

**AT&T OHIO GUIDEBOOK**

PART 15 - Dedicated Telecommunications Services  
SECTION 3 - Digital Private Line Services

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3rd Revised Sheet 1

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**3. DS1 SERVICE**

**A. Description**

DS1 Service provides for the simultaneous two-way transmission of a serial, bipolar, return-to-zero, isochronous digital signal at a terminating bit rate of 1.544 megabits per second (Mbps).

The service is available in a point-to-point configuration between;

- Two customer-designated premises
- A Company wire center or customer-designated premise and a Company wire center where multiplexing, hubbing or cross-connection functions are performed
- Two Centrex locations
- The patron of an Interconnector and a Company wire center for connection to Optical Interconnection Service
- A customer-designated or Other Telecommunications Carriers (OTC) premises to the premises of a OTC for connection to the services or facilities of the OTC
- A customer-designated premise and an Network Reconfiguration Service (NRS)<sup>/1/</sup> system location, or between two NRS system locations (C)
- A customer-designated premise and a Company wire center;
  - For access to Centrex
  - For digital trunk access with Digital Trunking Service or ISDN Prime Service
  - For interconnection to Voice Gateway type network equipment

/1/ Effective October 30, 2018, Network Reconfiguration Service (NRS) will no longer be available for purchase by new or existing customers. See Part 20, Section 15. (N)  
(N)



**3. DS1 SERVICE (cont'd)****B. Definitions**Extended Superframe (ESF) Format

A signaling framing format for DS1 services consisting of frames with 192 information digit time slots preceded by a one digit time slot containing a Frame (F) bit. The ESF framing format consists of 24 consecutive frames as above in a structure where the F bits are divided into three groups used for framing, monitoring and datalink functions according to detailed specifications contained in industry standard ANSI T1.403-1995.

Superframe (SF or D4) Format

A signal framing format for DS1 services consisting of frames with 192 information digit time slots preceded by a one digit time slot containing a Frame (F) bit. The SF or D4 framing format consists of twelve consecutive frames as above in a structure where the F bits are used for framing only and are divided into two groups used for terminal framing and signaling framing functions according to detailed specifications contained in industry standard ANSI T1.403-1995.

**3. DS1 SERVICE (cont'd)**

**C. Terms and Conditions**

1. DS1 Service is provided at the option of the Company where facilities permit. If appropriate facilities are not available, *Special Construction* charges may apply.
2. Rate Zone Wire Center Assignment

Each Company wire center has been assigned to a Rate Zone. A table listing all Rate Zone assignments can be found in Part 15, Section 1, Paragraph V.

**3. DS1 SERVICE (cont'd)**

**D. Features**

1. Optional Features

Network Reconfiguration Service<sup>/1/</sup>

DS1 Service is available for use with Network Reconfiguration Service.

(C)

Central Office Multiplexing and Cross Connect Services

These optional services are available with DS1 Service. Refer to Central Office Multiplexing and Cross Connect Services later in this Section.

Clear Channel Capability

Is an arrangement which allows a customer to transport 1.536 Mbps of information on a DS1 Service with no constraint on the quantity or sequence of one and zero bits. Clear Channel Capability is a required option when 64 Kbps channels are multiplexed onto DS1 Service. Clear Channel Capability is only provided on non-channelized circuits between two customer premises where facilities permit.

Extended Super Frame

Is available as a non-chargeable, customer specified option.

Shared Network Arrangement

DS1 Service is available under a Shared Network Arrangement.

Special Facility Routing – Local Distribution Channel (LDC) Diversity

Special Facility Routing – LDC Diversity provides a transmission path for services between the customers designated premises (exclusive of the entrance facility) and the serving wire center that is diverse from the normal transmission path. With this arrangement, one or more services will be provisioned over the normal route and one or more services will be provisioned over the diverse route. Special Facility Routing must be ordered at the same time as the DS1 Service is ordered. There are both nonrecurring and monthly charges associated with Special Facility Routing and they are in addition to the normal DS1 Service charges. The transmission specifications and credit allowances for service interruption of services provided via a special facility routing arrangement are the same as for services using normal routing. The minimum service period for a DS1 Service ordered with Special Facility Routing is 12 months. Termination Charges will apply to service terminated prior to the contracted period. The termination charge for Special Facility Routing will be calculated as described in Term Payment Plans - Termination Charges in Part 15, Section 1.

Super Frame

Is available as a non-chargeable, customer specified option.

/1/ Effective October 30, 2018, Network Reconfiguration Service (NRS) will no longer be available for purchase by new or existing customers. See Part 20, Section 15.

(N)  
(N)

**3. DS1 SERVICE (cont'd)**

**E. Technical References**

Performance parameters for DS1 Service may be found in the Technical References listed below.

All signals generated by Network Channel Terminating Equipment (NCTE) must meet the signal and format constraints contained in Telcordia Technologies (formerly known as Bellcore) Publication GR-54-CORE. This document also contains the specifications for Clear Channel Capability.

<u>Subject</u>	<u>Technical Reference</u>
Digital Service Transmission Parameters	AM TR-TMO-000101
High Capacity Digital Service (1.544Mbps) Interface Generic Requirements For End Users	GR-54-CORE (Telcordia)
High Capacity Digital Special Access Service Transmission Parameter Limits and Interface Specifications	GR-342-CORE (Telcordia)

The Technical Reference(s) can be obtained from:

APEX Support Team  
 (734) 523-7348

The Telcordia Publication(s) can be obtained from:

Telcordia Technologies, Inc.  
 8 Corporate Center, PYA 3A-184  
 Piscataway, New Jersey 08854-4156

**3. DS1 SERVICE (cont'd)**

**F. Prices**

1. Service Elements

Description /Billing Code/	Nonrecurring Charge
Administrative Charge <sup>/1/</sup>	
- per order	
Zone 1 /NRBA1/	\$ 60.00
Zone 2 /NRBA2/	60.00
Zone 3 /NRBA3/	60.00
Design and Central Office Connection Charge <sup>/1/</sup>	
- per circuit	
Zone 1 /NRBD1/	144.00
Zone 2 /NRBD2/	144.00
Zone 3 /NRBD3/	144.00
Customer Connection Charge <sup>/1/</sup>	
- per termination	
Zone 1 /NRBB1/	213.00
Zone 2 /NRBB2/	213.00
Zone 3 /NRBB3/	240.00

/1/ For those customers who choose a Term Payment Plan (TPP) period of 24 months or greater in length for new installations, the Administrative Charge, Design and Central Office Connection Charge and Customer Connection Charge will not apply. However, customers requesting termination of service prior to the completion of a minimum of 24 months of a 24-month or greater TPP term will become liable for payment of Nonrecurring Charges described above.

**3. DS1 SERVICE (cont'd)**

**F. Prices (cont'd)**

1. Service Elements (cont'd)

<u>Description/Billing Code/</u>	<u>Monthly</u>	<u>12 Months</u>	<u>Monthly Payment</u> <i>Term Payment Plans</i>		
			<u>24 Months<sup>/2/</sup></u>	<u>36 Months<sup>/2/</sup></u>	<u>60 Months<sup>/1/</sup></u>
Local Distribution Channel					
- per point of termination					
Zone 1 /TZ4X1/	\$6,797.00 (I)	\$265.00	\$185.00	\$157.50	\$140.00
Zone 2 /TZ4X2/	6,797.00	275.00	195.00	162.50	145.00
Zone 3 /TZ4X3/	6,797.00 (I)	290.00	215.00	175.00	155.00
Channel Mileage Termination					
- per point of termination					
Zone 1 /CZ4X1/	2,265.00 (I)	85.00	60.00	50.00	42.00
Zone 2 /CZ4X2/	2,265.00	85.00	60.00	50.00	42.00
Zone 3 /CZ4X3/	2,265.00 (I)	85.00	68.25	65.00	60.00
Channel Mileage					
- per mile					
Zone 1 /1YZX1/	758.00 (I)	30.00	23.00	20.00	17.50
Zone 2 /1YZX2/	758.00	30.00	23.00	20.00	17.50
Zone 3 /1YZX3/	758.00 (I)	30.00	23.00	20.00	17.50

/1/ As of October 1, 2013, Term Payment Plan terms greater than 36 months are no longer available for new or renewing subscribers.

/2/ As of January 15, 2021, 24 and 36 Month Term Payment Plans are no longer available for new or renewing subscribers.

**3. DS1 SERVICE (cont'd)**

**F. Prices (cont'd)**

1. Service Elements (cont'd)

Description /Billing Code/	Nonrecurring Charge	
<u>Optional Features and Functions</u>		
Clear Channel Capability		
- per circuit arranged		
Zone 1 /CLYX1/	\$280.00	
Zone 2 /CLYX2/	280.00	
Zone 3 /CLYX3/	280.00	
Shared Network Arrangement		
- processing charge, per service order		
Zone 1 /SRNX1/		36.00
Zone 2 /SRNX2/		36.00
Zone 3 /SRNX3/		36.00
Description /Billing Code/	Nonrecurring Charge	Monthly
Special Facility Routing – Local Distribution Channel (LDC) Diversity		
- per order /NRBOQ/	\$525.00	
- per channel		
First Channel		\$65.00
Zone 1 /DJV/		65.00
Zone 2 /DJV/		65.00
Zone 3 /DJV/		
Additional Channel		
Zone 1 /DJW/		35.00
Zone 2 /DJW/		35.00
Zone 3 /DJW/		35.00

**3. DS1 SERVICE (cont'd)**

**F. Prices (cont'd)**

2. Payment Plans

- Month to Month  
DS1 Service is available on a month to month basis.
- Term Payment Plans  
DS1 Service is available under the Term Payment Plan (TPP) whereby customers must select either a 12, 24<sup>/2/</sup>, 36<sup>/2/</sup> or 60 month<sup>/1/</sup> period. After the selected Term Payment Plan period is satisfied, the monthly rate will apply unless a new TPP is selected. Refer to *Term Payment Plans* in Part 15, Section 1. (C)
- Single Payment Option (SPO)  
A Single Payment Option is available for this service. Refer to *Term Payment Plans - Single Payment Option* in Part 15, Section 1.

3. Termination Charges

Termination Charges will apply to service terminated prior to the contracted period. The termination charge for all TPP terms for DS1 Service will be calculated as described in *Term Payment Plans - Termination Charges* in Part 15, Section 1.

4. Credit Allowance

A credit allowance will be given for failure to meet the installation interval service date or for interruption of service. Refer to Credit Allowances in Part 15, Section 1 for calculating credit allowances.

/1/ As of October 1, 2013, Term Payment Plan terms greater than 36 months are no longer available for new or renewing subscribers.

/2/ As of January 15, 2021, 24 and 36 Month Term Payment Plans are no longer available for new or renewing subscribers. (N)  
(N)



#### 4. DS3 SERVICE

##### A. Description

DS3 Service is a two-point dedicated service that provides for simultaneous two way transmission of serial, isochronous digital signals at a terminating bit rate of 44.736 Megabits per second (Mbps). The interface to the customer will be an electrical signal. The service is available in a point-to-point configuration between:

- Two customer-designated premises.
- A Company wire center or customer-designated premises and a Company wire center where multiplexing, hubbing or cross-connection functions are performed.
- Company wire centers for termination in central office multiplexers.
- The patron of an Interconnector and a Company wire center for connection to Optical Interconnection Service.
- A customer-designated or Other Telecommunications Carriers (OTC) premises to the premises of an OTC for connection to services or facilities of the OTC.
- A customer-designated premises and a Network Reconfiguration Service (NRS)<sup>/1/</sup> system location, or between two NRS system locations. (C)

##### B. Definitions

###### Local Distribution Channel

Provides interconnection between the Company Serving Wire Center (SWC) and the customer premises. Consists of two rates elements: DS3 Service Packages and DS3 Service Channels.

##### C. Terms and Conditions

In addition to the Terms and Conditions set forth in Part 15, Section 1, the following applies to DS3 Service.

###### 1. Rate Zone Wire Center Assignment

Each Company wire center has been assigned to a Rate Zone. A table listing all Rate Zone assignments can be found in Part 15, Section 1, Paragraph V.

2. DS3 Service is provided at the option of the Company where facilities permit. If appropriate facilities are not available, *Special Construction* charges may apply.

/1/ Effective October 30, 2018, Network Reconfiguration Service (NRS) will no longer be available for purchase by new or existing customers. See Part 20, Section 15. (N)  
(N)

**4. DS3 SERVICE (cont'd)**

**D. Features**

1. Optional Features

Network Reconfiguration Service (NRS)<sup>/1/</sup> (C)  
DS3 Service is available for use with Network Reconfiguration Service (NRS).

Central Office Multiplexing and Cross Connect Services  
These optional services are available with DS3 Service. Refer to Central Office Multiplexing and Cross Connect Services later in this Section.

Shared Network Arrangement  
A Shared Network Arrangement is available with DS3 Service.

Special Facility Routing – Local Distribution Channel (LDC) Diversity  
Special Facility Routing – LDC Diversity provides a transmission path for services between the customers designated premises (exclusive of the entrance facility) and the serving wire center that is diverse from the normal transmission path. With this arrangement, one or more services will be provisioned over the normal route and one or more services will be provisioned over the diverse route. Special Facility Routing must be ordered at the same time as the DS3 Service is ordered. There are both nonrecurring and monthly charges associated with Special Facility Routing and they are in addition to the normal DS3 Service charges. The transmission specifications and credit allowances for service interruption of services provided via a special facility routing arrangement are the same as for services using normal routing. The minimum service period for DS3 Service ordered with Special Facility Routing is 12 months. Termination Charges will apply to service terminated prior to the contracted period. The termination charge for Special Facility Routing will be calculated as described in Term Payment Plans - Termination Charges in Part 15, Section 1.

/1/ Effective October 30, 2018, Network Reconfiguration Service (NRS) will no longer be available for purchase by new or existing customers. See Part 20, Section 15. (N)  
(N)

**4. DS3 SERVICE (cont'd)**

**E. Technical References**

The technical specifications and compatible channel interfaces are set forth in the following technical publications:

<u>Subject</u>	<u>Technical Reference</u>
Digital Service Transmission Parameters	AM TR-TMO-000101
Service Description and Interface Req't's for OPTINET Optical Service	AM TR-TMO-000072
High Capacity Digital Special Access Service - Transmission Parameter Limits and Interface Specifications	GR-342-CORE (Telcordia)

The Technical Reference(s) can be obtained from:

APEX Support Team  
(734) 523-7348

The Telcordia (formerly known as Bellcore) Publication(s) can be obtained from:

Telcordia Technologies, Inc.  
8 Corporate Place, PYA 3A-184  
Piscataway, New Jersey 08854-4156

**4. DS3 SERVICE (cont'd)**

**F. Prices**

1. Service Elements

Description /Billing Code/	Nonrecurring Charge
Administrative Charge <sup>/1/</sup> - per order	
Zone 1 /NRBA1/	\$ 60.00
Zone 2 /NRBA2/	60.00
Zone 3 /NRBA3/	60.00
Design and Central Office Connection Charge <sup>/1/</sup> - per circuit	
Zone 1 /NRBD1/	456.00
Zone 2 /NRBD2/	480.00
Zone 3 /NRBD3/	480.00
Customer Connection Charge <sup>/1/</sup> - per termination	
Zone 1 /NRBB1/	800.00
Zone 2 /NRBB2/	880.00
Zone 3 /NRBB3/	900.00

/1/ For those customers who choose a Term Payment Plan (TPP) period of 24 months or greater in length for new installations, the Administrative Charge, Design and Central Office Connection Charge and Customer Connection Charge will not apply. However, customers requesting termination of service prior to the completion of a minimum of 24 months of a 24-month or greater TPP term will become liable for payment of Nonrecurring Charges described above.

**4. DS3 SERVICE (cont'd)**

**F. Prices (cont'd)**

1. Service Elements (cont'd)

<u>Description/Billing Code/</u>	<u>12</u> <u>Months</u>	<u>Monthly Payment</u> <u>Term Payment Plans</u>			<u>60</u> <u>Months<sup>/1/</sup></u>	<u>Monthly</u> <u>Extension</u>
		<u>24</u> <u>Months<sup>/2/</sup></u>	<u>36</u> <u>Months<sup>/2/</sup></u>			
Local Distribution Channel						
- per point of termination						
Zone 1 /TZUP1/	\$3,406.00	\$2,375.00	\$1,718.00	\$1,040.00	\$65,306.00 (I)	
Zone 2 /TZUP2/	3,406.00	2,375.00	1,718.00	1,110.00	68,266.00	
Zone 3 /TZUP3/	3,406.00	2,375.00	1,718.00	1,200.00	74,418.00 (I)	
Channel Mileage Termination						
- per point of termination						
Zone 1 /CZ4X1/	468.00	418.00	393.00	300.00	9,072.00 (I)	
Zone 2 /CZ4X2/	468.00	418.00	393.00	300.00	9,072.00	
Zone 3 /CZ4X3/	468.00	418.00	393.00	338.00	9,072.00 (I)	
Channel Mileage						
- per mile						
Zone 1 /1YZX1/	165.00	137.00	118.00	55.00	2,617.00 (I)	
Zone 2 /1YZX2/	165.00	137.00	118.00	55.00	2,617.00	
Zone 3 /1YZX3/	165.00	137.00	118.00	65.00	2,617.00 (I)	

/1/ As of October 1, 2013, Term Payment Plan terms greater than 36 months are no longer available for new or renewing subscribers.

/2/ As of January 15, 2021, 24 and 36 Month Term Payment Plans are no longer available for new or renewing subscribers.

**4. DS3 SERVICE (cont'd)**

**F. Prices (cont'd)**

1. Service Elements (cont'd)

<u>Description /Billing Code/</u>	<u>Nonrecurring Charge</u>	
<i>Optional Features and Functions</i>		
Shared Network Arrangement		
- processing charge, per order		
Rate Zone 1 /SRNX1/	\$37.50	
Rate Zone 2 /SRNX2/	37.50	
Rate Zone 3 /SRNX3/	37.50	
<u>Description /Billing Code/</u>	<u>Nonrecurring Charge</u>	<u>Monthly</u>
Special Facility Routing - Local Distribution Channel (LDC) Diversity		
- per order /NRBOQ/	\$525.00	
- per channel		
First Channel		
Zone 1 /DVJ/		\$700.00
Zone 2 /DVJ/		700.00
Zone 3 /DVJ/		700.00
Additional Channel		
Zone 1 /DVW/		300.00
Zone 2 /DVW/		300.00
Zone 3 /DVW/		300.00

**4. DS3 SERVICE (cont'd)****F. Prices (cont'd)**

## 2. Payment Plans (cont'd)

- Term Payment Plans

DS3 Service is only available under the Term Payment Plan (TPP) whereby customers must select either a 12, 24<sup>/2/</sup>, 36<sup>/2/</sup> or 60 month<sup>/1/</sup> period. After the minimum period is satisfied, the monthly extension price will apply unless a new TPP is selected. Refer to *Term Payment Plans* in Part 15, Section 1. (C)

- Single Payment Option (SPO)

A Single Payment Option is available for this service. Refer to *Term Payment Plans - Single Payment Option* in Part 15, Section 1.

## 3. Termination Charges

Termination Charges will apply to service terminated prior to the contracted period. The termination charge for all TPP terms for DS3 Service will be calculated as described in *Term Payment Plans - Termination Charges* in Part 15, Section 1.

## 4. Credit Allowance

A credit allowance will be given for failure to meet the installation interval service date or for interruption of service. Refer to *Credit Allowances* in Part 15, Section 1 for calculating credit allowances.

/1/ As of October 1, 2013, Term Payment Plan terms greater than 36 months are no longer available for new or renewing subscribers.

