Asynchronous Transfer Mode Cell Relay Service Product Guide **(Product Guide)**

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TABLE OF CONTENTS

ASYNCHRONOUS TRANSFER MODE CELL RELAY SERVICE

I. GENERAL

A. Service Overview

Asynchronous Transfer Mode Cell Relay Service (**ATM** or the **Service**) is a fast packet switching service for high bandwidth networks which require flexible bandwidth, and high-performance transport, and switching for connectivity between and among widely distributed Customer designated Premises. ATM is a cell-based, connection-oriented, switching and multiplexing technology designed to be a fast, general-purpose transfer mode for multiple services.

ATM consists of two interfaces which are available as Port with Access Connection:

- User Network Interface (**UNI**)
- Interim Inter-switch Signaling Protocol (**IISP**)

ATM connectivity is provided via Permanent Virtual Circuits and/or Switched Virtual Circuits that are implemented over access Facilities and switches, in each case dedicated to the Customer, but provided over a shared network.

The basic ATM functionality consists of transporting 53-byte cells of information from a Customer designated Premises to a Verizon ATM switch over a UNI or IISP via a shared network.

B. Acronyms and Definitions

All capitalized terms not otherwise defined in this Product Guide shall have the meanings set forth in Verizon's Tariffs FCC No. 1 or 20 (individually, **Tariff**, and collectively, **Tariffs**), as applicable.

Central Office (**CO**): a Verizon office or building in which local loops serving a Customer designated Premises in a locality are connected to each other or to a Verizon optical network at such office or building.

Customer(s): any individual, partnership, association, joint-stock company, trust, corporation, or governmental entity or other entity which subscribes to the Services or other arrangements offered under this Product Guide, including both Interexchange Carriers (**ICs**) and End Users.

Customer Premises Equipment (**CPE**): terminal equipment connected to Verizon's network and residing on the Customer designated Premises.

End User: any Customer of an interstate or foreign telecommunications service that is not a carrier, except that a carrier other than a telephone company shall be deemed to be an "End User" when such carrier uses a telecommunications service for administrative purposes and a person or entity that offers telecommunications services exclusively as a reseller shall be deemed to be an "End User" if all resale transmission offered by such reseller originate on the premises of such reseller.

Facilities: telecommunications cables and equipment owned and utilized by Verizon in the provision of service. For Collocation, the term Facilities denotes telecommunications cables and equipment owned/leased and used solely by the Customer in connection with its multiplexing node.

Optical Carrier Rate (**OCn**): a SONET transmission signal/speed, line rate, or service. The rates are in multiples of an OC1, which is equivalent to an STS1 (51.84 Mbps), SONET's basic rate.

OCn Rate	Bandwidth Capacity
OC3	155.52 Mbps
OC12	622.08 Mbps

Optical Carrier Rate Concatenated (**OC#c**): a "clear channel" SONET transmission using only one framing format. For example, an OC3 signal provides three STS1 frame formats with 3 overheads for a total capacity of 2,268 bytes per SPE frame in an OC3c signal. In an OC3c signal, one STS3c frame format is used with one overhead, increasing the total payload capacity to 2,340 bytes per SPE frame.

Premises: a building, a portion of a building in a multitenant building, or buildings on continuous property (except Railroad Right-of-Way, etc.) not separated by a public highway. Premises does not include Collocation arrangements.

Service Date: the date that a Service has been installed, tested and made available to the Customer. A confirmed Access Service Request (**ASR**) is generally required to establish a Service Date.

Serving Wire Center: the first Verizon Wire Center to which Facilities are connected on the terminating path of a call proceeding from the Customer designated Premises to the terminating end office.

Synchronous Optical Network (**SONET**): the North American standard for the transmission of high capacity bandwidth over optical Facilities. This synchronous transmission platform utilizes a modular multiplexing approach. Because of the large bandwidth, some of the payload is used to monitor, protect, manage, and improve the transmission of the signal.

II. SERVICE COMPONENTS

A. Components

1. UNI Port with Access Connection

a. The **UNI Port with Access Connection** is a dedicated Facility that connects the Customer designated Premises to one of Verizon's ATM switches. The UNI Port with Access Connection is also a dedicated Facility that connects the Customer's Collocated Interconnection arrangement as described in Section 19.2 of Tariff FCC No. 1, Expanded Interconnection arrangement as described in Section 28.1 of Tariff FCC No. 11, Expanded Interconnection Service as specified in Section 17 of Tariffs FCC No. 14 and 16, or state tariffs, as applicable (**Collocation**) to

one of Verizon's ATM switches.

b. UNI Port with Access Connection is available at DS1, DS3, OC3c and OC12c transmission speeds. There are two types of UNIs: Full and Incremental. The Full UNI includes all available bandwidth. The Incremental UNI is sold and provisioned in increments of Effective Bandwidth (as defined in Section (II)(A)(7) following. Incremental UNIs must have at least one increment of Effective Bandwidth (either PVC (as defined in Section (II)(A)(4) following) or SVC (as defined in Section (II)(A)(5) following)) in order for traffic to traverse the network. The OC3c Incremental UNI is ordered in increments of 5 Mbps. The OC12c Incremental UNI is ordered in increments of 15 Mbps. No DS1 Incremental UNI is offered.

c. OC3c and OC12c transmission services are provided as a concatenated signal in STS-3c and STS-12c formats, respectively. The actual throughput into ATM is less than the bandwidth for the UNI provided due to the fact that each cell has overhead.

d. At the request of the Customer, the OC3c and OC12c UNI Port with Access Connections may be provisioned on either Protected or Protected Diverse (as defined in Section (II)(A)(1)(d)(1) and (2)) following SONET Facilities.

   1. OC3c and OC12c Protected UNI Port with Access Connections are provisioned over SONET as a survivable Service with an alternate (not diverse) Facility between the ATM switch and Customer designated Premises.

