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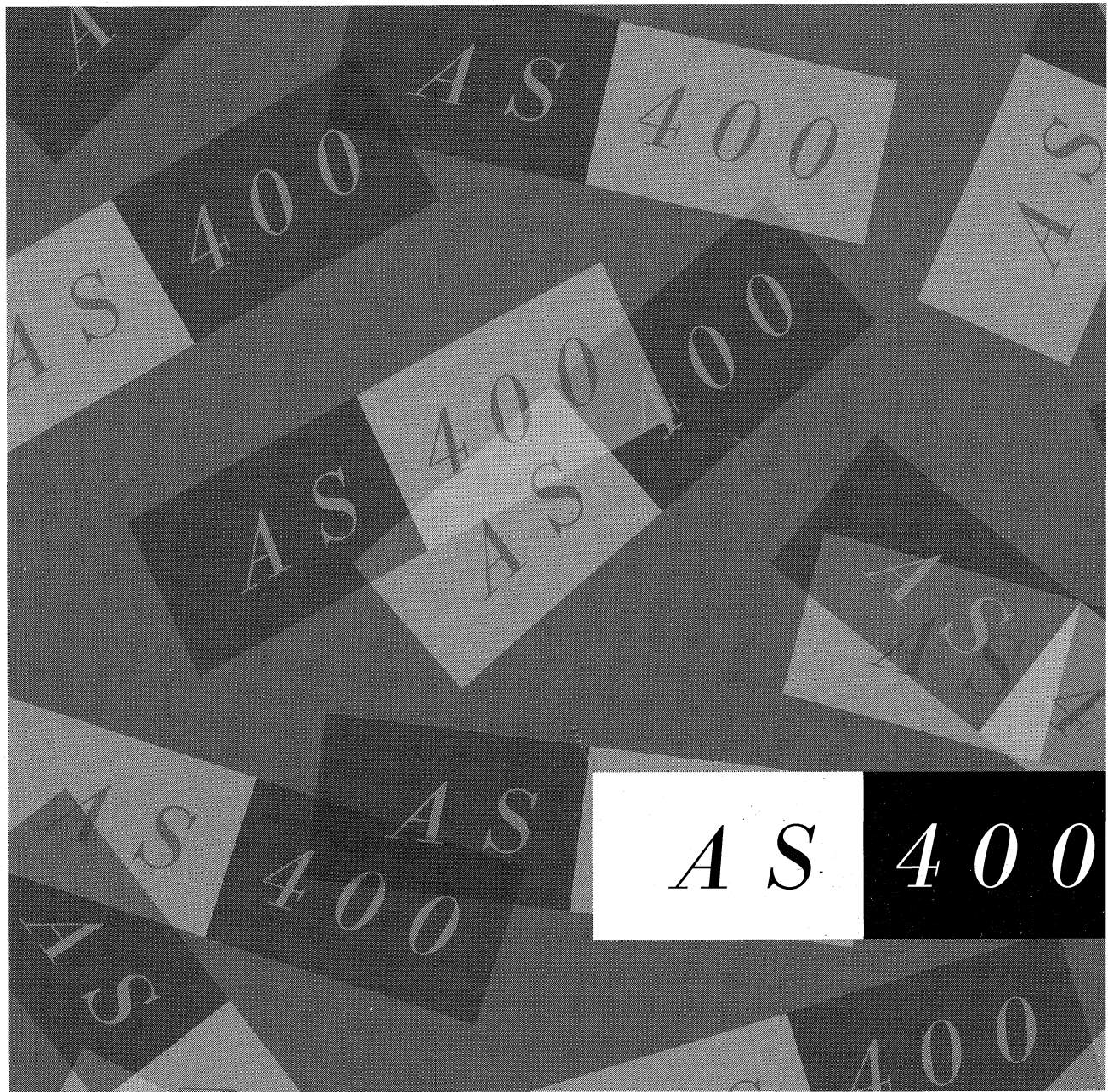# AS/400
Ultimedia System Facilities
Installation and Administration

Version 3

IBM

AS/400

**Ultimedia System Facilities
Installation and Administration**

Version 3

First Edition (September 1994)

This edition applies to the following licensed programs:

　　IBM Client Access/400 Family (Program 5763-XA1) Version 3 Release 1

　　IBM Operating System/400 (Program 5763-SS1) Version 3 Release 1

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About Ultimedia System Facilities Installation and Administration (SC41-3540)

This book contains instructions for installing the Ultimedia System Facilities* (Ultimedia Facilities*) product on an Application System/400* (AS/400*) system and on programmable workstations (PWSs) running in either of the following environments:

- Operating System/2* (OS/2*)
- Microsoft** Windows**

This book also contains information on the following topics:

- Planning for an Ultimedia Facilities installation

- Changing prerequisite product configurations for Ultimedia Facilities use

- Configuring an AS/400 for the use of the Shared Analog Device Control (SADC) component of Ultimedia Facilities

This book does not include instructions for installing and configuring prerequisite products, nor does it include instructions for configuring Ultimedia Facilities on a PWS. For PWS configuration instructions, refer to *Ultimedia System Facilities User Guide*, SC41-3541.

You might need to refer to other IBM* manuals for more specific information about a particular topic. The *Publications Reference*, SC41-3003, provides information on all the manuals in the AS/400 library.

Who Should Use This Book

This book is intended for network administrators who want to install the Ultimedia Facilities product on an AS/400 system and on the programmable workstations (PWSs) networked to the AS/400.

This book assumes that the person installing the Ultimedia Facilities product has a working knowledge of AS/400 systems, the OS/2 or Windows environments, and a basic understanding of network technology and PWS operation.

Chapter 1. Planning for Ultimedia System Facilities Installation

Ultimedia System Facilities (Ultimedia Facilities) is a feature of IBM Operating System/400* for creating, editing, and presenting multimedia. It is designed to work cooperatively between an AS/400 system and a network of programmable workstations (PWSs). Ultimedia Facilities includes some components that are installed on the AS/400 and some that are installed on each of the workstations.

Performance for multimedia-enhanced applications depends on a number of factors, including the speed and memory of the AS/400 system and of the workstations. Determine your throughput and response time requirements before establishing your AS/400 system and workstation sizes. Contact your IBM representative to assist you in determining your system requirements.

AS/400 System Prerequisites

The Ultimedia System Facilities feature runs on an AS/400 system that is equipped as follows:

- IBM Operating System/400 Version 3 Release 1 Modification 0 (OS/400*).

- IBM Client Access/400 Version 3 Release 1 Modification 0 (Client Access/400).

- Sufficient memory to meet your video requirements. Memory requirements for digital video can be very large. Your actual requirements will vary, based on the video quality you require and the data compression method used to convert analog video to digital.

- A communications connection, such as token-ring, over which the AS/400 system communicates with the workstations that use Ultimedia Facilities. See *Communications Configuration*, SC41-3401 for more information about communications adapters for your AS/400 system.

- If you are going to use Shared Analog Device Control (SADC), an asynchronous port to connect to each SADC server that is used. Each asynchronous port requires an input/output adapter (IOA) that is connected to an input/output processor (IOP). At least one asynchronous port and one SADC server are required to control analog video devices. The IOAs and the IOPs that you use depend on your AS/400 system and the SADC server that you use. To learn more about AS/400 communications requirements, refer to *Communications Configuration*, SC41-3401.

Before you begin to install Ultimedia Facilities, complete the planning tasks in Part 1, "Planning Tasks" of *Software Installation*, SC41-3120.

PWS Prerequisites

Ultimedia Facilities is designed to operate on workstations equipped as follows:

- An 80386 or higher processor.

- Ultimedia Facilities is designed to operate with either Operating System/2 or Microsoft Windows. An OS/2 workstation must have at least 8MB of random

access memory (RAM); the recommended size is 16MB or greater. A Windows workstation must have at least 4MB of RAM; 8MB are recommended.

- A VGA, SVGA, or XGA monitor.

- A communications connection, such as token-ring over which the workstation communicates with the AS/400 system.

  Note: A 16 megabyte network is recommended for digital video.

- An adapter capable of supporting the multimedia tasks you expect to perform with that workstation. See "PWS Adapters" on page 1-3 for more information on multimedia adapters.

The following products must be installed on a PWS before you can install Ultimedia Facilities:

- For OS/2:

  - OS/2 Version 2.1 with the latest customer service diskettes (CSDs) **or** OS/2 Version 2.11
  - Multimedia Presentation Manager/2* (MMPM/2)
  - Client Access/400 for OS/2
  - A communications program supported by Client Access/400 such as Communications Manager/2

- For Windows:

  - Disk Operating System (DOS) Version 5.0 or higher
  - Microsoft Windows (Windows) 3.1 with Multimedia Extensions**
  - Client Access/400 for Extended DOS
  - A communications program supported by IBM Client Access/400 such as, Local Area Network Support Program for Client Access/400 LAN connections

Client Access/400 functions that must be installed:

- Router
- Shared folders
- Data Queues

Use the Client Access/400 Configuration program to do the following:

- Assign a shared folder to the AS/400 on which the Ultimedia Facilities feature is installed. To do so, select **Folders** from the Client Access/400 Configuration main menu. The Use Folders on Host System display appears. Press **F10** for Actions. Select **Options** and then select option 2. The Add Drive Definition display appears. Type a drive designation and the name of your AS/400 system. Define the Folder Assignment as **All folders** and press **Enter**. When you press **F3** to exit, a pop-up window appears. Press **1** for Save and exit.

- Download data queue support to the PWS. To do so, select **General Options** from the Client Access/400 configuration menu. In the General Options for Client Access/400 display, select **Location of functions**. In the functions display, select **Data Queues** and press **Enter**. When you press **F3** to exit, a pop-up window appears. Press **1** for Save and exit. The Copy Files to Your Personal Computer display appears. Indicate the directory that you want the data queue files copied to and press **Enter**.

Refer to *Client Access/400 for OS/2 Setup*, SC41-3520 or *Client Access/400 for DOS Setup*, SC41-3556, for detailed information on using the Client Access/400 Configuration program.

Note for Windows Users: Do not install the Client Access/400 network driver in Windows. Instead, have no network drivers installed or use the LAN server driver installed. Ultimedia Facilities will dynamically load the Client Access/400 DLLs as they are needed. If Windows loads the Client Access/400 network driver at startup, the Client Access/400 DLLs loaded by the driver will fragment conventional memory, affecting the performance of Ultimedia Facilities.