/2/ As of January 15, 2021, 24 and 36 Month Term Payment Plans are no longer available for new or renewing subscribers. (N)  
(N)

**5. OC-*n* POINT-TO-POINT SERVICE****A. Description**

OC-*n* Point-to-Point Service (OC-*n* channels) provides high speed synchronous optical fiber-based full duplex data transmission capabilities. OC-*n* channels may be either channelized (non-concatenated) or non-channelized (concatenated) designated as OC-*nc*. This service provides optical data transmission with the following characteristics:

- OC-3/OC-3c Service provides channels operating at the terminating bit rate of 155.52 Mbps
- OC-12/OC-12c Service provides channels operating at the terminating bit rate of 622.08 Mbps
- OC-48/OC-48c Service provides channels operating at the terminating bit rate of 2488.32 Mbps
- OC-192/OC-192c Service provides channels operating at the terminating bit rate of 9953.28 Mbps

OC-*n* channels may be used to connect:

- A customer-designated premises to another customer-designated premises.
- A customer-designated premises to a Company location where Add/Drop Multiplexing, Add/Drop Functions and/or cross-connections are performed.

OC-*n* channels may be connected by:

- Using the appropriate OC-*n* Add/Drop Multiplexer (mux) along with the Add/Drop Function to an DS1 and/or DS3 at suitably equipped wire centers, i.e. non-concatenated, or
- Using the full bandwidth premises to premises, i.e. concatenated.



**5. OC-n POINT-TO-POINT SERVICE (cont'd)****A. Description (cont'd)**

OC-n Point-to-Point Service, based on customer requirements, can be configured in any of the following ways:

- OC-3
- Three STS-1 (Synchronous Transport Signals) channels which each contain:
    - One DS3 that is STS-1 mapped;
    - Up to 28 DS1s that are VT-mapped;
    - An STS-1 channel without constraint to payload mapping when the STS-1 channel does not terminate via an Add/Drop Function to DS1 or DS3 services within the Company network;
  - A single concatenated STS-3C channel
  - 1 Gbps Ethernet STS-1, 1v-2v
- OC-12
- Twelve STS-1 channels which each contain:
    - One DS3 that is STS-1 mapped;
    - Up to 28 DS1s that are VT-mapped;
    - An STS-1 channel without constraint to payload mapping when the STS-1 channel does not terminate via an Add/Drop Function to DS1 or DS3 services within the Company network;
  - Four concatenated STS-3C channels;
  - From one to three STS-3C channels mixed with from three to nine STS-1 channels subject to utilization of the total OC-12 capacity;
  - A single concatenated STS-12C channel
  - 1 Gbps Ethernet STS-1, 1v-9v
  - 1 Gbps Ethernet STS-3c, 1v-3v

**5. OC-n POINT-TO-POINT SERVICE (cont'd)****A. Description (cont'd)**

- OC-48
- Forty-eight STS-1 channels which each contain:
    - One DS3 that is STS-1 mapped;
    - Up to 28 DS1s that are VT-mapped;
    - An STS-1 channel without constraint to payload mapping when the STS-1 channel does not terminate via an Add/Drop Function to DS1 or DS3 services within the Company network;
  - Sixteen concatenated STS-3C channels;
    - From one to fifteen concatenated STS-3C channels mixed with from three to forty-five STS-1 channels subject to utilization of the total OC-48 capacity;
  - Four concatenated STS-12C channels;
    - From one to three concatenated STS-12C channels mixed with from twelve to thirty-six STS-1 channels subject to utilization of the total OC-48 capacity;
    - From one to three concatenated STS-12C channels mixed with from four to twelve concatenated STS-3C channels, also mixed with from three to thirty-three STS-1 channels subject to utilization of the total OC-48 capacity;
    - From one to three concatenated STS-12C channels mixed with from one to eleven concatenated STS-3C channels, also mixed with from three to thirty-three STS-1 channels subject to utilization of the total OC-48 capacity
  - 1 Gbps Ethernet STS-1, 1v-21v
  - 1 Gbps Ethernet STS-3c, 1v-7v

**5. OC-n POINT-TO-POINT SERVICE (cont'd)****A. Description (cont'd)**

OC-192

One hundred ninety two interleaved STS-1 channels which each contain:

- One DS3 that is STS-1 mapped;
- Up to 28 DS1s that are VT-mapped;
- An STS-1 channel without constraint to payload mapping when the STS-1 channel does not terminate via an Add/Drop Function to DS1 or DS3 services within the Company network;

Sixty four interleaved concatenated STS-3C channels:

- From one to sixty three interleaved concatenated STS-3C channels mixed with from three to one hundred and eighty nine STS-1 channels, subject to utilization of the total STS-192 capacity;

Sixteen interleaved concatenated STS-12C channels:

- From one to fifteen interleaved concatenated STS-12C channels mixed with from twelve to one hundred and eighty STS-1 channels subject to utilization of the total STS-192 capacity;
- From one to fifteen interleaved concatenated STS-12C channels mixed with from four to sixty concatenated STS-3C channels subject to utilization of the total STS-192 capacity.
- From one to fifteen interleaved concatenated STS-12C channels mixed with from one to fifty nine concatenated STS-3C channels, also mixed with from three to one hundred and seventy seven STS-1 channels subject to utilization of the total STS-192 capacity.

**5. OC-n POINT-TO-POINT SERVICE (cont'd)****A. Description (cont'd)**

OC-192 (cont'd)

Four interleaved concatenated STS-48C channels:

- From one to three interleaved concatenated STS-48C channels mixed with from forty eight to one hundred and forty four STS-1 channels subject to utilization of the total STS-192 capacity;
- From one to three interleaved concatenated STS-48C channels mixed with from sixteen to forty eight STS-3c channels subject to utilization of the total STS-192 capacity;
- From one to three interleaved concatenated STS-48C channels mixed with from four to twelve STS-12c channels subject to utilization of the total STS-192 capacity;
- From one to three interleaved concatenated STS-48C channels mixed with from one to forty seven concatenated STS-3C channels, also mixed with from three to one hundred and forty one STS-1 channels subject to utilization of the total STS-192 capacity.
- From one to three interleaved concatenated STS-48C channels mixed with from one to eleven concatenated STS-12C channels, also mixed with from twelve to one hundred and thirty two STS-1 channels subject to utilization of the total STS-192 capacity.
- From one to three interleaved concatenated STS-48C channels mixed with from one to eleven concatenated STS-12C channels, also mixed with from four to forty four concatenated STS-3c channels subject to utilization of the total STS-192 capacity.
- From one to three interleaved concatenated STS-48C channels mixed with from one to eleven concatenated STS-12C channels, also mixed with from three to one hundred and twenty nine STS-1 channels subject to utilization of the total STS-192 capacity.

1 Gbps Ethernet STS-1, 1v-21v

1 Gbps Ethernet STS-3c, 1v-7v

OC-n

The customer is responsible via the ordering process to identify what STS signal configuration is to be contained in each OC-n Point-to-Point service connection and each STS-1, STS-3 and/or STS-12 payload content. This information is needed for routing and connection purposes in the network.

**5. OC-*n* POINT-TO-POINT SERVICE (cont'd)**

**A. Description (cont'd)**

Channel Configuration

OC-*n* Channels consist of Local Distribution Channels (LDCs), Interoffice Transport (which consists of a combination of Channel Mileage and Channel Mileage Terminations), and optional features and functions.

- OC-*n* Local Distribution Channels

OC-*n* Local Distribution Channels provide optical interconnection between a Company Serving Wire Center (SWC) and the customer premises.

The following types of LDCs are available:

<u>Terminating Bit Rate</u>	<u>Loop Format</u>	<u>Data Transmission Format</u>
155.52 Mbps	4 fiber	Synchronous
622.08 Mbps	4 fiber	Synchronous
2488.32 Mbps	4 fiber	Synchronous
9953.28 Mbps	4 fiber	Synchronous

**5. OC-*n* POINT-TO-POINT SERVICE (cont'd)****B. Definitions**Interoffice Transport

Interoffice Transport facilities, comprised of Channel Mileage Termination (CMT) and Channel Mileage (CM), provide the transmission paths between Serving Wire Centers associated with two customer-designated premises or between a Serving Wire Center associated with a customer premises and a Company Hub location. Four interoffice transport types are available: OC-3 transport at a bit rate of 155.52 Mbps, OC-12 transport at a bit rate of 622.08 Mbps, OC-48 transport at a bit rate of 2488.32 Mbps and OC-192 at a bit rate of 9953.28 Mbps.

OC-3/OC-3c LDCs are interconnected to OC-3 transport, OC-12/OC-12c LDCs are interconnected to OC-12 transport, OC-48/OC-48c LDCs are interconnected to OC-48 transport and OC-192/OC-192c LDCs are interconnected to OC-192 transport.

In addition, interoffice transport can be connected between wire centers with Add/Drop Multiplexing at a lower OC-*n* speed than the LDC, if the transport is between a lower speed Add/Drop Function and:

- another lower speed Add/Drop Function;
- another lower speed Local Distribution Channel;
- a lower speed Dedicated Ring Port;
- a lower speed Cross-Connect;

All of the above terminations must be the same speed as the transport.

SONET (Synchronous Optical Network)

SONET is a set of international standards for fiber optic based transmission systems. SONET defines standard optical carrier transmission rates and utilizes a modular multiplexing approach based on the application of Synchronous Transport Signals (STS).

**5. OC-*n* POINT-TO-POINT SERVICE (cont'd)****C. Terms and Conditions**

1. The customer is responsible via the ordering process to identify what STS signal configuration is to be contained in each OC-*n* service connection and each STS-1, STS-3 and/or STS-12 payload content. This information is needed for routing and connection purposes in the network.
2. When OC-*n* Point-to-Point Service is provided, the customer is responsible for providing the Optical Line Termination (OLT) at the customer's premises. The OLT supplied at the customer premises must be compatible with the OLT used by the Company in the Serving Wire Center.
3. All LDCs comprising a channel must have the same terminating bit rate unless multiplexing is performed at a Company Hub location.
4. The options in Add/Drop Multiplexing and Add/Drop Function cannot be used with OC-3 or OC-12 Service configured by the customer to contain a single non-channelized (concatenated) STS-3C or STS-12C signal, respectively.
5. Service Rearrangement Charges
  - If a change involves the rearrangement of an OC-*n* Point-to-Point Service (non-channelized) to an arrangement with an Add/Drop Multiplexer and an Add/Drop Function or vice-versa, an Administrative Charge, Design and Central Office Connection Charge and Customer Connection Charge will apply.
  - A change in payload mapping within an OC-*n* package will require a redesign of the OC-*n* Point-to-Point Service, and an *Administrative Charge* and *Design and Central Office Connection Charge* will apply.
6. When ordering the 1+1 Protection with Route Survivability option:
  - The protect fiber will be charged on a distance sensitive basis, based on quarter route miles, from the customer premises to the serving wire.
  - Prior to confirming an order for service, the Company will provide a proposed route diagram to the customer. The diagram will include the number of quarter route miles and method used to support the number needed to provide the alternate route or route to the alternate wire center. In order to avoid compromising Route or Central Office Survivability information, the Company will provide this information only to the ordering customer.
  - Installation of the 1+1 Protection with Route Survivability option will not begin until the customer has accepted the proposed routing by the Company.
7. OC-*n* Point-to-Point Service is provided at the option of the Company where appropriate SONET facilities are available. If appropriate facilities are not available, *Special Construction* charges may apply.
8. The minimum service period for OC-*n* Point-to-Point Service is 12 months.

**5. OC-n POINT-TO-POINT SERVICE (cont'd)****D. Features**

## 1. Optional Features

OC-n Add/Drop Multiplexing

An arrangement that allows an OC-n channel operating at a terminating speed of 155.52 Mbps, 622.08 Mbps, 2488.32 Mbps and 9953.28 Mbps respectively, to add/drop a lower speed channel by using this feature along with the Add/Drop Function as stated below.

OC-3 Add/Drop Multiplexing at a Company wire center will provide the capability to support the full Add/Drop Function capacity of OC-3 Service bandwidth with up to three DS3 Add/Drop Functions or equivalently up to three groups of 28 DS1 Add/Drop Functions.

OC-12 Add/Drop Multiplexing at a Company wire center will provide the capability to support the full Add/Drop Function capacity of OC-12 Service bandwidth with up to four OC-3 Add/Drop Functions or up to twelve DS3 Add/Drop Functions or equivalent combinations of OC-3 and DS3 Add/Drop Functions.

OC-48 Add/Drop Multiplexing at a Company wire center will provide the capability to support one quarter of the Add/Drop Function capacity of OC-48 Service bandwidth. Up to four OC-48 Add/Drop Multiplexing options may be provided with each supporting one OC-12 Add/Drop Function, or up to four OC-3 Add/Drop Functions or up to twelve DS3 Add/Drop Functions or equivalent combination of OC-3 and DS3 Add/Drop Functions.

OC-192 Add/Drop Multiplexing at a Company wire center will provide the capability to support full Add/Drop Function capacity of OC-192 Service bandwidth. Up to four OC-48 Add/Drop Multiplexing options, or up to 16 OC-12 add/drop functions, or up to 64 OC-3 add/drop functions or equivalent combinations of OC-48, OC-12 and OC-3 add/drop functions are supported.



**5. OC-n POINT-TO-POINT SERVICE (cont'd)**

**D. Features (cont'd)**

1. Optional Features (cont'd)

Add/Drop Function

OC-n Point-to-Point Service is able to add or drop lower level signals as shown in the matrix following. The Add/Drop Function is offered at a circuit level. For example, if a customer wants to drop one DS3 signal from an OC-12 service, one Add/Drop Function charge for the DS3 would be applicable, in addition to the OC-12 Add/Drop Multiplexing charge.

An OC-n Point-to-Point Service is only able to add or drop the services that have been identified by payload content (mapped) within the bandwidth. DS1 mapped STS-1 signals are only able to connect to a DS1 and DS3 mapped STS-1 signals are only able to connect to a DS3. If a change is required it may be accomplished by the customer's CPE or through the current asynchronous environment for multiplexing of DS3 and DS1 Services. See Central Office (CO) Multiplexing for DS1 and DS3 Services.

	ADD/DROP Function					
	<u>DS1</u>	<u>DS3</u>	<u>OC-3</u>	<u>OC-12</u>	<u>OC-48</u>	<u>1000 BaseLX</u>
OC-192	No <sup>/1/</sup>	Yes <sup>/2/</sup>	Yes	Yes	Yes	Yes
OC-48	No <sup>/1/</sup>	Yes	Yes	Yes	N/A	Yes
OC-12	Yes	Yes	Yes	N/A	N/A	Yes
OC-3	Yes	Yes	N/A	N/A	N/A	Yes

/1/ To add/drop a DS1 from an OC-12 and/or OC-48, an intermediate step at either OC-3 or DS3 must be taken. To add/drop a DS1 from an OC-192, an intermediate step at OC-48 must be taken.

/2/ Only the first 24 DS3s will be dropped directly off an OC-192, the 25th DS3 requires an OC-3, OC-12 or OC-48 subtended shelf.

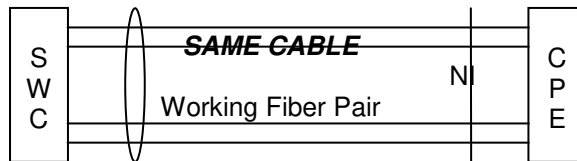
5. OC-*n* POINT-TO-POINT SERVICE (cont'd)

D. Features (cont'd)

1. Optional Features (cont'd)

1+1 Protection

The base OC-*n* Point-to-Point Service is offered with four fibers in the same cable, but the protection card will only be activated when this option is ordered. This will allow customers to order protection if their CPE can accommodate it.



Protect Fiber Pair

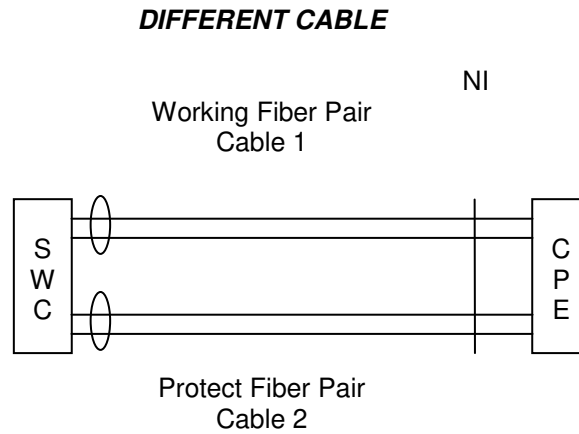
5. OC-n POINT-TO-POINT SERVICE (cont'd)

D. Features (cont'd)

1. Optional Features (cont'd)

1+1 Protection with Cable Survivability

This option will provide 1+1 protection and additional loop survivability with the working fiber pair and protect fiber pair placed in separate cables within the same conduit.



5. OC-n POINT-TO-POINT SERVICE (cont'd)

D. Features (cont'd)

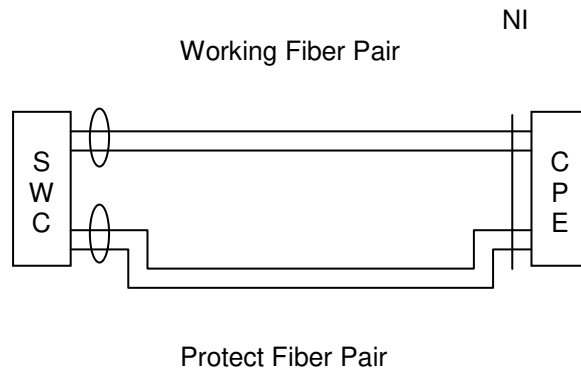
1. Optional Features (cont'd)

1+1 Protection with Route Survivability

This option will provide 1+1 protection and offer additional protection from fiber cable cuts by routing the working fiber pair via the primary route and the protect fiber pair via a physically diverse alternate route.

This option will also assure 100 percent availability of the service. Any service interruption will result in a credit allowance as described in the *Prices, Credit Allowances* paragraph following.

**DIFFERENT PHYSICAL PATH**



**5. OC-n POINT-TO-POINT SERVICE (cont'd)**

**D. Features (cont'd)**

1. Optional Features (cont'd)

OC-n Point-to-Point Diversity

This option will provide the ability to protect a single circuit end-to-end, providing two completely diverse (or separate) paths through the Company's network. The circuit will have separate optical connections in the Central Office and between interoffice facility systems. The two paths will be designed and provisioned separately such that neither path will follow the same routes, thus providing continued service should a network fault occur in one of the paths. This feature requires the additional provision of 1+1 Protection with Route Survivability.

Point-to-Point Regenerator

Regenerators provide essential detection and retransmission of SONET Optical 2488.32 Mbps and 9953.28 Mbps signals between customer premises. Regenerators will only be provided as required by the Company when actual fiber facility distances between customer designated premises and/or central office locations exceed design limits (typically 25 to 30 miles). Regenerators will be located exclusively in Company central offices.

Shared Network Arrangement

A Shared Network Arrangement is available with OC-n Point-to-Point Service. Refer to Shared Network Arrangement in Part 15, Section 1.

Ethernet over SONET (EoS)

EoS allows the efficient transport of Ethernet frames using SONET. Ethernet Optical Add/Drop capability will be available in bandwidths up to 1 Gbps on an OC-n Point-to-Point Service. As SONET bandwidths will be preset, the customer will be unable to transmit data beyond these preset SONET bandwidths. Only single-mode fiber is available in the Central Office. The EoS line rates are based on the theoretical SONET payload line rates as specified in Telcordia Publication GR-253-CORE, Issue 4. These values are not representative of the true Ethernet transport capacity of the EoS circuit.

(N)  
|  
(N)

**5. OC-*n* POINT-TO-POINT SERVICE (cont'd)**

**E. Technical References**

The technical specifications for OC-*n* Point-to-Point Service are described in Technical Reference AM TR-NIS-000111. The Company will work cooperatively with the customer to select compatible Optical Line Terminations (OLTs) which conform to the requirements set forth in Technical Reference Publication AM TR-TMO-000101.

The network channel interfaces define the bit rates that are available for OC-*n* Point-to-Point Service operating at speeds of 155.52 Mbps, 622.08 Mbps, 2488.32 Mbps and 9953.28 Mbps respectively. Network Channel interfaces and codes are described in Technical Publication AM TR-TMO-000080.