   2. OC3c and OC12c Protected Diverse UNI Port with Access Connections are provisioned over SONET as a survivable Service with an alternate and diverse Facility between the ATM switch and Customer designated Premises.

e. DS1, DS3, OC3c, and OC12c interfaces, both electrical and optical, are supported and defined to the technical specifications specified in Section (III)(A) following.

2. UNI Inverse Multiplexing ATM (IMA) Port with Access Connection

   a. **UNI IMA Port with Access Connection** permits the provisioning of bandwidth greater than DS1 and less than DS3 by binding together multiple DS1 Facilities. The inverse multiplexer at each end of the connection aggregates and de-aggregates multiple parallel DS1 Facilities into a single higher bandwidth Facility. UNI IMA Ports are offered as Full bandwidth only. Two (2) to six (6) DS1 Facilities in total are permitted to be grouped in a UNI IMA Port with Access Connection providing aggregated bandwidth from three (3) to nine (9) megabits per second.

   b. UNI IMA Port with Access Connection allows for all class of service parameters, as defined in Section (II)(A)(6) following, up to the combined

bandwidth of the aggregated DS1s and all PVCs and/or SVCs that fit within the bandwidth.

c. Customer must purchase a minimum of two (2) DS1s in conjunction with UNI IMA Port with Access Connection. Disconnecting DS1s within a UNI IMA group must be done in reverse order of the in-service date.

3. IISP Port with Access Connection

a. The **IISP Port with Access Connection** is a dedicated Facility that connects the Customer's ATM network to one of Verizon's ATM switches. The IISP Port with Access Connection is also a dedicated Facility that connects the Customer's Collocation arrangement to one of Verizon's ATM switches.

b. IISP Port with Access Connection allows network-to-network connectivity through the use of PVCs and/or SVCs. The IISP interface specifies how a Verizon ATM switch sends and receives data from a Customer's ATM network. The IISP connection consists of a 1.544 Mbps (DS1), a 44.736 Mbps (DS3), 155.52 Mbps (OC3c) or a 622 Mbps (OC12c) Facility from the Customer's ATM network to Verizon's ATM switch and the designated port interface connection.

c. The IISP Port with Access Connection includes Protected and Protected Diverse OC3c and OC12c SONET IISPs.

1. OC3c and OC12c Protected IISP Port with Access Connections are provisioned over SONET as a survivable Service with an alternate (not diverse) Facility between the ATM switch and Customer designated Premises.

2. ATM Protected Diverse OC3c and OC12c SONET IISP Port with Access Connections are provisioned over SONET as a survivable Service with an alternate diverse path between the ATM switch and Customer designated Premises.

d. DS1, DS3, OC3c, and OC12c interfaces, both electrical and optical, are supported and defined to the technical specifications specified in Section (III)(A) following.

4. Permanent Virtual Circuit

a. The **Permanent Virtual Circuit (PVC)** defines a virtual connection across a UNI or IISP between a Customer designated Premises and Verizon's ATM switch. Multiple PVCs connect two (2) or more Customer designated Premises with virtual connections through a Verizon ATM switch(es). Each UNI or IISP requires at least two (2) PVCs to make an end-to-end virtual connection between two (2) Customer designated Premises.

b. Each ATM cell carries a unique tag which identifies that ATM cell as belonging to a particular PVC. When a PVC is provided as a point-to-

point virtual connection, transmission is bi-directional allowing for ATM cells to be transmitted or received over the same PVC. For point-to-multipoint virtual connections, transmission is provided as transmit only. The virtual connection is set up by Verizon based on information provided by the Customer in the ASR.

c. Available classes of service for PVCs are defined in Section (II)(A)(6) following.

d. There are two types of PVCs: Virtual Channel Connections and Virtual Path Connections.

1. **Virtual Channel Connection** (**VCC**) is a single logical channel between two determined End User locations, provisioned via an ASR and cannot be altered by a customer without additional order activity.

2. **Virtual Path Connection** (**VPC**) is a single logical channel that can contain multiple VCCs and that is provisioned via an ASR. Customers may provision their own VCCs within the VPC, provided that the sum of the service parameters of all of the virtual channels does not exceed the aggregate service parameters of the VPC.

e. Available classes of service for PVCs are defined in Section (II)(A)(6) following.

5. Switched Virtual Circuit

a. **Switched Virtual Circuit** (**SVC**) is a virtual connection across a UNI or IISP between a Customer designated Premises and Verizon's ATM switch. SVCs are provisioned on demand by CPE that signals the ATM switch to set up and tear down virtual connections. The network will respond to these requests by provisioning a virtual connection across the network based on the classes of service requested, provided that sufficient network resources are available to establish the connection.

b. Each UNI or IISP that is SVC signal enabled base upon CPE will be provided with a SVC International Code Designator (**ICD**) prefix that will uniquely identify the UNI or IISP. Customer must use this Verizon assigned prefix when requesting SVC virtual connections.

c. Available classes of service for SVCs are defined in Section (II)(A)(6) following.

d. Closed User Group (**CUG**) provides the ability to contain SVC calls between certain UNIs/IISPs. A CUG functionally groups UNIs/IISPs into logical associations and allows calling privileges to be specified network wide. A CUG provides a network-wide mechanism for access control.

6. Class of Service

PVCs and SVCs are provisioned based upon the class of service selected by the Customer, subject to the following parameters:

a. **Constant Bit Rate** (**CBR**) class of service allows a steady flow of user information required to support applications where variable delays in transmission would negatively impact the information content. CBR is the highest priority traffic on the network.

1. **Peak Cell Rate** (**PCR**), the continuous cell rate allowed for information transfer on a CBR connection, is ordered by Customer in increments of 64 Kbps up to the maximum bandwidth of the UNI or IISP. Cells exceeding the SCR and below the PCR will be limited to a Maximum Burst Size. Each CBR SVC will be limited to a maximum PCR of 20 Mbps.