PWS Adapters

MMPM/2 and Multimedia Extensions provide the features and device drivers you need for some Ultimedia Facilities multimedia functions without any additional hardware requirements. These functions include the following:

- Viewing high resolution software motion video in a standard movable and sizable window

- Displaying OS/2 and Windows bitmap images

Ultimedia Facilities provides support for presenting, capturing, and editing multimedia objects through integrated support or through third party packages. the following tables provide a list of supported format types and adapters for each of the Ultimedia Facilities multimedia objects:

Table 1-1. Adapters needed to present Multimedia Objects under Microsoft Windows 3.1

Object Type	File Format	File Extension	Type of Support	Supported Adapter or Software
Video	DVI	.AVS	Integrated	ActionMedia II
	Indeo	.AVI	Integrated	Digital Video for Windows
	Ultimotion*	.AVI	Third Party	
	Other	.AVI	Third Party	
Audio	DVI	.AVS	Integrated	ActionMedia II
	MIDI	.MID	Integrated	Sound Blaster, M-Audio, PAS
	WAVE	.WAV	Integrated	Sound Blaster, M-Audio, PAS
	Other			
Image	DVI	.AVS	Integrated	ActionMedia II
	IBM AVC Image	._ID, ._IM	Third Party	
	Bitmaps	.BMP	Integrated	No added software needed
	IBM M-Motion	.MOT	Third Party	
	PC Paintbrush**	.PCX	Integrated	No added software needed
	TIFF	.TIF	Integrated	No added software needed
	TARGA**	.TGA	Integrated	No added software needed
	Graphics Interchange	.GIF	Integrated	No added software needed
	Ventura Image	.IMG	Integrated	No added software needed
	JPEG	.JPG	Integrated	No added software needed
	Other		Third Party	
Text	ASCII	.TXT	Integrated	No added software needed
	Other		Third Party	
Graphics	OS/2 Metafile	.MET	Third Party	
	Windows Metafile	.WMF	Integrated	No added software needed

Details on Supported Adapters and Software:

ActionMedia II**	IBM ActionMedia II with Digital Video MCI driver
Digital Video for Windows	Microsoft Video for Windows Digital Video MCI driver
Digital Video Player	IBM Digital Video Player MCI driver
Sound Blaster**	Creative Labs** SoundBlaster, SoundBlaster Pro, OPL2, OPL3, MCV, and SoundBlaster 16 with respective MCI drivers
M-Audio	IBM M-Audio Capture & Playback Adapter with MCI driver
PAS	Media Vision** Pro AudioSpectrum 16 with MCI driver

Table 1-2. Adapters Needed to Capture Multimedia Objects Under Microsoft Windows 3.1

Object Type	File Format	File Extension	Type of Support	Supported Adapter or Software
Video	DVI	.AVS	Third Party	
	Other	.AVI	Third Party	
Audio	DVI	.AVS	Third Party	
	WAVE	.WAV	Integrated	Sound Blaster, M-Audio, PAS
	Other			
Image	DVI	.AVS	Third Party	
	IBM AVC Image	._ID, ._IM	Third Party	
	Bitmaps	.BMP	Integrated	Video Blaster
	IBM M-Motion	.MOT	Third Party	
	PC Paintbrush	.PCX	Integrated	Video Blaster
	TIFF	.TIF	Integrated	Video Blaster
	TARGA	.TGA	Integrated	Video Blaster
	Graphics Interchange	.GIF	Integrated	Video Blaster
	Ventura Image	.IMG	Third Party	
	JPEG	.JPG	Third Party	

Details on Supported Adapters and Software:

Sound Blaster	Creative Labs SoundBlaster, SoundBlaster Pro, OPL2, OPL3, MCV, and SoundBlaster 16 with respective MCI drivers
M-Audio	IBM M-Audio Capture & Playback Adapter with MCI driver
PAS	Media Vision Pro AudioSpectrum 16 with MCI driver
Video Blaster	Creative Labs Video Blaster with MCI driver (The NO_WIN_CAPTION flag for CaptureObject API is not supported) (The Object Selection Notification APIs will not work when using this adapter)

Table 1-3. Adapters Needed to Edit Multimedia Objects Under Microsoft Windows 3.1

Object Type	File Format	File Extension	Type of Support	Supported Adapter or Software
Video	DVI	.AVS	Third Party	
	Other	.AVI	Third Party	
Audio	DVI	.AVS	Third Party	
	WAVE	.WAV	Integrated	Sound Blaster, M-Audio, PAS
	Other			
Image	DVI	.AVS	Third Party	
	IBM AVC Image	._ID, ._IM	Third Party	
	Bitmaps	.BMP	Integrated	No added software needed
	IBM M-Motion	.MOT	Third Party	
	PC Paintbrush	.PCX	Integrated	No added software needed
	TIFF	.TIF	Integrated	No added software needed
	TARGA	.TGA	Integrated	No added software needed
	Graphics Interchange	.GIF	Integrated	No added software needed
	Ventura Image	.IMG	Integrated	No added software needed
	JPEG	.JPG	Integrated	No added software needed

Details on Supported Adapters and Software:

Sound Blaster	Creative Labs SoundBlaster, SoundBlaster Pro, OPL2, OPL3, MCV, and SoundBlaster 16 with respective MCI drivers
PAS	Media Vision Pro AudioSpectrum 16 with MCI driver

Table 1-4. Adapters Needed to Present Multimedia Objects Under OS/2 Version 2.1

Object Type	File Format	File Extension	Type of Support	Supported Adapter or Software
Video	DVI	.AVS	Integrated	ActionMedia II
	Indeo	.AVI	Third Party	
	Ultimotion	.AVI	Integrated	Digital Video Player
	Other		Third Party	
Audio	DVI	.AVS	Integrated	ActionMedia II
	MIDI	.MID	Integrated	Sound Blaster, M-Audio, PAS
	WAVE	.WAV	Integrated	Sound Blaster, M-Audio, PAS
	Other		Third Party	
Image	DVI	.AVS	Integrated	ActionMedia II
	IBM AVC Image	._ID, ._IM	Integrated	Software using MMIO
	Bitmaps	.BMP	Integrated	Software using MMIO
	IBM M-Motion	.MOT	Integrated	M-Motion
	PC Paintbrush	.PCX	Integrated	Software using MMIO
	TIFF	.TIF	Integrated	Software using MMIO
	TARGA	.TGA	Integrated	Software using MMIO
	Graphics Interchange	.GIF	Third Party	
	Ventura Image	.IMG	Third Party	
	JPEG	.JPG	Third Party	
	Other		Third Party	
Text	ASCII	.TXT	Integrated	No added software needed
	Other		Third Party	
Graphics	OS/2 Metafile	.MET	Integrated	No added software needed
	Windows Metafile	.WMF	Third Party	

Details on Supported Adapters and Software:

ActionMedia II	IBM ActionMedia II with Digital Video MCI driver
Digital Video Player	IBM Digital Video Player MCI driver
Sound Blaster	Creative Labs SoundBlaster, SoundBlaster Pro, OPL2, OPL3, MCV, and SoundBlaster 16 with respective MCI drivers
M-Audio	IBM M-Audio Capture & Playback Adapter with MCI driver
PAS	Media Vision Pro AudioSpectrum 16 with MCI driver
Software using MMIO	Supported in Software with Multimedia I/O (MMIO) procedures; provided in IBM MMPM/2 and Ultimedia Builder/400
M-Motion	IBM M-Motion Video Adapter with MCI driver

Table   1-5. Adapters Needed to Capture Multimedia Objects Under OS/2 Version 2.1

Object Type	File Format	File Extension	Type of Support	Supported Adapter or Software
Video	DVI	.AVS	Integrated	ActionMedia II
	Other		Third Party	
Audio	DVI	.AVS	Integrated	ActionMedia II
	WAVE	.WAV	Integrated	Sound Blaster, M-Audio, PAS
	Other		Third Party	
Image	DVI	.AVS	Integrated	ActionMedia II
	IBM AVC Image	._ID, ._IM	Third Party	
	Bitmaps	.BMP	Third Party	
	IBM M-Motion	.MOT	Third Party	
	PC Paintbrush	.PCX	Third Party	
	TIFF	.TIF	Third Party	
	TARGA	.TGA	Third Party	
	Graphics Interchange	.GIF	Third Party	
	Ventura Image	.IMG	Third Party	
	JPEG	.JPG	Third Party	
Text	Other		Third Party	
Graphics	Other		Third Party	

Details on Supported Adapters and Software:

ActionMedia II	IBM ActionMedia II with Digital Video MCI driver
Sound Blaster	Creative Labs SoundBlaster, SoundBlaster Pro, OPL2, OPL3, MCV, and SoundBlaster 16 with respective MCI drivers
M-Audio	IBM M-Audio Capture & Playback Adapter with MCI driver
PAS	Media Vision Pro AudioSpectrum 16 with MCI driver

Table 1-6. Adapters Needed to Edit Multimedia Objects Under OS/2 Version 2.1

Object Type	File Format	File Extension	Type of Support	Supported Adapter or Software
Video	DVI	.AVS	Integrated	ActionMedia II
	Other		Third Party	
Audio	DVI	.AVS	Integrated	ActionMedia II
	WAVE	.WAV	Integrated	Sound Blaster, M-Audio, PAS
	Other		Third Party	
Image	DVI	.AVS	Integrated	ActionMedia II
	IBM AVC Image	._ID, ._IM	Integrated	Software using MMIO
	Bitmaps	.BMP	Integrated	Software using MMIO
	IBM M-Motion	.MOT	Integrated	Software using MMIO
	PC Paintbrush	.PCX	Integrated	Software using MMIO
	TIFF	.TIF	Integrated	Software using MMIO
	TARGA	.TGA	Integrated	Software using MMIO
	Graphics Interchange	.GIF	Third Party	
	Ventura Image	.IMG	Third Party	
	JPEG	.JPG	Third Party	
Text	Other		Third Party	
Graphics	Other		Third Party	

Details on Supported Adapters and Software:

ActionMedia II	IBM ActionMedia II with Digital Video MCI driver
Sound Blaster	Creative Labs SoundBlaster, SoundBlaster Pro, OPL2, OPL3, MCV, and SoundBlaster 16 with respective MCI drivers
M-Audio	IBM M-Audio Capture & Playback Adapter with MCI driver
PAS	Media Vision Pro AudioSpectrum 16 with MCI driver
Software using MMIO	Supported in Software with Multimedia I/O (MMIO) procedures; provided in IBM MMPM/2 and Ultimedia Builder/400

With the addition of any of a variety of adapters that conform to the media control interface (MCI) standard, you can take advantage of additional multimedia functions that Ultimedia Facilities provides. Consult your adapter supplier for information on which adapters support the functions that you want to use. Be sure that the adapter you purchase includes the device drivers that are compatible with your operating system.

