AT&T

DEFINITY® COMMUNICATIONS SYSTEM
Multimedia Link

User Manual and Technical Reference
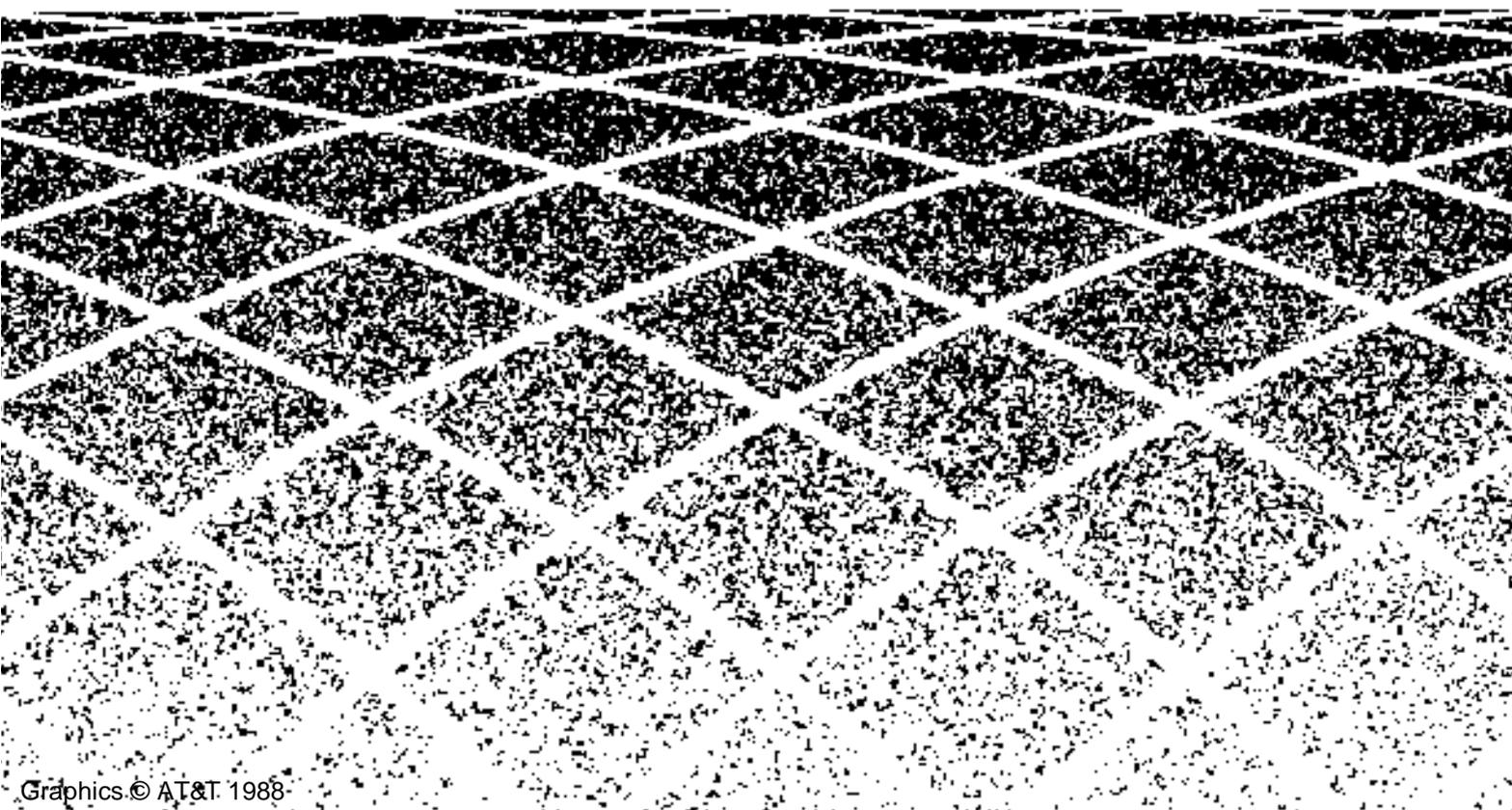
IMPORTANT SAFETY INSTRUCTIONS

Only the most careful attention has been devoted to safety standards in the manufacture of this product. Safety is a major factor in the design and use of every AT&T product. But safety is YOUR responsibility too.

Please read carefully the helpful tips listed below and on the next page. These suggestions will enable you to take fullest advantage of this product. Then, retain these tips for future use.

