

**1. METALLIC SERVICE****A. DESCRIPTION*****Basic Channel Description***

Metallic channel is an unconditioned two-wire channel capable of transmitting low speed varying signals at rates up to 30 baud. This channel is provided by metallic or equivalent facilities. Metallic channels are provided between Customer-designated premises or between a Customer-designated premises and a Company Office where bridging functions are performed. Interoffice metallic facilities will be limited in length to a total of five miles per channel, and be provided where facilities are available. Interoffice metallic facilities (wire pairs) are in diminishing supply, and can be expected to become less available as optical fiber is deployed and wire cables are removed. (C)

**Technical Specification Packages****Package MT**

Parameter	C	1	2	3
DC Resistance Between Conductors	X	X	X	
Loop Resistance	X			X
Shunt Capacitance	X			X

The technical specifications are delineated in Technical Reference TR-NPL-000336.

**Network Channel Interfaces**

Compatible network channel interfaces are set forth in Technical Reference AM-TR-TMO-000080.

**1. METALLIC SERVICE (cont'd)****A. DESCRIPTION (cont'd)**

Optional Features and Functions

Central Office Bridging Capability

Series Bridging of up to 26 customer designated premises.

The following table shows the technical specifications packages with which the optional features and functions are available.

**Available with Technical Specifications Package MT-**

	<b>C</b>	<b>1</b>	<b>2</b>	<b>3</b>
Three Premises Bridging	X	X		X
Series Bridging	X		X	

**1. METALLIC SERVICE (cont'd)****B. Prices****1. Service Elements**

<u>Description /Billing Code/</u>	<u>Nonrecurring Charge</u>	<u>Monthly Price</u>	
<u>Administrative Charge</u>			
- per order /NRSC/	\$50.00	-	
<u>Design and Central Office Connection Charge</u>			
- per circuit /NRCD/	150.00	-	
<u>Customer Connection Charge</u>			
- per termination /NRCC/	250.00	-	
<u>Local Distribution Channel</u>			
- per point of termination /T6ECS/	-	\$2,944.00	(I)
<u>Channel Mileage Termination</u>			
- per point of mileage termination /CM6/	-	None	
<u>Channel Mileage</u>			
- per mile /1L5XX/	-	1,278.00	(I)
<u>Optional Features and Functions</u>			
- Bridging			
- Three Premises Bridging, per port /BCNM3/	None	6.00	
- Series Bridging, per port /BCNMS/	None	3.05	

**2. TELEGRAPH GRADE SERVICE****A. DESCRIPTION*****Basic Channel Description***

A Telegraph Grade Channel is an unconditioned channel capable of transmitting binary signals at rates of 0-75 baud or 0-150 baud. This channel is furnished for half-duplex or duplex operation. Telegraph Grade channels are provided between Customer-designated premises or between a Customer-designated premises and a Company Office.

(C)

**Technical Specifications Packages****Package TG**

Parameter	C	1	2	
Telegraph Distortion		X	X	X

The technical specifications are delineated in Technical Reference TR-NPL-000336.

**Network Channel Interfaces**

Compatible network channel interfaces are set forth in Technical Reference AM-TR-TMO-000080.

**2. TELEGRAPH GRADE SERVICE (cont'd)****A. DESCRIPTION (cont'd)****Optional Features and Functions**

Telegraph Bridging (two-wire and four-wire)

The following table shows the technical specifications packages with which the optional features and functions are available.

**Available with Technical Specifications Package TG -**

	<b>C</b>	<b>1</b>	<b>2</b>
Telegraph Bridging	X	X	X

**2. TELEGRAPH GRADE SERVICE (cont'd)****B. Prices**

## 1. Service Elements

<u>Description /Billing Code/</u>	<u>Nonrecurring Charge</u>	<u>Monthly Price</u>	
<u>Administrative Charge</u>			
- per order /NRSC/	\$50.00	-	
<u>Design and Central Office Connection Charge</u>			
- per circuit /NRCD/	150.00	-	
<u>Customer Connection Charge</u>			
- per termination /NRCC/	250.00	-	
<u>Local Distribution Channel</u>			
- per point of termination			
Two-Wire /T6E2X/	-	\$4,944.00	(l)
Four-Wire /T6E4X/	-	44.00	
<u>Channel Mileage Termination</u>			
- per point of mileage termination /CM6/	-	18.75	
<u>Channel Mileage</u>			
- per mile /1L5XX/	-	174.00	(l)
<u>Optional Features and Functions</u>			
Telegraph Bridging Two-Wire and Four-Wire			
- per port			
Two-Wire /BCNT2/	None	10.20	
Four-Wire /BCNT4/	None	14.45	