Sample Network Configuration

The following describes a sample configuration and the functions it provides to help you select a useful network format.
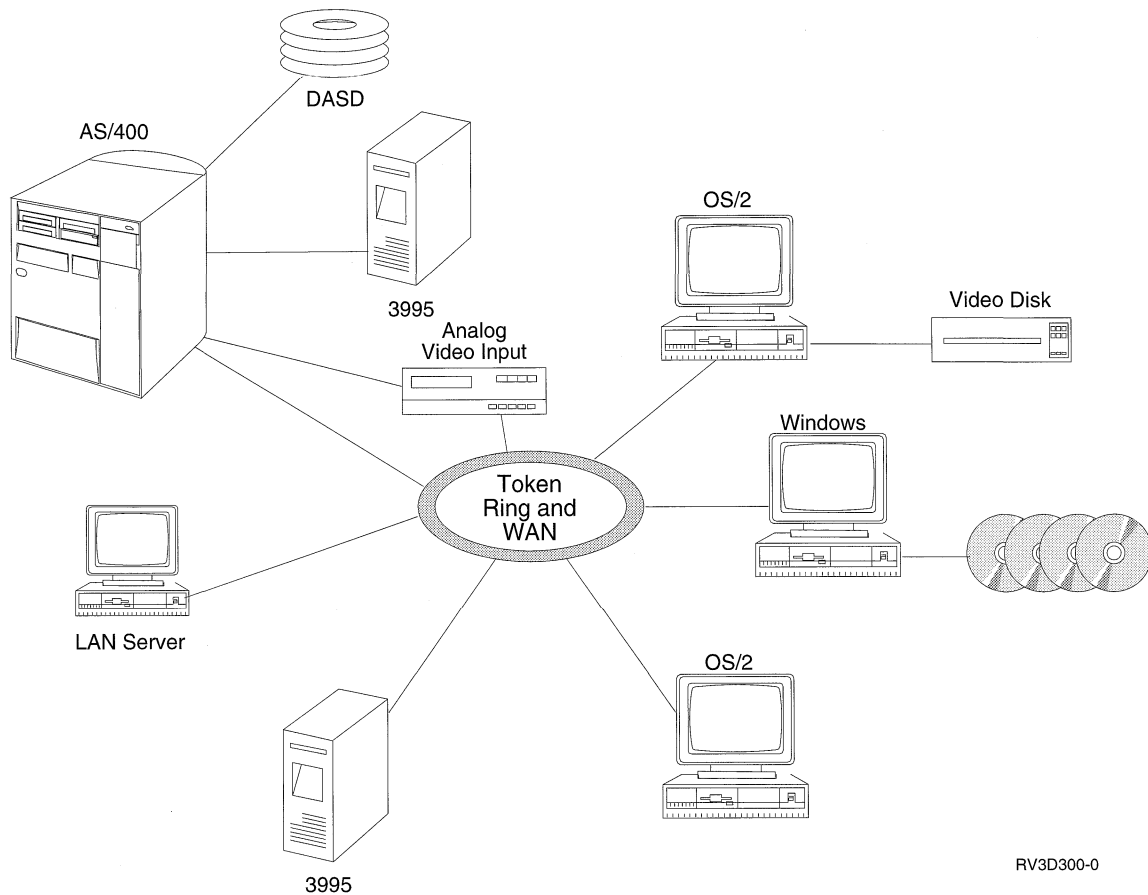
Figure   1-1. The Digital Networks and Supported Devices Sample

AS/400

Configuration

3995 host-attached Optical Solution

Function

Provide storage for objects on the direct access storage device (DASD) and optional storage for digital multimedia objects on optical disks.

LAN Server

Configuration

IBM OS/2 LAN Server–Advanced

Function

Provide storage of digital multimedia objects

PWS 1 — Sample OS/2 Configuration

Configuration

OS/2
OS/2 LAN Requester
Communications Manager/2
MMPM/2

ActionMedia II Adapter
Attached Video Disk Player

Camera, microphone, and speaker attached to the Actionmedia II Adapter

Functions

Present or capture digital audio and video multimedia objects that are stored on the workstation, on an optical disk, or on the LAN server.

Present analog video objects that are stored on video disk

Display digital images and graphic objects that are stored on the work-station, on the AS/400, on an optical disk, or on the LAN server

PWS 2 — Sample Windows configuration

Configuration

Windows
LAN Requester
Multimedia Extensions (MME)

M-Audio Adapter
Attached CD-ROM
Microphone and speaker attached to the M-Audio Adapter

Functions

Present digital audio objects that are stored on the workstation, on the AS/400, on the LAN server, on an optical disk, or on a CD

Present analog audio objects that are stored on CD, using either the M–Audio Adapter or a speaker attached to the CD-ROM

Capture audio objects through the M-Audio Adapter and store them on the workstation, on the AS/400, on an optical disk, or on the LAN server

Display digital images and graphics that are stored on the workstation, on an optical disk, or on the LAN server

PWS 3 — Sample configuration with no multimedia hardware

Configuration

OS/2
OS/2 LAN Requester
MMPM/2

Function

Display digital images and graphics that are stored on the workstation, on the AS/400, on an optical disk, or on the LAN server.

Chapter 2. Installing Ultimedia System Facilities

Because Ultimedia System Facilities works cooperatively between an AS/400 system and a network of programmable workstations (PWSs), installing Ultimedia Facilities is a two step process:

1. Install the OS/400 Ultimedia Facilities feature on the AS/400 system.
2. Install the Client Access/400 Ultimedia Facilities feature on each PWS.

On the AS/400 system, Ultimedia Facilities is installed as a feature of the Operating System/400 (OS/400). Refer to *Software Installation*, SC41-3120 for information on installing an OS/400 feature.

If you are establishing a network of shared analog multimedia devices (such as cameras and videotape machines), you must define that network in the _ f4l. configuration on the AS/400 system. See Chapter 4, "Defining a Shared Analog Device Control Network" to learn how to configure your Shared Analog network.

On a PWS, the Ultimedia System Facilities feature operates in both the OS/2 and Windows environments. The remainder of this chapter is divided into two sections, one for people who work in the Windows environment and one for those who work in the OS/2 environment. You need only refer to the section that applies to your workstation.

Installing Ultimedia Facilities on a PWS with Windows

Before you begin the installation, be sure the following Client Access/400 programs are started on the workstation:

Program	Description
PCSXI	Client Access/400 Extended Memory Manager
STARTRTR	Client Access/400 Router
STARTFLR	Client Access/400 Shared Folders Support
CFGFLR	Client Access/400 Configure Shared Folders
PCSWIN	Client Access/400 Windows Program
LOADDQ	Client Access/400 Data Queue Support Program

For detailed information on starting the Client Access/400 programs, refer to *Client Access/400 for DOS Setup*, SC41-3556.

Running the Installation Program in the Windows Environment

To install the Ultimedia Facilities product files on your PWS , follow these steps:

1. In the Program Manager window, select **File** from the menu bar. A pull-down menu appears.

2. Select **Run** from the File pull-down menu. The Run window appears.

3. In **Command line**, type the following:

   I:\QUMBFL2\USFINST.EXE

   Where *I:* is the name of the logical drive assigned to all shared folders on the AS/400 system, *\QUMBFL2* is the name of the folder on the AS/400 that contains the Ultimedia System Facilities Windows programs, and *USFINST.EXE* is the name of the installation program.

The Installation window appears.

4. At this point, you can choose to exit the installation program, request help, or continue. Select **Continue** to proceed. More files are loaded, then the Install window appears. This window includes the following check boxes:

- Update AUTOEXEC.BAT

  If you select this check box, Ultimedia Facilities will automatically make changes in the AUTOEXEC.BAT file that are required for the feature to run on the workstation. If you do not select this box, you must change the AUTOEXEC.BAT file yourself.

  Note: Ultimedia Facilities creates a file called AUTOEXEC.ADD that you can refer to if you choose to make the changes to the AUTOEXEC.BAT file yourself.

- Overwrite files

  If you select this check box, the system automatically writes over an y workstation file that has the same name as any of the Ultimedia Facilities product files. If you do not select this box, the system displays a message when it encounters an existing file with the same name as one of the product files.

Select the options you want, and then select **OK**. The Install–directories window appears, which displays a list box of product components and three directory list boxes. Figure 2-1 shows a sample of an Install–directories window.
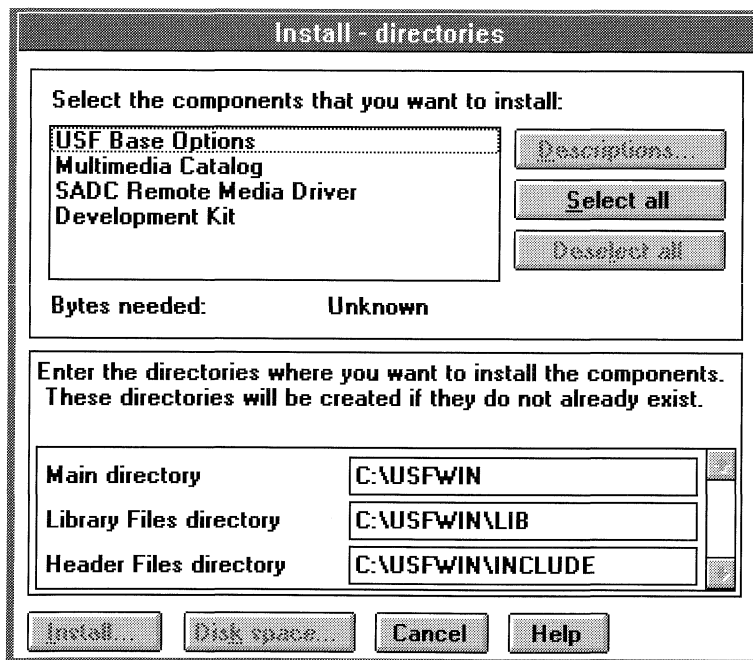
Figure 2-1. The Install–directories Window in the Windows Environment

5. If you want to change the drives or directories in which the product files are installed, select them in the list boxes in the Install–directories window.

6. Select **Install**. The Install–progress window appears. It displays the names of the files being installed and a graphical representation of the progress of the installation. When all of the the files are installed, the Installation and Mainte-

nance window appears to confirm completion of the installation. Select **OK** to close the window. Select **Exit** to exit the Ultimedia System Facilities Installation program

7. To use Ultimedia Facilities, restart the workstation. This activates the changes to the AUTOEXEC.BAT file.

When the installation is complete, the following icons appear:

- A Program Folder called Ultimedia Facilities containing Icons for:
  - Workstation Configuration
  - User Preferences
  - Cooperative Process Management
- A Program Icon on the Desktop called Multimedia Catalog.
- The icon for the Ultimedia Facilities folder
- A Program Group called Ultimedia Facilities containing Icons for:
  - Workstation Configuration
  - User Preferences
  - Cooperative Process Management
  - Multimedia Catalog

Each workstation has two configuration notebooks, the Workstation Configuration notebook and the User Preferences notebook, that control how Ultimedia Facilities operates on that workstation. Each of these notebooks has an icon that appears in the Ultimedia Facilities folder. Refer to *Ultimedia System Facilities User Guide* SC41-3541, for information on how to configure these notebooks.

Installing Ultimedia Facilities on a PWS with OS/2

Before you begin the installation, be sure the following Client Access/400 programs are started on the workstation:

Program	Description
STARTRTR	Client Access/400 Router
STARTFLR	Client Access/400 Shared Folders Support
CFGFLR	Client Access/400 Configure Shared Folders

For detailed information on starting the Client Access/400 programs, refer to *Client Access/400 for OS/2 Setup*, SC41-3520.