⚠ **WARNING:**
When using this product, the following safety precautions should always be followed to reduce the risk of fire, electric shock, and injury to persons.

- Read and understand all instructions.

- Follow all warnings and instructions marked on this product.

- This product can be hazardous if immersed in water. To avoid the possibility of electrical shock, do not use it near water.

- To reduce the risk of shock, do not disassemble this product. There are no user serviceable parts inside.

- This product should be operated only from a 48Vdc communications circuit power source. If you are not sure of the type of power being provided, contact a qualified service person.

- Do not overload wall outlets and extension cords as this can result in the risk of line or electric shock.

- Disconnect the cords on this product and refer servicing to qualified service personnel under the following conditions:

  — When the power supply cord is damaged or frayed.

  — If liquid has been spilled into the product.

  — If the product has been exposed to rain or water.

  — If the product does not operate normally by following the operating instructions.

— If the product has been dropped or the housing has been damaged.

— If the product exhibits a distinct change in performance.

Environmental Requirements

The range of operating temperatures for MultiMedia Link is 40°F to 120°F (5°C to 49°C). The range for relative humidity is 5 percent to 95 percent below 84°F, less than 168 grains of water vapor per pound of dry air above 84°F.

SAVE THESE INSTRUCTIONS

When you need information about this product or instruction on how to install it, refer to this instruction booklet packed with the product.

FCC Rules require that you be notified of the following: Some telephone equipment generates, uses and can radiate radio-frequency energy and, if not installed and used properly, may cause interference to radio and television reception.

Your AT&T product has been tested and found to meet the standards for a Class A digital device, as specified in Part 15 of the FCC Rules. These specifications are designed to provide reasonable protection against such interference in a commercial installation. However, there is no guarantee that interference will not occur in a particular installation.

If your AT&T product causes interference to radio or television reception when it's in use, you might correct the interference with any one or all of these measures:

- Where it can be done safely, reorient the receiving television or radio antenna.

- To the extent possible, relocate the television, radio or other receiver with respect to the telephone equipment.

- If your telephone product runs on AC power, plug your product into an AC outlet that's not on the same circuit as one used by your radio or television.

If you need assistance, you can call our National Service Center at 1 800 222-3111.

⚠ CAUTION:
The user is cautioned that modifications to this equipment, not expressly approved by AT&T could void the user's authority to operate the equipment.

Introduction

The DEFINITY® Communications System MultiMedia Link is a protocol converter which enables the connection of an Integrated Services Digital Network (ISDN) Basic Rate Interface (BRI) data or video endpoint to an AT&T Private Branch Exchange (PBX) via AT&T's proprietary Digital Communications Protocol (DCP). These PBXs include older PBXs such as System 75 or System 85 as well as the newer DEFINITY Communications Systems and AT&T's Multipoint Control Unit (MCU) Version 3.0. For connectivity to the outside world, however, the PBX must be equipped with digital trunks that are administered for data calling. Figure 1 shows MultiMedia Link in a system configuration.
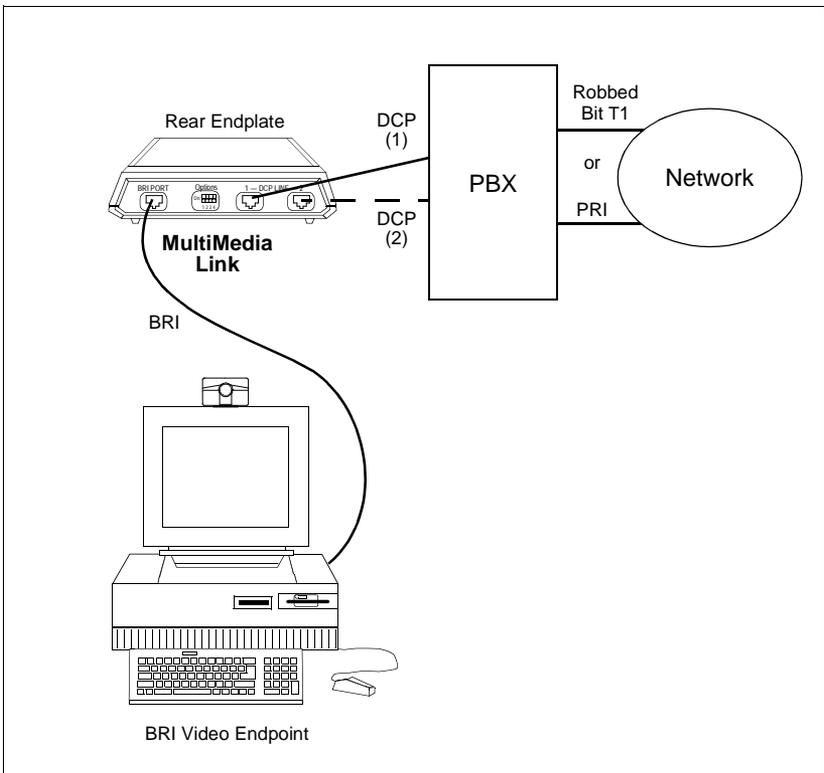

