charges apply as a result of the connection to the Collocated Interconnection arrangement. When Verizon Optical Networking connects to a Collocated Interconnection arrangement, the Verizon Optical Networking circuit will be cross-connected to the Collocated Interconnection arrangement, and all rates and charges for such Collocated Interconnection arrangement shall apply in addition to any charges for Verizon Optical Networking.

   e. The Aggregation port option is not available where cross-connection to a Collocated Interconnection arrangement occurs.

E. APPLICATION OF RATES AND CHARGES

1. Verizon Optical Networking is available for 1, 3, 5, and 7-year commitment periods/term plans.

2. The minimum service period for Verizon Optical Networking is one year.

3. Upon expiration of a commitment period, the Customer may choose to continue service under a new commitment period under a private carriage agreement or cancel service. If the Customer does not choose one of these options, the Company will continue the service at the monthly rate for the original commitment period. (N)

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E. APPLICATION OF RATES AND CHARGES (N)

4. A change in protocol of an On-Net Channel Extension is treated as a discontinuance of service and an installation of both, a new On-Net Channel Extension and the appropriate On-Net Channel Mileage, and will result in termination liability charges applied for the discontinuance of the existing service.

5. Monthly recurring charges (MRCs) apply for On-Net Channel Extensions, On-Net Channel Mileage, and Access Aggregation Ports.

6. The MRC for the Channel Extension applies per channel extension and at the specified term plan rate. The On-Net Channel Extension charge is also dependent on the type of facility interface provided.

7. The MRC for the Channel Mileage applies on a per mile basis for the airline miles between the Serving Wire Centers. When the mileage calculation results in a fraction of a mile, it is rounded up to the next whole mile.

8. The MRC for the Access Aggregation Port applies per port and at the specified term plan rate. The Access Aggregation Port charge is also dependent on the type of facility interface provided.

9. Nonrecurring charges (**NRCs**) apply for the initial installation of On-Net Channel Extensions and Access Aggregation Ports.

10. When connecting Verizon Optical Networking services to other Company provided services, the rates and charges, and terms and conditions of the connecting services also apply.

11. When connecting a Verizon Optical Networking circuit to a Collocated Interconnection arrangement, the MRC for the Channel Extension that provides the communications path and interface termination from a Customer's Premises to the serving wire center will apply at the specified term plan rate, as set forth in Part E. The MRC for the Channel Extension rate element will not apply at the CIS arrangement end of the service. The Customer shall also be charged an MRC for the Channel Mileage at the specified term plan rate on a fixed and on a per mile basis for the airline miles between the Serving Wire Centers, if applicable. In addition to charges described herein, any other charges associated with connecting Verizon Optical Networking to a Collocated Interconnection arrangement are described in the applicable Company FCC Tariff. (N)

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E. APPLICATION OF RATES AND CHARGES (Cont'd) (N)

12. When a Verizon Optical Networking circuit is ordered from a Customer designated Premises to a wire center where connection to a Company provided switched ethernet service network-to-network interface port only connection occurs, the Channel Extension rate element at the Customer designated Premises will apply. The switched ethernet service network-to-network interface port only connection rate element will apply in lieu of the Channel Extension rate element at the switched ethernet service end of the service. The Customer shall also be charged Verizon Optical Networking Channel Mileage at the specified term plan rate on a fixed and on a per mile basis for the airline miles between the Serving Wire Centers, if applicable.

13. When a Verizon Optical Networking circuit is ordered to connect a CIS arrangement and a Company provided switched ethernet service network-to-network interface port only connection in another wire center, the Channel Extension rate element will not apply at the CIS arrangement end of the service. The switched ethernet service network-to-network interface port only connection rate element will apply in lieu of the Channel Extension rate element at the switched ethernet service end of the service. The Customer shall also be charged Verizon Optical Networking Channel Mileage at the specified term plan rate on a fixed and on a per mile basis for the airline miles between the serving wire centers. In addition to charges described herein, any other charges associated with connecting Verizon Optical Networking to a Collocated Interconnection arrangement are described in the applicable Company FCC Tariff.

F. TERMINATION LIABILITY

1. Termination liability applies to On-Net Channel Mileage, On-Net Channel Extension, and Access Aggregation Port service components and applies when either is disconnected prior to expiration of the commitment period, i.e., term plan.

2. The termination liability charge is equal to 25% of the remaining monthly charges for the balance of the commitment period beginning with the date of disconnection or cancellation, and ending with the expiration date of the commitment period.

3. Termination liability applies in addition to any charges associated with satisfying the minimum period obligation.

4. When the service includes connection to another Company service, termination liability for the connecting service also applies in accordance with the terms and conditions specified for that connecting service.

5. Termination liability will not apply if a Customer changes its term plan to a longer commitment period under a private carriage agreement.

6. Termination liability will not apply to the existing service when (1) a Verizon Optical Networking Ethernet service is upgraded to a higher bit rate Verizon Optical Networking Ethernet service, Fibre Channel service, and/or FiCON service (e.g., a Verizon Optical Networking Ethernet 10Mbps service is changed to a Verizon Optical Networking Ethernet 100Mbps service or to a Verizon Optical Networking Ethernet 1Gbps service), and (2) the new term is equal to or of greater length than the term for the terminating service. (N)