**3. DIRECT ANALOG SERVICE****A. DESCRIPTION*****Basic Channel Description (cont'd)***

A Direct Analog Service channel is a channel which provides voice frequency transmission capability in the nominal frequency range of 300 to 3000 Hz and may be terminated two-wire or four-wire. Direct Analog Service channels are provided between Customer-designated premises or between a Customer-designated premises<sup>/1/</sup> and a Company Office.

Direct Analog Service may be ordered to allow connections between the Customer-designated premises and wire center which provides Other Network Services.

/1/ Company provided Centrex CO like switches and Answering Service Concentrators are considered to be customer premises for purposes of administering regulations and rates in this section of this Guidebook.

(C)

**3. DIRECT ANALOG SERVICE (cont'd)****A. DESCRIPTION (cont'd)****Technical Specifications Packages****Package VG**

<b>Parameter</b>	<b>C<sup>/1/</sup></b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>	<b>8</b>	<b>9</b>	<b>10</b>	<b>11</b>	<b>12</b>
Attenuation													
Distortion	X	X	X	X	X	X	X	X	X	X	X	X	X
C-Message Noise	X	X	X	X	X	X	X	X	X	X	X	X	X
Echo Control	X	X	X	X		X		X	X			X	X
Envelope Delay													
Distortion	X						X	X	X	X	X	X	X
Frequency Shift	X						X	X	X	X	X	X	
Impulse Noise	X					X	X	X	X	X	X	X	X
Intermodulation													
Distortion	X					X	X	X	X	X	X		
Loss Deviation	X	X	X	X	X	X	X	X	X	X	X	X	X
Phase Hits, Gain													
Hits, and Dropouts	X												
Phase Jitter	X					X	X	X	X	X	X		
Signal-to-C-													
Message Noise				X									
Signal-to-C-													
Notch Noise	X				X	X	X	X	X	X	X	X	

**Package****Parameters**

	<b>DAL</b>	<b>1</b>	<b>2</b>
Attenuation Distortion		X	X
C-Message Noise		X	X
Echo Control		X	X
Envelope Delay		X	X
Distortion			
Frequency Shift		X	X
Impulse Noise		X	X
Intermodulation		X	X
Distortion			
Loss Deviation		X	X
Phase Jitter		X	X
Signal-to-C		X	X
Notch Noise			

/1/ The desired parameters are selected by the customer from the list of available parameters.



**3. DIRECT ANALOG SERVICE (cont'd)****A. DESCRIPTION (cont'd)****Technical Specifications Packages (cont'd)**

The technical specifications for these parameters (except for dropouts, gain hits, and phase hits) are delineated in Technical Reference TR-nPL-000334 and TR-nPL-000335. The technical reference for dropouts, gain hits and phase hits is Technical Reference PUB 41004, Table 4.

**Network Channel Interfaces**

The following network channel interfaces for Direct Analog Service do not require signaling capability: AH, DA, DB, DD, DE, DS, NO, PR and TF.

The following network channel interfaces for Direct Analog Service require signaling capability: AB, AC, CT, DX, DY, EA, EB, EC, EX, GO, GS, LA, LB, LC, LO, LR, LS, RV and SF.

The following interfaces are available with DAL Service:

Compatible network channel interfaces are set forth in Technical Reference AM-TR-TMO-000080.

**Optional Features and Functions****Central Office Bridging Capability**

- Voice Bridging (two-wire and four-wire)
  - Data Bridging (two-wire and four-wire)
  - Telemetry and Alarm Bridging Split Band, Active Bridging Passive Bridging Summation, Active Bridging<sup>/1/</sup>
- (D)
- (C)
- (D)

/1/ Due to manufacturer discontinuance of equipment necessary to provide Telemetry and Alarm Bridging Split Band, Active Bridging Passive Bridging Summation, and Active Bridging, these optional features and functions are no longer available for new installations. Effective September 1, 2004, this service will be withdrawn and completely discontinued. The Company will waive all nonrecurring charges associated with any new Voice Grade (VG) Channel for customers who order and install a conversion from the current TABS channel to a VG channel.