2. **Sustained Cell Rate** (**SCR**), the maximum rate at which cells may be constantly transmitted with a high assurance that no cells will be lost, is ordered by Customer in increments of 64 Kbps up to the maximum bandwidth of the UNI or IISP. Each CBR SVC will be limited to a maximum SCR of 20 Mbps.

3. **Cell Delay Variation Tolerance** (**CDVT**) is the amount of variation permitted for early arrival of clusters of cells at the source UNI. Cells exceeding the tolerance will be declared non-conforming.

   CDVT for DS1, DS3, OC3c and OC12c = 600 microseconds

4. Non-conforming cells are discarded.

b. **Variable Bit Rate** (**VBR**) class of service allows bit rate variations within defined parameters as described below.

1. **VBR not real time** (**VBRnrt**) class of service may be selected when information is burst and does not flow at a constant rate.

   a. PCR is ordered by Customer in increments of 64 Kbps bandwidth. Default is 200% of SCR for PVCs. (The ratio of PCR to SCR will be signaled by CPE for SVCs. Therefore there is no default value.) Each VBR SVC will be limited to a maximum PCR of 20 Mbps.

   b. SCR is ordered by Customer in increments of 64 Kbps up to the maximum bandwidth of the UNI or IISP. Each VBR SVC will be limited to a maximum SCR of 20 Mbps.

   c. **Maximum Burst Size** (**MBS**), the maximum number of cells selected by the Customer that can be passed to the Customer's network in a single burst at a rate that exceeds the SCR, but does not exceed the PCR assigned to the VBR

connection. The default for PVCs is 100 cells. MBS is as signaled by CPE on SVCs. Cells exceeding the MBS will be declared non-conforming.

d. CDVT for DS1, DS3, OC3c and OC12c = 600 microseconds

e. Non-conforming cells are discarded.

2. **VBR real time (VBRrt)** class of service may be selected when information is burst and delay sensitive.

a. PCR is ordered by Customer in increments of 64 Kbps bandwidth. Default is 200% of SCR for PVCs. (The ratio of PCR to SCR will be signaled by CPE for SVCs. Therefore there is no default value.) Each VBR SVC will be limited to a maximum PCR of 20 Mbps.

b. SCR is ordered by Customer in increments of 64 Kbps up to the maximum bandwidth of the UNI or IISP. Each VBR SVC will be limited to a maximum SCR of 20 Mbps.

c. The default MBS for PVCs is 100 cells. MBS is as signaled by CPE on SVCs. Cells exceeding the MBS will be declared non-conforming.

d. CDVT for DS1, DS3, OC3c and OC12c = 600 microseconds

e. Non-conforming cells are discarded.

c. **Unspecified Bit Rate (UBR)** has the lowest priority of the classes of service (CBR, VBRrt and VBRnrt are the higher priority classes of service, in descending order of priority.)

The three higher priority classes of service require the Customer to specify traffic characteristics (e.g., PCR, SCR and MBS). These traffic descriptors, in combination with the class of service selected, enable the network to quantify the amount of bandwidth that must be reserved in order to guarantee quality of service performance. (Customers are charged based on the calculated amount of bandwidth that is reserved to support their connection.)

With UBR, if the characteristics are conformant, then the cells are admitted to the network. Those that are not conformant (i.e., sent too quickly) will be discarded.

Since UBR is the lowest priority class of service, there are no quality of service performance guarantees. The customer must specify a PCR on all UBR PVCs. The traffic will be policed based on the PCR, and any cells sent in faster than the PCR will be discarded.

7. Effective Bandwidth

Effective Bandwidth (**EB**) is the amount of physical bandwidth that must be allocated to each virtual connection (PVC or SVC) in order to deliver bandwidth based on its class of service and traffic contract. The engineering rules used within the switch configured for each class of service, along with the applicable bandwidth, are combined based on an EB algorithm created for the switch. For CBR traffic, the EB is usually equal to the PCR. For VBR traffic, the EB is based on the oversubscription and multiplexing schemes in place to support that class of service. EB is usually higher than the SCR for VBRnrt traffic and higher than the PCR for VBRrt traffic.

B. Reserved

III. TECHNICAL

A. Technical Specifications

The technical specifications for the Service are delineated in Technical References TR-NWT-001112, GR-1110-CORE, GR-1248-CORE, and SR-3330.

The technical specifications for DS1 and DS3 signals are delineated in TR-INS-000342.

The technical specifications for OC3c and OC12c signals are delineated in GR-253-CORE, Issue 2.

The technical specifications for IISP interfaces are delineated in ATM Forum Interim Inter-switch Signaling Protocol, af-pnni-0026.000.

The technical specifications for UNIs are delineated in ATM Forum ATM User Network Interface Specifications V3.0, af-uni-0010.001, and V3.1, af-uni-0010.002. Interface specifications for compatible CPE or devices must also be in accordance with the specifications defined in these documents.

Technical specifications are subject to change in accordance with changes adopted by standards-setting industry bodies. Such updates to technical specifications, as they occur, shall be automatically incorporated without the requirement to amend this Product Guide.

Copies of technical specifications for ATM are available at:

http://www.mfaforum.org/tech/atm_specs.shtml

B. Reserved

IV. TERMS AND CONDITIONS

A. Deployment and Availability

1. ATM offered pursuant to this Product Guide is offered as a jurisdictionally interstate Service (i.e., the traffic is more than ten percent (10%) interstate in nature). If the Service is not jurisdictionally interstate, then Customer shall inform Verizon of the same and shall purchase such Services (if available and offered by Verizon) pursuant to the applicable arrangement offered by Verizon (e.g., tariff or contract).

