



AM-TR-ENG-000121

# Ameritech Digital Video Service Interface Specifications

A Technical Description of the USER/Network Interface for Ameritech's Digital Video Service

To: All Ameritech Vendor Community

Priority: N/A

Effective Date: September 1994

Issue Date: Issue 1, September 1994

Expires On: N/A

Training Time: N/A

Related Documents: See Section 7

Canceled Documents: N/A

Issuing Department: N/A

Distribution: NA

Business Unit: N/A

**Points of Contact:**

Brian Baldwin-Technical/Regulatory Liaison -708-248-5324  
Terry McCarthy-Network Services Engineer-708-248-5067

**Author(s):**

Brian Baldwin  
Terry McCarthy

**Copyright © SBC Corporation, 2000**

This document is protected by the U.S. Copyright laws.  
Any alteration to its text, contents, or presentation format is  
an infringement of SBC's Copyright rights

**Table of Contents**

1. Purpose	3
2. Change and Reissue	3
3. General	3
4. Overview	3
5. Service Description	3
6. Interface Requirements	4
6.1. Network Channel Code	4
6.2. Network Channel Interface Code	4
6.3. Interface Specifications	6
6.3.1. TV1D Video Performance Objectives	6
6.3.2. TV1D Audio Performance Objectives	7
6.3.3. TVD Specifications	7
7. References	8
7.1. Primary Reference	8
7.2. Secondary References	8

**TECHNICAL REFERENCE NOTICE**

This Technical Reference is published by Ameritech to provide a technical description of Ameritech Digital Video Service Interface Specifications

Ameritech reserves the right to revise this document for any reason including, but not limited to, conformity with standards promulgated by various agencies, utilization of advances in the state of the technical arts, or the reflection of changes in the design of any equipment, techniques or procedures described or referred to herein.

**AMERITECH MAKES NO REPRESENTATION OR WARRANTY, EXPRESS OR IMPLIED, WITH RESPECT TO THE SUFFICIENCY, ACCURACY, OR UTILITY OF ANY INFORMATION OR OPINION CONTAINED HEREIN. AMERITECH EXPRESSLY ADVISES THAT ANY USE OF OR RELIANCE UPON THIS TECHNICAL REFERENCE IS AT THE RISK OF THE USER AND THAT AMERITECH SHALL NOT BE LIABLE FOR ANY DAMAGE OR INJURY INCURRED BY ANY PERSON ARISING OUT OF THE SUFFICIENCY, ACCURACY, OR UTILITY OF ANY INFORMATION OR OPINION CONTAINED HEREIN.**

This document is not to be construed as a suggestion to any manufacturer to modify or change any of its products, nor does this document represent any commitment by Ameritech or any Ameritech operating company (AOC) to purchase any product, whether or not it provides the described characteristics.

Ameritech does not recommend products, and nothing contained herein is intended as a recommendation of any product to anyone.

Nothing contained herein shall be construed as conferring by implication, estoppel, or otherwise any license or right under any patent, whether or not the use of any information herein necessarily employs an invention of any existing or later issued patent.

Ameritech reserves the right not to offer any or all of these services and to withdraw any or all of them at any future time.

Document may be ordered from Ameritech by contacting the Document Order Center at (847) 248-4324.

**Copyright © SBC Service, Inc. 2000**

This document is protected by the U.S. Copyright laws.  
Any alteration to its text, contents, or presentation format is  
an infringement of SBC's Copyright rights

**Copyright © SBC Service, Inc. 2000**

This document is protected by the U.S. Copyright laws.  
Any alteration to its text, contents, or presentation format is  
an infringement of SBC's Copyright rights

**1. Purpose**

This document describes the User/Network Interface specifications for Ameritech's Digital Video Service

**2. Change and Reissue**

This is the second issue of this document. Changes from Issue 1 include the addition of more audio channel options and further clarification of the video and audio specifications.

**3. General**

Ameritech's Digital Video Service (ADVS) provides a one-way, digital transport-based, point-to-point transmission service capable of transmitting a video signal and from one to four associated audio signals.