**3. DIRECT ANALOG SERVICE (cont'd)****A. DESCRIPTION (cont'd)****Optional Features and Functions (cont'd)****Conditioning**

Conditioning provides more specific transmission characteristics for Direct Analog Service. C-Type conditioning controls attenuation distortion and envelope delay distortion. Sealing Current helps maintain continuity on dry metallic loops.

In addition, a customer may desire that either the attenuation distortion or the envelope delay distortion, or both, be improved to more stringent specifications than those provided with C-Type conditioning. In such cases the customer has the option of ordering Improved Attenuation Distortion and Improved Envelope Delay Distortion, either separately or in combination, in lieu of C-Type conditioning. When either improved option (Improved Attenuation Distortion or Improved Envelope Delay Distortion) is ordered without the other, the performance specifications for the other parameter will be those provided with C-Type conditioning at no additional charge.

For two-point services, the parameters apply to each service. For multipoint services, the parameters apply to each mid-link or end-link. C-Type conditioning and Data Capability may be combined on the same service.

**3. DIRECT ANALOG SERVICE (cont'd)****A. DESCRIPTION (cont'd)****Optional Features and Functions (cont'd)**

## Conditioning (cont'd)

- C-Type Conditioning

C-Type Conditioning is provided for the additional control of attenuation distortion and envelope delay distortion on data services. The attenuation distortion and envelope delay distortion specifications for C-Type Conditioning are as set forth in the Technical References.

- Improved Attenuation Distortion

Improved attenuation distortion is provided for additional control of attenuation distortion, and is provided in lieu of C-Type conditioning. The improved attenuation distortion specifications are as set forth in the Technical Reference.

- Improved Envelope Delay Distortion

Improved envelope delay distortion is provided for additional control of envelope delay distortion, and is provided in lieu of C-Type conditioning. The improved envelope delay distortion specifications are as set forth in the Technical Reference.

- Sealing Current Conditioning

Sealing Current Conditioning is provided to help maintain continuity on dry metallic loops. It is usually associated with four-wire DA or NO type network channel interfaces.

**3. DIRECT ANALOG SERVICE (cont'd)****A. DESCRIPTION (cont'd)****Optional Features and Functions (cont'd)**

## Conditioning (cont'd)

- Improved Attenuation Distortion

Improved attenuation distortion is provided for additional control of attenuation distortion, and is provided in lieu of C-Type conditioning. The improved attenuation distortion specifications are as set forth in the Technical Reference.

- Improved Envelope Delay Distortion

Improved envelope delay distortion is provided for additional control of envelope delay distortion, and is provided in lieu of C-Type conditioning. The improved envelope delay distortion specifications are as set forth in the Technical Reference.

- Sealing Current Conditioning

Sealing Current Conditioning is provided to help maintain continuity on dry metallic loops. It is usually associated with four-wire DA or NO type network channel interfaces.

**3. DIRECT ANALOG SERVICE (cont'd)****A. DESCRIPTION (cont'd)*****Optional Features and Functions (cont'd)*****Customer Specified Premises Receive Level**

This option allows the customer to specify the receive level at the Point of Termination. The level must be within a specific range delineated in Technical Reference TR-nPL-000335 and associated Addendum.

**Improved Termination**

On Effective Four-Wire Transmission at Four-Wire Point of Termination (applicable to each two-wire port): Provides for a fixed 600-ohm impedance, variable level range and simplex reversal. Company equipment is required at the customer's premises where this option is ordered. The Improved Termination parameters are delineated in Technical Reference TR-NPL-000335.

(C)

**Improved Return Loss**

On Effective Two-Wire Transmission at Two-Wire Point of Termination: Provides for more stringent Echo Control specifications. In order for this option to be applicable, the transmission path must be four-wire at one POT and two-wire at the other POT. Placement of Company equipment may be required at the customer's premises with the two-wire POT. The Improved Return Loss parameters are delineated in Technical Reference TR-nPL-000335.