Running the Installation Program in the OS/2 Environment

To install the Ultimedia Facilities product files on your PWS, follow these steps :

1. At an OS/2 command prompt, type the following:

   I:\QUMBOS2\USFINST.EXE

   Where *I:* is the name of the logical drive assigned to all shared folders on the AS/400 system, *\QUMBOS2* is the name of the folder on the AS/400 that contains the Ultimedia System Facilities OS/2 programs, and *USFINST.EXE* is the name of the installation program.

   The Installation window appears.

2. At this point, you can choose to exit the installation program, request help, or continue. Select **Continue** to proceed. More files are loaded, then the Install window appears. This window includes the following check boxes:

- Update CONFIG.SYS

   If you select this check box, Ultimedia Facilities will automatically make changes in the CONFIG.SYS file that are required for the feature to run on the workstation. If you do not select this box, you must change the CONFIG.SYS file yourself.

   Note: Ultimedia Facilities creates a file called CONFIG.ADD that you can refer to if you choose to make the changes to the CONFIG.SYS file yourself.

- Overwrite files

   If you select this check box, the system automatically writes over an y workstation file that has the same name as any of the Ultimedia Facilities product files. If you do not select this box, the system displays a message when it encounters an existing file with the same name as one of the product files.

Select the options you want, and then select **OK**. The Install–directories window appears, which displays a list box of product components and three directory list boxes. Figure 2-2 shows a sample of an Install–directories window.
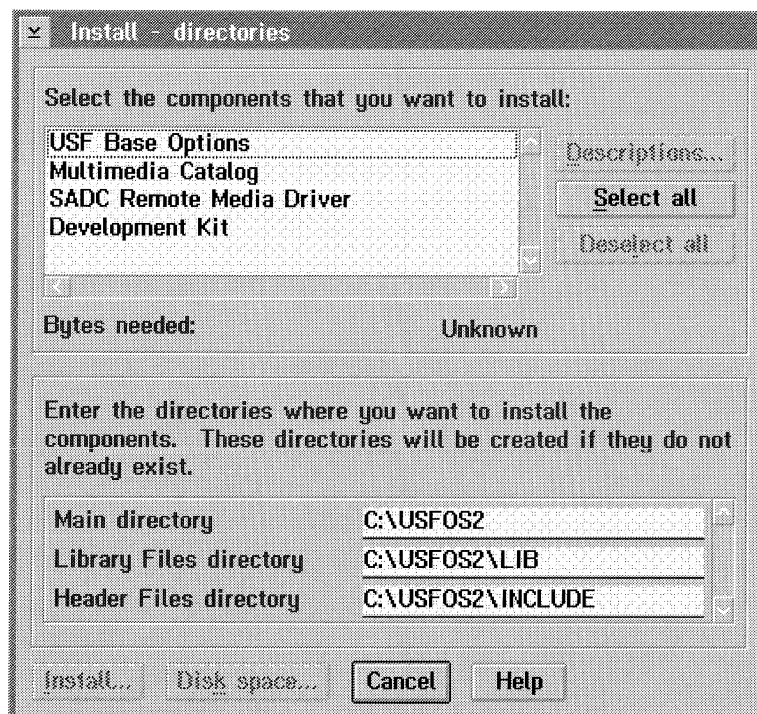
Figure 2-2. The Install–directories Window in the OS/2 Environment

3. If you want to change the drives or directories in which the product files are installed, select them in the list boxes in the Install–directories window.

4. Select **Install**. The Install–progress window appears. It displays the names of the files being installed and a graphical representation of the progress of the installation. When all of the the files are installed, the Installation and Maintenance window appears to confirm completion of the installation. Select **OK** to close the window.

5. To use Ultimedia Facilities, restart the workstation. This activates the changes to the CONFIG.SYS file.

When the installation is complete, the following icons appear on the OS/2 desktop:

- A Program Folder called Ultimedia Facilities containing Icons for:
  - Workstation Configuration
  - User Preferences
  - Cooperative Process Management
- A Program Icon on the Desktop called Multimedia Catalog.

Each workstation has two configuration notebooks, the Workstation Configuration notebook and the User Preferences notebook, that control how Ultimedia Facilities operates on that workstation. Each of these notebooks has an icon that appears in the Ultimedia Facilities folder. Refer to *Ultimedia System Facilities User Guide* SC41-3541, for information on how to configure these notebooks.

Chapter 3. Using Ultimedia System Facilities SADC Capabilities

With the use of Ultimedia System Facilities tools and application programming interfaces (APIs), you can dynamically share access to multimedia sources and devices among the users on your network. Multimedia devices can be located centrally and connected in a Shared Analog Device Control (SADC) network that includes video switches that send signals to many users. Using Ultimedia Facilities network management APIs, you can attach, group, and detach devices to manage the SADC network.

Users can share multimedia sources, such as videodiscs and videocassettes, without physically handling the object or having players attached to dedicated workstations. You can choose to locate all multimedia devices in a secure and remote room, or media closet, to provide physical control. Using a media closet ensures that resources are available when scheduled and safeguards your equipment.

The network of analog devices you control using the Ultimedia Facilities feature is independent of the digital network on which multimedia object information is exchanged between the AS/400 system and the workstations. This helps prevent disruption of communications throughout the network. In addition, Ultimedia Facilities uses an SADC server for analog devices to isolate much of the communications burden from the AS/400 system.

Controlling an Analog Video Network

On an SADC network, a single signal can be distributed to many users Using the Ultimedia Facilities APIs, you can develop applications that control devices and route the signal to the appropriate users' workstations. Refer to *Ultimedia System Facilities Programming*, SC41-3652 for information on the Ultimedia Facilities APIs.

The Ultimedia Facilities SADC feature uses R-232 communications to send commands to an SADC server. The SADC server routes the commands to controlled devices throughout the video network. Devices in the SADC network provide video signals for delivery to users. The Ultimedia Facilities feature in turn uses the Client Access/400 program, 5250 emulation, and a local area network (LAN) to communicate with the workstations where users view the video delivered by the Ultimedia Facilities feature. (You can also display video on a video target, such as a TV set.)

The following describes the environment for an AS/400-based Ultimedia Facilities application:

Analog video network
Consists of video source and target devices, one or more video switches, and one or more SADC servers

Video switch
Routes video signals from source devices to target devices. The switch receives commands that are routed by the SADC server from an AS/400 application. The video switch uses these commands to control the routing of video signals.

SADC server

A personal computer that handles communications between the AS/400 system and all controlled equipment on an SADC network. It is connected to the AS/400 system, the video switches, and the controlled analog devices in your SADC network. The SADC server receives commands from the AS/400 through an asynchronous line and sends the commands to the appropriate video device or switch. The SADC server polls each attached device to determine device status and to obtain any data from the analog devices.

Ultimedia Facilities workstations

Personal computers running the Client Access/400 program and either the OS/2 or Microsoft Windows programs. Each Ultimedia Facilities workstation can be enabled for video using a video display adapter. The AS/400 application can allow users to control their own video windows and to control devices on the SADC network.

The following is an example of how such a system might work:

1. A user at a Ultimedia Facilities workstation requests an analog video presentation. An AS/400 user-written application issues the Ultimedia Facilities commands to satisfy the request.

2. If necessary, the application calls Ultimedia Facilities APIs to open, change, or close a video window on the user's workstation.

3. The application calls a Ultimedia Facilities API to make the connection between the video device and the workstation using the video switch.

4. The application then calls a Ultimedia Facilities API to send a Play command to an SADC server. The APIs use definitions from the Ultimedia Facilities configuration on the AS/400 system describe each controlled device in your network.

5. The SADC server sends the Play command to the appropriate device and returns information to the AS/400 system.

6. The device sends the video signal through the video switch to the user's workstation, where it is displayed in the video window.

Note: You can use the Ultimedia Facilities feature to control the delivery of video to workstations that are not equipped with Ultimedia Facilities. However, these workstations cannot use the window control capabilities that are provided by the Ultimedia Facilities APIs.

SADC servers, video switches, analog video devices, and the connections between these components and the AS/400 must be defined in the Ultimedia Facilities configuration on the AS/400. To learn how to define these components, see Chapter 4, "Defining a Shared Analog Device Control Network" on page 4-1.

Equipping an SADC Network

If you are establishing a Ultimedia Facilities Shared Analog Device Control network, you need some equipment and programs beyond those needed for Ultimedia Facilities alone.

SADC Server Equipment Requirements

The SADC server runs on a personal computer with Micro Channel architecture equipped with the following:

- A hard disk or diskette drive

- Expansion slots for adapter cards to connect the video network. The number of asynchronous ports you can have depends on the number of slots available for adapters. Therefore, the computer you select will determine the number of devices that can be connected.

Table 3-1 provides a guide to the number of controlled video devices that you can attach to each SADC server.

Table   3-1. Maximum Number of Controllable Devices Per SADC Server

Adapter	Ports on Adapter	Maximum Adapters per Server (1)	Maximum Device Ports per Server (2)
Boca** MCA Serial/Parallel Card	2	4	8
Arnet** Multi-8 MultiPort adapter card	8	1	8
IBM Dual Asynchronous adapter card	2	4	8
IBM Multiprotocol adapter card	1	8	8

Notes:

1. Based on PS/2 Model 80. Please consult your PS/2 documentation to determine the maximum number of available slots on your computer.
2. Assumes one port is used to connect to the AS/400 system. A port is required for each controllable video device and video switch.

You need adapter cards that provide the following connections from the SADC server :

- One RS-232 port to connect to the AS/400 system
- One RS-232 port to connect to each video switch on the network
- One RS-232 port to connect to each controllable device on the network

You can choose from the following adapters:

- Boca MCA Serial/Parallel Card, from Boca Research, Inc., part number BMC PS@, which has 2 ports
- Arnet Multi-8 MultiPort adapter card with the D-sub connector box, both from Arnet Corporation, which provides 8 ports
- IBM Dual Asynchronous adapter card
- IBM Multiprotocol adapter card

SADC Server Program Requirements

The SADC server requires the following programs:

- Disk Operating System (DOS), Version 4.0 or higher
- Device drivers for the communications adapter cards installed in the server
- PS/2 TV unit programs, if a PS/2 TV unit is attached as a tuner
- The SADC server program

You must download the SADC server program to a diskette using a work station with the Client Access/400 program. Then you use the diskette to install the SADC server program on the server.

Setting Up an SADC Server

To set up a PS/2 computer as the SADC server, you must install the DOS program, the adapter cards and their device drivers, and the SADC server program.

1. Install the DOS program, Version 4.0 or higher.

2. Install the adapter cards to connect the video devices and the video switch to the SADC server.

3. Install the device drivers for each adapter and perform any configuration required.

4. Use asynchronous cables to connect an RS-232 port on the AS/400 system with the communications port 1 on the PS/2 computer. You must use a null modem adapter when connecting the cable to the PS/2 computer.