<u>Subject</u>	<u>Technical Reference</u>	
Ameritech Service's Network Channel and Network Channel Interface Codes	AM TR-TMO-000080	
Ameritech Digital Service Transmission Parameters	AM TR-TMO-000101	
Ameritech OC-3/OC-3c, OC-12/OC-12c, OC-48/OC-48c and OC-192/OC-192c Service Interface Specifications	AM TR-NIS-000111	
Synchronous Optical Network (SONET) Transport Systems: Common Generic Criteria	Telcordia Technologies GR-253-CORE, Issue 4	(N) (N)

The Technical Reference can be obtained from:

APEX Support Team  
(734) 523-7348

The Telcordia Technologies document can be obtained from:

Telcordia Technologies  
One Telcordia Drive, RRC 1B-180  
Piscataway, New Jersey 08854

(N)  
|  
(N)

5. OC-n POINT-TO-POINT SERVICE (cont'd)

F. Prices

1. Service Elements

<u>Description /Billing Code/</u>	<u>Nonrecurring Charge</u>
Administrative Charge	
- per order	
OC-3/OC-3c Service 155.52 Mbps /ORCMX/	\$ 60.00
OC-12/OC-12c Service 622.08 Mbps /ORCMX/	60.00
OC-48/OC-48c Service 2488.32 Mbps /ORCMX/	60.00
OC-192/OC-192c Service 9953.28 Mbps /ORCMX/	60.00
Design and Central Office Connection Charge	
- per circuit	
OC-3/OC-3c Service 155.52 Mbps /NRBCL/	375.00
OC-12/OC-12c Service 622.08 Mbps /NRBCL/	375.00
OC-48/OC-48c Service 2488.32 Mbps /NRBCL/	500.00
OC-192/OC-192c Service 9953.28 Mbps /NRBCL/	2,250.00
Customer Connection Charge	
- per termination	
OC-3/OC-3c Service 155.52 Mbps /NRBBL/	450.00
OC-12/OC-12c Service 622.08 Mbps /NRBBL/	450.00
OC-48/OC-48c Service 2488.32 Mbps /NRBBL/	600.00
OC-192/OC-192c Service 9953.28 Mbps /NRBBL/	600.00

5. OC-n POINT-TO-POINT SERVICE (cont'd)

F. Prices (cont'd)

1. Service Elements (cont'd)

Description <u>/Billing Code/</u>	Monthly Payment <i>Term Payment Plans</i>			Monthly <u>Extension</u>	(C)
	<u>12</u> <u>Months</u>	<u>36</u> <u>Months</u>	<u>60</u> <u>Months</u> <sup>/1/</sup>		
Local Distribution Channel					
- per point of termination					
OC-3/OC-3c /TMECS/	\$1,607.00	\$ 1,368.00	\$ 1,125.00	\$ 1,607.00	
OC-12/OC-12c /TMECS/	4,000.00	3,400.00	2,800.00	4,000.00	
OC-48/OC-48c /TMECS/	8,000.00	6,800.00	5,600.00	8,000.00	
OC-192/OC-192c /TMECS/	NA	20,400.00	16,800.00	29,400.00	
Channel Mileage Termination					
- per point of Mileage Termination					
OC-3 /CM6/	469.00	399.00	375.00	469.00	
OC-12 /CM6/	700.00	595.00	560.00	700.00	
OC-48 /CM6/	1,575.00	1,420.00	1,340.00	1,575.00	
OC-192/CM6/	NA	4,260.00	4,020.00	7,035.00	
Channel Mileage					
- per mile					
OC-3 /IL5XX/	250.00	213.00	200.00	250.00	
OC-12 /IL5XX/	500.00	425.00	400.00	500.00	
OC-48 /IL5XX/	550.00	520.00	440.00	550.00	
OC-192 /1L5XX/	NA	520.00	440.00	650.00	
Optional Features					
Add/Drop Multiplexing					
- per arrangement					
OC-3 /MPECX/	1,107.00	939.00	775.00	1,107.00	
OC-12 /MPEDX/	2,750.00	2,340.00	1,925.00	2,750.00	
OC-48 /MXRFX/	5,000.00	3,510.00	2,895.00	5,000.00	
OC-192 /MXRGX/	NA	10,530.00	8,685.00	15,000.00	

/1/ As of October 1, 2013, Term Payment Plan terms greater than 36 months are no longer available for new or renewing subscribers. (N)



**5. OC-n POINT-TO-POINT SERVICE (cont'd)**

**F. Prices (cont'd)**

1. Service Elements (cont'd)

<u>Description /Billing Code/</u>	<u>Nonrecurring Charge</u>	<u>Monthly Price</u>
Optional Features (cont'd)		
Add/Drop Function		
OC-3 Service		
- per DS3 Add or Drop /MXJBX/	-	\$ 120.00
- per DS1 Add or Drop /MXJAX/	-	50.00
- per 1000BaseLX Ethernet /MX4LX/	-	500.00
OC-12 Service		
- per OC-3 Add or Drop /MXJCX/	-	150.00
- per DS3 Add or Drop /MXJBX/	-	120.00
- per 1000BaseLX Ethernet /MX4LX/	-	500.00
OC-48 Service		
- per OC-12 Add or Drop /MXJEX/	-	375.00
- per OC-3 Add or Drop /MXJCX/	-	150.00
- per DS3 Add or Drop /MXJBX/	-	120.00
- per 1000BaseLX Ethernet /MX4LX/	-	500.00
OC-192 Service		
- per OC-48 Add or Drop /MXJFX/	-	900.00
- per OC-12 Add or Drop /MXJEX/	-	375.00
- per OC-3 Add or Drop /MXJCX/	-	150.00
- per 1000BaseLX Ethernet /MX4LX/	-	500.00
1+1 Protection		
- per Local Distribution Channel		
OC-3/OC-3c /P8T/	-	57.00
OC-12/OC-12c /P8T/	-	250.00
OC-48/OC-48c /P8T/	-	1,175.00
OC-192/OC-192c /P8T/	-	5,400.00

**5. OC-n POINT-TO-POINT SERVICE (cont'd)**

**F. Prices (cont'd)**

1. Service Elements (cont'd)

<u>Description /Billing Code/</u>	<u>Nonrecurring Charge</u>	<u>Monthly Price</u>
Optional Features (cont'd)		
1+1 Protection with Cable Survivability		
- per Local Distribution Channel		
OC-3/OC-3c /P3S/	\$500.00	\$ 57.00
OC-12/OC-12c /P3S/	600.00	250.00
OC-48/OC-48c /P3S/	700.00	1,175.00
OC-192/OC-192c /P3S/	800.00	5,400.00
1+1 Protection with Route Survivability		
- per Local Distribution Channel		
OC-3/OC-3c /P8T/		
OC-12/OC-12c /P8T/		
OC-48/OC-48c /P8T/		
OC-192/OC-192c /P8T/		
	Apply P8T above plus 'Per Quarter Route Mile' below	
- per quarter route mile		
OC-3 /S2DXY/		50.00
OC-12 /S2DXS/		75.00
OC-48 /S2DXX/		100.00
OC-192 /S2DXY/		150.00

**5. OC-n POINT-TO-POINT SERVICE (cont'd)**

**F. Prices (cont'd)**

1. Service Elements (cont'd)

<u>Description /Billing Code/</u>	<u>Nonrecurring Charge</u>	<u>Monthly Price</u>
Optional Features (cont'd)		
OC-n Point-to-Point Diversity <sup>/1/</sup>		
- per OC-3 circuit /CPAPA/		\$ 200.00
- per OC-12 circuit /CPAPB/		300.00
- per OC-48 circuit /CPAPC/		700.00
- per OC-192 circuit /CPAPD/		1,200.00
Point-to-Point Regenerator		
- per OC-48 regenerator /RGY48/		5,280.00
- per OC-192 regenerator /RGY92/		11,000.00
Shared Network Arrangement		
- Processing Charge, per Service Order /NRBOP/	\$30.00	

/1/ OC-n Point-to-Point Diversity requires the additional provision of 1+1 Protection with Route Survivability.

**5. OC-n POINT-TO-POINT SERVICE (cont'd)****F. Prices (cont'd)**

## 2. Payment Plans

- Term Payment Plans

OC-n Point-to-Point Service is available under the Term Payment Plan (TPP) whereby customers must select either a 12-, 36- or 60-month<sup>/1/</sup> period. After the selected Term Payment Plan period is satisfied, the monthly extension price will apply unless a new TPP is selected. Refer to *Term Payment Plans* in Part 15, Section 1. (C)

- Single Payment Option (SPO)

A Single Payment Option is available for this service. Refer to *Term Payment Plans - Single Payment Option* in Part 15, Section 1.

## 3. Termination Charges

Termination Charges will apply to service terminated prior to the contracted period. The termination charge for all TPP terms for OC-n Point-to-Point Service will be calculated as described in *Termination Charges* in Part 15, Section 1.

For service installed after July 10, 2007, customers will be permitted to move one Local Distribution Channel (LDC) of an OC-n Point-to-Point Service to another location in the same LATA during their TPP term and keep the TPP in force, provided no lapse in service occurs. The customer must have met a 12-month minimum in-service period at the old location and be liable for at least 12 months remaining at the new location. Nonrecurring charges, as appropriate, will apply.

For service installed after July 10, 2007, customers will be permitted to upgrade to a higher-speed service provided by the Company, without incurring Termination Charges, given the following conditions are met:

- an upgrade is considered an increase in speed or capacity when comparing OC-n Point-to-Point Service to the new service.
- the customer must issue a disconnect order for the existing OC-n Point-to-Point Service and place a service order for the new, higher-speed service, such that there is no more than 90 days overlap in service.
- the same customer locations must be utilized for the new, higher-speed service.
- the expiration date for the new, higher-speed service is beyond the end of the original TPP term associated with the existing OC-n Point-to-Point Service.
- the existing OC-n Point-to-Point Service must have been in service for a minimum period of 15 months for a 36-month contract or 18 months for a 60-month contract.

/1/ As of October 1, 2013, Term Payment Plan terms greater than 36 months are no longer available for new or renewing subscribers. (N)  
(N)

**5. OC-n POINT-TO-POINT SERVICE (cont'd)**

**F. Prices (cont'd)**

4. Credit Allowance

A credit allowance will be given for interruptions in service. Refer to *Credit Allowances* in Part 15, Section 1.

1+1 Protection with Route Survivability and OC-n Point-to-Point Diversity

Any service interruption will result in a credit equal to one month's bill for the circuit involved. If the interruption occurs on a Local Distribution Channel without this option, normal terms and conditions for *Credit Allowances* as stated in Part 15, Section 1 will apply.

**6. OC-n DEDICATED RING SERVICE*****Service Availability***

Effective December 1, 2021, neither new nor existing customers will be permitted to purchase new OC-n Dedicated Ring Service ("Service"). In addition, (A) Service Term Payment Plans greater than 12-months in length will no longer be available; and (B) requests to move, add, change, upgrade or downgrade existing Service arrangements will not be accepted, with the following exceptions: (1) existing customers will be permitted to modify their existing Service and will be able to add new circuits to their existing Service, but will not be permitted to add new nodes in any locations; (2) any such new circuits will be subject to the customer's existing term payment plan or term agreement for the Service to which they are added. Following the expiration of a customer's existing term agreement, Service will be provided on a month-to-month basis at the applicable Monthly Extension rates until the Service is discontinued.

Effective November 30, 2023, unless specified to the contrary in their existing Service agreements, existing customers may not renew Term Payment Plans or term agreements for Service. In addition, no move, add, or change orders of any type will be accepted.

(N)

(N)

**A. Description**

OC-n Dedicated Ring Service provides a customer a dedicated custom network. The network is in a ring architecture, including sub-rings (or ARC sub-rings provisioned on appropriate Next Generation SONET equipment), designed to provide increased reliability and functionality connecting multiple customer-designated locations and specified Company wire centers via self healing network designs. A sub-ring is a lower speed ring made up of two or more sub-ring Nodes operating off of the higher speed main ring. An ARC sub-ring is a lower speed ring made up of one or more sub-ring ARC Nodes operating off of the higher speed main ring.

Dedicated Ring Service will provide 50-millisecond protection switching after fault detection to assure 100 percent availability of the services on the ring. (See Section F, Paragraph 4 following for information regarding credit allowances for service interruptions.)

OC-n Dedicated Ring Service is an alternative to OC-n Point-to-Point Service between multiple customer locations.

**Dedicated Ring Configuration**

- Nodes

The ring will provide connectivity to multiple customer-designated locations (nodes). However, a ring must have a minimum of two nodes, excluding sub-ring nodes and ARC sub-ring nodes. At least one node must be a Company wire center node. A maximum of 16 nodes including regenerators will be allowed per ring.

The Company reserves the right to determine the order of the nodes on the ring.

When a customer premises node is located in the same building as a wire center node, diversity between the two nodes may not be available.

If a customer co-locates two customer premises nodes of the same speed, on the same dedicated ring, on the same premises, the additional node will be billed as an "additional node". This option does not provide diversity between these two co-located nodes and the rest of the ring.

The customer will be billed time and material for any additional charges incurred by the Company in locating Company equipment at the customer premises.

**6. OC-n DEDICATED RING SERVICE (cont'd)****A. Description (cont'd)**Dedicated Ring Configuration (cont'd)

- Nodes (cont'd)

Direct Drop Node

An optional Direct Drop Node (DDN) is available on an OC-12 Dedicated Ring. This node has direct add/drop capability not to exceed 3 DS3s or its equivalent.

The remaining bandwidth of the OC-12 ring continues on through the Node to another drop point on the ring.

Use of the Direct Drop Node allows customers to drop DS1s directly from the Node without the need for the Optical to Electrical DS1 Add/Drop Capability option.

OC-12 nodes and OC-12 DDNs may be used together in making up an OC-12 dedicated ring. A DS1 that enters the ring via a port on a Direct Drop Node must also exit via a port on another Direct Drop Node (DDN on-DDN off). A DS3 that enters the ring via a port on a Direct Drop Node may exit via a port on either a Direct Drop Node or OC-12 node. Direct Drop Node is not available in a two node ring configuration.

**6. OC-*n* DEDICATED RING SERVICE (cont'd)****A. Description (cont'd)**Dedicated Ring Configuration (cont'd)

- Nodes (cont'd)

Sub-Ring Node

A sub-ring node is a lower speed optical extension off a main ring. It traverses one or more main ring nodes via the use of OC-*n* port connections on and off the main ring. The primary use of sub-ring nodes is to provide the ability to fully utilize the bandwidth around the ring when the customer requires DS1/VT1.5 circuit paths.

An optional sub-ring node is available at OC-3, OC-12 and OC-48 speeds from an OC-192 main ring, OC-3 and OC-12 speeds from an OC-48 main ring, and OC-3 speed from an OC-12 main ring. A sub-ring node may only connect to the main ring at the same or an adjacent main ring node. With Next Generation SONET equipment, a sub-ring node may connect to another sub-ring node. (C)  
(C)

Any service that enters the main ring via a port on a sub-ring node must also exit via a port on another sub-ring node (sub-ring on – sub-ring off). Cascading sub-rings are not allowed off a main ring. Service circuits may not be established between a sub-ring node and a port on the same main ring node to which it connects.

Each sub-ring must be implemented as an OC-*m* on an OC-*n* ring with full compliment of STS-1s, 3 or 12 depending on the bandwidth of the sub-ring, appearing together at all associated sub-ring nodes on a given sub-ring.

OC-3 sub-rings and OC-12 DDNs may not be combined on an OC-12 main ring. OC-12 sub-rings and OC-12 DDNs may be combined on a sub-ring connected to an OC-48 main ring.

Two OC-*n* ports and associated node charges apply for each sub-ring node connected to the main ring, as well as applicable mileage for the sub-ring applies. Mileage charges are applicable when the sub-ring is in a different location than the main ring. (N)  
(N)

A sub-ring node which is co-located with a main ring node at the customers premises (for the same dedicated ring) will be billed as an "Additional Node".



**6. OC-n DEDICATED RING SERVICE (cont'd)****A. Description (cont'd)**Dedicated Ring Configuration (cont'd)

- Nodes (cont'd)

ARC Sub-Ring Node

ARC sub-ring nodes are only available on appropriate Next Generation SONET equipment. An ARC sub-ring node is a lower speed optical extension off a main ring. It connects to one main ring node via the use of OC-N port connections from and to a main ring. The primary use of ARC sub-ring nodes is to add other locations to the ring that will utilize minimal amounts of bandwidth from the main ring. ARC sub-rings are only available off of UPSR main rings. ARC sub-rings are only available where facilities and/or operating conditions permit as determined by the Company.

An optional ARC sub-ring node is available at OC-3 and OC-12 speeds from an OC-48 main ring, and OC-3 speeds from an OC-12 main ring. An ARC sub-ring node may connect to the main ring at any main ring node.

Cascading ARC sub-rings are not permitted off a main ring. Services entering an ARC sub-ring node cannot drop from the directly connecting main ring node (hairpinning).

More than one ARC sub-ring may be added to a main ring. Each ARC sub-ring must be implemented as an OC-M on an OC-N ring with a full complement of STS-1s, STS-3s or STS-12s, depending on the bandwidth of the ARC sub-ring, appearing together at all associated ARC sub-ring nodes on a given ARC sub-ring.

Two OC-N ports apply for each ARC sub-ring connected to the main ring. A node charge applies for each ARC sub-ring location. Mileage charges are applicable when the ARC sub-ring is in a different location than the main ring. An ARC sub-ring which is co-located in the same room with a main ring node at the customer's premises (for the same dedicated ring) will be billed as an "Additional Node".

ARC sub-rings do not reduce bandwidth capacity of the main ring. As services are added to the main or ARC sub-ring, only the bandwidth capacity of the service is reduced.

**6. OC-n DEDICATED RING SERVICE (cont'd)**

**A. Description (cont'd)**

Dedicated Ring Configuration (cont'd)

- Ports

The ring capacity will be either OC-3, OC-12, OC-48 or OC-192. Lower speed channels are accessible at nodes via port terminations.

Accepted interfaces are as follows:

	<u>OC-3 Node</u>	<u>OC-12 Node</u>	<u>OC-48 Node</u>	<u>OC-192 Node</u>
DS1 Ports	x (Max. 84/Node)	x (Max. 84/OC-3, OC-3c Ports) <sup>/1/,/3/</sup>	x (Max. 84/OC-3, OC-3c Ports) <sup>/1/,/3/</sup>	x (Max. 84/OC-3, OC-3c Ports) <sup>/1/</sup>
DS3 Ports	x(Max. 3/Node)	x (Max. 12/Node)	x (Max. 48/Node)	x (Max. 192/Node)
OC-3, OC-3c Ports <sup>/2/</sup>	N/A	x (Max. 4/Node)	x (Max. 16/Node)	64
OC-12, OC-12c Ports <sup>/2/</sup>	N/A	N/A	x (Max. 4/Node)	16
OC-48, OC-48c Ports <sup>/2/</sup>	N/A	N/A	N/A	4

/1/ Optical to Electrical DS1 Add/Drop Capability is needed along with an OC-3 port unless the customer has chosen an OC-12 DDN. When Next Generation (NG) SONET equipment is utilized, Optical to Electrical Add/Drop Capability may be needed when the maximum number of Direct Drop ports are exceeded.

/2/ OC-3 and OC-3c ports support both OC-3 and OC-3 bandwidth, OC-12 and OC-12c ports support both OC-12 and OC-12c bandwidths, and OC-48 and OC-48c ports support both OC-48 and OC-48c bandwidths.

/3/ The first 84 DS1s can be dropped directly off the shelf. When the customer orders the 85th DS1, a subtended OC-3 shelf is required and the 85th DS1 is dropped from the OC-3 shelf.

**6. OC-n DEDICATED RING SERVICE (cont'd)**

**A. Description (cont'd)**

Dedicated Ring Configuration (cont'd)

- Ports (cont'd)

	<u>OC-3 Node</u>	<u>OC-12 Node</u>	<u>OC-48 Node</u>	<u>OC-192 Node</u>
100 Mbps (STS-1) Ethernet Ports	3	12	48	192
100 Mbps (STS-3c) Ethernet Ports	N/A	4	16	64
1 Gbps (STS-1) Ethernet Ports	N/A	12	48	192
1 Gbps (STS-3c) Ethernet Ports	N/A	4	16	64
1 Gbps (STS-12c) Ethernet Ports	N/A	N/A	4	16
1 Gbps (STS-24c) Ethernet Ports	N/A	N/A	2 <sup>/1/</sup>	8

/1/ Not available on all Next Generation SONET equipment.