**4. Overview**

Ameritech's Digital Video Service (ADVS) provides a one-way, unprotected, point to point digital transmission capability that compiles with NTSC 525 line/60 field video signal standards. ADVS transmits one to four associated audio signals along with the video signal. ADVS employs digital network facilities between two customer premises locations, or a customer premises location and an Interexchange Carrier's (IC) Point of Presence (POP), using Ameritech's digital interoffice network.

This service improves upon existing analog video transport service by use of digital telecommunications technology for transport of various grades of video, and in the future will more easily adapt to support high definition television and interactive film editing. The use of digital technology affords a transmission quality that, in many applications, is superior to its analog predecessor. The terrestrial-based service is virtually impervious to atmospheric, electric and environmental interference. It overcomes drawbacks common with analog-copper, satellite and microwave transmission systems.

**5. Service Description**

Two different channel termination arrangements are available for ADVS

**TVD1**

Channel termination for delivery or receipt at the network interface of baseband video and audio. The customer can select one to four 15 KHz audio channels along with the video channel terminations must be TV1D

**Copyright © SBC Service, Inc. 2000**

This document is protected by the U.S. Copyright laws.  
Any alteration to its text, contents, or presentation format is  
an infringement of SBC's Copyright rights

## TVD

Channel termination for delivery or receipt at the network interface of a digitized signal. The digitized signal would interface with a 44.736 Mbps (commonly referred to as 45 Mbps) standard signal. There is no industry standard algorithm for encoding or decoding television signals at this rate. However, the Video Enabling Equipment agreed upon during negotiation with the customer will be selected to maintain the service performance objectives as delineated in section 6.3

## 6. Interface Requirements

The physical interconnection for the analog NTSC (TVD1) video interface will be at a telephone company-provided coaxial cable jack panel, using customer-provided coaxial cable jumpers equipped with Bayonet Quick Connect (BNC) miniature coax connectors. The physical interconnection for the audio interface will be at the wire pairs terminated on a terminal block, or via a three-conductor "XLR" or equivalent connector.

The physical interconnection for the digital (TVD) video interface will be at the telephone company-provided DSX panel, using customer-provided coaxial cable jumpers equipped with BNC connector.

### 6.1. Network Channel Code

The Network Channel (NC) code as described in Bellcore Documents SR STS-000307 and SR STS-000323 is a four-character representation of the channel parameters. It consists of two data elements: (1) two-character position that specify the type and quality of the channel, and (2) two positions that specify an available option code the this channel type.

The NC Code for ADVS is **TV-**, which is defined below:

1. Code TV –Analog Video and Audio
2. Options Codes– No Options

### 6.2. Network Channel Interface Code

The electrical interface with telco-owned facilities is described by a Network Channel Interface (NCI) codes. The NCI code, also described in Bellcore Documents SR STS-000307 and SR STS-000323, is comprised of five elements that must be specified by the customer for each point of termination when ordering the service. These elements are:

1. The number of conductors code can be one of five options:

**Copyright © SBC Service, Inc. 2000**

This document is protected by the U.S. Copyright laws.  
Any alteration to its text, contents, or presentation format is  
an infringement of SBC's Copyright rights

**02- for Combined Video Audio**

**04-for Video and 1 Channel Audio**

**06-for Videoand 2 Channels Audio**

**08-for Video and 3 Channels Audio**

**10-for Video and 4 Channels Audio**

2. The protocol code can be one of two options

**TV-Television Interface**

**DS-Digital Hierarchy Interface**

3. The impedance code is always: 6 (75 ohms)
4. The protocol options can be one of three options:

**15-for Analog Video plus one or two 15 KHz Audio Signal**

**15A-for Analog Videoplusone through four 15 KHz Audio Signal**

**44A-one DS-3 or 45 Mbps Transmission Bit Rate**

5. The direction of service can be one of two options

**O-for Transmit End**

**-O for Receive End**

Example: 06TV6.15.O (Analog Video w/2 Audio-Transmission End)

6. Along with the NCI Code, the negotiated Video Enabling Equipment Type must be provided by the customer when ordering service

**Copyright © SBC Service, Inc. 2000**

This document is protected by the U.S. Copyright laws.  
Any alteration to its text, contents, or presentation format is  
an infringement of SBC's Copyright rights