5. Using a work station running Client Access/400 and attached to an AS/400 system running Ultimedia Facilities, copy the FZZMVSVR.EXE file from the root directory in the QUMBFL2 shared folder to a diskette.

6. The FZZMVSVR.EXE program requires two additional files before it can run. The file, FZZMVSVR.DAT, contains the interrupt number and I/O address for the serial ports on the computer. The file has the following format:

   ```
   interrupt-number  I/O address
   ```

   Two example files are supplied.

   ```
   BOCA.DAT  Shows support for four BOCA MCA Serial/Parallel cards
   ARNET.DAT Shows support for an Arnet Multi-8 Card
   ```

   Copy the appropriate file (either BOCA.DAT or ARNET.DAT) from the QUMBFLR shared folder into a file named FZZMVSVR.DAT. Edit the file using a text editor or the DOS EDLIN program so that it contains the number of ports found on your system.

   The file FZZMVSVR.MR0 must also be copied from the MRI subdirectory that is in the QUMBFL2 shared folder into the same directory that contains the FZZMVSVR.EXE program.

7. If a PS/2 TV unit is connected to the SADC Server as a source device install the programs provided with the PS/2 TV unit onto the PS/2 computer and add the path name for the directory containing the programs to the PATH= statement in the AUTOEXEC.BAT file.

8. To start the SADC server program type the following command and press enter.

   ```
   FZZMVSVR.EXE
   ```

   Note: The FZZMVSVR.EXE program has two optional parameters:
   /D Displays a log of the functions that FZZMVSVR.EXE performs.
   /P Prints a log of the functions that FZZMVSVR.EXE performs to a file called FZZMVSVR.LOG.

After making the changes described, start the SADC server program. As the server program, FZZMVSVR.EXE, starts it displays a copyrighted SADC title screen with the message Waiting for initialization...at the bottom.

When you start the SADC program on the AS/400 using the STRUSF command, the Waiting for initialization ... message is replaced with initialization messages as the SADC program initializes the COM Ports in the PS/2 computer.

Video Switch Requirements

The video switch must be controllable using RS-232 communications. The Ultimedia Facilities program provides device definitions for the following video switches:

- Sigma** Model 21888 SV, 8 by 8 Stereo Routing Switcher
- AutoPatch** Model 4XDM 0000 V1A2, 8 by 8 Stereo Signal Routing Switch
- Ancor** Model CXT/100-44 Model 8, 8 by 8 Fiber Optic Router Switch

You also can define other video router switches and use them in a SADC network, but only if the video router switch can be controlled using RS-232 communications and can be defined to the SADC program.

Selecting Analog Video Devices

Your analog video network can include devices with the following characteristics:

Controllable video source device
Provides a video signal to the SADC network, uses RS-232 communications for device control, and is connected to the SADC server to receive commands from Ultimedia Facilities. The video device must have a video-out connection, which is cabled to the input side of the video switch.

Supported types of analog video source devices include:

- Videocassette recorders (VCRs)

  VCRs can play videocassette tapes and can record video and play it back. The Ultimedia Facilities feature provides definitions for two models of VHS-format VCRs. It is possible to add support for other VCRs that can be controlled using RS-232 communications, including those with S-VHS and Hi-8 millimeter (mm) formats.

- Videodisc players

  The high quality and durability of videodiscs and the ability to produce them at reasonable cost make videodiscs increasingly popular. The Ultimedia Facilities feature provides definitions for two models of videodisc players. You also can add support for other videodisc players that can be controlled using RS-232 communications, including those with constant linear velocity (CLV) and constant angular velocity (CAV) formats.

- Video conferencing codecs

  The Ultimedia Facilities feature provides support for a video conferencing codec. The support allows you to share the video conferencing equipment between users. You can also add support for other codecs that can be controlled using RS-232 communications.

- Broadcast television signal tuners

  A wide variety of television signal sources, including cable television (CATV), satellite, ultrahigh frequency (UHF), very high frequency (VHF), and private sources can be used. The Ultimedia Facilities feature provides support to set the channel on the PS/2 TV controllable tuner. You can also add support for other tuners that can be controlled using R-232 communications, or you can use non-controllable tuners.

Non-controllable video source device

Provides a video signal to the SADC network through a video-out connection which is cabled to the video switch. The Ultimedia Facilities feature cannot manipulate the functions of non-controllable video source devices. Examples of non-controllable source devices include video cameras and video scan converters.

Controllable video target device

Receives a video signal from a source device in the SADC network and can be controlled by commands from Ultimedia Facilities. An example of a controllable video target device is a videocassette recorder that is used to record a broadcast.

Video display device

Receives a video signal from a source device in the SADC network for display to users. Supported display devices, such as the ActionMedia II adapter can be controlled using the Ultimedia Facilities APIs for controlling windows. Other display devices, such as TV sets, can also be used (without window control).

Supported types of video display devices include:

- M-Motion adapter

  The M-Motion adapter is a display adapter that accepts composite (baseband) video signals and displays full-motion video on the video graphics array (VGA) or extended graphics array (EGA) monitor of a PS/2 computer.

- ActionMedia II adapter

  The ActionMedia II adapter is a digital video adapter card that can display composite video signals and can convert video signals from analog to digital format and the reverse. The ActionMedia II adapter is frequently used with CD-ROM discs.

- Video Blaster

  The Video Blaster is the digital video card that is supported in the Windows environment.

Selecting Cable and Distribution Methods

The SADC network, manages and controlled by a Ultimedia System Facilities application, can distribute analog video signals using any of the following:

- Baseband or composite video distribution

  You can use composite video distribution to deliver video to users within a limited physical area. Composite video distribution is a low-cost choice. Many video devices provide composite video signal output, and video switches are readily available for connecting the video source devices to workstations on the SADC network. However, composite video can limit the distance between source and users, which can limit expansion.

- Broadband or cable television (CATV) distribution

  You can use CATV distribution to deliver video to many users, to users in several buildings, or to deliver a number of video a number of video channels to all users. CATV is a moderately priced choice. However, installing a CATV distribution network requires expertise in CATV technology.

Using the F-Coupler device, CATV signals can be combined on the same shielded, twisted-pair cable with token-ring signals for delivery to the workstation. This can reduce or eliminate rewiring costs normally involved with video delivery networks. The F-Coupler device is a device that combines or separates a radio-frequency CATV video signal and a token-ring LAN digital data signal that are carried on shielded twisted-pair wiring.

With F-Coupler devices, you can use the existing wiring lobes on a token-ring LAN to deliver video signals to workstations on the network while providing normal token-ring operations.

Note: The F-Coupler device can only be used from the wiring closet to the office. It cannot be used on the backbone of the network.

- Fiber optic distribution

  You can use fiber optic distribution to deliver video with the possibility of integrating voice, data, and video in the same network. Fiber optic distribution is a future-oriented choice.

  The technology to distribute video using fiber optic cabling is commercially available, but the switching and modulation equipment is costly. Installing a fiber optic distribution network requires expertise in fiber optic technology. However, fiber optic distribution is reliable, provides either a baseband or broadband signal, and can distribute video to users in several buildings.

Some choices for cabling an SADC network include the following:

- Cable television head-on equipment to place the video-out signal from several sources on a broadband cable to deliver channels from which users can select.

- Wiring closets in which connections for each workstation and source connections come together. Wiring closets can include one or more SADC servers connected to the AS/400 system directly or through a modem.

- F-Coupler devices which combine or separate a broadband video signal and digital data (token-ring) signal on a single twisted-pair cable. With F-Coupler devices, video can be delivered without requiring additional wiring.

- Composite wiring, including amplifiers to boost composite video signals, that must travel more than a few hundred feet to the target, such as a workstation or a videocassette recorder.

- Fiber optic cable for very long cable runs.

Chapter 4. Defining a Shared Analog Device Control Network

You can add the presentation of analog video to your AS/400 applications through the use of the Shared Analog Device Control (SADC) component of Ultimedia Facilities. SADC provides commands and application program interfaces (APIs) that you can use in an AS/400 application to accomplish the following:

- Install video devices (such as videodisc players, videocassette players (VCRs), and television tuners) in a central location and connect them to a network through a router switch that sends video signals to multiple users. You can manage the video network by attaching, grouping, and detaching video devices through the use of SADC APIs.

- Enable network users to share video media without physically handling the discs or cassettes and without having a video player device attached to a dedicated viewing station.

The network of video devices you control using SADC is independent of your digital network; this prevents disruption of communications between the AS/400 and the workstations. Because SADC uses a media device controller, much of the communications load is relieved from the AS/400.

A Sample SADC Configuration

Figure 4-1 shows a sample configuration of a basic Shared Analog Device Control network (SADC).
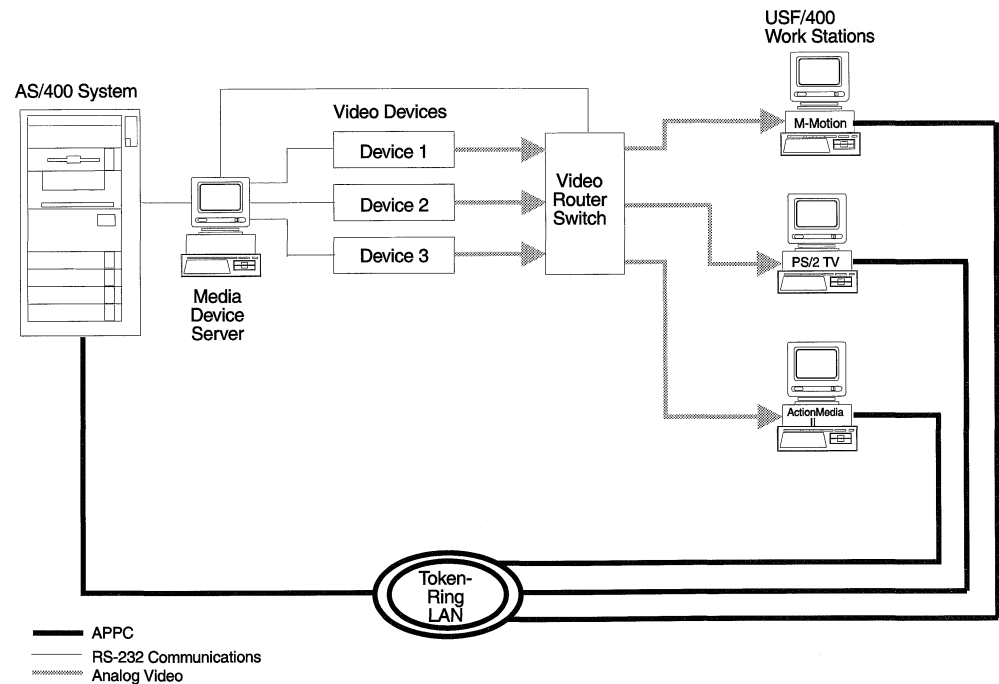

Figure 4-1. A Sample SADC Configuration

This sample supports a limited number of video devices. It uses one video switch and a Personal System/2 (PS/2.) PWS with an asynchronous communications

4-1

adapter card as the SADC server. The video switch is directly connected to the source and target devices using baseband video cabling.