FIGURE 1   MultiMedia Link in a System Configuration

This document assumes that necessary and sufficient digital trunking is already in place. If it is not in place, or you are unsure about the digital trunking in your facility, contact your AT&T sales representative or the AT&T Video Technical Center (VTC) at 1 800 VIDEO GO (1 800 843-3646).

The MultiMedia Link provides a standard 4-wire BRI interface to the endpoint, for example, a desktop video teleconferencing system. The BRI endpoint must be capable of operating according to AT&T "custom" BRI specifications. Refer to the AT&T ISDN Basic Rate Interface Specification, 801-802-100. MultiMedia Link supports the connection of one, and only one such endpoint.

The BRI endpoint connected to MultiMedia Link can initiate and receive up to two simultaneous 56 kbps or 64 kbps circuit switched data calls. Use of the 64 kbps data rate requires the availability of 64 kbps channels end to end.

Currently the MultiMedia Link does not support voice calling from the BRI endpoint. Regardless of the existence of any voice calling capability in the BRI endpoint, its connection via the MultiMedia Link precludes use of this functionality. Endpoints which include voice functionality are not recommended for use with MultiMedia Link due to possibly incorrect assumptions of functionality by those who are unaware of the connection technology.

The MultiMedia Link connects to the PBX via one or two **4-wire** DCP lines. The MultiMedia Link cannot use 2-wire DCP lines. System 85 and DEFINITY G2 and G3 PBXs can be administered to support dual simultaneous data calls on a single DCP line. Other switches cannot support two simultaneous data calls on one DCP line and require connection to two DCP ports on the switch.

The front panel of the MultiMedia Link is shown in Figure 2. The three dual color status LEDs are described in Table 1. In addition to indicating status during normal operation, the LEDs also indicate the result of the self-test when initially powered.
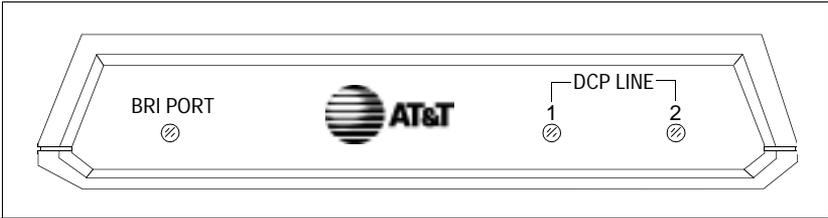

FIGURE 2   Front Panel

TABLE 1   Front Panel LED Indicator Descriptions

LED	LED Condition	Status
BRI Port	Off	Idle
	Flashing green	Incoming call
	Steady green	Active call
	Flashing red	Self test failed
	Steady red	BRI link down
DCP Line 1	Steady green	Two links established
	Steady orange	One link established
	Steady red	No links established
	Flashing red, orange, or green	In loopback mode
DCP Line 2	Steady orange	Link established
	Steady red	No link established
	Flashing red, orange, or green	In loopback mode

The back panel of the MultiMedia Link is shown in Figure 3. The connectors located on the back panel are described in Table 2.
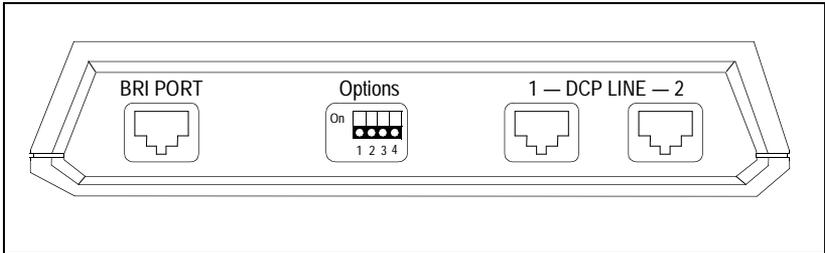
FIGURE 3   Back Panel

TABLE 2   Back Panel Connector Descriptions

Connector	Description
BRI Port	This connector accepts one end of the BRI cable used to connect the video or data endpoint to the MultiMedia Link.
DCP Line 1	This connector accepts one end of the D8W line cord used to connect the primary DCP line to the MultiMedia Link.
DCP Line 2	This connector accepts one end of a D8W line cord used to connect a secondary DCP line to the MultiMedia Link.