**6. OC-*n* DEDICATED RING SERVICE (cont'd)****A. Description (cont'd)**Dedicated Ring Configuration (cont'd)

- Ports (cont'd)

By using the existing OC-*n* Point-to-Point Service and cross-connection capability; OC-3 or OC-3c Point-to-Point Service may connect to an OC-3 or OC-3c port of an OC-12, OC-48 or OC-192 ring or OC-12 or OC-12c Point-to-Point Service may connect to an OC-12 or OC-12c port of an OC-48 or OC-192 ring, or OC-48 or OC-48c Point-to-Point Service may connect to an OC-48 or OC-48c port of an OC-192 ring located in a Company wire center. OC-48c bandwidth is only available between two OC-48 or OC-48c ports at different customer premises nodes on the same OC-192 dedicated ring.

As described in OC-*n* Point-to-Point Service, an OC-3, OC-3c port will permit the connection of STS-1 channels to other STS-1 channels across the OC-12, OC-48 or OC-192 Dedicated Ring Service subject to the overall ring capacity limits described below. Also an STS-1 channel with DS1 payload mapping accessing an OC-12 Dedicated Ring using an OC-3 port may be connected to the Optical to Electrical DS1 Add/Drop Capability for the purpose of connecting up to 28 DS1 ports. An STS-1 channel with DS3 payload mapping accessing the OC-12 or OC-48 Dedicated Ring using an OC-3 port may individually connect to a DS3 port.

DS1 ports, DS3 ports and STS-1 channels within OC-3 ports may not connect to any other ports within the same node. All other port-to-port connections are allowable except for DS3 port to DS1 port connections. If a DS3 to DS1 connection is required, it may be accomplished by the customer's CPE or by utilizing the TransMux capability (OC-3 or OC-12) or current multiplexing environment of DS3 Service and DS1 Service.

EC-1 (Electrical Carrier Level 1) Ports

The EC-1 Port (unchannelized) allows for STS-1 electrical connectivity operating at 51.84 Mbps. This port will provide an unchannelized STS-1 interface via the Dedicated Ring Node. EC-1 Ports can be utilized to interconnect SONET network elements using Telcordia-compliant electrical interfaces.

**6. OC-n DEDICATED RING SERVICE (cont'd)****A. Description (cont'd)**Dedicated Ring Configuration (cont'd)

- Mileage

Mileage is the total airline distance between the serving wire center of each node involved on the ring. A one mile minimum will be billed between nodes.

A two node ring configuration has a two mile minimum - one mile from the Wire Center Node to the customer premises node, and one mile from the customer premises node to the Wire Center.

In addition, interoffice transport can be connected between wire centers at a lower OC-n speed than the Dedicated Ring, if the transport is between a dedicated ring port and:

- a lower speed Add/Drop Function;
- a lower speed Local Distribution Channel;
- another lower speed Dedicated Ring Port;
- a lower speed Cross-Connect

All of the above terminations must be the same speed as the transport.

- Optical to Electrical Add/Drop Capability

The Optical to Electrical DS1 option allows an electrical DS1 to be derived from an optical OC-12, when more than 84 DS1s are required, or an OC-48 ring by using this capability to add/drop the electrical DS1 from an OC-3.

The Optical to Electrical DS3 option allows an electrical DS3 to be derived from an optical OC-3, OC-12, OC-48 or OC-192 shelf. The manner in which a DS3 is dropped will be designed based on forecast and equipment hierarchy. However, a customer may purchase Central Office Multiplexing. Customers requiring multiplexing at a Customer Premises Node can utilize the TransMux feature (OC-3 or OC-12 only) or must provide CPE to perform this functionality, and it must be compatible with Company equipment.

**6. OC-n DEDICATED RING SERVICE (cont'd)**

**A. Description (cont'd)**

Dedicated Ring Configuration (cont'd)

- Dedicated Ring Regenerator

Regenerators provide essential detection and retransmission of SONET Optical 155.52 Mbps, 622.08 Mbps, 2488.32 Mbps and 9953.28 Mbps signals between nodes.

Regenerators will only be provided as required by the Company when actual fiber facility distances between customer-designated nodes exceed inter-nodal design limits (typically 20 to 25 miles). Regenerators will be located exclusively in Company wire centers and do not allow ports to access customer service connections.

**6. OC-*n* DEDICATED RING SERVICE (cont'd)**

**A. Description (cont'd)**

Dedicated Ring Configuration (cont'd)

- **Dedicated Ring Connection Capacity**  
Maximum transport capacity of OC-*n* Dedicated Ring Service is characterized by the total quantity of individual port-to-port connections allowed between all nodes on the ring.

For OC-3 Dedicated Ring Service, the maximum ring capacity will be equal to one of the following combinations:

<u>DS3 Port to DS3 Port</u> <u>Connections</u>	<u>DS1 Port to DS1 Port</u> <u>Connections</u>
Three and	None
Two and	Up to 28
One and	Up to 56
None and	Up to 84

An OC-3 sub-ring (or ARC sub-ring) provided as part of OC-12 or OC-48 Dedicated Ring Service has a maximum capacity equal to one of the above combinations.

For OC-3 Dedicated Ring Service and OC-3 sub-rings (or ARC sub-rings) as part of OC-12 or OC-48 Dedicated Ring Service, individual DS1 port-to-DS1 port and DS3 port-to-DS3 port connections capacities may be incrementally distributed between nodes on the ring in any manner.

**6. OC-n DEDICATED RING SERVICE (cont'd)**

**A. Description (cont'd)**

Dedicated Ring Configuration (cont'd)

- Dedicated Ring Connection Capacity (cont'd)

For OC-12 Dedicated Ring Service, the maximum ring capacity will be equal to one of the following combinations:

<u>DS3 Port to DS3 Port Connections</u>	<u>DS1 Port to DS1 Port Connections</u>
Twelve and	None
Eleven and	One group of 28 (28)
Ten and	Two groups of 28 (56)
Nine and	Three groups of 28 (84)
Eight and	Four groups of 28 (112)
Seven and	Five groups of 28 (140)
Six and	Six groups of 28 (168)
Five and	Seven groups of 28 (196)
Four and	Eight groups of 28 (224)
Three and	Nine groups of 28 (252)
Two and	Ten groups of 28 (280)
One and	Eleven groups of 28 (308)
None and	Twelve groups of 28 (336)

An OC-12 sub-ring (or ARC sub-ring) provided as part of OC-48 Dedicated Ring Service has a maximum capacity equal to one of the above combinations.



**6. OC-n DEDICATED RING SERVICE (cont'd)****A. Description (cont'd)**Dedicated Ring Configuration (cont'd)

- Dedicated Ring Connection Capacity (cont'd)

For OC-12 Dedicated Ring Service and OC-12 sub-rings (or ARC sub-rings) as part of OC-48 Dedicated Ring Service, individual DS1 port-to-DS1 port (and DS3 port-to-DS3 port) connection capacities may be incrementally distributed between nodes on the ring in any manner.

For OC-12 Dedicated Ring Service using OC-12 Direct Drop Nodes, the maximum ring capacity will be up to 84 DS1 port-to-port connections, together with up to 9 DS3 port-to-port connections, or equivalent. Individual DS1 port-to-port connections up to a total of 84 may be incrementally distributed between OC-12 Direct Drop Nodes on the ring in any manner.

OC-12 Dedicated Ring Service will also provide capability for node-to-node connection of STS-1 or STS-3C channels using OC-3 or OC-3c ports on the OC-12 ring. Each STS-1 to STS-1 channel connection or STS-1 channel to DS3 port connection requested by the customer will reduce the remaining ring capacity by the equivalent of one DS3 port-to-DS3 port connection or 28 DS1 port-to-DS1 port connections.

Each STS-3C to STS-3C channel connection requested by the customer will reduce the remaining ring capacity by the equivalent of three DS3 port-to-DS3 port connections or 84 DS1 port-to-DS1 port connections.

An OC-3 sub-ring provided as part of an OC-12 Dedicated Ring Service reduces the remaining OC-12 ring capacity by the equivalent of three DS3 port-to-DS3 port connections or 84 DS1 port-to-DS1 port connections.

**6. OC-n DEDICATED RING SERVICE (cont'd)**

**A. Description (cont'd)**

Dedicated Ring Configuration (cont'd)

- Dedicated Ring Connection Capacity (cont'd)

For OC-48 Dedicated Ring Service, the maximum ring capacity will be equal to one of the following combinations:

<u>DS3 Port to DS3 Port</u> <u>Connections</u>	and	<u>DS1 Port to DS1 Port</u> <u>Connections</u>
Forty-eight	and	None
Forty-seven	and	One group of 28 (28)
Forty-six	and	Two groups of 28 (56)
Forty-five	and	Three groups of 28 (84)
Forty-four	and	Four groups of 28 (112)
Forty-three	and	Five groups of 28 (140)
Forty-two	and	Six groups of 28 (168)
Forty-one	and	Seven groups of 28 (196)
Forty	and	Eight groups of 28 (224)
Thirty-nine	and	Nine groups of 28 (252)
Thirty-eight	and	Ten groups of 28 (280)
Thirty-seven	and	Eleven groups of 28 (308)
Thirty-six	and	Twelve groups of 28 (336)

Continuing down the scale to:

None	and	Forty-eight groups of 28 (1344)
------	-----	------------------------------------

For OC-48 Dedicated Ring Service, individual DS1 port-to-DS1 port connection capacities may be distributed only in incremental groups of 28 between any two nodes on the ring. Individual DS3 port-to-DS3 port connection capacities may be incrementally distributed between nodes on the ring in any manner.

**6. OC-n DEDICATED RING SERVICE (cont'd)****A. Description (cont'd)**Dedicated Ring Configuration (cont'd)

- Dedicated Ring Connection Capacity (cont'd)

OC-48 Dedicated Ring Service will also provide capability for node-to-node connection of STS-1 or STS-3C channels using OC-3, OC-3c, OC-12 or OC-12c ports on the OC-48 ring. Each STS-1 to STS-1 channel connection or STS-1 channel to DS3 port connection requested by the customer will reduce the remaining ring capacity by the equivalent of one DS3 port-to-DS3 port connection or 28 DS1 port-to-DS1 port connections. Each STS-3C to STS-3C channel connection requested by the customer will reduce the remaining ring capacity by the equivalent of three DS3 port-to-DS3 port connections or 84 DS1 port-to-DS1 port connections.

An OC-3 Sub-ring provided as part of OC-48 Dedicated Ring Service reduces the remaining OC-48 ring capacity by the equivalent of three DS3 port-to-DS3 port connections or 84 DS1 port-to-DS1 port connections.

OC-48 Dedicated Ring Service will also provide capability for node-to-node connections of STS-12C channels using OC-12 ports on the OC-48 ring. Each STS-12C to STS-12C channel connection requested by the customer reduces the remaining ring capacity by the equivalent of twelve DS3 port-to-DS3 port connections or 336 DS1-to-DS1 port connections.

An OC-12 Sub-ring provided as part of OC-48 Dedicated Ring Service reduces the remaining OC-48 ring capacity by the equivalent of twelve DS3 port-to-DS3 port connections or 336 DS1 port-to-DS1 port connections.

**6. OC-n DEDICATED RING SERVICE (cont'd)****A. Description (cont'd)**Dedicated Ring Configuration (cont'd)

- Dedicated Ring Connection Capacity (cont'd)

For OC-192 Dedicated Ring Service operating with BLSR (Bidirectional Line Switched Ring) protection, the maximum ring capacity directly between adjacent nodes is not to exceed 96 STS-1 circuit equivalents. For OC-192 Dedicated Ring Service operating with UPSR (Unidirectional Path Switched Ring) protection, the maximum ring capacity between all nodes is not to exceed 192 STS-1 circuit equivalents.

OC-192 Dedicated Ring Service will also provide capability for node-to-node connection of STS-1 or STS-3C channels using OC-3, OC-3c, OC-12, OC-12c, OC-48 or OC-48c ports on the OC-192 ring.

OC-192 Dedicated Ring Service will also provide capability for node-to-node connection of STS-12C channels using OC-12, OC-12c, OC-48 or OC-48c ports on the OC-192 ring.

OC-192 Dedicated Ring Service will also provide capability for node-to-node connections of STS-48C channels using OC-48, or OC-48c ports on the OC-192 ring.

**6. OC-n DEDICATED RING SERVICE (cont'd)****A. Description (cont'd)**

- Unprotected Channel Transport

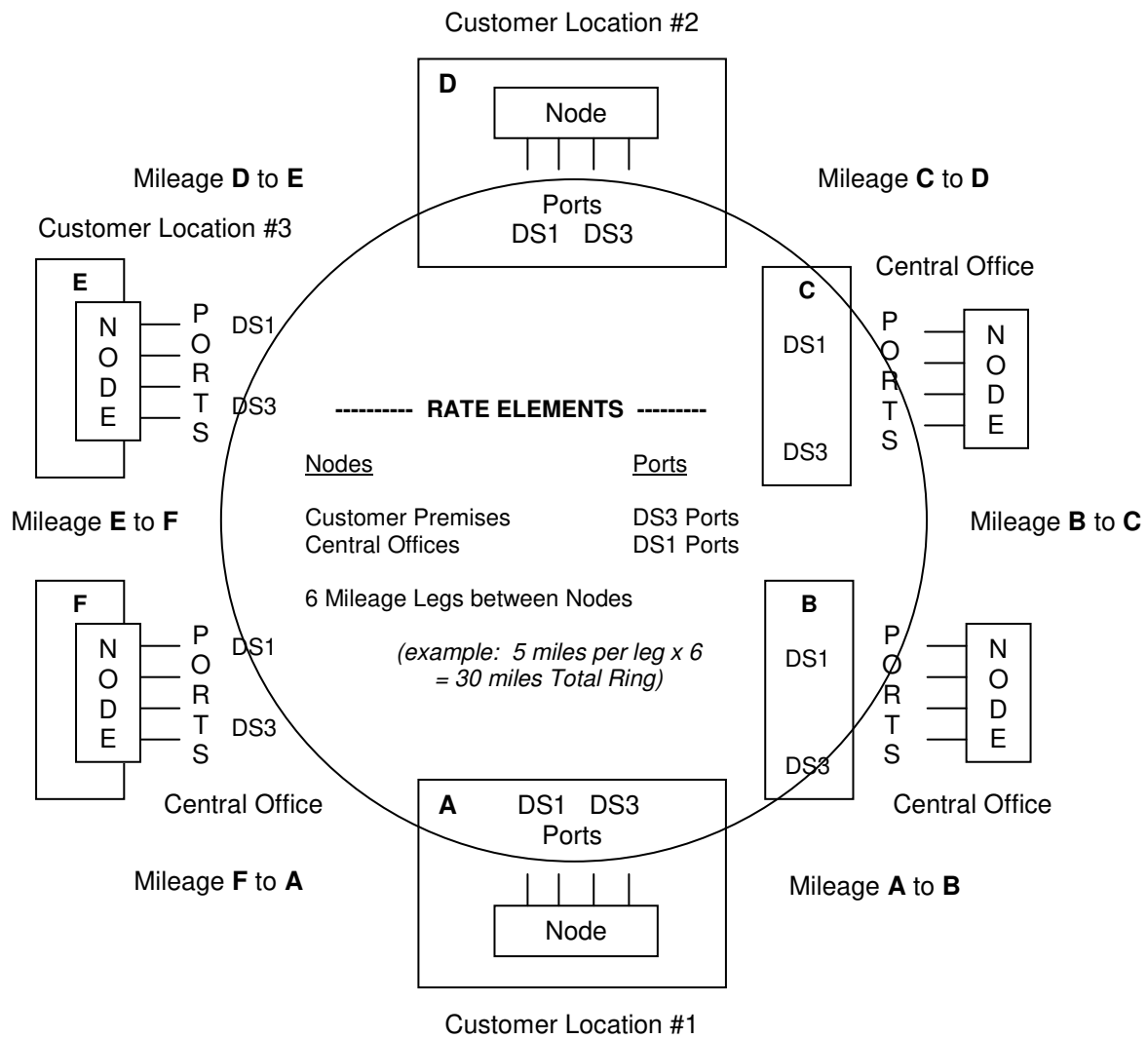
Unprotected Channel Transport will allow customers to transport traffic over a ring without enabling SONET protection schemes. This is intended for applications in which the customer provides protection for the circuit through means other than those available through SONET. If a fault occurs on the ring along the transport path, the traffic will not be switched to a protection channel. Service will be interrupted on that circuit until the fault is corrected. If a fault occurs in the ring but does not occur along the transport route, service will not be interrupted on that circuit. Without protection, SONET is unable to meet the normal availability so Credit Allowance credits do not apply and credits will not occur upon an outage of an Unprotected Channel Transport. Credits will not be provided for the whole service when the fault on the ring creates the outage. If a riding service extends off the ring, Credit Allowances for that riding service may be applicable per the respective product Guidebook. This capability is limited to customers with OC-n Dedicated Ring service installed after July 2, 2007.

6. OC-n DEDICATED RING SERVICE (cont'd)

A. Description (cont'd)

Dedicated Ring Configuration (cont'd)

- Diagram of OC-3 Dedicated Ring Service

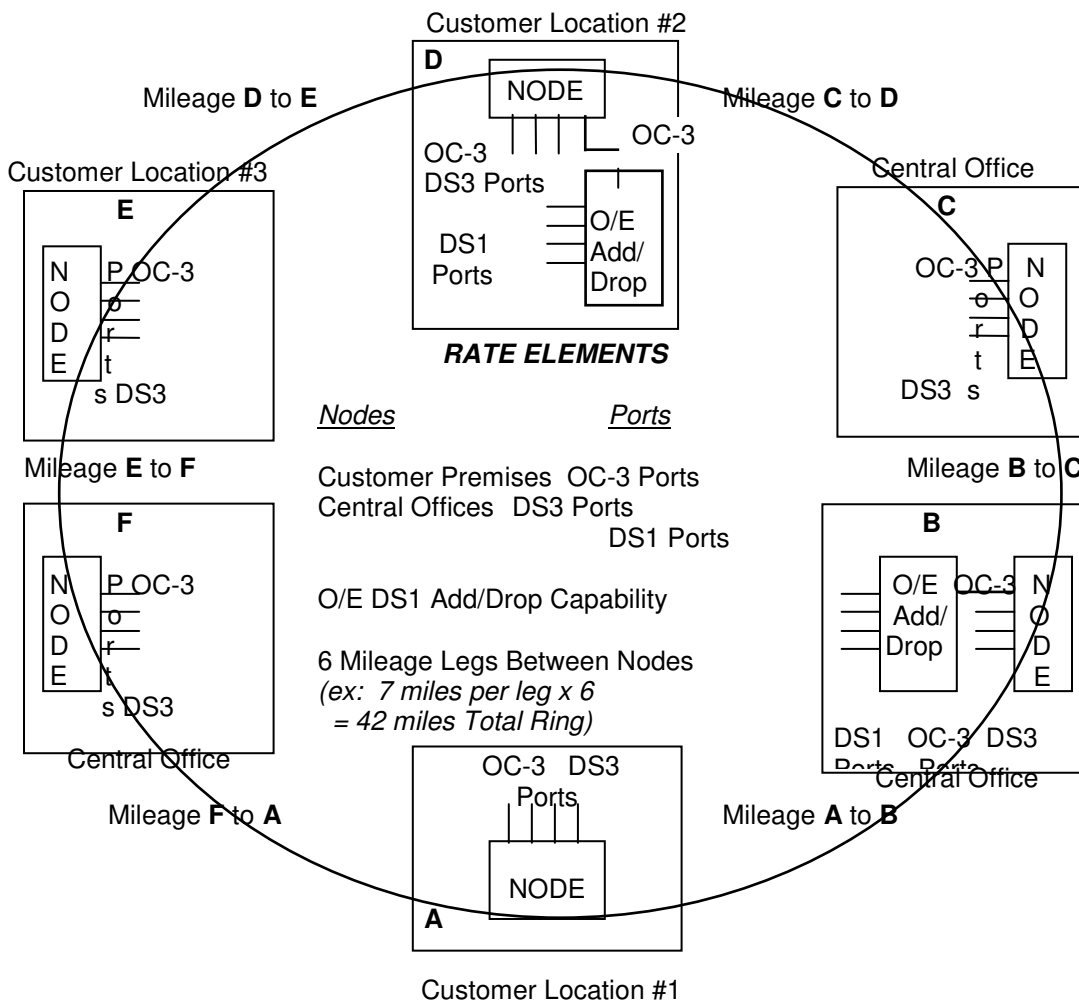


6. OC-n DEDICATED RING SERVICE (cont'd)

A. Description (cont'd)

Dedicated Ring Configuration (cont'd)