This type of video network organization is typical when you are using a small number of controlled source or target devices. The number of controlled devices you can use is limited by the number of slots in the PS/2 media device controller and ports on the PS/2's adapter cards.

Configuring SADC on the AS/400

To establish a Shared Analog Device Control (SADC) network, you must perform the following Ultimedia System Facilities configuration tasks on the AS/400 system:

1. Define the SADC servers that manage communications between the AS/400 system and the devices (such as videodisc players and videocassette recorders) on the SADC network.

2. Define the video switches that route video signals from source devices to target devices under the control of an AS/400 application.

3. Define the devices that the people using the SADC network will share.

4. Define the connections between the devices, the video switch, and the work-stations on the SADC network.

Defining an SADC Server

Among the key components of an SADC network is the SADC server, which manages communications between the AS/400 system and the devices on the network. "Controlling an Analog Video Network" on page 3-1 describes the function of SADC servers in more detail, "SADC Server Equipment Requirements" on page 3-3 and "SADC Server Program Requirements" on page 3-3 describe the equipment and programs required for SADC servers, and " Setting Up an SADC Server" on page 3-4 describes how to install the Ultimedia Facilities server program on an SADC server. This chapter details the steps required to define an SADC server in the Ultimedia Facilities configuration on the AS/400 system.

To define an SADC server, follow these steps:

1. At the ready prompt on the AS/400, type **WRKUSFSVRE**. The Work with USF Servers display appears. The display lists the SADC servers that are config- ured on the AS/400. If you are defining an SADC network for the first time, this list is empty.

2. Type **1** for Add in the **Opt** column; then type the name that you are assigning to the server. Be sure to assign a name that is not assigned to any existing server, line, controller, or device on the system. The following rules apply to SADC server names:

   • The name must have no more than eight characters.

   • The first character must be an alphabetic character (a–z, A–Z) or a special character (@, $, #).

   • The remaining characters can be any combination of alphanumeric charac- ters (a–z, A–Z, 0–9) and special characters (@, $, #).

3. When you have typed the server name, press **Enter**. The Add USF Server Entry (ADDUSFSVRE) display appears.

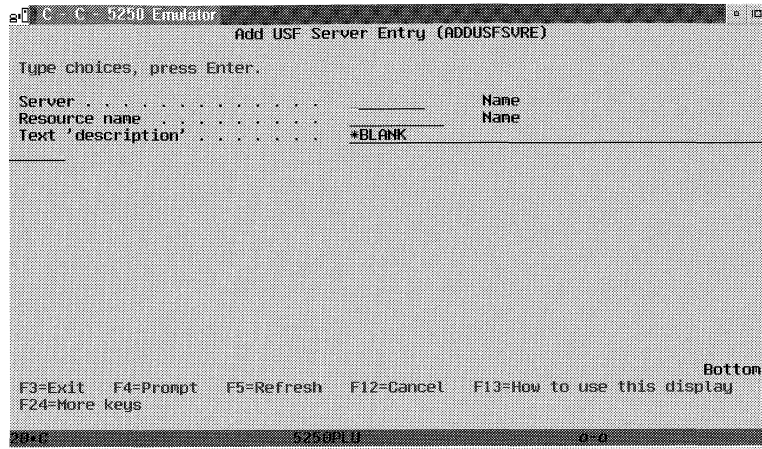Figure 4-2 shows an example of the Add USF Server Entry display.

Figure 4-2. The Add USF Server Entry (ADDUSFSVRE) Display

Complete the entries in the display as follows:

1. In **Resource name**, type the name of the AS/400 asynchronous communications line to be used to communicate with the multimedia server.

   Note: You must define the asynchronous line in the AS/400 configuration *before* you define the SADC server. Refer to *Communications Configuration*, SC41-3401 for information on configuring asynchronous lines.

2. Type a description (up to 50 characters long) that will help you to identify the server when you work with the configuration in the future.

3. Press **Enter**. The SADC server is added to the configuration and you return to the Work with USF Servers display.

Changing and Removing SADC Server Definitions

Use the Work with USF Servers display to change or remove a definition for an SADC server. To view the display, type **WRKUSFSRVE** at the AS/400 Ready prompt. The display lists the names of the SADC servers that have been defined within the Ultimedia Facilities configuration on the AS/400 system.

To change a definition, follow these steps:

1. In the Work with USF Servers display, type **2** in the **Opt** column next to the name of the server definition that you want to change. Then press **Enter**. The Change USF Server Entry display appears.

2. Type the information you want to change in the appropriate fields of the Change display. To learn about the fields and how to use the display, see "Defining an SADC Server" on page 4-2.

3. Press **Enter**. The definition is changed and you return to the Work with USF Servers display.

To remove a definition, follow these steps:

1. In the Work with USF Servers display, type **4** in the **Opt** column next to the name of the device that you want to remove. The Confirm Remove of USF Server display appears, showing you information about the device definition you selected.

2. Press **Enter** to delete the definition.

Defining a Video Switch

Among the key components of an SADC network is the video switch, which routes video signals from source devices to target devices in response to commands from an application on the AS/400 system. "Controlling an Analog Video Network" on page 3-1 provides more detail about the function of video switches in SADC networks, and "Video Switch Requirements" on page 3-5 describes video switch equipment. This chapter details the steps required to define a video switch in the Ultimedia Facilities configuration on the AS/400 system.

To the AS/400, the video switch is essentially the same as any other multimedia device. Therefore, you use the same displays that you use to define a device.

To configure a video switch, follow these steps:

1. At the ready prompt on the AS/400, type **WRKUSFDEVE**. View 1 of the Work with USF Devices display appears. The display lists the devices that are configured on the AS/400 system.

   Note: There are four views of the Work with USF Devices display. Each view contains different information that has been defined about each device. "Viewing Device Definitions in the Work with USF Devices Display" on page 4-9 describes the information that is displayed in each of the views.

   If a you are establishing a new SADC network, and no devices have been defined, the Work with USF Devices display is empty.

2. Type **1** for Add in the **Opt** column; then type   the name you are assigning to the video switch. Be sure to assign a name that is not assigned to any existing device on the system. The following rules apply to video switch names:

   - The name must have no more than twenty characters.

   - The first character must be an alphabetic character (a–z, A–Z) or a special character (@, $, #).

   - The remaining characters can be any combination of alphanumeric characters (a–z, A–Z, 0–9) and special characters (@, $, #).

   When you have typed the video switch name, press **Enter**. The Add USF Device Entry display appears. Figure 4-3 on page 4-5 shows an example of the Add USF. Device Entry display.

Figure 4-3. The Add USF Device Entry Display

Complete the entries in the display as follows:

1. In **Device type**, type ***SWITCH** to indicate you are defining a video switch.

2. Type the name of the AS/400 exit program that controls the video switch. You can use a custom program that you or someone else creates for the switch, or you can type the name of one of the following exit programs supplied by Ultimedia Facilities:

   *ANCOR Ancor Model CXT/100-44 Model 8 video switch

   *AUTOPATCH Autopatch Model 4XDM 000 V1A2 video switch

   *SIGMA Sigma Model 21888 video switch

3. If you are using a custom exit program, type the name of the library that contains the exit program. If you are using one of the supplied exit programs, you can leave the **Library** field blank.

4. In **Remote location** and **Remote network identifier**, type ***NONE**.

5. Press **Enter**. Additional fields appear in the Add USF Device Entry display. Figure 4-4 shows an example of the display with the additional fields.
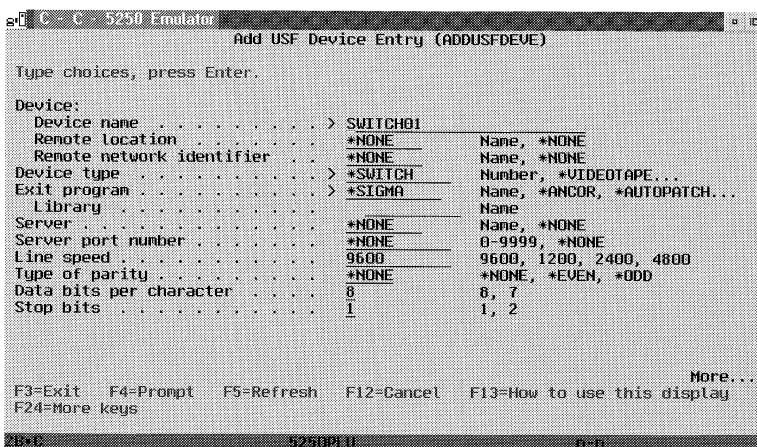
Figure 4-4. The Add USF Device Entry Display with Additional Fields (Version1)

6. In **Server**, type the name of the SADC server that manages communication between this video switch and the AS/400 system.

Note: Enter the name of an existing SADC server. If you have not yet defined the server for this video switch, you must do so before you can define the switch. To learn how to define an SADC server, see "Defining an SADC Server" on page 4-2.

Note: You can get the values for line speed, type of parity, data bits per character, and stop bits from the documentation for your video switch.

7. Press **Page Down**. A second Add Ultimedia System Facilities Device Entry display appears.

8. In the **Calendar** fields, type ***NONE** next to **Name**. You can leave the other **Calendar** fields blank.

9. Type a description (up to 50 characters long) that will help you to identify the video switch when you work with the configuration in the future.

10. Press **Enter**. The switch is added to the configuration and you return to the Work with USF Devices display.

Defining Multimedia Devices

Each device that is shared by the users on your SADC network must be defined in the Ultimedia Facilities configuration on the AS/400. "Selecting Analog Video Devices" on page 3-5 describes the types of devices you can include in your SADC network.

To define a device, follow these steps:

1. At the ready prompt on the AS/400 system, type **WRKUSFDEVE**. View 1 of the Work with USF Devices display appears.

   Note: There are four views of the Work with USF Devices display. Each view contains different information that has been defined about each device. "Viewing Device Definitions in the Work with USF Devices Display" on page 4-9 describes the information that is displayed in each of the views.

   If you are establishing a new SADC network, and no devices have been defined, the Work with USF Devices display is empty.

2. Type **1** for Add in the **Opt** column; then type the name you are assigning to the video device. Be sure to assign a name that is not assigned to any existing device on the system.

   The following rules apply to device names:

   • The name must have no more than twenty characters.

   • The first character must be an alphabetic character (a–z, A–Z) or a special character (@, $, #).

   • The remaining characters can be any combination of alphanumeric characters (a–z, A–Z, 0–9) and special characters (@, $, #).

   When you have typed the device name, press **Enter**. The Add USF Device Entry display appears.

