FRAME RELAY SERVICE (REGION 11)

A. AVAILABILITY OF SERVICE

Frame Relay Service in Region 11 was previously offered under The Verizon Telephone Companies Tariff FCC No. 20 and is limited under this Product Guide to in-Service arrangements of existing Customers that (i) were grandfathered under The Verizon Telephone Companies Tariff FCC No. 20 and/or (ii) are not governed by a private carriage agreement. The Company has notified Customers that all remaining in-Service arrangements of Frame Relay Service are being discontinued, and the provisions of this Product Guide apply until such time as the in-Service arrangements are disconnected. Effective April 30, 2021, moves, additions and/or changes are no longer permitted. (C) (C)

B. SERVICE DESCRIPTION

Frame Relay Service (**FRS**) is a medium to high speed connection-oriented packet switched data Service that allows for the interconnection of Local Area Networks (**LAN**) or other compatible Customer equipment across a wide area for the purpose of interstate access. FRS allows for the transfer of variable length frames (packets). Frames are relayed by virtual connections, i.e., frames travel a fixed path through the network although bandwidth is not dedicated to each virtual connection.

This Service uses Permanent Virtual Connections (**PVCs**). A PVC is a logical channel from one Frame Relay port to another Frame Relay port. PVCs are bi-directional channels that are established and dis-established via the Service order process.

The Frame Relay standard specifies an address field called the Data Link Connection Identifier (**DLCI**). The DLCI specifies a connection (e.g., Customer premises to LEC switch or LEC switch to interexchange carrier network). A PVC is comprised of two or more DLCIs.

This Service, comprised of two Interfaces, a User Network Interface (**UNI**) and a Network-to-Network Interface (**NNI**), allows FRS compatible Customer Premises Equipment (**CPE**) to originate or terminate interexchange Services. All UNI access facilities must be in conformance with American National Standards Institute (**ANSI**) standards T1.606-1990, T1.606 Addendum 1-1991, T1.606a-1992, T1.617, Annex D-1992. All NNI access facilities must be in conformance with ANSI standards T1.606b-1993 and Technical Reference TR-TSV061370, Issued: May 1993.

FRS may be connected to the following Company provided Services, where such connections are technically and operationally feasible, as determined by the Company:

- asynchronous transfer mode cell relay Service
- digital subscriber line Service
- frame relay Service

FRS provides high speed throughput over digital facilities at speeds of 56 Kbps, 128 Kbps, 256 Kbps, 384 Kbps, 512 Kbps, 768 Kbps, 1.536 Mbps, 4 Mbps, 6 Mbps, 10 Mbps, 22 Mbps or 44.736 Mbps. Physical access to the Frame Relay network is provided via a UNI Port with Access Line Connection, a UNI Port Only Connection, Enterprise UNI Port Only Connection or via an NNI Port Only Connection with a digital transmission facility.

A 56 Kbps DDS II, or a DS1 or DS3 rated channel termination may be used as the UNI Port Only Connection or Enterprise UNI Port Only Connection transport link. A DS1 or DS3 rated channel termination may be used as the NNI Port Only Connection transport link. When available, DS1 transport must be equipped with both B8ZS capability and Extended Super Frame (**ESF**).

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

A 44.736 Mbps High Capacity rated channel termination may be used as the 4 Mbps, 6 Mbps, 10 Mbps, 22 Mbps UNI Port Only Connection dedicated access link. A 44.736 Mbps High Capacity rated channel termination, or in New York, an Enterprise DS3 Special Access rated channel termination, may be used as the 44.736 Mbps UNI Port Only or 44.736 Mbps NNI Port Only Connection dedicated access link to a DS3 FRS Packet Switch at a transmission speed of 44.736 Mbps. Channel mileage applies, as appropriate. DS3 transport must be equipped with B3ZS.

Network maintenance and network upgrades for FRS are performed during the hours of 11:00 PM and 8:00 AM. At times, during the hours of maintenance activity, it will be necessary to place Customer's Service in an inactive (out of Service) condition. The amount of time that this scheduled out of Service condition will exist is called a "maintenance window". Company will provide Customer' notice prior to the maintenance window. Maintenance window activity could be scheduled for consecutive days.