- Diagram of OC-12 Dedicated Ring Service

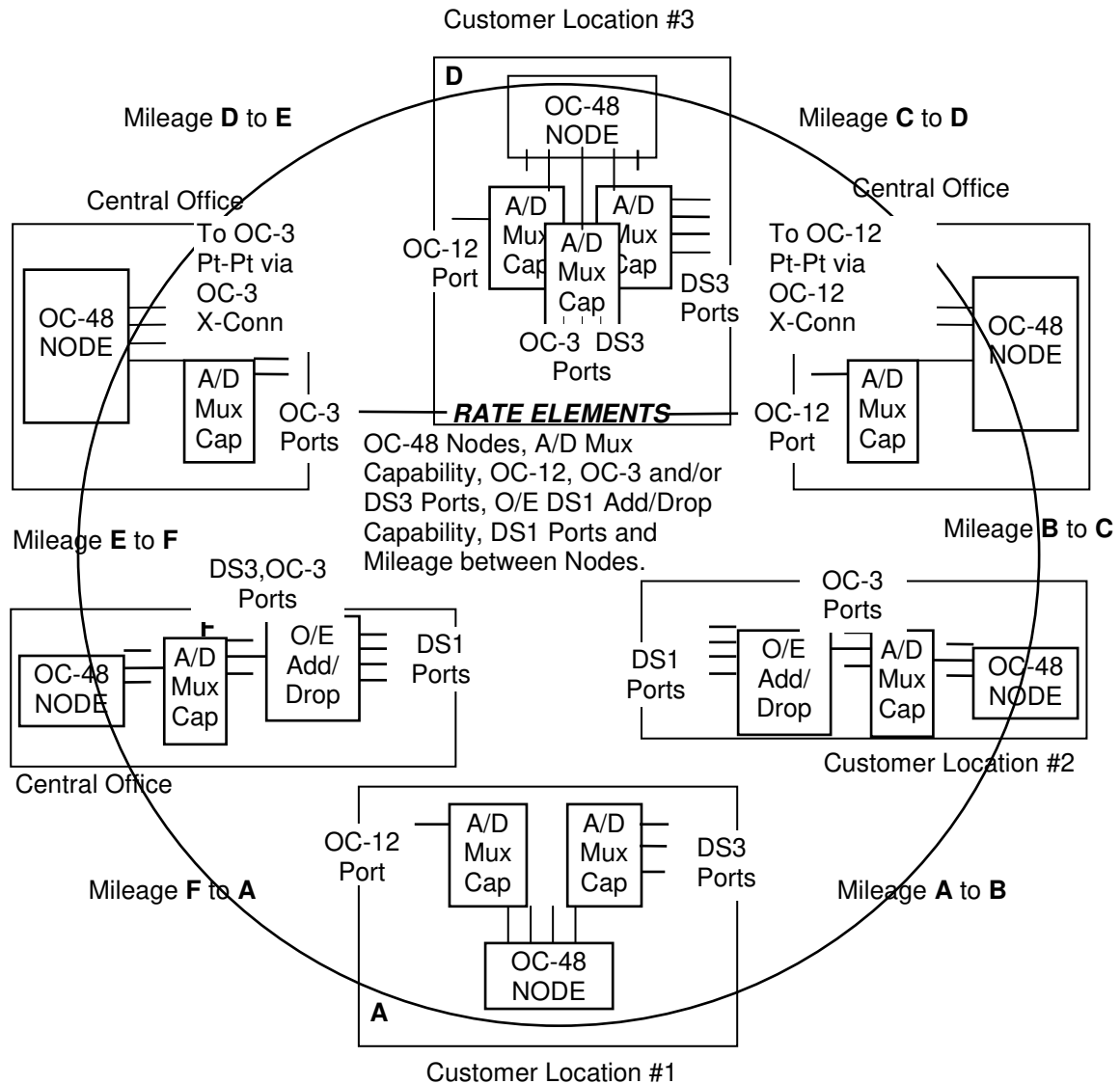


6. OC-n DEDICATED RING SERVICE (cont'd)

A. Description (cont'd)

Dedicated Ring Configuration (cont'd)

- Diagram of OC-48 Dedicated Ring Service



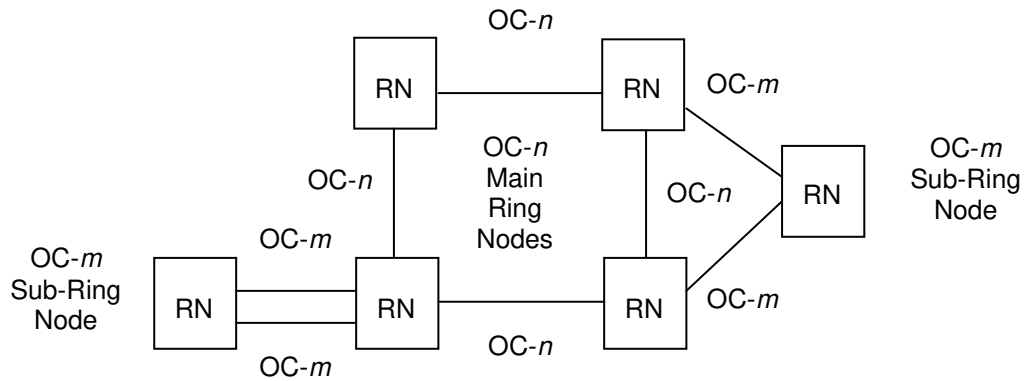


6. OC-n DEDICATED RING SERVICE (cont'd)

A. Description (cont'd)

Dedicated Ring Configuration (cont'd)

- Diagram of Sub-Ring Nodes, OC-M < OC-N



Sub-Ring Nodes, OC-m < OC-n

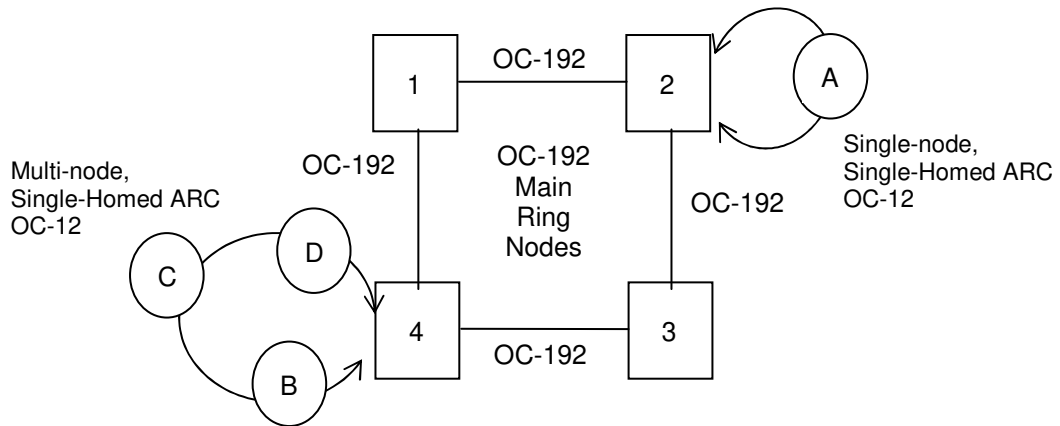
RN = Ring Node

6. OC-n DEDICATED RING SERVICE (cont'd)

A. Description (cont'd)

Dedicated Ring Configuration (cont'd)

- Diagram of ARC Sub-Ring Nodes, OC-m < OC-n



ARC Sub-Ring Nodes, OC-m < OC-n

OC-192 Dedicated Ring shown as an example

**6. OC-n DEDICATED RING SERVICE (cont'd)**

**B. Definitions**

Dedicated Ring Node

A dedicated ring designation of either a customer location or Company wire center that has Add/Drop capabilities.

Dedicated Ring Port

A dedicated ring element that denotes the termination or origination of a channelized service between dedicated ring nodes.

Ring Extension

A customer premises SONET installation connected to OC-12 Dedicated Ring Service via dedicated ring nodes and ports at two different wire center locations, one of which must be the serving wire center of the extended location. This applies only when the 1+1 Protection with Central Office Survivability optional feature is offered with OC-3 Service or OC-12 Service local distribution channels.

SONET (Synchronous Optical Network)

SONET is a set of international standards for fiber optic based transmission systems. SONET defines standard optical carrier transmission rates and utilizes a modular multiplexing approach based on the application of Synchronous Transport Signals (STS).

Re-Map Service<sup>/1/</sup>

Re-Map Service is provided in conjunction with an OC-n Dedicated Ring Service and allows for a pre-defined set of services to be re-routed by the Company from one customer premises node to another customer premises node (defined as a "Re-Map node") in the event of a customer premises disaster. Re-Map Service will be tested at initial installation and once each year thereafter. Additional testing can be requested and will be charged on a per test basis. Activation upon customer request in the event of an emergency will be charged on a per-occurrence basis.

(C)

/1/ Effective August 1, 2013, Re-Map functionality is not available for new installations. Existing Re-Map customers will be permitted to modify their service by adding new circuits to their existing service, but will not be permitted to add new nodes in new locations. New circuits added to existing locations will utilize the customer's existing Term Payment Plan (TPP) and should be coterminous with the customer's existing TPP. Upon expiration, customers may renew existing Term Payment Plans using any then-available term periods.

(N)  
|  
(N)

**6. OC-*n* DEDICATED RING SERVICE (cont'd)**

**B. Definitions (cont'd)**

Ethernet over SONET (EoS) <sup>/1/</sup>

EoS allows the efficient transport of Ethernet frames using SONET. Ethernet ports will be available in bandwidths up to the Ethernet interface of 100 Mbps or 1 Gbps on an OC-*n* Dedicated Ring Service. As SONET bandwidths will be preset, the customer will be unable to transmit data beyond these preset SONET bandwidths. Interfaces of 100 Mbps or 1 Gbps Ethernet are available only to customers with Next Generation SONET equipment. Only single-mode fiber is available in the Central Office. The EoS line rates are based on the theoretical SONET payload line rates as specified in Telcordia Publication GR-253-CORE, Issue 4. These values are not representative of the true Ethernet transport capacity of the EoS circuit.

(N)  
|  
(N)

Additional features are provided with the Ethernet over SONET (EoS) capability:

*Virtual Concatenation (VCAT)* provides the ability and flexibility to size the customer's bandwidth (sub-rate VT1.5, super-rate STS-1 and 3c service payloads) based on their traffic requirements. For transport of payloads that do not fit efficiently into the standard set of VT1.5, STS-1 and STS-Nc payload envelopes, virtual concatenation can be used.

Flex Ring

Denotes a feature which will provide multiple rings at various bandwidth levels (i.e. OC-12 and OC-48) in a single shelf. To increase bandwidth, a second high-speed card can be provisioned or a card with higher optics can be provisioned on the same shelf. When customers opt to purchase Dedicated Ring Services, the customer owns 100% of the available bandwidth within the ring. Although multiple rings can be provisioned off the shelf, all rings will be owned by the same customer.

/1/ EoS port interfaces offered as 10/100BaseT are only available at the customer premises location.

**6. OC-n DEDICATED RING SERVICE (cont'd)**

**C. Terms and Conditions**

The following terms and conditions apply to OC-n Dedicated Ring Service:

1. Dedicated ring service is provided at the option of the Company where appropriate SONET facilities are available. If appropriate facilities are not available, *Special Construction* charges may apply.
2. Dedicated ring service has a minimum service period of 36 months.
3. The customer will be billed time and material for any additional charges incurred by the Company in locating Company equipment at the customer premises for Dedicated Ring Node installations.
4. When a customer orders a Re-Map node, a minimum number of Re-Map ports must be equipped: <sup>/1/</sup> (C)

OC-3	28 DS1 Re-Map ports, or 1 DS3 or EC-1 Re-Map port
OC-12	28 DS1 Re-Map ports, or 3 DS3 or EC-1 Re-Map ports, or 1 OC-3 or OC-3c Re-Map port
OC-48	28 DS1 Re-Map ports, or 3 DS3 or EC-1 Re-Map ports, or 1 OC-3 or OC-3c Re-Map port, or 1 OC-12 or OC-12c Re-Map port
OC-192	28 DS1 Re-Map ports, or 3 DS3 or EC-1 Re-Map ports, or 1 OC-3 or OC-3c Re-Map port, or 1 OC-12 or OC-12c Re-Map port, or 4 OC-48 or OC-48c Re-Map ports

/1/ Effective August 1, 2013, Re-Map functionality is not available for new installations. Existing Re-Map customers will be permitted to modify their service by adding new circuits to their existing service, but will not be permitted to add new nodes in new locations. New circuits added to existing locations will utilize the customer's existing Term Payment Plan (TPP) and should be coterminous with the customer's existing TPP. Upon expiration, customers may renew existing Term Payment Plans using any then-available term periods. (N)

6. OC-n DEDICATED RING SERVICE (cont'd)

C. Terms and Conditions (cont'd)

5. Re-Map node ports must be ordered in incremental blocks as described below:<sup>/2/</sup> (C)

	Port Type				
	<u>DS1</u>	<u>DS3</u>	<u>OC-3</u> <u>OC-3c</u>	<u>OC-12</u> <u>OC-12c</u>	<u>OC-48</u> <u>OC-48c</u>
OC-3 Ring	28, 56 or 84 (multiples of 28)	1, 2 or 3	N/A	N/A	N/A
OC-12 Ring	28, 56 or 84 (multiples of 28)	3, 6, 9 or 12	1, 2, 3 or 4	N/A	N/A
OC-48 Ring	28, 56 or 84 (multiples of 28)	3, 6, 9 ... or 48	1, 2, 3 ... or 16	1, 2, 3 or 4	N/A
OC-192 Ring	28, 56 or 84 (multiples of 28) <sup>/1/</sup>	3, 6, 9 ... or 192	1, 2, 3 ... or 64	1, 2, 3 ... or 16	1, 2, 3 or 4

6. An OC-48 or OC-192 ring utilizing Re-Map requires an OC-12, OC-3, EC-1 or DS3 Re-Map port. DS1 Re-Map Add/Drop Capability is needed if DS1 drops are required at the Re-Map node. (An OC-3 or OC-3c Re-Map port and DS1 Re-Map O/E Add/Drop Capability supports up to 84 DS1s).<sup>/2/</sup> (C)

7. When provisioning a Re-Map node, either 28 DS1 Re-Map ports or 1 DS3 or EC-1 Re-Map port will be the minimum required.<sup>/2/</sup> (C)

8. The emergency Re-Map activation configuration will be maintained for up to 30 days. After 30 days, if the customer wishes to continue the use of the remapped configuration, the emergency activation NRC will be applied once for each 30 day additional period.<sup>/2/</sup> (C)

/1/ DS1 Ports will be provided via a subtended OC-3 or OC-12 shelf.

/2/ Effective August 1, 2013, Re-Map functionality is not available for new installations. Existing Re-Map customers will be permitted to modify their service by adding new circuits to their existing service, but will not be permitted to add new nodes in new locations. New circuits added to existing locations will utilize the customer's existing Term Payment Plan (TPP) and should be coterminous with the customer's existing TPP. Upon expiration, customers may renew existing Term Payment Plans using any then-available term periods. (N)

**6. OC-n DEDICATED RING SERVICE (cont'd)**

**C. Terms and Conditions (cont'd)**

- 9. Once the customer notifies the Company that they are ready to receive signals at the re-map node site the Company will re-map up to 50 circuits within the initial 4 hours and 20 circuits every hour thereafter. The Emergency Activation Nonrecurring Charge will not be applied if the first 50 circuits are not remapped within 4 hours due to a Company caused delay.<sup>/1/</sup> (C)
- 10. Re-Map testing or activation for OC-3 or OC-12 DDN service requires a minimum of one DS1 (VT1.5), or 1 DS3 (STS-1) between one customer premises node and the Re-Map node.<sup>/1/</sup> (C)
- 11. Re-Map testing or activation for OC-12, OC-48 or OC-192 service requires a minimum incremental group of from 1 to 28 DS1s or one DS3 or EC-1 (equals one STS-1) between one customer premises node and the Re-Map node. In addition, Re-Map capability on an OC-192 Dedicated Ring is limited to those rings utilizing UPSR (Unidirectional Path Switched Ring) protection.<sup>/1/</sup> (C)
- 12. Effective June 13, 2003, new orders for OC-n Dedicated Ring Service with the EoS enhancement will be served by different equipment than the equipment used for customers who placed OC-n Dedicated Ring Service orders that were completed prior to June 13, 2003. Customers subscribing to OC-n Dedicated Ring Service prior to June 13, 2003 requesting a change to the new equipment will incur early termination charges for their existing OC-n Dedicated Ring Service. Disconnect of the existing OC-n Dedicated Ring Service and placement of an order for new OC-n Dedicated Ring Service with the EoS enhancement is required. The monthly rates for the new service(s) shall be those rates in effect at the time the new service(s) is installed.
- 13. EoS interfaces have distance limitations from the Company Serving Wire Center to the customer's demarcation point. These limitations will be discussed with the customer during the planning process, and the Company and the customer will determine the appropriate EoS interface for the customer's OC-n Dedicated Ring Service.

/1/ Effective August 1, 2013, Re-Map functionality is not available for new installations. Existing Re-Map customers will be permitted to modify their service by adding new circuits to their existing service, but will not be permitted to add new nodes in new locations. New circuits added to existing locations will utilize the customer's existing Term Payment Plan (TPP) and should be coterminous with the customer's existing TPP. Upon expiration, customers may renew existing Term Payment Plans using any then-available term periods. (N)

**6. OC-n DEDICATED RING SERVICE (cont'd)****C. Terms and Conditions (cont'd)**

14. EoS requires that customers utilize certain settings for their Customer Provided Equipment (CPE). The Company will work cooperatively with the customer to make sure that the customer utilizes the correct settings. In some cases, the customer may be required to make modifications (including upgrades) to their CPE, which will be entirely at the customer's expense. Failure to use these settings will result in service problems possibly leading to outages for which the customer will not hold the Company liable. EoS throughputs may vary depending on the type of equipment used to provide the service. Certain protocols may not be available.
15. Flex Ring (multiple rings) is available only with Next Generation SONET equipment. Effective March 6, 2006, new orders for OC-n Dedicated Ring Service with the Flex Ring feature will be served by different equipment than the equipment used for customers who placed OC-n Dedicated Ring Service orders that were completed prior to March 6, 2006. Customers subscribing to OC-n Dedicated Ring Service prior to March 6, 2006 requesting a change to the new equipment will be allowed when the customer orders a new ring with a TPP and revenue of equal to or greater than the existing ring. Disconnect of the existing OC-n Dedicated Ring Service and placement of an order for new OC-n Dedicated Ring Service with the Flex Ring feature is required. The monthly rates for the new service(s) shall be those rates in effect at the time the new service(s) is installed.
16. Only one Flex Ring customer may reside on a Dedicated Ring Node in the Central Office or Customer Premise. Although the equipment can support multiple Dedicated Rings, all rings must be owned by the same customer. Multiple Dedicated Ring customers can not share a single piece of Network Terminating Equipment. Where possible, the Company will provision a second ring (on the same shelf) with the same line rate to provide the customer with additional bandwidth. This will provide the customer with an aggregate bandwidth of 24 STS-1s (2 OC-12s) and 96 STS-1s (2 OC-48s) without purchasing an additional shelf. Capability of the second ring and limitations on the available direct drop ports off the second ring will be similar to the first ring and subject to the availability of card slots on the shelf.
17. ARC sub-rings can be provisioned in two basic configurations:
  - single-node, single-homed ARC
  - multi-node, single-homed ARC
18. Circuit traffic can be added/dropped from an ARC sub-ring node to another ARC sub-ring node within the same ARC (known as intra-ARC) or between ARCs (known as inter-ARC). Intra-ARC circuits can only be provisioned as unprotected, due to technical limitations. Circuit traffic can also originate on an ARC sub-ring node and route across and drop from a main ring node, but only when UPSR protection schemes are used.