2. ATM is currently available in the operating territories of the following Verizon Operating Telephone Companies:

East Operating Territories:
Verizon Delaware LLC
Verizon Maryland Inc.
Verizon New England Inc.
Verizon New Jersey Inc. (including NY-NJ corridor and NJ-PA corridor)
Verizon New York Inc. (including NY-NJ corridor)
Verizon Pennsylvania Inc. (including NJ-PA corridor)
Verizon Virginia Inc.
Verizon Washington, D.C. Inc.
Verizon West Virginia Inc.

West Operating Territories:
Verizon California, Inc. (California and Nevada)
Verizon Florida LLC
Verizon North Inc. (Idaho, Illinois, Indiana, Michigan, Ohio, Pennsylvania, and Wisconsin)
Verizon Northwest Inc. (Idaho, Oregon, Washington)
Verizon South Inc. (Illinois, Indiana, Michigan, North Carolina, South Carolina, Virginia)
Verizon Southwest Inc. (Texas)

3. In the above operating territories, ATM is available in Verizon specified Central Offices where Facilities and conditions permit. Where suitable Facilities and equipment are not sufficient or do not exist to provide ATM, Verizon may provide the Service subject to additional special construction, if any. If Customer agrees to the special construction charges, the Parties shall either enter into a separate agreement for such special construction, or enter into an amendment to an existing agreement, as mutually agreed to by the Parties.

4. Customer may request that the Facilities used to provide ATM be specially routed. Verizon may provide such specially routed Facilities subject to additional charges, if any. If Customer agrees to the additional charges for special Facilities routing, the Parties shall either enter into a separate agreement for such special Facilities routing, or enter into an amendment to an existing agreement, as mutually agreed to by the Parties.

5. All intervals are business days and are calculated from a full business day after Verizon receives an accurate and complete ASR from the Customer prior to the cutoff time. Cutoff time for receipt of an accurate and complete ASR is 5 PM ET. The intervals set forth below do not include any time period where Customer's service request is not received by Verizon via a Verizon-authorized and mechanized ASR format.

6. Negotiated intervals apply in the following circumstances: (a) all Service requests for quantities to which the standard interval does not apply, as specified below; (b) when Customer requests special handling (e.g., expedite); or (c) where suitable Facilities are not available. The negotiated interval will be determined by internal Verizon groups and communicated to the Customer.

7. Verizon's intervals for ATM services are outlined in the following table.

Service Request for	Quantity	Applicable Operating Territory	Due Date Interval
UNI, UNI IMA and IISP Port With Access Connection – DS1	1	East	9 days if Facilities are currently available (includes check for availability of Facilities
			Negotiated if Facilities not currently available
		West	12 days if Facilities are currently available (includes check for availability of Facilities)
			Negotiated if Facilities not currently available
	2 or more	East and West	Negotiated
UNI/IISP Port With Access Connection – DS3	1	East and West	12 days if Facilities are currently available (includes check for availability of Facilities)
			Negotiated if Facilities not currently available
	2 or more		Negotiated
UNI/IISP Port With Access Connection – OC3C	Any	East and West	Negotiated
UNI/IISP Port With Access Connection – OC12C	Any	East and West	Negotiated
Software Changes (PVCs, SVCs)	1-24	East	3 days
		West	5 days
	25 or more	East and West	Negotiated

8. The standard intervals set forth preceding represent the **minimum** period between receipt by Verizon of an accurate and complete ASR from Customer and provisioning of the Service by Verizon. If Customer requests a Service Date that is earlier than the standard interval for the Service set forth above, then Customer shall be responsible for any charges or fees (including any Expedite Charges) assessed by Verizon. These standard intervals are Verizon's guidelines that Verizon will attempt to meet on a consistent basis; however, except as otherwise specified in Section (IV)(H)(3) following, Verizon

makes no guaranty or warranty that the Service will be provisioned in accordance with these standard intervals.

9. Multiple ASRs for the same Service which are submitted within a seventy-two (72) hour period will be subject to a negotiated interval.

10. Verizon may discontinue the Service with no less than a 30-day written notice provided to the Customer. On and subsequent to the effective date of the Service discontinuance, Customer will no longer be able to purchase or order any new Service. However, Customer can move or change its existing Service as long as such activity does not result in a new Commitment Period. Customer can retain the Service until the expiration date of the term plan. Upon expiration of the term plan, Customer must convert the Service to another service provided by Verizon or disconnect the Service, but in no event shall the Customer have less than six (6) months from the effective date of Service discontinuance to convert the Service to a different service provided by Verizon or to disconnect the Service.

11. Verizon may grandfather the Service with no less than a 30-day written notice provided to the Customer. On and subsequent to the effective date of the grandfathering of the Service, Customer will no longer be able to purchase or order any new Service. However, Customer can move or change the existing Service as long as such activity does not result in a new Commitment Period. Customer can retain the existing Service until the term plan expiration and as specified in Section (V)(C) following.

B. Reserved

C. Reserved

D. Reserved

E. Responsibilities of the Parties

ATM is ordered via ASR.

Customer must provide the necessary CPE or ATM device capable of interfacing with Verizon's ATM. Each CPE or ATM device must conform to the technical specifications set forth in Section (III) preceding.

ATM is supported by Verizon's single point of contact (**SPOC**) National Fast Packet Fulfillment Center that provides continuous support for ATM 24 hours per day, seven days per week (24 x 7) with the ability to manage all Verizon-provided ATM Services as a single network.

At no additional charge, Verizon will at Customer's request, cooperatively test the Service at the time of installation. Acceptance tests will include tests for the parameters applicable to the Service as specified in the ASR for Service.

F. Reserved

G. Reserved

H. Service Level Agreements (**SLAs**)

1. General

Service Interruption is defined as a condition which renders the Service unusable to Customer solely as a result of failure of a facility or equipment within the Verizon network that is used to furnish Service under this Product Guide. Verizon reserves the right to determine when the Service is unusable based on its internal procedures. A Service Interruption period starts when Verizon is notified by Customer that the Service is inoperative. Notification must be in a manner and format designated by Verizon.