(C)

**Data Capability**

Data Capability provides transmission characteristics suitable for data communications. Specifically, Data Capability provides for the control of Signal to C-notched Noise Ratio and intermodulation distortion. It is available for two-point services or multipoint services.

**3. DIRECT ANALOG SERVICE (cont'd)**

<b>A. DESCRIPTION (cont'd)</b>
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**Optional Features and Functions (cont'd)**

## Data Capability (cont'd)

The Signal to C-Notched Noise Ratio and intermodulation distortion parameters for Data Capability are:

- Signal to C-Notched Noise Ratio is equal to or greater than 32dB
- Intermodulation distortion
- Signal to second order modulation products (R2) is equal to or greater than 38dB
- Signal to third order modulation products (R3) is equal to or greater than 42dB

When a service equipped with Data Capability is used for voice communications, the quality of the voice transmission may not be satisfactory.

## Signaling Capability

Signaling Capability provides for the process by which one customer premises alerts another customer premises on the same service with which it wishes to communicate.

## Line-Powered Data Station Termination Unit (DST)

Line-powered DSTs are available at customer designated premises in lieu of commercial-powered DSTs. This option is available on new and existing channels with two-wire or four-wire, two-point or multi-point channels.

**3. DIRECT ANALOG SERVICE (cont'd)****A. DESCRIPTION (cont'd)**

The following table shows the technical specifications packages with which the optional features and functions are available.

	Available with Technical Specifications Package VG-												
	C	1	2	3	4	5	6	7	8	9	10	11	12
C-Type Conditioning	X					X	X	X	X	X	X		
Central Office													
Bridging													
Capability	X		X			X	X				X	X	X
Central Office													
Multiplexing	X						X						
Customer Specified													
Premises Receive													
Level X		X	X				X	X	X				
Data Capability	X						X	X			X		
Improved Attenuation													
Distortion	X					X	X	X	X	X	X		
Improved Envelope													
Delay Distortion	X					X	X	X	X	X	X		
Improved Termination	X	X	X	X	X	X	X	X	X	X	X	X	X
Improved Return Loss													
For Effective													
Two-Wire													
Transmission	X		X	X				X					
Sealing Current													
Conditioning	X					X	X				X		
Signaling Capability	X	X	X	X				X	X	X			

**3. DIRECT ANALOG SERVICE (cont'd)**

<b>A. DESCRIPTION (cont'd)</b>
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**Four-Wire/Two-Wire Conversions**

When a customer requests that an effective four-wire channel be terminated with a two-wire channel interface at the Customer-designated premises, a four-wire to two-wire conversion is required. The rate for the conversion is included as part of the basic Local Distribution Channel rate.



**3. DIRECT ANALOG SERVICE (cont'd)****B. Prices****1. Service Elements**

<u>Description /Billing Code/</u>	<u>Nonrecurring Charge</u>	<u>Monthly Price</u>	
<u>Administrative Charge</u>			
- per order /NRSC/	\$50.00	-	
<u>Design and Central Office Connection Charge</u>			
- per circuit /NRCD/	150.00	-	
<u>Customer Connection Charge</u>			
- per termination /NRCC/	250.00	-	
<u>Local Distribution Channel</u>			
- per point of termination <sup>/1/</sup>			
Two-Wire /T6E2X/	-	\$5,155.00	(l)
Four-Wire /T6E4X/	-	7,345.00	(l)
<u>Channel Mileage Termination</u>			
- per point of mileage termination /CM6/	-	2,569.00	(l)
<u>Channel Mileage</u>			
- per mile /1L5XX/	-	180.00	(l)

/1/ One Local Distribution Channel applies per customer designated premises at which the channel is terminated. This charge will apply even if the customer designated premises and the serving wire center are co-located in a Company building.