**6. OC-n DEDICATED RING SERVICE (cont'd)**

**D. Features**

1. Standard Features

Shared Network Arrangement

A Shared Network Arrangement is available with OC-n Dedicated Ring Service. Refer to Shared Network Arrangement in Part 15, Section 1.

Expanded Interconnection

Provides for the connection of customer-provided dedicated ring channels to specified Company provided Dedicated Communications Services.

Transmux

Provides for the ability to multiplex from a VT-mapped DS-1 to a DS-3 within an OC-3, OC-12 or OC-48 Dedicated Ring Service and also on a single card. DS-1s mapped to VT1.5s are aggregated across the SONET network and terminated into a single DS-3 card at a central location. The hand-off will be a channelized DS-3.

**6. OC-n DEDICATED RING SERVICE (cont'd)**

**E. Technical References**

The Network Channel Interface (NCI) and the Network Channel Codes (NC) and all other associated material are contained in Technical Publication AM TR-TMO-000080 and AM TR-TMO-000101.

<u>Subject</u>	<u>Technical Reference</u>	
Ameritech Services Network Channel and Network Channel Interface Codes	AM TR-TMO-000080	
Ameritech Digital Service Transmission Parameters	AM TR-TMO-000101	
Ameritech OC-3, OC-12, OC-48 and OC-192 Dedicated Ring Service Interface Specifications	AM TR-NIS-000111	
Synchronous Optical Network (SONET) Transport Systems: Common Generic Criteria	Telcordia Technologies GR-253-CORE, Issue 4	(N) (N)

The Technical Reference can be obtained from:

APEX Support Team  
(734) 523-7348

The Telcordia Technologies document can be obtained from:

Telcordia Technologies  
One Telcordia Drive, RRC 1B-180  
Piscataway, New Jersey 08854

(N)  
|  
(N)

**6. OC-n DEDICATED RING SERVICE (cont'd)**

**F. Prices**

1. Service Elements

<u>Description /Billing Code/</u>	<u>Nonrecurring Charge</u>
Administrative Charge	
- per order	\$ 50.00
• OC-3 Dedicated Ring /ORCMX/	50.00
• OC-12 Dedicated Ring /ORCMX/	50.00
• OC-48 Dedicated Ring /ORCMX/	50.00
• OC-192 Dedicated Ring /ORCMX/	50.00
Design and Central Office Connection Charge	
- per circuit <sup>/1/</sup>	
• OC-3 Dedicated Ring /NRBCL/	600.00
• OC-12 Dedicated Ring /NRBCL/	600.00
• OC-48 Dedicated Ring /NRBCL/	600.00
• OC-192 Dedicated Ring /NRBCL/	2,250.00

/1/ Per circuit is applied once per the total original ring design.

6. OC-n DEDICATED RING SERVICE (cont'd)

F. Prices (cont'd)

1. Service Elements (cont'd)

<u>Description /Billing Code/</u>	<u>Nonrecurring Charge</u>	
Re-Map Service <sup>/1/</sup>		(C)
Initial service script establishment/test charge		
Per OC-3 Ring /NRMR1/	\$2,000.00	
Per OC-12 Ring /NRMR1/	3,500.00	
Per OC-12 DDN Ring /NRMR2/	2,000.00	
Per OC-48 Ring /NRMR1/	4,500.00	
Per OC-192 Ring /NRMR1/	5,500.00	
Subsequent script activity charge		
Per OC-3 Ring /NRMR3/	1,200.00	
Per OC-12 Ring /NRMR3/	2,100.00	
Per OC-12 DDN Ring /NRMR4/	1,200.00	
Per OC-48 Ring /NRMR3/	2,700.00	
Per OC-192 Ring /NRMR3/	3,200.00	
Scheduled test charge		
Per OC-3 Ring /NRMR5/	1,600.00	
Per OC-12 Ring /NRMR5/	2,800.00	
Per OC-12 DDN Ring /NRMR6/	1,600.00	
Per OC-48 Ring /NRMR5/	3,600.00	
Per OC-192 Ring /NRMR5/	4,200.00	
Emergency Re-map activation (per request)		
Per OC-3 Ring /NRMR7/	1,800.00	
Per OC-12 Ring /NRMR7/	3,150.00	
Per OC-12 DDN Ring /NRMR8/	1,800.00	
Per OC-48 Ring /NRMR7/	4,050.00	
Per OC-192 Ring /NRMR7/	5,000.00	

/1/ Effective August 1, 2013, Re-Map functionality is not available for new installations. Existing Re-Map customers will be permitted to modify their service by adding new circuits to their existing service, but will not be permitted to add new nodes in new locations. New circuits added to existing locations will utilize the customer's existing Term Payment Plan (TPP) and should be coterminous with the customer's existing TPP. Upon expiration, customers may renew existing Term Payment Plans using any then-available term periods. (N)

6. OC-n DEDICATED RING SERVICE (cont'd)

F. Prices (cont'd)

1. Service Elements (cont'd)

<u>Description /Billing Code/</u>	<u>Nonrecurring Charge</u>	<u>Monthly Payment Term Payment Plans</u>			<u>Monthly Extension</u>	(C) (N)(C) (N)
		<u>12 Months</u>	<u>36<sup>/2/</sup> Months</u>	<u>60<sup>/2/</sup> Months</u>		
Node						
- per node type:						
OC-3						
Customer Premises						
First	/FP5CX/	\$1,770.00	\$1,770.00	\$1,415.00	\$2,120.00	(N)
Additional	/FP5CA/	1,000.00	1,000.00	800.00	1,200.00	(N)
Central Office	/FC5CX/	1,000.00	1,000.00	800.00	1,200.00	(N)
OC-3						
Customer Premises						
First Re-Map <sup>/1/</sup>	/RN8CX/	1,770.00	1,770.00	1,415.00	\$2,120.00	(N)
Additional Re-Map <sup>/1/</sup>	/RN8CA/	1,000.00	1,000.00	800.00	1,200.00	(N)

/1/ Effective August 1, 2013, Re-Map functionality is not available for new installations. Existing Re-Map customers will be permitted to modify their service by adding new circuits to their existing service, but will not be permitted to add new nodes in new locations. New circuits added to existing locations will utilize the customer's existing Term Payment Plan (TPP) and should be coterminous with the customer's existing TPP. Upon expiration, customers may renew existing Term Payment Plans using any then-available term periods.

/2/ All term plans for OC-n Dedicated Ring Service which are established, renewed or extended after December 13, 2013, for term lengths which are scheduled to expire at any time after February 1, 2019, will instead expire on February 1, 2019. Notwithstanding anything to the contrary in the previous sentence, this footnote does not apply to any term plans established after July 15, 2017.

As of December 1, 2021, Term Payment Plan terms greater than 12 months are no longer available for new or renewing subscribers. (N)  
(N)

6. OC-n DEDICATED RING SERVICE (cont'd)

F. Prices (cont'd)

1. Service Elements (cont'd)

Description /Billing Code/	Nonrecurring Charge	Monthly Payment Term Payment Plans			Monthly Extension	(C) (N)(C) (N)
		12 Months	36 <sup>/2/</sup> Months	60 <sup>/2/</sup> Months		
Node (cont'd)						
OC-12						
Customer Premises						
First /FP5DX/		\$3,850.00	\$3,850.00	\$3,080.00	\$4,620.00	(N)
Additional /FP5DA/		2,620.00	2,620.00	2,095.00	3,140.00	
Central Office /FC5DX/		2,620.00	2,620.00	2,095.00	3,140.00	
Direct Drop						
Customer Premises						
First /L8NDX/		3,750.00	3,750.00	2,980.00	4,470.00	
Additional /L8NDA/		2,520.00	2,520.00	1,995.00	2,990.00	
Central Office /L9NDX/		2,520.00	2,520.00	1,995.00	2,990.00	
OC-12						
Customer Premises						
First Re-Map <sup>/1/</sup> /RN8DX/		3,850.00	3,850.00	3,080.00	4,620.00	
Additional Re-Map <sup>/1/</sup> /RN8DA/		2,620.00	2,620.00	2,095.00	3,140.00	
Direct Drop						
Customer Premises						
First Re-Map <sup>/1/</sup> /RL8DX/		3,750.00	3,750.00	2,980.00	4,470.00	
Additional Re-Map <sup>/1/</sup> /RL8DA/		2,520.00	2,520.00	1,995.00	2,990.00	(N)

/1/ Effective August 1, 2013, Re-Map functionality is not available for new installations. Existing Re-Map customers will be permitted to modify their service by adding new circuits to their existing service, but will not be permitted to add new nodes in new locations. New circuits added to existing locations will utilize the customer's existing Term Payment Plan (TPP) and should be coterminous with the customer's existing TPP. Upon expiration, customers may renew existing Term Payment Plans using any then-available term periods.

/2/ All term plans for OC-n Dedicated Ring Service which are established, renewed or extended after December 13, 2013, for term lengths which are scheduled to expire at any time after February 1, 2019, will instead expire on February 1, 2019. Notwithstanding anything to the contrary in the previous sentence, this footnote does not apply to any term plans established after July 15, 2017.

As of December 1, 2021, Term Payment Plan terms greater than 12 months are no longer available for new or renewing subscribers. (N)  
(N)

6. OC-n DEDICATED RING SERVICE (cont'd)

F. Prices (cont'd)

1. Service Elements (cont'd)

<u>Description /Billing Code/</u>	<u>Nonrecurring Charge</u>	<u>Monthly Payment Term Payment Plans</u>			<u>Monthly Extension</u>	(C) (N)(C) (N)
		<u>12 Months</u>	<u>36<sup>/2/</sup> Months</u>	<u>60<sup>/2/</sup> Months</u>		
Node (cont'd)						
OC-48						
Customer Premises						
First /FP5EX/		\$5,890.00	\$5,890.00	\$4,715.00	\$6,500.00	(N)
Additional /FP5EA/		5,240.00	5,240.00	4,190.00	6,280.00	(N)
Central Office /FC5EX/		5,240.00	5,240.00	4,190.00	6,280.00	(N)
OC-48						
Customer Premises						
First Re-Map <sup>/1/</sup> /RN8EX/		\$5,890.00	\$5,890.00	\$4,715.00	\$7,070.00	(N)
Additional Re-Map <sup>/1/</sup> /RN8EA/		5,240.00	5,240.00	4,190.00	6,280.00	(N)

/1/ Effective August 1, 2013, Re-Map functionality is not available for new installations. Existing Re-Map customers will be permitted to modify their service by adding new circuits to their existing service, but will not be permitted to add new nodes in new locations. New circuits added to existing locations will utilize the customer's existing Term Payment Plan (TPP) and should be coterminous with the customer's existing TPP. Upon expiration, customers may renew existing Term Payment Plans using any then-available term periods.

/2/ All term plans for OC-n Dedicated Ring Service which are established, renewed or extended after December 13, 2013, for term lengths which are scheduled to expire at any time after February 1, 2019, will instead expire on February 1, 2019. Notwithstanding anything to the contrary in the previous sentence, this footnote does not apply to any term plans established after July 15, 2017.

As of December 1, 2021, Term Payment Plan terms greater than 12 months are no longer available for new or renewing subscribers. (N)  
(N)

6. OC-n DEDICATED RING SERVICE (cont'd)

F. Prices (cont'd)

1. Service Elements (cont'd)

<u>Description /Billing Code/</u>	<u>Nonrecurring Charge</u>	<u>Monthly Payment Term Payment Plans</u>			<u>Monthly Extension</u>	(C) (N)(C) (N)
		<u>12 Months</u>	<u>36<sup>/2/</sup> Months</u>	<u>60<sup>/2/</sup> Months</u>		
Node (cont'd)						
OC-192						
Customer Premises						
First /GP5AX/		\$22,000.00	\$22,000.00	\$17,650.00	\$33,000.00	(N)
Additional /GP5AA/		19,650.00	19,650.00	15,700.00	29,475.00	
Central Office /GC5AX/		19,650.00	19,650.00	15,700.00	29,475.00	
OC-192						
Customer Premises						
First Re-Map <sup>/1/</sup> /RNFA/		22,000.00	22,000.00	17,650.00	33,000.00	(N)
Additional Re-Map <sup>/1/</sup> /RNFAA/		19,650.00	19,650.00	15,700.00	29,475.00	(N)

/1/ Effective August 1, 2013, Re-Map functionality is not available for new installations. Existing Re-Map customers will be permitted to modify their service by adding new circuits to their existing service, but will not be permitted to add new nodes in new locations. New circuits added to existing locations will utilize the customer's existing Term Payment Plan (TPP) and should be coterminous with the customer's existing TPP. Upon expiration, customers may renew existing Term Payment Plans using any then-available term periods.

/2/ All term plans for OC-n Dedicated Ring Service which are established, renewed or extended after December 13, 2013, for term lengths which are scheduled to expire at any time after February 1, 2019, will instead expire on February 1, 2019. Notwithstanding anything to the contrary in the previous sentence, this footnote does not apply to any term plans established after July 15, 2017.

As of December 1, 2021, Term Payment Plan terms greater than 12 months are no longer available for new or renewing subscribers. (N)  
(N)



**6. OC-n DEDICATED RING SERVICE (cont'd)**

**F. Prices (cont'd)**

1. Service Elements (cont'd)

<u>Description /Billing Code/</u>	<u>Nonrecurring Charge</u>	<u>Monthly Payment Term Payment Plans</u>			
		<u>12 Months</u>	<u>36<sup>/2/</sup> Months</u>	<u>60<sup>/2/</sup> Months</u>	
Node (cont'd)					
Nonrecurring Charges for subsequent installation					
- per node					
Customer Premises /NRBS7/	\$400.00				(C)
Central Office /NRBSV/	325.00				(N)(C)
Nonrecurring Charges for subsequent installation					
- per node					
Customer Premises - Re-Map /NRBS7 <sup>/1/</sup>	400.00				(N)

/1/ Effective August 1, 2013, Re-Map functionality is not available for new installations. Existing Re-Map customers will be permitted to modify their service by adding new circuits to their existing service, but will not be permitted to add new nodes in new locations. New circuits added to existing locations will utilize the customer's existing Term Payment Plan (TPP) and should be coterminous with the customer's existing TPP. Upon expiration, customers may renew existing Term Payment Plans using any then-available term periods.

/2/ All term plans for OC-n Dedicated Ring Service which are established, renewed or extended after December 13, 2013, for term lengths which are scheduled to expire at any time after February 1, 2019, will instead expire on February 1, 2019. Notwithstanding anything to the contrary in the previous sentence, this footnote does not apply to any term plans established after July 15, 2017.

As of December 1, 2021, Term Payment Plan terms greater than 12 months are no longer available for new or renewing subscribers. (N)  
(N)

**6. OC-n DEDICATED RING SERVICE (cont'd)**

**F. Prices (cont'd)**

1. Service Elements (cont'd)

<u>Description /Billing Code/</u>	<u>Monthly Payment Term Payment Plans</u>			<u>Monthly Extension</u>	(C)
	<u>12 Months</u>	<u>36 Months<sup>/1/</sup></u>	<u>60 Months<sup>/1/</sup></u>		(N)(C)
Node (cont'd)					
- per node:					
Flex Ring					
OC-12					
Customer Premises Node /GP5FX/	\$2,200.00	\$2,200.00	\$1,800.00	\$2,900.00	(N)
Central Office Node /GC5FX/	1,850.00	1,850.00	1,500.00	2,200.00	
OC-48					
Customer Premises Node /GP5GX/	3,900.00	3,900.00	3,000.00	4,500.00	
Central Office Node /GC5GX/	3,500.00	3,500.00	2,800.00	4,100.00	(N)

/1/ All term plans for OC-n Dedicated Ring Service which are established, renewed or extended after December 13, 2013, for term lengths which are scheduled to expire at any time after February 1, 2019, will instead expire on February 1, 2019. Notwithstanding anything to the contrary in the previous sentence, this footnote does not apply to any term plans established after July 15, 2017.

As of December 1, 2021, Term Payment Plan terms greater than 12 months are no longer available for new or renewing subscribers. (N)  
(N)

**6. OC-n DEDICATED RING SERVICE (cont'd)**

**F. Prices (cont'd)**

1. Service Elements (cont'd)

<u>Description /Billing Code/</u>	<u>Nonrecurring Charge</u>	<u>Monthly Payment Term Payment Plans</u>			<u>Monthly Extension</u>	(C) (N)(C)
		<u>12 Months</u>	<u>36 Months<sup>/2/</sup></u>	<u>60 Months<sup>/2/</sup></u>		
Transmux <sup>/1/</sup>						
- per DS-3 port /S4NGX/		\$550.00	\$550.00	\$450.00	\$675.00	(N)
Nonrecurring Charges for subsequent installation						
- per DS-3 port /NRBSX/	\$385.00					

/1/ Available only with OC-3, OC-12 or OC-48 Dedicated Ring Service.

/2/ All term plans for OC-n Dedicated Ring Service which are established, renewed or extended after December 13, 2013, for term lengths which are scheduled to expire at any time after February 1, 2019, will instead expire on February 1, 2019. Notwithstanding anything to the contrary in the previous sentence, this footnote does not apply to any term plans established after July 15, 2017.

As of December 1, 2021, Term Payment Plan terms greater than 12 months are no longer available for new or renewing subscribers. (N)  
(N)

6. OC-n DEDICATED RING SERVICE (cont'd)

F. Prices (cont'd)

1. Service Elements (cont'd)

<u>Description /Billing Code/</u>	<u>Nonrecurring Charge</u>	<u>Monthly Payment Term Payment Plans</u>			<u>Monthly Extension</u>	(C) (N)(C) (N)
		<u>12 Months</u>	<u>36<sup>/3/</sup> Months</u>	<u>60<sup>/3/</sup> Months</u>		
OC-48 Add/Drop Capability <sup>/1/</sup> - per arrangement (per node) (not to exceed 12 DS3s or equivalent) /MPEFX/		\$1,170.00	\$1,170.00	\$965.00	\$1,450.00	(N)
Re-Map per arrangement <sup>/2/</sup> (not to exceed 12 DS3s or equivalent) /M8RFX/		1,170.00	1,170.00	965.00	1,450.00	(N)
Nonrecurring Charges for subsequent installation - per arrangement /NRBS8/	\$490.00					

/1/ When Next Generation (NG) SONET equipment is utilized, the Add/Drop Capability Charge may be applied when the maximum number of Direct Drop ports are exceeded.

/2/ Effective August 1, 2013, Re-Map functionality is not available for new installations. Existing Re-Map customers will be permitted to modify their service by adding new circuits to their existing service, but will not be permitted to add new nodes in new locations. New circuits added to existing locations will utilize the customer's existing Term Payment Plan (TPP) and should be coterminous with the customer's existing TPP. Upon expiration, customers may renew existing Term Payment Plans using any then-available term periods.

/3/ All term plans for OC-n Dedicated Ring Service which are established, renewed or extended after December 13, 2013, for term lengths which are scheduled to expire at any time after February 1, 2019, will instead expire on February 1, 2019. Notwithstanding anything to the contrary in the previous sentence, this footnote does not apply to any term plans established after July 15, 2017.

As of December 1, 2021, Term Payment Plan terms greater than 12 months are no longer available for new or renewing subscribers. (N)  
(N)

**6. OC-n DEDICATED RING SERVICE (cont'd)**

**F. Prices (cont'd)**

1. Service Elements (cont'd)

<u>Description /Billing Code/</u>	<u>Nonrecurring Charge</u>	<u>Monthly Payment Term Payment Plans</u>			<u>Monthly Extension</u>	(C) (N)(C) (N)
		<u>12 Months</u>	<u>36<sup>/3/</sup> Months</u>	<u>60<sup>/3/</sup> Months</u>		
OC-192 Add/Drop Capability <sup>/1, 2/</sup> - per node /MXRGX/		\$5,000.00	\$5,000.00	\$4,000.00	\$7,000.00	(N)

/1/ The OC-192 Add/Drop Capability Charge is applied to all nodes, excluding regenerators.