Installation

Physical connection of the MultiMedia Link requires one or two 4-wire DCP telephone lines and standard 48V dc auxiliary power on the primary DCP line. Auxiliary power may be provided from the satellite wiring closet or it may be provided locally (Price Element Codes 8302-901A for KS-22911 power supply or 2404-010A for MSP-1 power supply). Your telecommunications service manager should be familiar with these arrangements which are standard for connection of other DCP telephone adjuncts and data equipment.

The MultiMedia Link comes equipped with two telephone line cords for connection between its DCP line jacks and the DCP telephone line wall jacks. It is assumed that the BRI endpoint comes equipped with its own telephone line cord for connection to the MultiMedia Links BRI port. If not, a standard AT&T D8W line cord will need to be procured. Note that the MultiMedia Link does not provide any power to the BRI endpoint through the BRI port. BRI data/multimedia endpoints are typically powered by direct connection to a commercial AC outlet. BRI endpoints normally powered via the BRI will require auxiliary power. Consult the endpoint's installation instructions for recommended methods to connect auxiliary power on the BRI side of the MultiMedia Link.
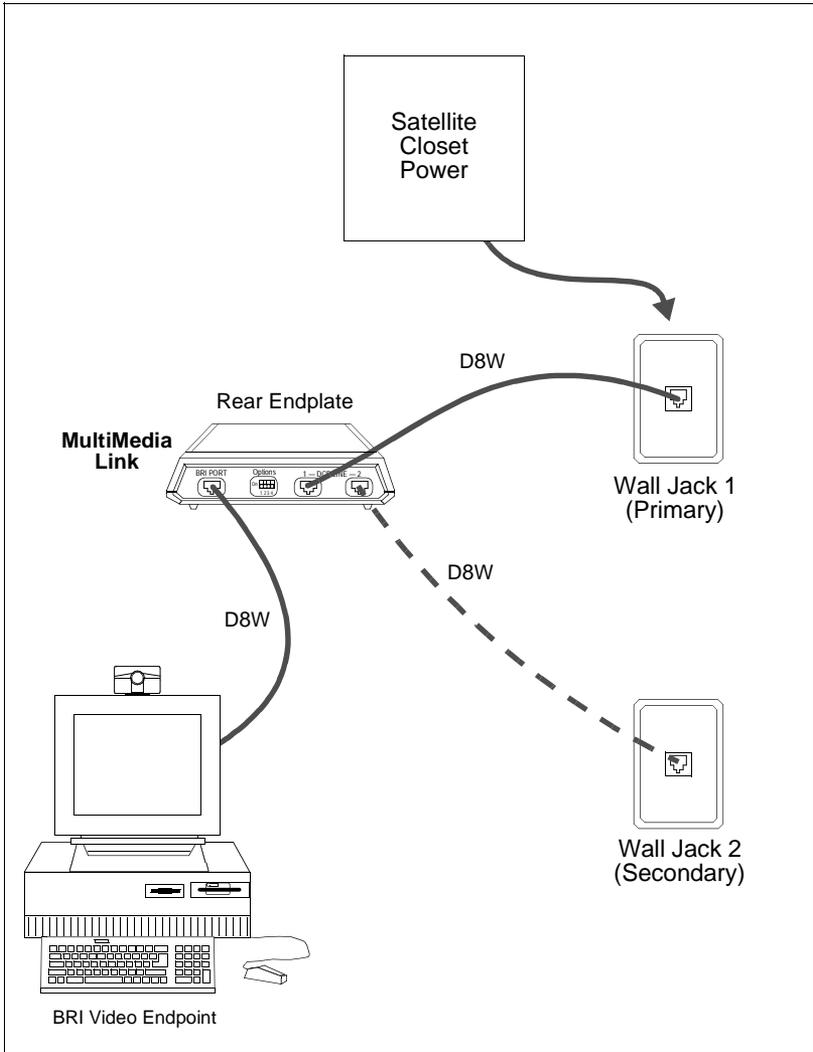
⚠ **WARNING:**
The wiring between the BRI endpoint and the MultiMedia Link (typically only the distance of one telephone line cord) must remain within the same building. This connection must not run outside where it may be exposed to lightning and/or power line crosses.