   Figure 4-3 on page 4-5 shows an example of the Add USF Device display. Complete the entries in the display as follows:
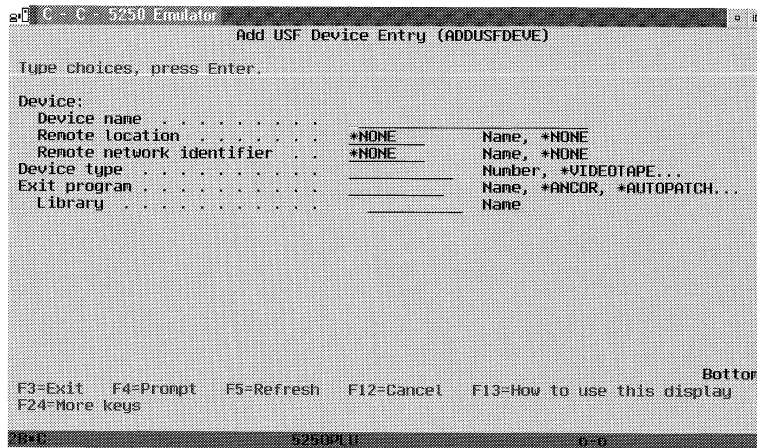
1. In **Device type**, indicate the type of device that you are configuring. For a list of device designations, press **F4**. The Specify Value for Parameter DEVTYPE display appears. If the type of device you are defining is not explicitly listed in this display, input an integer value that indicates the type of device in **Device type**. Use a different number for each device type that you add.

2. Type the name of the AS/400 exit program that controls the device. You can use a custom program that you or someone else creates for the device, or you can type the name of one of the following exit programs supplied by Ultimedia Facilities:

   *JVC JVC** Model BR-S605U VCR

   *NEC NEC** Model PV-S98A VCR

   *P2200 Pioneer** Model LD-V2200 videodisc player

   *P8000 Pioneer Model LD-V8000 videodisc player

   *SONY Sony** 1450 videodisc player

   *PICTEL PictureTel** Model C4000 Codec

   If the device cannot be controlled by Ultimedia Facilities, type ***NONCTBL**. A video camera that runs continuously is an example of device that is not controllable.

3. If you are using a custom exit program, type the name of the library that contains the exit program. If you are using one of the supplied exit programs, or if the device is noncontrollable, you can leave the **Library** field blank.

4. If the device has a logical connection to a workstation, type the name of the workstation as it is known to the AS/400 system in **Remote location**

5. Type the ID of the digital network that connects the workstation to the AS/400 system in **Remote network identifier**.

   Note: The name of a workstation (its remote control point name) is associated with its controller name in the AS/400 configuration.

   If the device does *not* have a logical connection to a workstation, type ***NONE** in these fields.

6. Press **Enter**. Additional fields appear in the Add USF Device Entry display.

The additional entries that appear depend on whether the device has a logical connection to a workstation.

- If the device has a logical connection to a workstation (you typed a workstation name in **Remote location**), the additional fields are described in "Additional Fields in the Add USF Device Entry Display — Version 2" on page 4-8

- If it does not (you typed ***NONE** in the **Remote location** and **Remote network identifier** fields), the additional fields are described in "Additional Fields in the Add USF Device Entry Display — Version 1."

Additional Fields in the Add USF Device Entry Display — Version 1

If the device does not have a logical connection to a workstation (you typed ***NONE** in the **Remote location** and **Remote network identifier** fields), the additional fields appear as they do in Figure 4-4 on page 4-5. Complete the fields as follows:

1. In **Server**, type the name of the SADC server that manages communication between this device and the AS/400 system.

Note: Enter the name of an existing SADC server. If you have not yet defined the server for this device, you must do so before you can define the device. To learn how to define an SADC server, see "Defining an SADC Server" on page 4-2.

2. In **Server port number**, type the number of the serial port on the SADC server through which connections to this device are established.

3. In **Line speed**, type the baud rate at which the device transmits data.

4. Type the parity type (***ODD**, ***EVEN**, or ***NONE**) that applies to communication with the device.

5. Type the number of data bits (7 or 8) used for each character in the protocol of the device.

6. Type the number of stop bits (1 or 2) to be inserted at the end of each byte of transmission.

   Note: You can get the values for line speed, parity type, data bits per character, and stop bits from the documentation for your device.

7. Press **Page Down**. A second Add USF Device Entry display appears.

8. The **Calendar** fields apply to devices that can be scheduled by using an OfficeVision/400* calendar.

   - In **Name**, type the name of the OfficeVision calendar that people use to schedule time on the device.

   - In **User or List ID**, type the AS/400 system directory User ID and address of the person to whom the calendar is assigned. You can find this information in the AS/400 system directory. To use the directory, type **WRKDIRE** at the AS/400 Ready prompt or check with your system administrator.

   To learn more about OfficeVision calendars, refer to *Using OfficeVision/400*, SH21-0697.

   If the device is not associated with an OfficeVision calendar, type ***NONE** next to **Name**. You can leave the other **Calendar** fields blank.

9. Type a description (up to 50 characters long) that will help you to identify the device when you work with the configuration in the future.

10. Press **Enter**. The device is added to the configuration and you return to the Work with USF Devices display.

Additional Fields in the Add USF Device Entry Display — Version 2

If the device has a logical connection to a workstation (you typed a workstation name in **Remote location**), the additional fields appear as they do in Figure 4-5 on page 4-9.
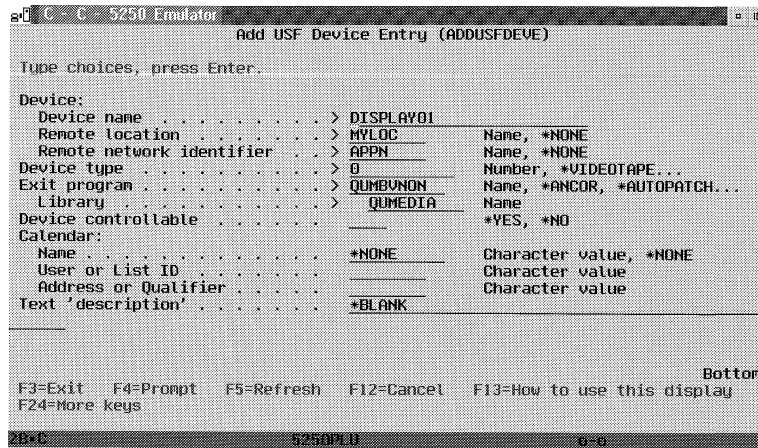
Figure 4-5. The Add USF Device Entry Display with Additional Fields (Version 2)

Complete the fields as follows:

1. Indicate whether the device can be controlled by Ultimedia Facilities. Type ***YES** or ***NO**. A video camera that runs continuously is an example of device that is not controllable. A video cassette recorder that you can activate from your workstation using Ultimedia Facilities is an example of a device that is controllable.

2. The **Calendar** fields apply to devices that can be scheduled by using an OfficeVision calendar.

   • In **Name**, type the name of the OfficeVision calendar that people use to schedule time on the device.

   • In **User or List ID**, type the AS/400 system directory User ID and address of the person to whom the calendar is assigned. You can find this information in the AS/400 system directory. To use the directory, type **WRKDIRE** at the AS/400 Ready prompt or check with your system administrator.

   To learn more about OfficeVision calendars, refer to *Using OfficeVision/400*, SH21-0697.

   If the device is not associated with an OfficeVision calendar, type ***NONE** next to **Name**. You can leave the other **Calendar** fields blank.

3. Type a description (up to 50 characters long) that will help you to identify the device when you work with the configuration in the future.

4. Press **Enter**. The device is added to the configuration and you return to the Work with Multimedia Devices display.

Viewing Device Definitions in the Work with USF Devices Display

The Work with USF Devices display lists all of the devices that are defined in the Ultimedia Facilities configuration on the AS/400 system. The display has four different views, each of which displays different information that has been defined for each of the devices in the list.

To view the display, type **WRKUSFDEVE** at the AS/400 Ready prompt. View 1 of the display appears. Figure 4-6 on page 4-10 shows an example of the display.
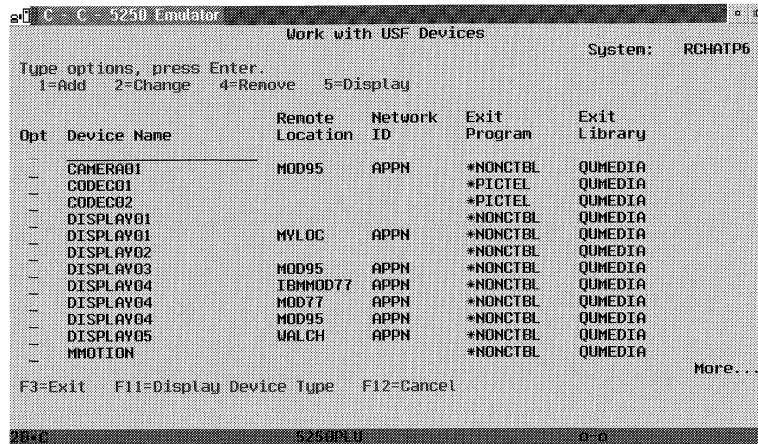
```
 ▆▆ C - C - 5250 Emulator                                          ▫ ▫
                       Work with USF Devices
                                                  System:   RCHATP6
 Type options, press Enter.
    1=Add    2=Change    4=Remove    5=Display

                          Remote    Network   Exit       Exit
 Opt  Device Name         Location  ID        Program    Library

   _   CAMERA01           MOD95     APPN      *NONCTBL   QUMEDIA
   _   CODEC01                                *PICTEL    QUMEDIA
   _   CODEC02                                *PICTEL    QUMEDIA
   _   DISPLAY01                              *NONCTBL   QUMEDIA
   _   DISPLAY01          MYLOC     APPN      *NONCTBL   QUMEDIA
   _   DISPLAY02                              *NONCTBL   QUMEDIA
   _   DISPLAY03          MOD95     APPN      *NONCTBL   QUMEDIA
   _   DISPLAY04          IBMMOD77  APPN      *NONCTBL   QUMEDIA
   _   DISPLAY04          MOD77     APPN      *NONCTBL   QUMEDIA
   _   DISPLAY04          MOD95     APPN      *NONCTBL   QUMEDIA
   _   DISPLAY05          WALCH     APPN      *NONCTBL   QUMEDIA
   _   MMOTION                                *NONCTBL   QUMEDIA
                                                          More...
 F3=Exit   F11=Display Device Type   F12=Cancel
```

Figure 4-6. The Work with Ultimedia System Facilities Devices Display, View 1

To display each of the views, press **F11**. The following information appears in the views:

View 1

- **Remote Location**

  The name of the workstation, as it is known to the AS/400 system, to which the device has a logical connection. If the device does not have a logical connection to a workstation, this field is blank.

- **Network ID**

  The name of the digital network that connects the workstation named in **Remote location** to the AS/400 system. If the device in the list does not have a logical connection to a workstation, this field is blank.