2. Basic SLAs

a. Subject to Section (IV)(H)(4) following, Customer is eligible to receive certain credits (**Credit Allowance**) (as set forth in more detail below) on an affected Service if such Service experiences a Service Interruption:

b. If the Service experiences a Service Interruption of at least four (4) hours, the affected Service will receive a Credit Allowance for the affected rate element(s) computed as follows:

1. Credit is computed by multiplying the monthly rate for the affected rate element(s) of the Service by the ratio that the number of hours in the period of Service Interruption bears to seven hundred twenty (720) hours. For the purpose of this computation, each month shall be considered to have seven hundred twenty (720) hours. The credit shall be based upon the monthly recurring charge for the affected rate element(s) of the Service for the month during which the Service Interruption occurred.

2. Each Service Interruption is considered separately for the purposes of establishing Credit Allowance. No credit shall be given for a Service Interruption of Service of less than four (4) hours. The credit for a single month's billing period shall not exceed the monthly recurring charge for the affected rate element(s) of the Service.

c. When a Service qualifies for Enhanced SLAs as set forth in Section (IV)(H)(3) following, Credit Allowances for a Service Interruption under Basic SLAs (Section (IV)(H)(2)) do not apply.

d. The Basic SLA Credit Allowance does not apply when one or more of the conditions set forth in Section (IV)(H)(4) apply.

3. Enhanced SLAs

Enhanced SLAs are available, at the option of the Customer, in lieu of Basic SLAs. Enhanced SLAs specify performance criteria against which actual performance will be compared on a monthly basis. Enhanced SLAs provide a

Customer with a Credit Allowance in the event Verizon does not meet the defined performance criteria.

a. General

1. Enhanced SLAs are available at the Customer's option. The Customer must subscribe to Enhanced SLAs in accordance with Section (IV)(H)(3)(b) following.

2. During the period that the Customer participates in Enhanced SLAs, the Customer will not be eligible to receive credits under Basic SLAs in Section (IV)(H)(2) preceding.

3. Enhanced SLAs include the following:

- On Time Provisioning as set forth in Section (IV)(H)(3)(c) following, and
- Mean Time to Restore as set forth in Section (IV)(H)(3)(d) following, and
- Network Availability as set forth in Section (IV)(H)(3)(e) following.

4. Enhanced SLA Credit Allowances apply only to the following rate elements:

- UNI Port with Access Connection (as described in Section (II)(A)(1) preceding
- UNI IMA Port with Access Connection (as described in Section (II)(A)(2) preceding
- IISP Port with Access Connection (as described in Section (II)(A)(3) preceding

5. All Service performance and provisioning measurements are conducted using Verizon monitoring systems and procedures. Verizon may change these systems and procedures at its sole discretion. In performing threshold measurements of overall Mean Time To Restore and Network Availability as set forth in Sections (IV)(H)(3)(d) and (IV)(H)(3)(e) following, Verizon shall include data measured from throughout its operating territories.

6. The Enhanced SLA monitoring period is based on a calendar month.

7. Maximum Amounts of Enhanced SLA Credit Allowance

a. The combined total of any Enhanced SLA Credit Allowances applied to an individual Service may not exceed the following thresholds:

1. For any calendar month, the total monthly recurring charges billed to the Customer of record for qualifying individual rate element(s) for that month.

2. For any calendar year, ten percent (10%) of the total annual revenue of the prior calendar year billed to the Customer of record for qualifying rate elements, or $200,000 per individual Service, whichever is less. For any calendar year in which a Customer did not have qualifying Service in the prior calendar year, $75,000 per individual Service.

8. To receive Enhanced SLA Credit Allowances on eligible rate elements, Customer must have rate elements listed in its initial subscription submitted under Section (IV)(H)(3)(b) following based on the established Customer of record, or have ordered the eligible rate elements subsequent to its initial subscription.

9. To receive credit, Verizon must receive a written request for credit from the Customer within thirty (30) calendar days of the end of the applicable Enhanced SLA monitoring period. The Customer's request for credit must be submitted to the appropriate Verizon entity (office or interface) in a manner prescribed by Verizon. The request must include a list of all impacted connection identification numbers and the type of Enhanced SLA Credit Allowance requested for each connection.

10. Verizon reserves the right to change, alter or discontinue the Enhanced SLAs at its discretion.

b. Subscription to Enhanced SLAs

To participate in the Enhanced SLA, Customer must meet the qualifications set forth following and submit a subscription in writing, including a list of all qualifying rate elements.

1. Subscribe to and maintain a minimum of twenty-five (25) ATM DS1 UNI Port with Access Connections, each of which must have been in-service for at least one calendar month; or
2. Subscribe to and maintain a minimum of twenty-five (25) ATM DS1 IISP Port with Access Connections, each of which must have been in-service for at least one calendar month; or
3. Subscribe to and maintain a minimum of fifteen (15) ports using any combination of ATM DS3, OC3c or OC12c UNI Port with Access Connections or ATM DS3, OC3c or OC12c IISP Port with Access Connections, each of which must have been in-service for at least one calendar month; **AND**
4. Customer must have at least thirty-six (36) months remaining in an applicable term plan Commitment Period at the time of initial subscription to Enhanced SLA. Customer may renew or extend an existing term plan Commitment Period in order to meet the thirty-six (36) month minimum for initial qualification.

c. On Time Provisioning

1. **On Time Provisioning** is defined as Verizon providing Service to the Customer no later than the Firm Order Commitment (**FOC**) due date provided by Verizon plus twenty-four (24) hours. For these purposes, "providing Service" is defined as successful completion of testing of the connection and rate element by Verizon. The FOC due date is provided to Customer at the time an order is verified for order accuracy, availability of required Facilities and components, and completion of design and ordering related forms and documents.