/2/ When Next Generation (NG) SONET equipment is utilized, the Add/Drop Capability Charge may be applied when the maximum number of Direct Drop ports are exceeded.

/3/ All term plans for OC-n Dedicated Ring Service which are established, renewed or extended after December 13, 2013, for term lengths which are scheduled to expire at any time after February 1, 2019, will instead expire on February 1, 2019. Notwithstanding anything to the contrary in the previous sentence, this footnote does not apply to any term plans established after July 15, 2017.

As of December 1, 2021, Term Payment Plan terms greater than 12 months are no longer available for new or renewing subscribers. (N)  
(N)

6. OC-n DEDICATED RING SERVICE (cont'd)

F. Prices (cont'd)

Service Elements (cont'd)

Description /Billing Code/	Nonrecurring Charge	Monthly Payment Term Payment Plans			Monthly Extension	(C) (N)(C) (N)
		12 Months	36 <sup>/2/</sup> Months	60 <sup>/2/</sup> Months		
Ports						
- per node:						
DS1 at OC-3 node /SPRAX/		\$ 50.00	\$ 50.00	\$ 45.00	\$65.00	(N)
DS3 at OC-3 node /SPRBX/		120.00	120.00	110.00	140.00	
DS3 at OC-12 (DDN) /SPRMX/		120.00	120.00	110.00	140.00	
DS3 at OC-12 node /SPRCX/		120.00	120.00	110.00	140.00	
EC-1 at OC-3 node /S9NSX/		150.00	150.00	135.00	150.00	
EC-1 at OC-12 node /S9NUX/		120.00	120.00	110.00	150.00	
EC-1 at OC-48 node /S9NVX/		120.00	120.00	110.00	150.00	
EC-1 at OC-192 node /S9TZX/		120.00	120.00	110.00	150.00	
OC-3,OC-3c at OC-12 node /SPREX/		150.00	150.00	135.00	200.00	
DS1 at OC-12 (DNN) <sup>/1/</sup> /SPRNX/		50.00	50.00	45.00	65.00	
DS1 at OC-12 node <sup>/1/</sup> /SPRGX/		50.00	50.00	45.00	65.00	
OC-12,OC-12c at OC-48 node /SPRHX/		375.00	375.00	360.00	475.00	
OC-3,OC-3c at OC-48 node /SPRJX/		150.00	150.00	135.00	200.00	
DS3 at OC-48 node /SPRKX/		120.00	120.00	110.00	150.00	
DS1 at OC-48 node <sup>/1/</sup> /SPRLX/		50.00	50.00	45.00	65.00	
OC-48,OC-48c at OC-192 node /S9NJX/		950.00	950.00	900.00	1,425.00	
OC-12,OC-12c at OC-192 node /S9NGX/		375.00	375.00	360.00	475.00	
OC-3,OC-3c at OC-192 node /S9NEX/		150.00	150.00	135.00	200.00	
DS3 at OC-192 node /S9QGX/		120.00	120.00	110.00	140.00	
DS1 at OC-192 node /S9QWX/		50.00	50.00	45.00	65.00	(N)

/1/ Optical to Electrical DS1 Add/Drop Capability is needed along with an OC-3 port unless the customer has chosen an OC-12 DDN. When Next Generation (NG) SONET equipment is utilized, Optical to Electrical Add/Drop Capability may be needed when the maximum number of Direct Drop ports are exceeded.

/2/ All term plans for OC-n Dedicated Ring Service which are established, renewed or extended after December 13, 2013, for term lengths which are scheduled to expire at any time after February 1, 2019, will instead expire on February 1, 2019. Notwithstanding anything to the contrary in the previous sentence, this footnote does not apply to any term plans established after July 15, 2017.

As of December 1, 2021, Term Payment Plan terms greater than 12 months are no longer available for new or renewing subscribers. (N)  
(N)

**6. OC-n DEDICATED RING SERVICE (cont'd)**

**F. Prices (cont'd)**

1. Service Elements (cont'd)

<u>Description /Billing Code/</u>	Nonrecurring <u>Charge</u>	Monthly Payment <i>Term Payment Plans</i>			(C) (N)(C) (N)
		<u>12</u> <u>Months</u>	<u>36<sup>/1/</sup></u> <u>Months</u>	<u>60<sup>/1/</sup></u> <u>Months</u>	
Nonrecurring Charges for subsequent installation					
- per port					
OC-48,OC-48c /NRBN9/	\$500.00				
OC-12,OC-12c /NRBSZ/	400.00				
OC-3,OC-3c /NRBSW/	400.00				
DS3 /NRBSX/	385.00				
EC-1 /1CREC/	110.00				
DS1 /NRBSY/	350.00				

/1/ All term plans for OC-n Dedicated Ring Service which are established, renewed or extended after December 13, 2013, for term lengths which are scheduled to expire at any time after February 1, 2019, will instead expire on February 1, 2019. Notwithstanding anything to the contrary in the previous sentence, this footnote does not apply to any term plans established after July 15, 2017.

As of December 1, 2021, Term Payment Plan terms greater than 12 months are no longer available for new or renewing subscribers. (N)  
(N)

**6. OC-n DEDICATED RING SERVICE (cont'd)**

**F. Prices (cont'd)**

1. Service Elements (cont'd)

<u>Description /Billing Code/</u>	<u>Monthly Payment Term Payment Plans</u>			<u>Monthly Extension</u>	(C)
	<u>12 Months</u>	<u>36 Months<sup>/1/</sup></u>	<u>60 Months<sup>/1/</sup></u>		(N)(C)
EoS Ports - per node:					
100 Mbps Ethernet (STS-1)at OC-3 node /S9TAX/	\$145.00	\$145.00	\$130.00	\$225.00	(N)
100 Mbps Ethernet (STS-1)at OC-12 node /S9TBX/	145.00	145.00	130.00	225.00	
100 Mbps Ethernet (STS-3c)at OC-12 node /S9TCX/	180.00	180.00	160.00	280.00	
1 Gbps Ethernet (STS-1) at OC-12 node /S9TDX/	250.00	250.00	200.00	350.00	
1 Gbps Ethernet (STS-3c) at OC-12 node /S9TEX/	250.00	250.00	200.00	350.00	
100 Mbps Ethernet (STS-1)at OC-48 node /S9TGX/	145.00	145.00	130.00	225.00	
100 Mbps Ethernet (STS-3c)at OC-48 node /S9THX/	180.00	180.00	160.00	280.00	
1 Gbps Ethernet (STS-1) at OC-48 node /S9TJX/	250.00	250.00	200.00	350.00	
1 Gbps Ethernet (STS-3c) at OC-48 node /S9TKX/	250.00	250.00	200.00	350.00	
1 Gbps Ethernet (STS-12c) at OC-48 node /S9TLX/	600.00	600.00	500.00	875.00	
1 Gbps Ethernet (STS-24) at OC-48 node /S9TMX/	900.00	900.00	850.00	1,500.00	
100 Mbps Ethernet (STS-1)at OC-192 node /S9TNX/	145.00	145.00	130.00	225.00	
100 Mbps Ethernet (STS-3c)at OC-192 node/S9TOX/	180.00	180.00	160.00	280.00	
1 Gbps Ethernet (STS-1) at OC-192 node /S9TPX/	250.00	250.00	200.00	350.00	
1 Gbps Ethernet (STS-3c) at OC-192 node /S9TQX/	250.00	250.00	200.00	350.00	(N)

/1/ All term plans for OC-n Dedicated Ring Service which are established, renewed or extended after December 13, 2013, for term lengths which are scheduled to expire at any time after February 1, 2019, will instead expire on February 1, 2019. Notwithstanding anything to the contrary in the previous sentence, this footnote does not apply to any term plans established after July 15, 2017.

As of December 1, 2021, Term Payment Plan terms greater than 12 months are no longer available for new or renewing subscribers. (N)  
(N)



**6. OC-n DEDICATED RING SERVICE (cont'd)**

**F. Prices (cont'd)**

1. Service Elements (cont'd)

<u>Description /Billing Code/</u>	<u>Monthly Payment Term Payment Plans</u>			<u>Monthly Extension</u>	(C) (N)(C)
	<u>12 Months</u>	<u>36 Months<sup>/1/</sup></u>	<u>60 Months<sup>/1/</sup></u>		
EoS Ports - per node: (cont'd)					
1 Gbps Ethernet (STS-12c) at OC-192 node /S9TRX/	\$600.00	\$600.00	\$500.00	\$875.00	(N)
1 Gbps Ethernet (STS-24c) at OC-192 node /S9TSX/	900.00	900.00	850.00	1,500.00	(N)
<u>Nonrecurring Charge</u>					
Nonrecurring Charges for subsequent installation, per port type					
100 Mbps Ethernet /NRBY4/			\$385.00		
1 Gbps Ethernet /NRBY5/			425.00		

/1/ All term plans for OC-n Dedicated Ring Service which are established, renewed or extended after December 13, 2013, for term lengths which are scheduled to expire at any time after February 1, 2019, will instead expire on February 1, 2019. Notwithstanding anything to the contrary in the previous sentence, this footnote does not apply to any term plans established after July 15, 2017.

As of December 1, 2021, Term Payment Plan terms greater than 12 months are no longer available for new or renewing subscribers. (N)  
(N)

6. OC-n DEDICATED RING SERVICE (cont'd)

F. Prices (cont'd)

1. Service Elements (cont'd)

<u>Description /Billing Code/</u>	Monthly Payment <i>Term Payment Plans</i>			Monthly <u>Extension</u>	(C) (N)(C)
	<u>12 Months</u>	<u>36 Months</u> <sup>/4/</sup>	<u>60 Months</u> <sup>/4/</sup>		
EoS Ports					
Virtual Concatenation (VCAT) <sup>/1,2/</sup>					
- per OC-3, OC-12, OC-48 or OC-192 node					
10/100BaseT VCAT Ethernet Port /S5P1X/ <sup>/3/</sup>	\$250.00	\$250.00	\$180.00	\$350.00	(N)
VT1.5-1v (1.6 Mbps)					
VT1.5-2v (3.2 Mbps)					
VT1.5-3v (4.8 Mbps)					
VT1.5-4v (6.4 Mbps)					
VT1.5-5v (8.0 Mbps)					
VT1.5-6v (9.6 Mbps)					
VT1.5-7v (11.2 Mbps)					
VT1.5-8v (12.4 Mbps)					
VT1.5-10v (16.0 Mbps)					
VT1.5-13v (20.8 Mbps)					
STS-1-1v (48.384 Mbps)					
STS-1-2v (96.768 Mbps)					

/1/ Nonrecurring charges apply to EoS Ports, Virtual Concatenation (VCAT). See EoS Port charges on Sheet 78.3 for applicable nonrecurring charges.

/2/ The bandwidth options shown represent the actual payload capacity for the selected bandwidth. Only single-mode fiber is available in the Central Office. The EoS line rates defined herein are based on the theoretical SONET payload line rates as specified in Telcordia Publication GR-253-CORE, Issue 4. These values are not representative of the true Ethernet transport capacity of the EoS circuit.

/3/ EoS port interfaces offered as 10/100BaseT are only available at the customer premises location.

/4/ All term plans for OC-n Dedicated Ring Service which are established, renewed or extended after December 13, 2013, for term lengths which are scheduled to expire at any time after February 1, 2019, will instead expire on February 1, 2019. Notwithstanding anything to the contrary in the previous sentence, this footnote does not apply to any term plans established after July 15, 2017. As of December 1, 2021, Term Payment Plan terms greater than 12 months are no longer available for new or renewing subscribers.

(N)  
(N)

6. OC-n DEDICATED RING SERVICE (cont'd)

F. Prices (cont'd)

1. Service Elements (cont'd)

<u>Description /Billing Code/</u>	Monthly Payment <i>Term Payment Plans</i>			<u>Monthly Extension</u>	(C) (N)(C)
	<u>12 Months</u>	<u>36 Months<sup>/3/</sup></u>	<u>60 Months<sup>/3/</sup></u>		
EoS Ports					
Virtual Concatenation (VCAT) <sup>/1,2/</sup> (cont'd)					
- per OC-3, OC-12, OC-48 or OC-192 node (cont'd)					
1000BaseSX VCAT Ethernet Port /S5P2X/	\$425.00	\$425.00	\$350.00	\$500.00	(N)
1000BaseLX VCAT Ethernet Port /S5P3X/	425.00	425.00	350.00	500.00	(N)
STS-1-1v (48.384 Mbps)					
STS-1-2v (96.768 Mbps)					
STS-1-3v (145.152 Mbps)					
STS-1-4v (193.536 Mbps)					
STS-1-5v (241.92 Mbps)					
STS-1-6v (290.304 Mbps)					
STS-1-9v (435.456 Mbps)					
STS-1-12v (580.608 Mbps)					
STS-1-21v (1016.064 Mbps)					
STS-3c-1v (149.76 Mbps)					
STS-3c-2v (299.52 Mbps)					
STS-3c-3v (449.28 Mbps)					
STS-3c-4v (599.04 Mbps)					
STS-3c-7v (1048.32 Mbps)					

/1/ Nonrecurring charges apply to EoS Ports, Virtual Concatenation (VCAT). See EoS Port charges on Sheet 78.3 for applicable nonrecurring charges.

/2/ The bandwidth options shown represent the actual payload capacity for the selected bandwidth. Only single-mode fiber is available in the Central Office. The EoS line rates defined herein are based on the theoretical SONET payload line rates as specified in Telcordia Publication GR-253-CORE, Issue 4. These values are not representative of the true Ethernet transport capacity of the EoS circuit.

/3/ All term plans for OC-n Dedicated Ring Service which are established, renewed or extended after December 13, 2013, for term lengths which are scheduled to expire at any time after February 1, 2019, will instead expire on February 1, 2019. Notwithstanding anything to the contrary in the previous sentence, this footnote does not apply to any term plans established after July 15, 2017.

As of December 1, 2021, Term Payment Plan terms greater than 12 months are no longer available for new or renewing subscribers. (N)  
(N)

6. OC-n DEDICATED RING SERVICE (cont'd)

F. Prices (cont'd)

1. Service Elements

Description /Billing Code/	Nonrecurring Charge	Monthly Payment Term Payment Plans			Monthly Extension	(C) (N)(C) (N)
		12 Months	36 <sup>/4/</sup> Months	60 <sup>/4/</sup> Months		
Mileage						
- per mile between nodes by ring type						
• OC-3 /IL5XX/		\$ 260.00	\$ 260.00	\$ 220.00	\$ 330.00	(N)
• OC-12 /IL5XX/		260.00	260.00	220.00	330.00	
• OC-48 /IL5XX/		260.00	260.00	220.00	330.00	
• OC-192 /IL5XX/		260.00	260.00	220.00	330.00	
Optical to Electrical Add/Drop Capability						
- per OC-3 to DS1 add/drop /MXJDX/		875.00	875.00	700.00	1,050.00	
- per arrangement <sup>/1/</sup> (per OC-192 node) <sup>/2/</sup> /MXJGX/ Re-Map <sup>/3/</sup>		2,500.00	2,500.00	2,000.00	3,500.00	
- per OC-3 to DS1 add/drop /M8RDX/		875.00	875.00	700.00	1,050.00	(N)
Nonrecurring Charges for subsequent installation						
- per OC-3 to DS1 add/drop capability /NRBS6/	\$490.00					

/1/ When electrical DS3 or EC-1 drops are required, the OC-192 Optical to Electrical Add/Drop Capability Charge is applied in addition to the OC-192 Add/Drop Capability Charge preceding. When Next Generation (NG) SONET equipment is utilized, the Optical to Electrical Add/Drop Capability Charge may be needed only when the maximum number of Direct Drop ports are exceeded.

/2/ Not to exceed any configurable combination of ports beyond 192 STS-1 equivalents.

/3/ Effective August 1, 2013, Re-Map functionality is not available for new installations. Existing Re-Map customers will be permitted to modify their service by adding new circuits to their existing service, but will not be permitted to add new nodes in new locations. New circuits added to existing locations will utilize the customer's existing Term Payment Plan (TPP) and should be coterminous with the customer's existing TPP. Upon expiration, customers may renew existing Term Payment Plans using any then-available term periods.

/4/ All term plans for OC-n Dedicated Ring Service which are established, renewed or extended after December 13, 2013, for term lengths which are scheduled to expire at any time after February 1, 2019, will instead expire on February 1, 2019. Notwithstanding anything to the contrary in the previous sentence, this footnote does not apply to any term plans established after July 15, 2017.

As of December 1, 2021, Term Payment Plan terms greater than 12 months are no longer available for new or renewing subscribers. (N)  
(N)

6. OC-n DEDICATED RING SERVICE (cont'd)

F. Prices (cont'd)

1. Service Elements (cont'd)

Description /Billing Code/	Monthly Payment Term Payment Plans			Monthly Extension	(C) (N)(C) (N)
	12 Months	36 <sup>/2/</sup> Months	60 <sup>/2/</sup> Months		
Re-Map Capability <sup>/1/</sup>					
per DS1 Re-Map Block (consists of 28 DS1 ports) at					
OC-3 Ring /P8RAX/	\$1,400.00	\$1,400.00	\$1,260.00	\$1,820.00	(N)
OC-12 Ring /P8RGX/	1,400.00	1,400.00	1,260.00	1,820.00	
OC-12 DDN Ring /P8RNX/	1,400.00	1,400.00	1,260.00	1,820.00	
OC-48 Ring /P8RLX/	1,400.00	1,400.00	1,260.00	1,820.00	
per DS3 Re-Map Port at					
OC-3 Ring /P8RBX/	120.00	120.00	110.00	150.00	
OC-12 Ring /P8RBX/	120.00	120.00	110.00	150.00	
OC-12 DDN Ring /P8RMX/	120.00	120.00	110.00	150.00	
OC-48 Ring /P8RMX/	120.00	120.00	110.00	150.00	
per EC-1 Re-Map Port at					
OC-3 Ring /S9N6X/	120.00	120.00	110.00	150.00	
OC-12 Ring /S9N8X/	120.00	120.00	110.00	150.00	
OC-48 Ring /S9N9X/	120.00	120.00	110.00	150.00	
per DS3 Re-Map Block (consists of 3 DS3 ports) at					
OC-12 Ring /P8RCX/	360.00	360.00	330.00	450.00	
OC-48 Ring /P8RKX/	360.00	360.00	330.00	450.00	
per DS3 TransMux Re-Map Port at					
OC-3 Ring /RN7TX/	550.00	550.00	450.00	300.00	
OC-12 Ring /RN7TX/	550.00	550.00	450.00	300.00	
OC-48 Ring /RN7TX/	550.00	550.00	450.00	300.00	(N)

/1/ Effective August 1, 2013, Re-Map functionality is not available for new installations. Existing Re-Map customers will be permitted to modify their service by adding new circuits to their existing service, but will not be permitted to add new nodes in new locations. New circuits added to existing locations will utilize the customer's existing Term Payment Plan (TPP) and should be coterminous with the customer's existing TPP. Upon expiration, customers may renew existing Term Payment Plans using any then-available term periods.

/2/ All term plans for OC-n Dedicated Ring Service which are established, renewed or extended after December 13, 2013, for term lengths which are scheduled to expire at any time after February 1, 2019, will instead expire on February 1, 2019. Notwithstanding anything to the contrary in the previous sentence, this footnote does not apply to any term plans established after July 15, 2017.