Mounting

The MultiMedia Link is intended to be placed under the desk or in some other out-of-the-way location. It comes with four rubber feet attached to the plastic housing to prevent sliding. Two loose strips of hook and loop fasteners are also provided which can be attached to the top of the plastic housing for wall mounting.

Figure 4 shows a typical installation using a satellite closet mounted power supply.

Satellite
Closet
Power

D8W

Rear Endplate

MultiMedia
Link

BRI PORT   Options   1 — DC LINE — 2

Wall Jack 1
(Primary)

D8W

D8W

Wall Jack 2
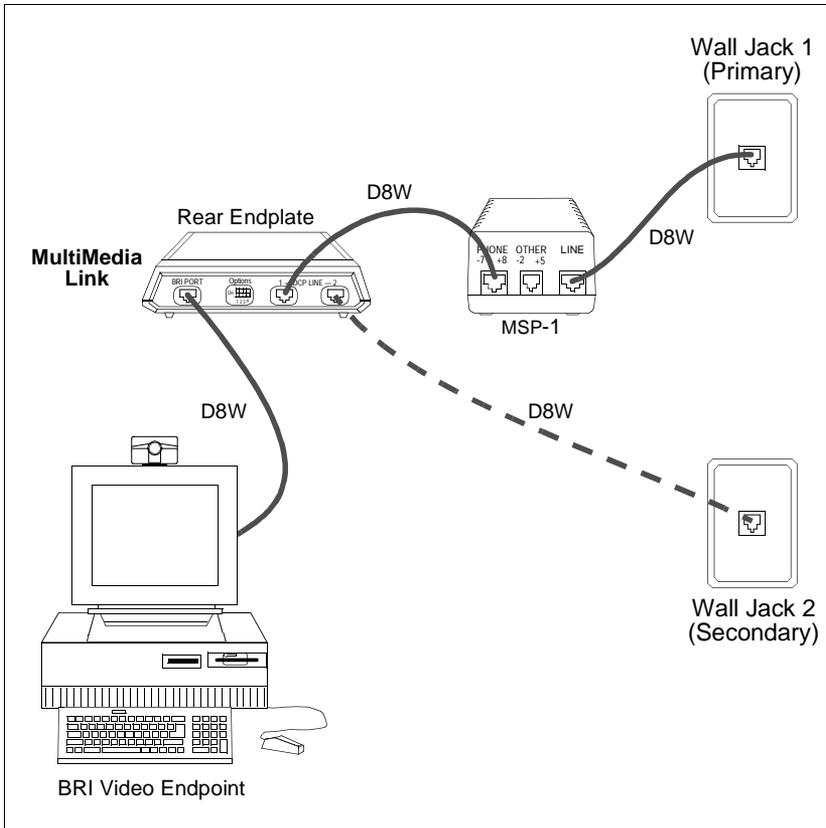(Secondary)