2. If Verizon does not meet the FOC due date plus twenty-four (24) hours for a rate element, and the responsibility is solely Verizon's , a one-time On Time Provisioning SLA Credit Allowance equal to fifty percent (50%) of the associated monthly recurring charge (**MRC**) for the rate element for the month in which the due date was missed will apply.

3. The On Time Provisioning SLA does not apply when one or more of the conditions set forth in Section (IV)(H)(4) apply.

d. Mean Time to Restore

1. Mean Time to Restore (**MTTR**) applies to a Customer-reported Service Interruption on a subscribed rate element that is within Verizon's network (outside plant or Central Office).

2. MTTR for a calendar month shall be the average of all ticket outage duration, or Time to Restore (**TTR**), as calculated by Verizon. The TTR is the Restored Date and Time (the trouble ticket closed time) minus the reported Date and Time (the trouble ticket start time) minus any stop clock time associated with hold, no access or suspend that was logged against the trouble report. Stop clock time includes, but is not limited to, the following times:

   a. Periods when Customer testing is occurring.
   b. Periods when Customer is working on its own CPE and has not yet released the connection to Verizon for maintenance, testing or repair.
   c. Periods when Verizon is awaiting Customer authorization to commence work on the connection.
   d. Periods when Verizon is denied access to Premises or Facilities as necessary to diagnose, repair or test a connection.
   e. Periods following repair of a connection when the ticket is held open by Customer to ensure the trouble is resolved.
   f. Periods when pre-defined maintenance windows have been established between Verizon and Customer.

3. MTTR is calculated by summing TTR for all measured tickets for Customer for the month and dividing by the total number of tickets for that Customer during that month.

4. MTTR excludes any subsequent reports (i.e., additional Customer inquiries while the trouble is pending), CPE troubles, trouble found on the Customer's side of the point of demarcation, troubles closed due to Customer action and troubles repaired by Verizon prior to receipt of a trouble report on that connection.

5. The following one-time MTTR SLA Credit Allowance applies per rate element per calendar month period.

   a. When the overall MTTR is greater than four (4) hours, a credit equal to fifty percent (50%) of the MRC applies per rate element that was the subject of a trouble ticket during the monitoring period whose open duration exceeded four (4) hours but did not exceed either (8) hours.

   b. When the overall MTTR is greater than eight (8) hours, a credit equal to one hundred percent (100%) of the MRC applies per rate element only that was the subject of a trouble ticket during the monitoring period whose open duration exceeded eight (8) hours.

6. The MTTR SLA does not apply when one or more of the conditions set forth in Section (IV)(H)(4) apply.

e. Network Availability

1. **Network Availability** refers to the percentage of time over a measured calendar month that the Service is available for use by Customer. The Verizon threshold for Network Availability is 99.90% in a calendar month.

2. Network Availability is calculated based upon the total number of minutes in a calendar month that a Customer was actually in service divided by the total number of minutes in that month that a Customer could have been in service for a given set of service component(s).

3. Network Availability = (1,440 minutes x number of days in month x number of PVCs) – (number of minutes Service was interrupted during month), the result of which is then divided by the possible number of available minutes for the month (1,440 minutes x number of days in month x number of PVCs).

   For example: A Customer has 50 PVCs in the month of July. July has 31 days; 1,440 minutes per day. Three PVCs were out of service over the course of the month for 120 minutes each or a total of 360 minutes. Network availability would be calculated by (1,440

minutes/day X 31 days X 50 PVCs) = 2,232,000 minutes less 360 minutes out of service = 2,231,640 minutes of actual Customer network availability. 2,231,640 is divided by 2,232,000 which equals that Customer's July Network Availability of 99.98%.

4. The number of minutes out of service is computed in the same fashion as the number of minutes for TTR. If overall Network Availability is less than the threshold of 99.90%, then a Network Availability SLA Credit Allowance equal to ten percent (10%) of the associated MRC will apply for the applicable individual rate elements for the service components that do not achieve the threshold. Verizon will not round up the calculation to reach the 99.90% threshold.

5. The Network Availability SLA Credit Allowance does not apply when one or more of the conditions set forth in Section (IV)(H)(4) apply.

4. When a Credit Allowance Does Not Apply

Credit Allowances (Basic and Enhanced SLA) will not apply when:

a. On Time Provisioning

1. Provision of Service is delayed or prevented due to the acts or omissions of the Customer or a party authorized by the Customer to use the Service; or
2. Provision of Service is delayed or prevented due to failures in power, equipment, service, or systems provided by the Customer or by persons other than Verizon; or
3. The Customer's premises is inaccessible; or
4. The Customer changes the order after receiving the FOC due date from Verizon; or
5. The Customer requests an expedited Due Date; or
6. The Customer changes its interface requirements; or
7. The Customer is not ready to accept Service; or
8. Independent telephone companies are involved in the Service installation; or
9. Building Facilities are not ready (includes space, cable support structures, building risers, and entrance Facilities to be provided by persons other than Verizon); or
10. The Customer orders termination beyond the network interface; or
11. The Customer requests installation at a non-standard Premises or the installation requires special construction; or
12. Where Facilities sufficient to provision the order do not exist; or
13. The order is for Service changes, Service rearrangements, or moves, as described in Section (V)(D)(3) following ; or
14. Provision of Service is delayed or prevented due to Verizon's provision of National Security Emergency Preparedness telecommunications service; or
15. Provision of Service is delayed or prevented due to a Force Majeure Event.