C. SERVICE COMPONENTS

FRS is comprised of the Service components which are described in more detail following:

UNI Port with Access Line Connection
UNI Port Only Connection
Enterprise UNI Port Only Connection
NNI Port Only Connection
Committed Information Rate
Optional Features and Functions

1. UNI Connections

The UNI is a standard interface used to connect the end user to the FRS Network. It receives the data frame from Customer's LAN or other CPE devices and verifies that the DLCI is valid before relaying the frame to the destination end point.

a. The UNI Port with Access Line Connection consists of a 56 kbps, 384 kbps, 1.536 Mbps or 44.736 Mbps digital facility from Customer premises to the FRS network and the appropriate port interface connection. UNI Port with Access Line Connection also includes the transport from a Customer's serving wire center to a Frame Relay Switch, when required. The effective data rate of this line is 56 kbps for narrowband connectivity and 384 kbps, 1.536 Mbps, 4 Mbps, 6 Mbps, 10 Mbps, 22 Mbps and 44.736 Mbps for wideband connectivity.

b. UNIs are also provisioned as a Port Only Connection. UNI Port Only Connection provides an FRS Network connection based on the port connection speeds of 56 kbps, 128 kbps, 256 kbps, 384 kbps, 512 kbps, 768 kbps, 1.536 Mbps, 4 Mbps, 6 Mbps, 10 Mbps, 22 Mbps and 44.736 Mbps. The channel speed of the access channel must be sufficient to accommodate the FRS port speed. Each port can accommodate multiple PVCs. UNI Port Only Connections do not include transport from a Customer's serving wire center to a Frame Relay Switch. Such transport, when required, is the responsibility of the Customer and must be ordered separately. Rates and charges for transport to the Frame Relay Switch apply in addition to UNI Port Only rates and charges. (N)

FRAME RELAY SERVICE (REGION 11)

C. SERVICE COMPONENTS (Cont'd) (N)

1. UNI Connections (Cont'd)

b. (Cont'd)

Customers may access Port Only Connections via Company-provided digital access facilities or via facilities provided by another carrier. When access facilities are provided by the Company, the terms and conditions, rates and charges for the specific type of access Service apply as specified in the applicable Tariff/Product Guide. For UNI Port Only Connections ordered to provide a Frame Relay Service network connection from an Expanded Interconnection Arrangement cross connect, associated transport must be ordered in accordance with The Verizon Telephone Companies Tariff F.C.C. No. 11, Section 28.10. The access facilities rates and charges are in addition to the rates and charges for FRS. Interconnection charges to connect access line Services provided by the Company or another carrier may apply and will be billed separately. Any special construction or nonstandard charges assessed by the carrier supplying the access facilities will be the responsibility of Customer.

c. Additional UNI Port With Access Line Connections and UNI Port Only Connections, referred to as Backup UNIs, may be ordered under Section (C)(5)(d) following for disaster recovery of one or multiple UNI Port With Access Line Connections and UNI Port Only Connections.

2. Enterprise UNI Port Only Connections#

The Enterprise UNI, is a standard interface used to connect the end user to the FRS Network. It receives the data frame from Customer's LAN or other CPE devices and verifies that the DLCI is valid before relaying the frame to the destination end point.

The Enterprise UNI Port Only Connection provides an FRS Network connection based on the port connection speeds of 56 kbps, 128 Kbps, 256 Kbps, 384 Kbps, 512 Kbps, 768 Kbps, 1.536 Mbps or 44.736 Mbps. The channel speed of the Enterprise access channel must match the FRS port speed. Each port can accommodate multiple PVCs.

Enterprise UNI Port Only Connections are only available where Facilities are available. (N)

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C. SERVICE COMPONENTS (Cont'd) (N)

3. NNI Port Only Connections

The NNI specifies how an FRS switch sends and receives data from a Frame Relay interexchange carrier's or other Customer's network.

The NNI Port Only Connection provides connection of a digital transmission facility (384 kbps/DS1, 1.536 Mbps/DS1 and 44.736 Mbps/DS3) to Company's FRS Network.

NNI Port Only Connections do not include transport from a Customer's serving wire center to a Frame Relay Switch. Such transport, when required, is the responsibility of the Customer and must be ordered separately. Rates and charges for transport to the Frame Relay Switch apply in addition to the NNI Port Only rates and charges.

Customers may access NNI Port Only Connections via Company-provided digital access facilities or via facilities provided by another carrier. When access facilities are provided by the Company, the terms and conditions, rates and charges for the specific type of access Service apply as specified in the applicable Tariff/Product Guide. For NNI Port Only Connections ordered to provide a Frame Relay Service network connection from an Expanded Interconnection Arrangement cross connect, associated transport must be ordered in accordance with The Verizon Telephone Companies Tariff F.C.C. No. 11, Section 28.10. The access facilities rates and charges are in addition to the rates and charges for FRS. Interconnection charges to connect access line Services provided by the Company or another carrier may apply and will be billed separately. Any special construction or nonstandard charges assessed by the carrier supplying the access facilities will be the responsibility of Customer.