BRI Video Endpoint

FIGURE 4   Typical Installation with Satellite Closet Mounted Power Supply

Figure 5 shows a typical installation using a KS-22911 power supply.
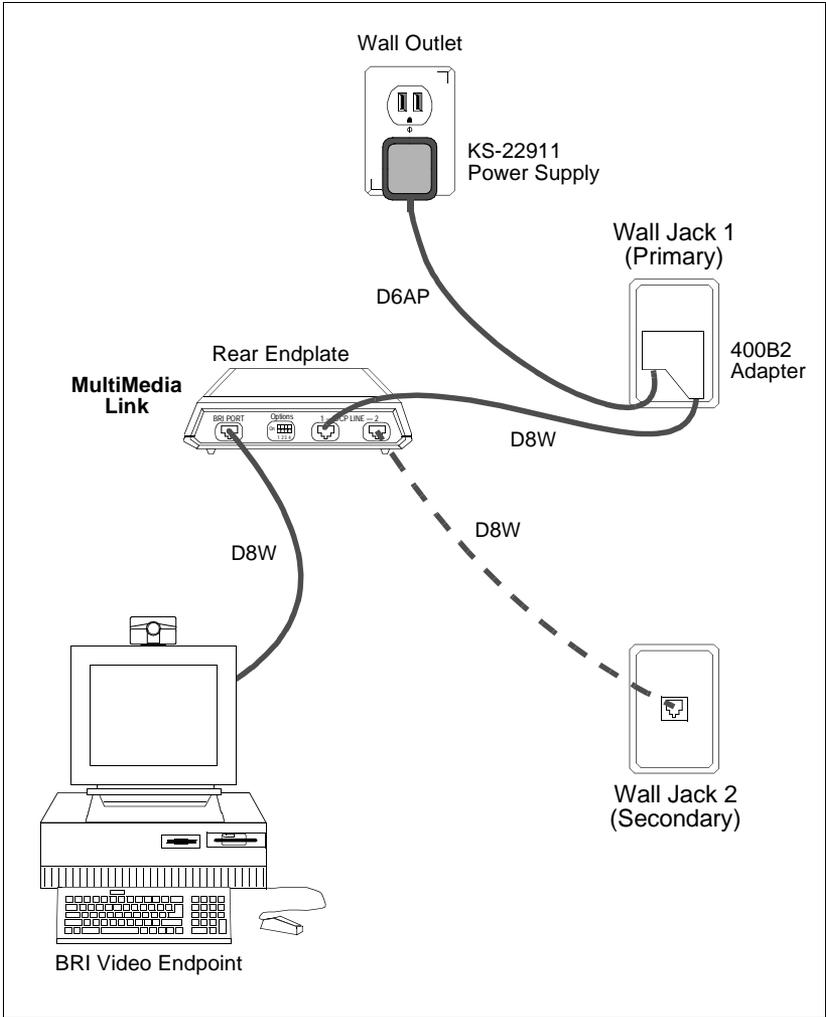
FIGURE 5   Typical Installation with KS-22911 Power Supply

Figure 6 shows a typical installation using an MSP-1 power supply.

FIGURE 6   Typical Installation with MSP-1 Power Supply

Although four DIP switches are provided, only DIP switch 1 and 3 are functional at the present time. Note that the MultiMedia Link has no actual knowledge of the data rate of the incoming call. For incoming calls, the setting of DIP switch 1 controls how BRI calls are offered to the endpoint. Off means 56 kbps; On means 64 kbps. Refer to the section on Loopback Test, later in this document, for DIP switch 3 functionality.

For outgoing calls, the PBX determines the data rate for creation of ISDN signaling messages and for call routing regardless of the data rate signaled by the originating endpoint. Older PBX's make this

determination by examination of the DCP line administration. Newer PBX's query MultiMedia Link for its DIP switch 1 setting.

DIP switch 1 comes from the factory set for 56 kbps data calls. Only change this setting if you are sure your system and all systems you will be calling accommodate 64 kbps for **ALL** data calls. Use of the 64 kbps setting requires the availability of clear 64 channels end to end. The DIP switch 1 setting **MUST** match the data rate setting for the endpoint and the PBX. If the switch setting does not match the call's actual data rate, call failure may occur.

Endpoint Configuration

You must configure your BRI endpoint for operation with AT&T's version of BRI. Typically the installation instructions for the endpoint will guide you through selection of network type or switching system type. You should select AT&T. Once you have selected AT&T, you may be prompted to select point-to-point or multipoint. If so, select point-to-point. You may also be prompted to enter a Service Profile Identifier (SPID). The MultiMedia Links BRI port does not make use of a specific SPID, but because your endpoint may require you to enter a SPID, you should enter a default value such as ten zero digits.

PBX Administration

PBX line administration for the MultiMedia Link is provided in this section. The administration of digital trunking to enable circuit switched data connectivity to and from the switch is beyond the scope of this document. Contact your sales representative or the VTC at 1 800 VIDEO GO (1 800 843-3646) for administration of digital trunking. Select AT&T Video Conferencing Equipment at the voice prompt.

MultiMedia Link is normally administered on the PBX as two PDMs. The number of DCP lines required is dependent on the PBX vintage as shown in Table 3. (If the endpoint only supports one active data call, MultiMedia Link can be administered as a single PDM and will always require only one DCP line regardless of PBX vintage.)

TABLE 3   DCP Line Requirements

Lines per MultiMedia Link	System 85 Switch	DEFINITY Generic 2 Switch	System 75 Switch	DEFINITY Generic 1 Switch	DEFINITY G3V1 Switch	DEFINITY G3V2 Switches and Beyond	MCU Version 3.0
Number of Lines	1	1	2	2	2	1	2

It is assumed that you are already familiar with the process of administering data modules on the PBX. MultiMedia Link is administered in the same manner as the DEFINITY High Speed Link Data Module. For further information, refer to Appendix D, "High Speed Link User's Guide," document number AT&T 555-020-711.