b. Service Interruptions, MTTR and Network Availability

1. When the Customer fails to report the Service Interruption to Verizon; or
2. When the Service Interruption was caused in whole or in part by the act or omission of the Customer or a party authorized by the Customer to use the Service;
3. When the Service Interruption was due to the failure of power, equipment, service, or systems provided by the Customer or persons other than Verizon; or
4. For any period in which Verizon is not afforded access to the Premises where the Service is terminated; or
5. When the Customer has released the Service to Verizon for maintenance purposes, to make rearrangements, or for the implementation of an order for a change in the Service; or
6. For any period of scheduled maintenance or scheduled downtime where the Customer has received prior notification from Verizon; or
7. When Service Interruptions occur or continue because of the failure of the Customer to authorize the replacement of any element of special construction; or
8. For periods when the Customer elects not to release the Service for testing and/or repair; or
9. When a connection has been in service for less than one (1) full calendar month (Enhanced SLA only); or
10. For any Service Interruption or a group of Service Interruptions, resulting from a common cause, for amounts less than five (5) dollars; or
11. For Service Interruptions, failures or delays due to a Force Majeure Event.

I. Maintenance Window

To meet Customer requirements, occasional network upgrades must be performed. These network upgrades are needed to provide improved performance and new features. Generally these upgrades will be performed between the hours of 11 PM and 8 AM. Network upgrades are planned to provide Customer reasonable and timely notification in order to minimize any impact on Customer's Service.

J. Conversions and Upgrades

Requests to change existing UNI Port with Access Connections to UNI IMA Port with Access Connections will be treated as a disconnect and new install. Termination liability charges, as set forth in Section (V)(D)(6) following, may apply.

K. Reserved

L. Reserved

V. APPLICATION OF RATES AND CHARGES

A. Rate Structure

The rates and charges for a UNI are differentiated by the bandwidth, the type of UNI and the mileage ranges (expressed as Tiers) associated with extending the UNI from the Customer's Serving Wire Center to the nearest Verizon ATM switch.

Each Verizon Central Office has been assigned a Tier based on its location relative to the nearest Verizon ATM switch. Central Offices assigned to Tier 1 are within five (5) miles of the nearest Verizon ATM switch. Central Offices assigned to Tier 2 are 5 – 25 miles from the nearest Verizon ATM switch. Tier 3 Central Offices are more than 25 miles from the nearest Verizon ATM switch.

1. UNI Port with Access Connection

   A monthly rate applies per UNI Port with Access Connection, based on the bandwidth (i.e., DS1, DS3, OC3c or OC12c) and/or type (i.e., Full or Incremental, Protected or Protected Diverse) of the access connection. Installation is free.

2. UNI IMA Port with Access Connection

   A monthly rate applies on a per DS1 basis for each sequential DS1 ordered up to the desired bandwidth (i.e., 3 Mbps, 4.5 Mbps, 6 Mbps, 7.5 Mbps or 9 Mbps). DS1s within an IMA group added subsequent to the initial installation of the first two DS1s will have their own Commitment Period. Installation is free.

3. IISP Port with Access Connection

   A monthly rate applies per IISP Port with Access Connection, based on the bandwidth (i.e., DS1, DS3, OC3c or OC12c) and/or type (i.e, Protected or Protected Diverse) of the access connection. IISP Port with Access Connection is only available in Tier 1. Installation is free.

4. Permanent Virtual Circuit

   A nonrecurring charge applies, per order, for VCC or VPC. PVCs are ordered per UNI or IISP. If multiple UNIs or IISPs are involved, a nonrecurring charge will apply to each UNI or IISP Port on which the virtual connections will reside. The nonrecurring charge does not apply when PVCs are installed at the same time as the respective UNIs or IISPs.

5. Switched Virtual Circuit

   A nonrecurring charge applies, per order, for VCC or VPC. SVCs are ordered per UNI or IISP. If multiple UNIs or IISPs are involved, a nonrecurring charge will apply to each UNI or IISP Port on which the virtual connections will reside. The nonrecurring charge does not apply when SVCs are installed at the same time as the respective UNIs or IISPs.

6. Effective Bandwidth

A monthly rate applies to incremental UNIs with CBR/VBR PVC or SVC bandwidth. A monthly rate also applies to incremental UNIs with UBR PVC or SVC bandwidth. Installation is free.

The monthly rate for PVC and/or SVC UBR bandwidth will be waived when the combined VBR and CBR Effective Bandwidth purchased (either SVC or PVC or any combination) is equal to at least fifty percent (50%) of the Effective Bandwidth capacity of the UNI. When UBR bandwidth is made available, it is available for both PVCs and SVCs. Installation is free.

Incremental UNIs with UBR PVC of zero bandwidth are provided at no charge to Customer only when ATM is used to transport Verizon-provided Digital Subscriber Line service.

7. Closed User Group

A nonrecurring charge applies per order and per UNI/ IISP for each CUG established and for each subsequent CUG member added to a CUG. The nonrecurring charge does not apply when a CUG is installed at the same time as the respective UNI or IISP.

B. Term Plans

ATM is available for term plans of one (1) year, two (2) years, three (3) years and five (5) years (**Commitment Periods**).

C. Extension and Renewal of Commitment Period

1. Prior to the end of the Commitment Period, the Customer may select one of the following options, to be effective at the end of the Commitment Period:

   - Renew for the same Commitment Period;
   - Commit to a new Commitment Period of shorter or longer duration; or
   - Discontinue Service.

2. In the event Customer does not select one of the above options, or in the event Section (IV)(A)(11) has been triggered, at the end of the Commitment Period, Customer will be converted to a new 1-year Commitment Period for the same Service until the earliest to occur of the date (a) the Customer cancels the Service, (b) Verizon discontinues the Service as specified in Section (IV)(A)(10) preceding, or (c) subject to (IV)(A)(10) preceding, a valid order for a new term plan is accepted by Verizon from Customer. Customer may cancel Service within sixty (60) days of such conversion without termination liability.