4. Committed Information Rate

The Customer is required to specify either a Standard Committed Information Rate (**CIR**) per PVC or a Frame Relay Service to Asynchronous Transfer Mode Cell Relay Service Interworking (**FRASI**) CIR per PVC. Standard CIR provides Customer with a mechanism for prioritizing data on a per PVC basis across a given UNI. Both standard and FRASI CIR allow a sustained throughput at a chosen rate without having any frames designated "discard eligible" under normal operating conditions. FRASI CIR enables the creation of a PVC that traverses both a Frame Relay switch and an ATM switch. FRASI CIR permits PVC paths to be established between Frame Relay Service subscribers and ATM users when interworking is available.

The Customer must specify which UNI Port with Access Line Connection or UNI Port Only the Standard PVC CIR will be billed against. FRASI CIR will be billed against the Frame Relay Service. CIR cannot be billed against an NNI port.

For Customers of record prior to July 29, 2004, each UNI Port with Access Line Connection, UNI Port Only Connection, Enterprise UNI Port Only Connection and NNI Port Only Connection allows for one logical channel, one network address and transport across the packet network. Additional logical channels are optional features which are described in (E) following. Effective July 29, 2004, logical channels and additional logical channels are no longer available to new Customers. Customers of record may retain existing Logical Channels as specified in (Section (C)(5)(b) following. New Customers must purchase Committed Information Rate (CIR) in lieu of Logical Channels. (N)

FRAME RELAY SERVICE (REGION 11)

C. SERVICE COMPONENTS (Cont'd) (N)

5. Optional Features and Functions

Optional features and functions provide Customer with additional capabilities for use with the FRS packet network. Nonrecurring charges do not apply when optional features are ordered in conjunction with the initial installation of the associated FRS UNI Port Only or UNI Port with Access Line Connection. When ordered subsequent to the initial installation of the associated FRS UNI Port Only or UNI Port with Access Line Connection, nonrecurring charges apply as set forth in Section (E)(4) following.

a. Additional PVCs Per UNI

This feature provides the assignment of additional DLCIs. When any two DLCIs are mapped together, a PVC is created. Additional PVCs Per UNI are subject to the availability of facilities.

b. Additional Logical Channel

Additional Logical Channels are no longer available to new Customers. For Customers of record prior to July 29 2004, a logical channel allows Customer to simultaneously operate multiple channels on a single access or port. In addition to the logical channel included with each access or port connection, additional logical channels may be ordered. Each Additional Logical Channel must be associated with a specific network address and includes connection to another logical channel on an access or port connection in order to form a PVC. Logical channel Customers placing orders for moves or changes to existing UNI access facilities, or placing orders for new UNI access facilities, will be required to purchase CIR for the PVC between ports. (N)

FRAME RELAY SERVICE (REGION 11)

C. SERVICE COMPONENTS (Cont'd) (N)

5. Optional Features and Functions (Cont'd)

c. Committed Information Rate (CIR) Optional Feature

CIR is no longer available to new Customers as an optional feature. Effective July 29, 2004, CIR is a chargeable basic component of Frame Relay Service as specified in Section (C)(4) preceding.

For Customers of record prior to July 29, 2004, CIR is a feature that provides Customer with a mechanism for prioritizing data on a per PVC basis across a given UNI. A CIR allows a sustained throughput at a chosen rate without having any frames designated "discard eligible" under normal operating conditions. Various CIR rates are available.

d. Back-up UNI

Back-up UNI Service is a disaster avoidance and disaster recovery feature that consists of a Primary UNI and a Backup UNI and incorporates PVC remapping capabilities of the Frame Relay network. The Primary UNI is terminated at the primary Customer host location and in normal operation Services PVCs between the primary host location and various Customer remote locations. A second UNI, which is designated by the Customer as a Backup UNI, is installed and terminated at the Customer's backup host location. During normal operations, no PVCs are mapped to the Backup UNI. The Customer is required to purchase both UNIs.

A Customer ordering Backup UNI Service is responsible for the following:

- Determining network configuration before and after activation of Backup UNI Service.
- Providing the Company with the appropriate information required for joint development of the Backup UNI database.
- Maintaining its own port configurations and router tables (for seamless changes from the Primary UNI to the Backup UNI, the Customer must use the same addressing scheme on routers connected to the primary and backup sites)

A Backup UNI, which may serve as a backup to one or more Primary UNIs, can be utilized to back up only one Primary UNI at a time. A Backup UNI must be the same or greater port speed than the Primary UNI(s).