On G3V2 and later switches, the use of a single DCP line to support two PDMs is called Secondary Data Module feature. This feature is found on page 2 of the System Parameter Customer Options screen on the system administration terminal. Although free of charge on G3V2 and G3V3 systems, this feature can only be activated remotely by the VTC or TSC. The VTC or TSC technician should set the value to "y" for yes. Once the Secondary Data Module feature is activated, the local system administrator can perform the remaining administration for any number of MultiMedia Links. (Beginning with G3V4, the Secondary Data Module feature defaults to "yes" so that remote technician involvement should not be required.) Table 2 shows the data module administration.

TABLE 4   PDM Administration on System 75, G1, G3

Data Module Administration Form Field	System 75, Generic 1, G3V1 Switches	G3V2 Switches and Beyond	MCU Version 3.0
Type	PDM	PDM	PDM
Port	An unused DCP port	An unused DCP port for the first PDM, the *same* port for the second PDM	An unused DCP port
ITC	UNRESTRICTED for 64 kbps calls, RESTRICTED for 56 kbps calls	UNRESTRICTED for both 56 kbps or 64 kbps calls	UNRESTRICTED for both 56 kbps or 64 kbps calls
Connected to	DTE	DTE	DTE
Remote Loop-Around Test	N	N	N
Secondary Data Module	Not applicable	N for first PDM, Y for second PDM	Not applicable

Administration of two Processor Data Modules (PDMs) on one DCP line on System 85 and DEFINITY Generic 2 switches is performed as shown in Table 2. (The Keyboard Dialing field must be enabled for the endpoint to be able to originate calls.)

TABLE 5   Administration of PDMs on System 85 and DEFINITY Generic 2

PDM Administration	System 85 Switch	DEFINITY Generic 2 Switch
Set the Terminal Type	In Proc 051 word 1, set field 6 to "10" for AP32.	In Proc 051 word 1, set field 6 to "3" for Dual Port Data.
Enable Keyboard Dialing	In Proc 051 word 1, set the Keyboard Dialing field 13 to "1" for yes.	In Proc 051 word 1, set the Keyboard Dialing field 13 to "1" for yes.
Administer the Data Module Line Appearances(s)	In Proc 052, word 1, set the Member (button) field 7 to "0" and specify the first extension number in field 8. Set the Member (button) field 7 to 1 and specify the second extension number in field 8.	In Proc 052, word 1, set the Member (button) field 7 to "0" and specify the first extension number in field 8. Set the Member (button) field 7 to 1 and specify the second extension number in field 8.

The 56/64 kbps channel speed of data calls is referred to differently among the different switch families. The 56 kbps calls are commonly referred to as Mode 1 data calls while 64 kbps calls are commonly referred to as Mode 0 data calls. System 85 and Generic 2 switches must be administered at a fixed speed. Table 6 shows the switch administration.

TABLE 6   Channel Speed

Administration	System 85 Switch	DEFINITY Generic 2 Switch
Channel Speed:	Set the Terminal Class of Service in Proc 010, word 4 as follows:	Set the Bearer Capability Class of Service in Proc 000, word 3 as follows:
56K (Mode 1)	Set field 3 to "1" and MultiMedia Link DIP switch 1 to "off".	Set field 5 to "7" and MultiMedia Link DIP switch 1 to "off". [*]
64K (Mode 0)	Set field 3 to "4" and MultiMedia Link DIP switch 1 to "on".	Set field 5 to "6" and MultiMedia Link DIP switch 1 to "on".

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[*]

System default definitions for Bearer Capability Class of Service (BCCOS) values 7 and 6 are 56K and 64K, respectively, but these defaults may have been changed in your system. BCCOS is defined in Proc 014, word 1.

Maintenance

The MultiMedia Link provides three dual color status LEDs. The functions of the LEDs are shown in Table 1 of the Introduction.

The MultiMedia Link accepts standard PBX maintenance commands, for example, DCP looparound.

Loopback Test

The MultiMedia Link Loopback Test provides a simple mechanism for testing lines and trunking. This test can be done at either the initial setup or for isolating problems.