**3. DIRECT ANALOG SERVICE (cont'd)****B. Prices**

## 1. Service Elements

<u>Description /Billing Code/</u>	<u>Nonrecurring Charge</u>	<u>Monthly Price</u>	
<u>Optional Features and Functions</u>			
<u>Bridging</u>			
(a) <i>Voice Bridging</i> , per port			
Two-Wire /BCNV2/	None	\$1,351.00	(l)
Four-Wire /BCNV4/	None	1,174.00	(l)
(b) <i>Data Bridging</i> , per port			
Two-Wire /BCND2/	None	8.75	
Four-Wire /BCND4/	None	1,434.00	(l)

**3. DIRECT ANALOG SERVICE (cont'd)****B. PRICES (cont'd)****1. Service Elements**

Description /Billing Code/	Nonrecurring Charge	Monthly Price
<b><u>Optional Features and Functions (cont'd)</u></b>		
<b>Bridging (cont'd)</b>		
Telemetry and Alarm Bridging <sup>/1/</sup>		
- Active Bridging Channel Connections	None	ICB
- Split Band, per channel connected /CNLRX/	None	ICB
- Summation, per channel connected /BCNSA/	None	ICB
- Passive Bridging Channel Connections, per channel connected /BCNTP/	None	ICB
Conditioning, per point of termination		
- C-Type /X1CPT/	None	\$7.85
- Improved Attenuation Distortion	None	None
- Improved Envelope Delay Distortion	None	None
- Sealing Current /1HBPT/	None	None
Improved Return Loss for Effective Two-Wire Transmission, per point of termination	None	None
Improved Termination, per point of termination, Four-Wire	None	None
Customer Specified Receive Level, per point of termination	None	None

/1/ Due to manufacturer discontinuance of equipment necessary to provide Telemetry and Alarm Bridging Split Band, Active Bridging Passive Bridging Summation, and Active Bridging, these optional features and functions are no longer available for new installations. Effective September 1, 2004, this service will be withdrawn and completely discontinued. The Company will waive all nonrecurring charges associated with any new Voice Grade (VG) Channel for customers who order and install a conversion from the current TABS channel to a VG channel. (C)

**3. DIRECT ANALOG SERVICE (cont'd)****B. Prices**

## 1. Service Elements

<u>Description /Billing Code/</u>	<u>Nonrecurring Charge</u>	<u>Monthly Price</u>	
<u>Optional Features and Functions (cont'd)</u>			
<i>Data Capability</i> , per point of termination /XDCPT/	\$300.00	\$8.95	
<i>Signaling Capability</i> , per point of termination /XSS++/ (in lieu of ++, substitute appropriate two-digit code from following list to specify type of signaling: AB, AC, AH, CT, DS, DT, DX, DY, EA, EB, EC, EX, GO, GS, LA, LB, LC, LO, LR, LS, RV, SE, SF)	None	1,111.00	(I)
<i>Line-Powered Data Station Termination Unit</i> (available with VG-6), per point of termination /LUN/	None	1,464.00	(I)

**4. LOCAL AREA DATA CHANNELS (LADC)<sup>/1/</sup>**

- A. Local Area Data Channels (LADC) are suitable for baseband transmission of digital data signals between two points within the same serving central office area. These channels are offered only for balanced transmission of data signals conforming to the signal power limitations and other parameters as set forth in Reference to Publications preceding, subject to the limitations set out in H. and I. following.
- B. Local Area Data Channels can also be provided, in addition to a. above, between two points, within the same exchange, zone or zone rate area, located in adjacent serving central office areas. An Interoffice Channel charge is applicable for the portion of the channel between the central offices.
- C. The Company will provide the length of the cable facility and the loss for the four-wire LADC so the customer can determine whether the modem will operate properly.
- D. Except as stated in e. following, provision of LADC, including the Interoffice Channel, are subject to the availability of suitable facilities.
- E. LADC, including the Interoffice Channel, require use of non-loaded cable facilities. In the event that only loaded cable facilities are available, the Company will, at the request of the customer, de-load facilities at a charge, determined separately for each case, in accordance with procedures for establishing charges for Special Equipment and Arrangements as covered elsewhere in this tariff.
- F. Provision of this service does not contemplate connection to the message network.
- G. These channels are furnished 24 hours per day, 7 days per week for a minimum period of one month.
- H. The Local Area Data Channels are terminated in a four-wire interface with effective four-wire facilities and are subject to the transmission limitations specified in i. following, in addition to those identified in A., B., and C., preceding.