In the event of failure of a Primary UNI, digital access line or host location, the Customer must contact the Company to request that the Primary UNI be remapped to the Backup UNI in order to activate the Backup UNI Service.

Upon restoral of the Primary UNI Service, the Customer must contact the Company to request that the Backup UNI be remapped back to the Primary UNI.

A nonrecurring charge applies, per Backup UNI, per occurrence, when a Customer requests an activation of the Backup UNI Service.

There is no charge for deactivation of Backup UNI Service. (N)

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C. SERVICE COMPONENTS (Cont'd) (N)

5. Optional Features and Functions (Cont'd)

e. Northern Corridor Option

The Northern Corridor Option provides UNI subscribers (UNI Port With Access Line Connection and UNI Port Only Connection) in New York City the ability to connect a PVC at a specified CIR (up to 2 Mbps) to locations in the New York-New Jersey Corridor as defined in Part 0, Section 3. The option is available on a Month-to-Month basis or may be included in the one-year, three-year or five-year term plan of the underlying UNI.

f. Premier PVC

Premier PVC is a chargeable optional feature that enables Customers to assign a higher priority of Service to Customer-specified PVCs. Premier PVC is suitable for PVCs carrying delay-sensitive, loss-intolerant data. Premier PVC is offered with both Standard Committed Information Rate (**CIR**) and FRASI CIR.

D. APPLICATION OF RATES AND CHARGES

1. Administrative Charge

For Customers who purchase CIR, an Administrative Charge will be applied whenever a change is made to Customer's Frame Relay configuration at Customer's request. Such changes are defined as those rearrangements necessary to add, delete, or rearrange Customer's configuration, including changes to Customer's selected carrier. Although multiple changes may be caused by such actions, only one Administrative Charge will apply.

An Administrative Charge applies for Customer-requested changes to the bandwidth capacity of existing circuits (e.g., 384 kbps to 1.536 Mbps, or 4 Mbps to 10 Mbps). However, if Customer upgrades between Service levels (e.g., 384 kbps to 4 Mbps) or downgrades between Service levels (e.g., 10 Mbps to 1.536 Mbps), the nonrecurring Service charge associated with the new Service level applies. The Administrative Charge applies per occurrence, per UNI Port with Access Line Connection, UNI Port Only Connection, Enterprise Port UNI Port Only Connection or NNI Port Only Connection.

2. Term Pricing Plans

a. Additional Discount

Customers who entered into new three-year or five-year TPPs on or after May 19, 2005 for the following UNI Port with Access Line Connection speeds automatically receive an Additional Discount as specified following. The Additional Discount percentage is applied to the monthly 3-year or 5-year TPP rates. Such rates may change during the TPP commitment period, thereby causing an increase or decrease in the rates applicable to Customer. (N)

FRAME RELAY SERVICE (REGION 11)

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

2. Term Pricing Plans (Cont'd)

a. Additional Discount (Cont'd)

	Term Pricing Plan	Additional Discount
384 kbps	Three-Year TPP	25%
1.536 Mbps	Three-Year TPP	40%
4 Mbps	Three-Year TPP	25%
6 Mbps	Three-Year TPP	25%
10 Mbps	Three-Year TPP	25%
22 Mbps	Three-Year TPP	25%
44.736 Mbps	Three-Year TPP	25%
384 kbps	Five-Year TPP	25%
1.536 Mbps	Five-Year TPP	40%
4 Mbps	Five-Year TPP	25%
6 Mbps	Five-Year TPP	25%
10 Mbps	Five-Year TPP	25%
22 Mbps	Five-Year TPP	25%
44.736 Mbps	Five-Year TPP	25%

b. Customers who entered into new three-year or five-year TPPs on or after May 19, 2005 for the following UNI Port Only speeds automatically receive an Additional Discount as specified following. The Additional Discount percentage is applied to the monthly 3-year or 5-year TPP rates. Such rates may change during the TPP commitment period, thereby causing an increase or decrease in the rates applicable to Customer.

	Term Pricing Plan	Additional Discount
384 kbps	Three-Year TPP	57%
1.536 Mbps	Three-Year TPP	40%
44.736 Mbps	Three-Year TPP	25%
384 kbps	Five-Year TPP	57%
1.536 Mbps	Five-Year TPP	40%
44.736 Mbps	Five-Year TPP	25%

c. All Customers shall remain subject to all terms and conditions for TPPs as set forth in this Product Guide. (N)