Loopback Test Procedure

1   Flip the MultiMedia Link DIP switch 3 to the "On" position.

- incoming calls from the network/PBX are set up for auto answer

- incoming calls are looped back to the originator

- calls initiated from the endpoint will be "disallowed"

- any active calls will drop when the DIP switch 3 is changed

- the BRI port LED will be either steady red or off, depending on the BRI port/endpoint status

- DCP line LEDs will remain the color they were prior to turning on DIP switch 3, but will flash to remind you that the Loopback Test mode is enabled

2   From another data or video endpoint, place a test video or data call to the MultiMedia Link.

Troubleshooting

The following table provides troubleshooting guidelines for technicians.

TABLE 7   Troubleshooting Guidelines for Technicians

Symptom	Suspected Problem	Recommended Action
No LED status indicators are lit.	There is no 48Vdc auxiliary power on DCP Line 1. Auxiliary power polarity may be reversed. The MultiMedia Link may be defective.	3. Check power supply AC input and DC output. 4. Check for polarity reversal between satellite closet and wall jack if power is being supplied from satellite closet. 5. If power is OK, replace the MultiMedia Link.
BRI Port status LED is red AND DCP Line 1 status is NOT red.	BRI endpoint is disconnected or powered down. (Some endpoints may not initialize the BRI link until a call is actually attempted.)	1. Attempt to make a call. If the Port status LED remains red, check or reset the BRI endpoint.
BRI Port status LED is flashing red.	Power on self-test has failed.	1. Disconnect DCP Line 1 momentarily to reset the unit. Reconnect. If LED continues to flash red, replace the MultiMedia Link.
BRI Port status LED is red AND DCP Line 1 status is also red.	The BRI Port status LED may be red because the DCP Line 1 has been disconnected or due to PBX maintenance testing of the DCP port.	1. Correct the DCP Line 1 problem before troubleshooting the BRI Port.
DCP Line 1 status LED is red. (Line 2 LED may be alternating red/ orange.)	DCP Line 1 to the switch is disconnected or PBX maintenance testing of the DCP port is in progress.	1. Check DCP Line 1 wiring. 2. Verify that a 4-Wire DCP port and NOT a 2-Wire DCP port is administered.

TABLE 7   Troubleshooting Guidelines for Technicians — *Continued*

Symptom	Suspected Problem	Recommended Action
DCP Line 2 status LED is red.	Not all configurations require use of Line 2. This condition is normal if a second line is not connected. Otherwise, DCP Line 2 to the switch is disconnected.	1. Check DCP Line 2 wiring. 1. Verify that a 4-Wire DCP port and NOT a 2-Wire DCP port is administered.
DCP Line 1 status LED is orange.	This condition is normal if the configuration uses two DCP lines. Otherwise, DCP Line 1 is misadministered (secondary channel protocol has not been detected on Line 1).	1. Check switch administration.
DCP Line 2 status LED is orange.	This condition is normal if the configuration uses two DCP lines.	1. No action required.
All status LEDs indicate OK, but cannot make or receive local data calls.	The user may be dialing a voice extension number instead of dialing a data extension. The switch port card may be defective.	1. Verify the extension numbers. 2. Run port card and station tests from the switch administration terminal.
Can make local data calls, but cannot make or receive external data calls.	Improper trunk or call routing administration. Improper trunk facilities in place.	1. Call for remote PBX administration. Do NOT request a technician to be dispatched to the MultiMedia Link location.

MultiMedia Link determines whether DCP Line 1 is administered as one or two Processor Data Modules (PDMs) at the time DCP Line 1 is first connected. If the administration is changed, for example, from single to dual PDM, you **MUST** reset the MultiMedia Link by unplugging DCP Line 1 and then reconnecting it.

Performance

The following table shows wiring distance limits for the MultiMedia Link.

TABLE 8   Wiring Distance Limits

Distance Limits	24 Gauge	26 Gauge
DCP	5,000 feet	4,000 feet
BRI	1,900 feet	1,600 feet
Satellite Power	500 feet	300 feet

⚠ **WARNING:**
The wiring between the BRI endpoint and the MultiMedia Link (typically only the distance of one telephone line cord) must remain within the same building. This connection must not run outside where it may be exposed to lightning and/or power line crosses.

NOTICE

While reasonable efforts were made to ensure that the information in this document was complete and accurate at the time of printing, AT&T can assume no responsibility for any errors. Changes or corrections to the information contained in this document may be incorporated into future issues.

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UL Information

This product has been tested and found to comply with the Underwriters Laboratories (UL) Standard 1459, second edition. This standard requires that you be advised of certain safety instructions regarding the use of the product.

CSA Information

This product has been tested and found to comply with the Canadian Standards Association (CSA). This standard requires that you be advised of certain safety instructions regarding the use of this product.