D. Additional Charges

1. Expedite Charge

a. An Expedite Charge will apply when a Customer requests a Service Date that is earlier than the standard interval Service Date for the Service ordered. A Customer may also request an earlier Service Date on negotiated interval orders. The request for an earlier Service Date may be received from the Customer prior to the issuance of an order, or after the order has been issued but prior to the Service Date.

b. Verizon maintains exclusive right to accept or deny the request to expedite. If, upon reviewing availability of equipment and scheduled work load, Verizon agrees to provide Service on an expedited basis and the Customer accepts this proposal, an Expedite Charge will apply.

c. If Verizon is subsequently unable to meet an agreed upon expedited Service Date, then the Expedite Charge will not apply.

d. In the event that Verizon provides Service on an expedited basis by Customer request and the Customer then delays Service, an additional Service Date Change Charge will be applied. In the event that the Customer cancels a Service subject to an expedite request, the Expedite Charge will be added to the Cancellation Charge. An Expedite Charge will not be applied to orders expedited for Verizon reasons. If costs other than additional administrative expenses are to be incurred when an order is expedited, the rates and charges for interstate special construction will apply.

e. The Expedite Charge will be billed in addition to the nonrecurring charge applicable to the Service and will be applied on a per order per occurrence basis.

2. Administrative Charge

A nonrecurring charge applies per service order when a Customer initiates a change to one or more of the following: UNI or IISP bandwidth, PVCs, class of service parameters, and/or other service parameters that may or may not require changes in physical Facilities and that can be provisioned by Verizon without the dispatch of a technician to the Customer designated Premises. For each service order issued, the charge will be one Administrative Charge regardless of the number of changes made. The Administrative Charge does not apply for those items ordered on the same service order with the installation of a UNI or IISP.

3. Moves and Changes

A move involves a physical change in the UNI or IISP of the Service. When the move is to a new location within the same building or to a different building, a nonrecurring charge for the move will apply. There will be no change in the Minimum Period requirement, and termination liability does not apply.

4. Reserved

5. Order Cancellation

   a. Customer may cancel an order for the installation of Service at any time prior to notification by Verizon that Service is available for Customer's use or prior to the Service Date, whichever is later. The cancellation date is the date Verizon receives an order from the Customer canceling the order.

   b. If Customer or Customer's End User (i) does not accept, or is unable to accept an ATM Service within thirty (30) calendar days after the original Service Date; or (ii) fails to negotiate within thirty (30) calendar days after the original Service Date a new Service Date that is within thirty (30) calendar days after the original Service Date, the order will be cancelled on the thirty-first (31st) calendar day after the original Service Date without any action required by Customer. Cancellation charges will apply.

   c. When Customer cancels an order in whole or in part for ATM prior to the installation of ATM, cancellation charges will apply on a per circuit basis (**Cancellation Charges**). Applicable Cancellation Charges are based upon certain critical dates as discussed below and determined by the amount of provisioning completed by Verizon at the time the order is cancelled.

   d. Certain Verizon critical dates are associated with the provisioning interval for an ATM order. These dates are used by Verizon to monitor the progress of the provisioning process. At any point in the provisioning interval, Verizon is able to determine which critical date was the last date passed and can thus determine the appropriate Cancellation Charges.

   e. The critical dates tracked by Verizon are as follows:

      Application Date (**APP**): The date Customer provides a firm commitment and complete ordering information to Verizon. This is also called the Order Date.

      Scheduled Issue Date (**SID**): The date that the order is to be entered in Verizon's order distribution system.

      Design Layout Report Date (**DLRD**): The date the Design Layout Report (DLR) is to be forwarded to Customer.

      Records Issue Date (**RID**): The date that all design and assignment information is to be sent to Verizon central office and installation personnel.

      Wired and Office Tested Date (**WOT**): The date by which all intra-office wiring is to be completed, all plug-ins optioned, aligned, and frame continuity established, and the interoffice Facilities, if applicable, tested.

Plant Test Date (**PTD**): The date on which overall testing of the service is to be started.

Due Date (**DD**): The date on which service is to be made available to Customer. This is also called the Service Date.

6. Termination Liability

   a. ATM Services are subject to termination liability if Service is disconnected prior to the end of the Commitment Period. Termination liability charges are calculated as follows:

      1. If the disconnection occurs during the first year of the Commitment Period, termination liability is equal to the Minimum Period obligation, or one hundred percent (100%) of the monthly recurring rates for the unexpired portion of the first year and twenty-five percent (25%) of the monthly recurring rates for the remainder of the Commitment Period.

      2. If the disconnection occurs after the first year of Commitment Period, termination liability is calculated at twenty-five percent (25%) of the monthly recurring rates from the date of disconnection through the remainder of the Commitment Period.

   b. Termination liability will not apply in each of the following situations:

      1. When the Commitment Period of the Service is changed to an equal or a longer Commitment Period. There will be no change in the Minimum Period requirement.

      2. Customer moves existing Service to a new location and maintains that Service for the remainder of the Commitment Period. There will be no change in the Minimum Period requirement.

      3. When an ATM Service is replaced by a new higher bandwidth ATM Service and such ATM Service has a new equal or longer Commitment Period than the existing ATM Service. The Customer remains responsible for satisfying any outstanding Minimum Period obligations.

7. Minimum Period

   The Minimum Period for ATM is one (1) year. If ATM is disconnected during the Minimum Period, Customer shall pay to Verizon one hundred percent (100%) of the monthly recurring rates from the date of disconnection through the end of the Minimum Period.

8. Reserved

9. Service Date Change Charge

Service Dates for the installation of new Services or rearrangements of existing Services may be changed, but the new Service Date may not exceed the original Service Date by more than thirty (30) calendar days. When, for any reason, the Customer indicates that Service cannot be accepted for a period within thirty (30) calendar days of the Service Date, and Verizon accordingly delays the start of Service, a Service Date Change Charge will apply.