**6.3. Interface Specifications**6.3.1. *TV1D Video Performance Objectives*

Parameter	Limits
Input and Output Signals	525 line/60 fields
Impedance	75 Ohms, Unbalanced to ground
Amplitude Response vs. Frequency (50 IRE unit sine wave)	
0.5 MHz	+1.5 to -1.4 IRE units
1.0 MHz	+2.1 to -2.0 IRE units
2.0 MHz	+2.8 to -2.7 IRE units
3.0 MHz	+3.6 to -3.3 IRE units
3.58 MHz	+2.1 to -2.0 IRE units
4.2 MHz	+4.2 to -3.9 IRE units
Chrominance to luminance gain inequality	+4 to -4 IRE units
Chrominance to luminance delay inequality	+33 to -33 na
Field-time waveform distortion	3 IRE peak to peak
Line-time waveform distortion	1 IRE peak to peak
Short-time waveform distortion	2.0%
Long-time waveform distortion	8.0 IRE units peak, 3-second setting time
Insertion gain	+5.9 to -5.5 IRE units
Insertion gain variation	
Hourly	+3.5 to -3.3 IRE units
Over one second	+1.7 to -1.7 IRE units
Luminance nonlinearity	4 IRE units
Differential Gain	5 IRE or 5%
Chrominance- to -Luminance intermodulation	2 IRE units
Chrominance nonlinear gain	

**Copyright © SBC Service, Inc. 2000**

This document is protected by the U.S. Copyright laws.  
Any alteration to its text, contents, or presentation format is  
an infringement of SBC's Copyright rights

20 IRE unit chroma signal	+2 to -2 IRE units
80 IRE unit chroma signal	+2 to -2 IRE units
Chrominance nonlinear phase	2 degrees
Dynamic gain of picture signal	3 IRE units
Dynamic gain of synchronizing signal	1.6 IRE units
Transient synchronizing signal nonlinearity	2 IRE units
Signal-to-weighted-random-noise ratio (10KHz-4.2 KHz)	60 dB
Signal-to-low-frequency-noise-ratio (0-10 KHz)	40dB

### 6.3.2. TV1D Audio Performance Objectives

Impedance	600 Ohms, Balance to Ground
Frequency Response	
(@ 1 KHz Ref @ 0 dBm)	
50 to 100 Hz	+1.0 to -1.4
100 Hz to 10 KHz	+1.0 to -1.0
10 KHz to 15 KHz	+1.0 to -2.0
Maximum Steady-State Tone Levels	+8 dBm, 100 Hz-404 Hz
(Averaged over one second)	0dBm, 404 Hz-15 KHz
Total Harmonic Distortion + Noise (4 sec @ +18dBm @ 404 Hz)	2.0%

### 6.3.3. TVD Specifications

Line Rate	44.736 Mbps +/- 20 ppm
Line Code	Bipolar with B3ZS
Impedance	75 Ohms
Jitter Tolerance	Complies with TR-INS-000342

**Copyright © SBC Service, Inc. 2000**

This document is protected by the U.S. Copyright laws.  
Any alteration to its text, contents, or presentation format is  
an infringement of SBC's Copyright rights

Requirements for the TVD interface are the same as those described in AM TR-TMO-000101 (Ameritech OPTINET Digital Service Parameters), Section 5 (OPTINET DS-3 Technical Specifications) and Bellcore Document TR-INS-000342 (High Capacity Digital Special Access Service- Transmission Parameter Limits and Interface Combinations), Section 7 (DS-3)