/1/ Effective March 29, 1990 no new or additions to existing LADC will be provided on inter wire center basis.

**4. LOCAL AREA DATA CHANNELS (LADC) (cont'd)**

- I. Transmission specifications for LADC are dependent upon the route length of the facilities utilized to provide the service as follows:

<u>Maximum End-to-End Facility Length In Route miles</u>	<u>Maximum Insertion Loss At 1000 Hz. in dB<sup>/1/</sup></u>
1	10.5
2	14.5
3	18.0
4	21.0
5	23.5
6	26.5

/1/ Insertion loss is referenced to 135 ohm resistive terminations at each end.

**4. LOCAL AREA DATA CHANNELS (LADC) (cont'd)****J. Rates and Charges**

Description /Billing Code/	Nonrecurring Charge	Monthly Charge
<b>Special Service Ordering Charge</b>		
- per order	\$310.00	-
<b>Circuit Design Charge</b>		
- per circuit	150.00	-
<b>Installation Charge</b>		
- per channel termination /1DCPX/	120.00	\$42.00(I)
<b>Interoffice Channel /OCH/</b>	72.99	71.70

**K. Application of Channel Service Nonrecurring Charges**

The following nonrecurring charges apply to order design and/or install Channel Service. Other Service Charges specified in this tariff do not apply in addition to these charges.

**1. Special Service Ordering Charge**

One Special Service Ordering Charge is applicable to receive, record and process a special service order for one or more Channel Service, ordered at the same time for the same customer.

**2. Circuit Design Charge**

One Circuit Design Charge is applicable for each Channel Service circuit designed. The circuit design charge includes determining (and ordering) the equipment and facilities required for the Channel Service.

**3. Channel Installation Charge**

One Channel Installation Charge is applicable for the installation of each channel termination required to establish Channel Service including central office connections, loop connections, line terminating equipment and testing of the equipment.

**5. SUBVOICE GRADE CHANNEL SERVICE**

A. Description (Intraexchange/Interexchange)

Type 102 - A channel service suitable for low speed unidirectional series-operated signaling. The Type 102 is provided on a two-point or multipoint (maximum of 26 points and 3 serving wire center areas).



**5. SUBVOICE GRADE CHANNEL SERVICE (cont'd)****B. Channels of Voice Grade or less****1. Subvoice Grade Channel Service****a. For use with the following types of channels:**

Description /Billing Code/	Monthly Price	
Two-Point and Multipoint Channels		
For the initial or additional termination of a local channel, per termination		
Company except Detroit Zone		
Routed via central office:		
Type 102 /1LDCX/	\$ 12.75	(I)
Detroit Zone		
Intra-zone rate area - Channel Terminations		
Rates specified preceding		
Inter-zone rate area - Channel Terminations		
Type 102 /1LDCX/	12.75	(I)

**5. SUBVOICE GRADE CHANNEL SERVICE (cont'd)****C. Service Charges****1. Charges**

- a. The following Nonrecurring Charges apply to order, design and/or install channel services and are based upon the type of channel service ordered, designed and installed.

Type of Channel Service

Type 102

Description	Nonrecurring Charge
Special Service Order, per order	\$152.00
Circuit Design, per circuit	150.00
Installation, per channel termination	112.00

**5. SUBVOICE GRADE CHANNEL SERVICE (cont'd)****C. Service Charges****2. Subvoice Grade Channel Services****a. Inter-zone rate area mileage and channel terminals**

Mileage between zone rate areas in the Detroit Zones and channel terminals are determined as specified in Part 20, Section 15.

**Charges**

Description /Billing Code/	Monthly Price
Mileage Rate, per mile /1LWBX/	\$ 1.65
Channel Terminals, per channel /CHV/	21.20

**b. Additional service features - The service features are provided at the charges set forth below:**

Multipoint Service Charge - applicable when more than two points of service are bridged on the channel.

Multipoint capability involves a bridging or hubbing arrangement for which a charge applies. This charge applies plus a charge for each local channel for each station location.

Description /Billing Code/	Nonrecurring Charge	Monthly Price
Bridged in the central office, per station location		
Type 102 /MSK/	\$13.50	\$ 1.00(l)