As of December 1, 2021, Term Payment Plan terms greater than 12 months are no longer available for new or renewing subscribers. (N)  
(N)

6. OC-n DEDICATED RING SERVICE (cont'd)

F. Prices (cont'd)

1. Service Elements (cont'd)

Description /Billing Code/	Nonrecurring Charge	Monthly Payment Term Payment Plans			Monthly Extension	(C) (N)(C) (N)
		12 Months	36 <sup>2/</sup> Months	60 <sup>2/</sup> Months		
Re-Map Capability <sup>1/</sup>						
- per OC-3 Re-Map Port at OC-12 Ring /P8REX/ OC-48 Ring /P8RJX/ OC-192 Ring /RN72X/		\$150.00 150.00 150.00	\$150.00 150.00 150.00	\$135.00 135.00 135.00	\$190.00 190.00 190.00	(N)
- per OC-12 Re-Map Port at OC-48 Ring /P8RHX/ OC-192 Ring /RN73X/		375.00 375.00	375.00 375.00	360.00 360.00	475.00 475.00	(N)
- per OC-48 Re-Map Port at OC-192 Ring /RN74X/		825.00	825.00	700.00	1,425.00	(N)
- per EC-1 Re-Map Port						
Nonrecurring Charges for subsequent installation of EC-1 Re- Map Port /1CREC// <sup>1/</sup>	\$110.00					
Dedicated Ring Regenerator each (as required)						
• OC-3 /RGY/		1,000.00	1,000.00	800.00	1,200.00	(N)
• OC-12 /RGY/		2,620.00	2,620.00	2,095.00	3,140.00	(N)
• OC-48 /RGY/		3,275.00	3,275.00	2,620.00	3,930.00	(N)
• OC-192 /RGY/		9,250.00	9,250.00	7,400.00	13,875.00	(N)
Nonrecurring Charges for subsequent installation of Regenerator						
- each (as required) /NRBS5/	270.00					
Shared Network Arrangement						
- processing charge, per service order /NRBOP/	30.00					

/1/ Effective August 1, 2013, Re-Map functionality is not available for new installations. Existing Re-Map customers will be permitted to modify their service by adding new circuits to their existing service, but will not be permitted to add new nodes in new locations. New circuits added to existing locations will utilize the customer's existing Term Payment Plan (TPP) and should be coterminous with the customer's existing TPP. Upon expiration, customers may renew existing Term Payment Plans using any then-available term periods.

/2/ All term plans for OC-n Dedicated Ring Service which are established, renewed or extended after December 13, 2013, for term lengths which are scheduled to expire at any time after February 1, 2019, will instead expire on February 1, 2019. Notwithstanding anything to the contrary in the previous sentence, this footnote does not apply to any term plans established after July 15, 2017.

As of December 1, 2021, Term Payment Plan terms greater than 12 months are no longer available for new or renewing subscribers. (N)  
(N)

**6. OC-n DEDICATED RING SERVICE (cont'd)**

**F. Prices (cont'd)**

2. Payment Plans

- Term Payment Plans

OC-n Dedicated Ring Service is only available under the Term Payment Plan (TPP) whereby customers must select either a 12 month, 36-month<sup>/1/</sup> or 60-month period<sup>/1/</sup>. If a node was added after the initial installation of the dedicated ring, the new node will carry the same TPP rate as the initial ring and be co-terminus with that TPP. After the selected TPP period is satisfied, the service will be provided on a month-to-month basis at the then-current Monthly Extension rates.

(C)  
(C)  
(D)  
(C)  
(D)

Refer to *Term Payment Plans* in Part 15, Section 1.

(D)

- Single Payment Option (SPO)

A Single Payment Option is available for this service. Refer to *Term Payment Plans - Single Payment Option* in Part 15, Section 1.

3. Termination Charges

Termination Charges will apply to service termination prior to the contracted period. The termination charge for all TPP terms for OC-n Dedicated Ring Service will be calculated as described in *Term Payments Plans – Termination Charges* in Part 15, Section 1.

Logical changes in the ring (change in mapping content) are not considered to be a dedicated ring termination.

(D)

(D)

<sup>/1/</sup> All term plans for OC-n Dedicated Ring Service which are established, renewed or extended after December 13, 2013, for term lengths which are scheduled to expire at any time after February 1, 2019, will instead expire on February 1, 2019. Notwithstanding anything to the contrary in the previous sentence, this footnote does not apply to any term plans established after July 15, 2017.

As of December 1, 2021, Term Payment Plan terms greater than 12 months are no longer available for new or renewing subscribers.

(N)  
(N)

**6. OC-n DEDICATED RING SERVICE (cont'd)**

**F. Prices (cont'd)**

3. Termination Charges (cont'd)

(D)

(D)



**6. OC-n DEDICATED RING SERVICE (cont'd)**

**F. Prices (cont'd)**

3. Termination Charges (cont'd)

(D)

(D)

**6. OC-n DEDICATED RING SERVICE (cont'd)****F. Prices (cont'd)**

## 4. Credit Allowance

A service interruption will result in a credit equal to one month's bill for the individual port-to-port connection involved where the system does not automatically self-heal around the point of failure within one (1) second. An interruption of service will start when an inoperative service is reported to the Company and end when the service is operative. In any month, as a result of an interruption, the total credit per rate element of the interrupted service may not exceed 100 percent of the monthly charge for that particular rate element. (C)

The OC-n Dedicated Ring Service credit allowance does not apply to a failure which occurs on a service where the customer has intentionally requested to provision riding services without SONET protection (see Unprotected Channel Transport described earlier) or an unprotected facility where the customer has chosen not to utilize Special Construction to have such facilities constructed. This provision includes the entrance facility where the customer has chosen not to establish dual entrance facilities (diversity) from their property line to their building equipment location. The Credit allowance determination for service outages utilizing non-diverse entrance facilities is found in Part 15, Section 1. Additional information regarding Credit Allowance limits may be found in AM TR-TMO-000101. (C)

Unprotected services may be interrupted to repair other circuits. In cases where the customer orders OC-192 Dedicated Ring Service with an unprotected 2-fiber service interface, the Company may provision this unprotected service, with other unprotected services, via a multi-port card. If one unprotected service on the card incurs an outage, the Company may repair the 2-fiber service interface device by replacing the card, which may temporarily interrupt service on any unprotected tributary circuits that subtend this same multi-port circuit card. In the event of a service interruption, credit allowance will be provided for the service that suffered the unplanned outage.

7. Reserved

(C)  
(D)

(D)

7. Reserved

(C)  
(D)

(D)

7. Reserved

(C)  
(D)

(D)

7. Reserved

(C)  
(D)

(D)

7. Reserved

(C)  
(D)

(D)

7. Reserved

(C)  
(D)



(D)



7. Reserved

(C)  
(D)



(D)

**8. CENTRAL OFFICE MULTIPLEXING AND CROSS CONNECT SERVICES**

**A. Description**

Central Office Multiplexing is a wire center based optional service that either derives multiple transmission paths from a single transmission source or combines multiple transmission sources into a single transmission path. Central Office Multiplexing may be available in the following configurations:

- DS3/DS1 is a serving arrangement that either converts an electrical DS3 channel to twenty-eight DS1 channels or converts twenty-eight DS1 channels to an electrical DS3 channel. Timing for the DS1 channels utilizes digital time division multiplexing.
- DS1/(Analog, Base Rate Service<sup>/2/</sup> or 128, 256 and 384 Service<sup>/1/</sup>) is a serving arrangement that either converts a DS1 into twenty-four channels for use with Analog, Base Rate Service or 128, 256, 384 Service or converts twenty-four Analog, Base Rate Service or 128, 256, 384 Service channels into a DS1 channel. (C)

Cross Connect is a wire center based optional service that cross-connects an OC-3 or OC-12 Service to another service of the same speed or to an add/drop function of the same speed at a wire center for the same or different customer on a per circuit basis.

Fiber Hub Cross Connect is an optional service arrangement that cross-connects a DS1 Service, DS3 Service, or Base Rate Service<sup>/2/</sup> termination to another service termination of the same speed at a designated Fiber Hub location. (C)

Multiplexer Cross-Connection (MCC) is an arrangement that allows one channel of a multiplexed DS1 or DS3 Service to be connected to one channel of the same bit rate and like signaling of another multiplexed DS1 or DS3 Service. The lesser speed channel may be either an analog channel or a Base Rate<sup>/2/</sup> channel provided at 64 Kbps of bandwidth between the two DS1 multiplexers, or DS1 Service between two DS3 multiplexers. MCC will be provided at all, or between two, Company locations where multiplexing is performed. (C)

**B. Definitions**

Cascade Multiplexing

Occurs when a higher speed channel is de-multiplexed to provide channels of a lesser capacity and one of the lesser capacity channels is further de-multiplexed.

Hub Rearrangement

Occurs when an existing channelized digital service between a customer premises and a hub location is multiplexed onto a new higher speed digital service at the hub.

/1/ Effective September 6, 2016, customers may not establish new term plans of any length for 128, 256 and 384 Service, and existing term plans may not be renewed. For existing service after any term plan expires, service will be provided only on a month-to-month basis.

/2/ Effective June 30, 2021, Base Rate Service is grandfathered. See Part 20, Section 15, Sheet 141 for service availability. (N)  
(N)

**8. CENTRAL OFFICE MULTIPLEXING AND CROSS CONNECT SERVICES (cont'd)****C. Terms and Conditions**

1. Central Office Multiplexing can only be ordered in conjunction with DS3 Service, DS1 Service and/or Network Reconfiguration Service<sup>/1/</sup>, and is provided at the option of the Company where facilities permit. If appropriate facilities are not available, *Special Construction* may apply. Subject to availability, the customer may choose the multiplexing site. (C)
2. End to end services may be provided via Central Office Multiplexing. The transmission parameters of the end to end service thus provided will be that of the lower capacity or bit rate.
3. A customer of the Cross Connect service must purchase service to the wire center from his designated premises. One charge applies per service cross-connected.
4. Customers utilizing Fiber Hub Cross-Connect must purchase service from their designated premises to the Fiber Hub location. Fiber Hub locations may be found in the National Exchange Carrier Association (NECA) Tariff, F.C.C. No. 4.
5. When service is provided between a customer designated premises and a Fiber Hub Cross-Connect site, service is considered to end at the hub locations. Performance is measured between the customer premises and the hub location.
6. It is the customer's responsibility to assure that the channels connected at a Fiber Hub Cross-Connect site are compatible.
7. When Fiber Hub Cross-Connect is utilized to connect two services, the two cross-connected services are treated separately for service performance measurement and service interruption credit purposes.
8. A Hub Rearrangement charge applies only when; neither customer location changes, the existing multiplexer associated with the lower speed services is not physically moved, and all rearranged facilities are included in one customer request.
9. When Cascade Multiplexing is performed, whether in the same or different locations, a charge for the additional multiplexing unit also applies. Channel Mileage Termination and Channel Mileage charges apply between multiplexer locations.
10. Each Company wire center has been assigned to a Rate Zone. A table listing all Rate Zone assignments can be found in Part 15, Section 1, Paragraph V.

/1/ Effective October 30, 2018, Network Reconfiguration Service (NRS) will no longer be available for purchase by new or existing customers. See Part 20, Section 15. (N)  
(N)

**8. CENTRAL OFFICE MULTIPLEXING AND CROSS CONNECT SERVICES (cont'd)****D. Technical References**

<u>Subject</u>	<u>Technical Reference</u>
OPTINET 64 Interface Specifications	AM TR-OAT-000070
Digital Service Transmission Parameters	AM TR-TMO-000101
Service Description and Interface Requirements for FT-1 Digital Service	AM TR-TMO-000106
Service Description and Interface for OPTINET Optical Service	AM TR-TMO-000072
Digital Data Special Access Service Transmission Parameters and Interface Combinations	TR-NWT-000341 (Telcordia)
High-Capacity Digital Service (1.544 Mbps) Interface Generic Requirements for End Users	GR-54-CORE (Telcordia)
High Capacity Digital Special Access Service - Transmission Parameter Limits and Interface Specifications	GR-342-CORE (Telcordia)

The Technical Reference(s) can be obtained from:

APEX Support Team  
(734) 523-7348

The Telcordia (formerly known as Bellcore) Publication(s) can be obtained from:

Telcordia Technologies, Inc.  
8 Corporate Place, PYA 3A-187  
Piscataway, New Jersey 08854-4156

**8. CENTRAL OFFICE MULTIPLEXING AND CROSS CONNECT SERVICES (cont'd)**

**E. Prices**

1. Service Elements

<u>Description /Billing Code/</u>	<u>Monthly Price</u>	
Cross Connection of Services		
OC-3 to OC-3 - per circuit /OCCCX/	\$ 104.00	
OC-12 to OC-12 - per circuit /OCCDX/	550.00	
OC-48 to OC-48 - per circuit /OCCFX/	1,100.00	
Multiplexer Cross-Connection - per central office		
• DS1 Service - per analog or Base Rate <sup>/1/</sup> channel /CMO1X/	.42	(C)
• DS3 Service - per DS1 Service		
Zone 1 /CMO31/	6.54	
Zone 2 /CMO32/	6.54	
Zone 3 /CMO33/	6.54	

/1/ Effective June 30, 2021, Base Rate Service is grandfathered. See Part 20, Section 15, Sheet 141 for service availability. (N)  
(N)

**8. CENTRAL OFFICE MULTIPLEXING AND CROSS CONNECT SERVICES (cont'd)**

**E. Prices (cont'd)**

1. Service Elements (cont'd)

<u>Description /Billing Code/</u>	<u>Nonrecurring Charge</u>	
Fiber Hub Cross-Connect		
- DS0 to DS0 (Analog to Analog)		
1 day response /CX901/	\$200.00	
3 day response /CX903/	150.00	
- DS0 to DS0 (Base Rate <sup>/1/</sup> to Base Rate)		(C)
1 day response /CX901/	200.00	
3 day response /CX903/	150.00	
- DS1 to DS1		
1 day response		
Zone 1 /CCUA1/	290.00	
Zone 2 /CCUA2/	290.00	
Zone 3 /CCUA3/	290.00	
3 day response		
Zone 1 /CCUB1/	190.00	
Zone 2 /CCUB2/	190.00	
Zone 3 /CCUB3/	190.00	
- DS3 to DS3		
1 day response		
Zone 1 /CCUC1/	305.00	
Zone 2 /CCUC2/	305.00	
Zone 3 /CCUC3/	305.00	
3 day response		
Zone 1 /CCUD1/	205.00	
Zone 2 /CCUD2/	205.00	
Zone 3 /CCUD3/	205.00	

/1/ Effective June 30, 2021, Base Rate Service is grandfathered. See Part 20, Section 15, Sheet 141 for service availability. (N)  
(N)

**8. CENTRAL OFFICE MULTIPLEXING AND CROSS CONNECT SERVICES (cont'd)**

**E. Prices (cont'd)**

1. Service Elements (cont'd)

<u>Description /Billing Code/</u>	<u>Nonrecurring Charge</u>	
Hub Rearrangement Record Charge		
- per DS3 to DS1 multiplexer rearranged		
Zone 1 /NRBE1/	\$500.00	
Zone 2 /NRBE2/	500.00	
Zone 3 /NRBE3/	500.00	
- per DS1 to Analog/Base Rate <sup>/1/</sup> multiplexer rearranged		(C)
Zone 1 /NRBE1/	400.00	
Zone 2 /NRBE2/	400.00	
Zone 3 /NRBE3/	400.00	

/1/ Effective June 30, 2021, Base Rate Service is grandfathered. See Part 20, Section 15, Sheet 141 for service availability. (N)  
(N)

**8. CENTRAL OFFICE MULTIPLEXING AND CROSS CONNECT SERVICES (cont'd)**

**E. Prices (cont'd)**

1. Service Elements (cont'd)

Description <u>/Billing Code/</u>	<u>Monthly</u>	<u>12 Months</u>	Monthly Payment <i>Term Payment Plans</i>		
			<u>24 Months<sup>/3/</sup></u>	<u>36 Months<sup>/3/</sup></u>	<u>60 Months<sup>/1/</sup></u>
Central Office Multiplexing					
- DS1 to Analog/Base Rate <sup>/4/</sup> /128, 256 and 384 <sup>/2/</sup>					(C)
Zone 1 /QMVX1/	\$575.00	\$400.00	\$325.00	\$300.00	\$285.00
Zone 2 /QMVX2/	575.00	400.00	325.00	300.00	285.00
Zone 3 /QMVX3/	575.00	400.00	325.00	300.00	285.00
- DS3 to DS1					
Zone 1 /QM3X1/	900.00	700.00	650.00	600.00	550.00
Zone 2 /QM3X2/	900.00	700.00	650.00	600.00	550.00
Zone 3 /QM3X3/	900.00	700.00	650.00	600.00	550.00

/1/ As of October 1, 2013, Term Payment Plan terms greater than 36 months are no longer available for new or renewing subscribers.

/2/ Effective September 6, 2016, customers may not establish new term plans of any length for 128, 256 and 384 Service, and existing term plans may not be renewed. For existing service after any term plan expires, service will be provided only on a month-to-month basis.

/3/ As of January 15, 2021, 24 and 36 Month Term Payment Plans are no longer available for new or renewing subscribers.

/4/ Effective June 30, 2021, Base Rate Service is grandfathered. See Part 20, Section 15, Sheet 141 for service availability. (N)  
(N)



**8. CENTRAL OFFICE MULTIPLEXING AND CROSS CONNECT SERVICES (cont'd)****E. Prices (cont'd)**

## 2. Payment Plans

- Month to Month

Cross Connection of Services (OC-3 to OC-3 and OC-12 to OC-12) is available on a month to month basis.

Central Office Multiplexing is available on a month to month basis.

- Term Payment Plans

Central Office Multiplexing is available under a Term Payment Plan (TPP) whereby customers must select either a 12, 24<sup>/2/</sup>, 36<sup>/2/</sup> or 60 month<sup>/1/</sup> period. After the selected Term Payment Plan period is satisfied, the monthly rate will apply unless a new TPP is selected. (C)  
Refer to *Term Payment Plans* in Part 15, Section 1.

- Single Payment Option (SPO)

A Single Payment Option is available for Central Office Multiplexing. Refer to *Term Payment Plans - Single Payment Option* in Part 15, Section 1.

## 3. Termination Charges

Termination Charges will apply to service terminated prior to the contracted period. The termination charge for all TPP terms for Central Office Multiplexing and Cross Connect Services will be calculated as described in *Term Payment Plans - Termination Charges* in Part 15, Section 1.

## 4. Credit Allowance

A credit allowance will be given for interruption of service when the outage consists of 30 consecutive minutes, or more, from the time that the Company is notified, or the outage is discovered by the Company, whichever is earlier. Refer to *Credit Allowances* in Part 15, Section 1 for calculating credit allowances. (Utilize Step 2 "for two-point services" to compute the credit allowance.) Credit allowances for circuits affected by a mux or cross-connect failure are calculated on a "by circuit" basis according to the type of circuit affected.

/1/ As of October 1, 2013, Term Payment Plan terms greater than 36 months are no longer available for new or renewing subscribers.

/2/ As of January 15, 2021, 24 and 36 Month Term Payment Plans are no longer available for new or renewing subscribers. (N)  
(N)

/1/ Material now appears in Part 20, Section 15, Sheet 20.

/1/ Material now appears in Part 20, Section 15, Sheet 21.

/1/

/1/ Material now appears in Part 20, Section 15, Sheet 22.

/1/ Material now appears in Part 20, Section 15, Sheet 23.

/1/ Material now appears in Part 20, Section 15, Sheet 24.

/1/ Material now appears in Part 20, Section 15, Sheet 24.

/1/ Material now appears in Part 20, Section 15, Sheet 24.



/1/ Material now appears in Part 20, Section 15, Sheet 25.

/1/ Material now appears in Part 20, Section 15, Sheet 63.

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/1/ Material now appears in Part 20, Section 15, Sheet 63.





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/1/ Material now appears in Part 20, Section 15, Sheet 66.



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/1/ Material now appears in Part 20, Section 15, Sheet 68.





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/1/ Material now appears in Part 20, Section 15, Sheet 70.

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/1/ Material now appears in Part 20, Section 15, Sheet 71.



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/1/ Material now appears in Part 20, Section 15, Sheet 73.

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/1/ Material now appears in Part 20, Section 15, Sheet 74.

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/1/ Material now appears in Part 20, Section 15, Sheet 75.





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/1/ Material now appears in Part 20, Section 15, Sheet 76.

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/1/ Material now appears in Part 20, Section 15, Sheet 77.



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/1/ Material now appears on Part 20, Section 15, Sheet 78.

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/1/ Material now appears in Part 20, Section 15, Sheet 79.

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/1/ Material now appears in Part 20, Section 15, Sheet 80.

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/1/ Material now appears in Part 20, Section 15, Sheet 81.

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/1/ Material now appears in Part 20, Section 15, Sheet 82.