## **7. References**

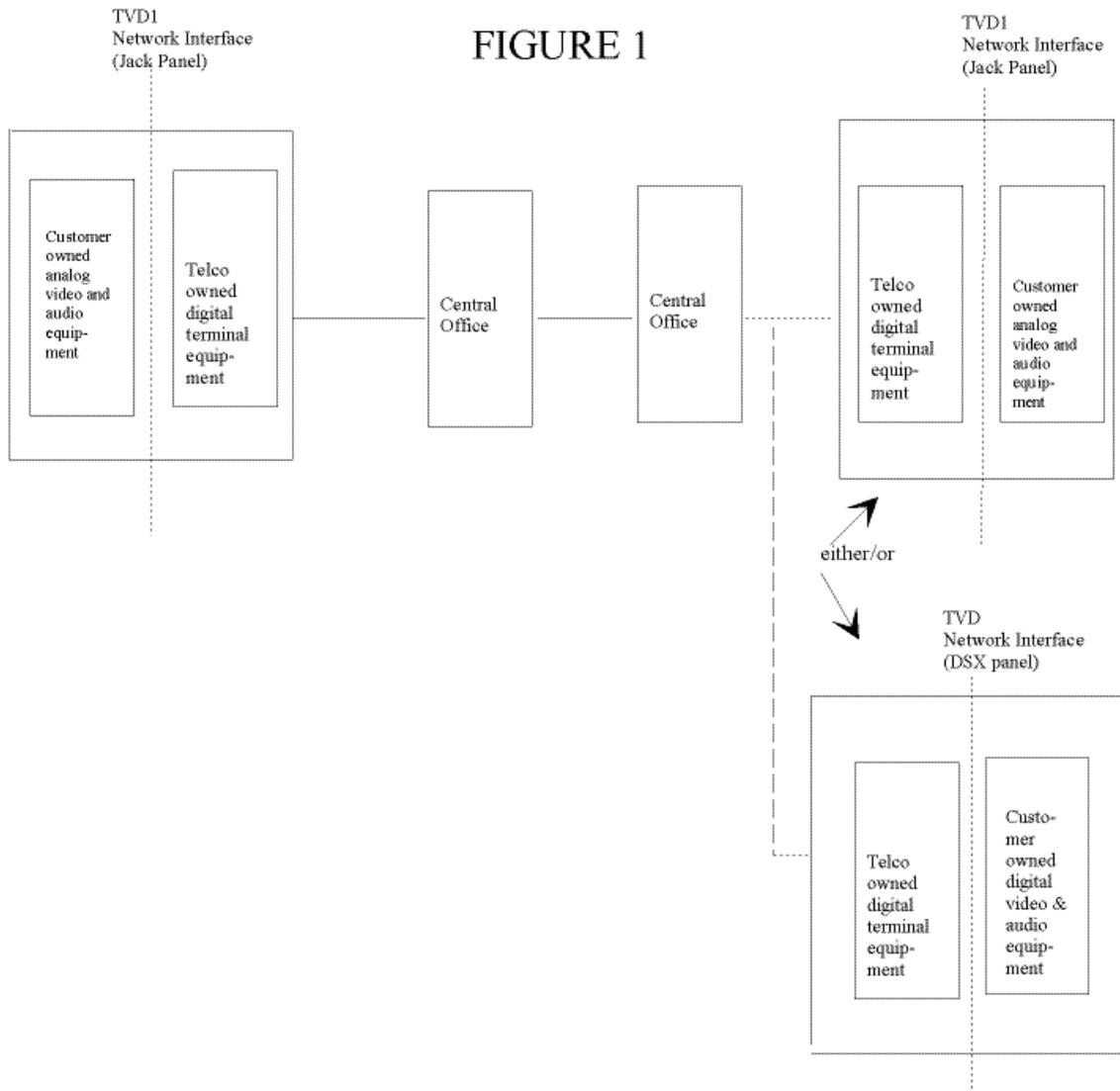
### **7.1. Primary Reference**

Telcordia TR-NPL-000337, Program Audio Special Access and Local Channel Services, Issue 1, July 1987 Telcordia TR-TSV-000338 Television Special Access and Local Channel Services Transmission Parameter Limits and Interface Combinations, Issue 2, August 1993 Telcordia TR-NIS-000342 High Capacity Digital Special Access Service - Transmission Parameter Limits and Interface Combinations, Issue 1, February 1991. Ameritech AM TR-TMO-000101, Ameritech OPTINET Digital Service Transmission Parameters, Issue 2, October 1992.

### **7.2. Secondary References**

Telcordia SR STS-000307, NC/NCI Code Dictionary, Issue 4, February 1993 Telcordia SR STS-000323, NC/NCI Compatibility Guide, Issue 3, February 1993

Ameritech AM TR-TMO-000080, Ameritech Services Network Channel and Network Channel Interface Codes, Issue 2, June 1993.



Copyright © SBC Service, Inc. 2000

This document is protected by the U.S. Copyright laws.  
Any alteration to its text, contents, or presentation format is  
an infringement of SBC's Copyright rights