- **Exit Program**

  The name of the exit program that controls the device. The following are the exit programs that Ultimedia Facilities supplies:

  *ANCOR Ancor Model CXT/100-44 Model 8 video switch

  *AUTOPATCH Autopatch Model 4XDM 000 V1A2 video switch

  *SIGMA Sigma Model 21888 video switch

  *JVC JVC Model BR-S605U VCR

  *NEC NEC** Model PV-S98A VCR

  *P2200 Pioneer** Model LD-V2200 videodisc player

  *P8000 Pioneer Model LD-V8000 videodisc player

  *SONY Sony** 1450 videodisc player

  *PICTEL PictureTel Model C4000 Codec

  This field might also display the names of an exit program that is not supplied by Ultimedia Facilities.

- **Exit Library**

  The name of the library in which the exit program can be found.

View 2

- **Device Type**

  This column can display any of the following values:
  - * VIDEOTAPE
  - * VIDEODISC
  - * SWITCH
  - * TUNER
  - * CODEC

  The column might also display a number that has been assigned to a device type other than those in the above list.

- **PC Ctrl**

  Indicates whether the device can be controlled by Ultimedia Facilities

- **Calendar**

  These fields apply to devices that can be scheduled by using an OfficeVision calendar. **Name** displays the name of the OfficeVision calendar that people use to schedule time on the device. **User ID** and **Address** display the AS/400 system directory ID and address of the person to whom the calendar is assigned. To learn more about OfficeVision calendars, refer to *Learning about OfficeVision/400*, SC41-9615.

  If the device is not associated with an OfficeVision calendar, these fields are blank.

View 3

- **Server Name**

  The name of the SADC serve that controls communication between the device and the AS/400 system.

- **Server Port**

  The number of the serial port on the SADC server through which connections to this device are established.

- **Baud Rate**

  The line speed at which the device transmits data.

- **Parity**

  The parity type (***ODD**, ***EVEN**, or ***NONE**) that applies to communication with the device.

- **Data Bits**

  The number of data bits (7 or 8) used for each character in the protocol of the device.

- **Stop Bits**

  The number of stop bits (1 or 2) to be inserted at the end of each byte of transmission.

Note: The View 3 fields are blank for devices that cannot be controlled by Ultimedia Facilities.

View 4

- **Description**

  The description that was assigned to the definition when the device was defined.

Changing and Removing Switch and Device Definitions

Use the Work with USF Devices display to change or remove a definition for a switch or a device on the SADC network. To view the display, type **WRKUSFDEVE** at the AS/400 Ready prompt. The display lists the switches and other devices that have been defined within the Ultimedia Facilities configuration on the AS/400. Figure 4-6 on page 4-10 shows an example of the Work with USF Devices display. "Viewing Device Definitions in the Work with USF Devices Display" on page 4-9 describes the information available in the four views of the display.

To change a definition, follow these steps:

1. In the Work with USF Devices display, type **2** in the **Opt** column next to the name of the device that you want to change. Then press **Enter**. The Change USF Device Entry display appears.

2. Type the information you want to change in the appropriate fields of the Change display. To learn about the fields and how to use the display, see "Defining Multimedia Devices" on page 4-6.

3. Press **Enter**. The definition is changed and you return to the Work with USF Devices display.

To remove a definition, follow these steps:

1. In the Work with USF Devices display, type **4** in the **Opt** column next to the name of the device that you want to remove. The Confirm Delete of USF Device display appears, showing you information about the he device device definition you selected.

2. Press **Enter** to delete the definition.

Defining Connections

When you have configured the multimedia servers, switches, and devices to be used on your Shared Analog Device Control (SADC) network, you must define the connections between the components. The configuration requires definitions for each of the following connections:

- Between the video switch and each of the multimedia devices, such as video disc players and video cassette recorders

- Between the video switch and each of the workstations that share the devices

To do so, follow these steps:

1. At the ready prompt on the AS/400, type **WRKUSFCNNE**. The Work with USF Connections display appears. The display lists the connections that have been defined within the Ultimedia Facilities configuration on the AS/400. If you are defining an SADC network for the first time, this list is empty.

2. Type **1** for Add in the **Opt** column; then press **Enter**. The Add USF Connection Entry display appears. Figure 4-7 on page 4-13 shows an example of this display.
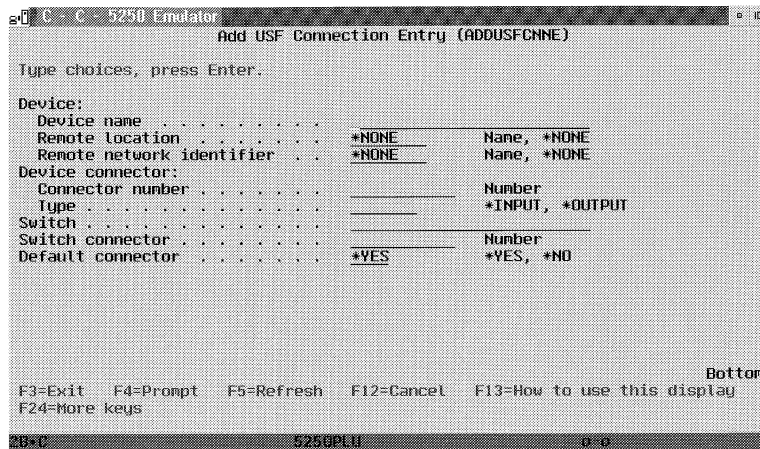


```
 C - C  5250 Emulator                                                    
                     Add USF Connection Entry (ADDUSFCNNE)
 Type choices, press Enter.

 Device:
   Device name  . . . . . . . . .
   Remote location  . . . . . . .    *NONE        Name, *NONE
   Remote network identifier  . .    *NONE        Name, *NONE
 Device connector:
   Connector number . . . . . . .                 Number
   Type . . . . . . . . . . . . .                 *INPUT, *OUTPUT
 Switch . . . . . . . . . . . . .
 Switch connector . . . . . . . .                 Number
 Default connector  . . . . . . .    *YES         *YES, *NO




                                                                   Bottom
 F3=Exit   F4=Prompt   F5=Refresh   F12=Cancel   F13=How to use this display
 F24=More keys
 MA+C                            5250PLU                      0-0
```

Figure   4-7. The Add USF Connection Entry Display

3. Complete the fields in the display as follows:

   a. In **Device name**, type the name assigned to the device to which you are defining a connection.

   b. If you are defining a connection to a workstation, type the name of the workstation as it is known to the AS/400 system in **Remote location**.

   c. In **Remote network identifier**, type the ID of the digital network that connects the workstation to the AS/400 system .

      Note: The name of a workstation (its remote control point name) is associated with its controller name in the AS/400 configuration.

   d. In **Connector number**, type the number of the connector on the device through which the connection you are defining is established.

   e. In **Type**, indicate whether the connector is an input connector or an output connector. For example, a video cassette recorder has an output connector through which it sends signals for the videotapes that it plays; it has an input connector through which it receives the signals for the data that it records. Type ***INPUT** or ***OUTPUT**.

   f. In **Switch**, type the name assigned to the switch that routes the video signals to or from this device.

   g. In **Switch connector**, type the number of the connector on the switch through which signals to or from this device are routed.

   h. In **Default connector**, indicate whether you are defining this connection as the default connection for the device. Some APIs include a default parameter when referencing a device connector. If you type ***YES** in this field, those APIs will refer to this connection.

4. Repeat these steps for each connection on the system.

Changing and Removing Connection Definitions

Use the Work with USF Connections display to change or remove a definition for a connection in the SADC network. To view the display, type **WRKUSFCNNE** at the AS/400 Ready prompt. The display lists the connections that have been defined within the Ultimedia Facilities configuration on the AS/400.

To change a definition, follow these steps:

1. In the Work with USF Connections display, type **2** in the **Opt** column next to the name of the connection that you want to change. Then press **Enter**. The Change USF Connection Entry display appears.

2. Type the information you want to change in the appropriate fields of the Change display. To learn about the fields and how to use the display, see "Defining Connections" on page 4-12.

3. Press **Enter**. The definition is changed and you return to the Work with USF Connections display.

Appendix A. Performance Considerations for Ultimedia System Facilities,

There are several considerations when planning for Ultimedia System Facilities. This section should assist you in selecting the proper software, hardware, and configuration for ultimate performance.

This section assumes you have completed the prerequisite Client Access/400 installation and configuration and are now ready to tune your system for multimedia. Some of the discussion in this section deals with advanced networking concepts appropriate for system and network administrators.

For additional information see *Work Management*, SC41-3306.

Planning for Digital Video

Digital video networking implementation requires careful planning. Digital video requires very high bandwidth. The actual bandwidth required will vary based on the video quality and the compression method used. It is recommended to first determine the level of video quality that is required for your application. After you have made this determination, measure a single video stream of that quality level, play it on the AS/400, and measure its effects on AS/400 CPU and other resources. From there, you can determine the number of video streams your network and AS/400 can support. It is recommended to keep network utilization below 50% to help reduce chances of video breakup.

Digital Video compression techniques such as DVI (Digital Video Interactive), Ultimotion, and MPEG1 typically require data rates of 1.0 to 2.0 megabits per seconds (Mbps) while the video is playing. Based on the amount of motion present in the video, the data rates will vary in the 1.0 to 2.0 Mbps range while the video is playing.

Ultimedia Facilities will support all communication connections supported by Client Access/400, but for full motion video, token-ring or FDDI network attachment is highly recommended. Keep connections on a single segment LAN, if possible.

A 4 MB token-ring LAN can support a maximum of 3 simultaneous DVI video streams. A 16 MB token-ring LAN can support up to 10 simultaneous DVI video streams running at a data rate of 1.2 Mbps. Ten simultaneous video streams at this rate will bring the 16 MB LAN to a very high utilization rate. Because of this it is strongly recommended to plan for fewer simultaneous video streams in order to keep the network utilization lower.

Several LAN adapters can be attached to a single AS/400. It is important to distribute work evenly across these adapters for maximal performance. For help with this task, see *Local Area Network Support*, SC41-3404.

Auxiliary Storage requirements for digital video can be very large. As a general rule, plan on 10 megabytes per minute of video. This is very general and your actual requirements will vary based on video quality and compression method used.

A-1

Since Ultimedia Facilities is server-centered, AS/400 applications can track the number of videos running simultaneously and if that number becomes excessive, the application can restrict further videos from being started. This is an application design tactic that can be used to prevent overutilization of resources such as AS/400 CPU or network bandwidth.

AS/400 Considerations

It is recommended to use the AS/400 Client Server models for most multimedia applications. Since they are optimized for client server applications, they will generally provide better performance and are more capable of handling multimedia throughput requirements.

AS/400 Adapters

The following AS/400 token-ring adapters are listed in order of highest to lowest throughput:

1. Feature 2619 - 16/4 Mbps Network Adapter/HP (highly recommended)

2. Feature 2626 - 16/4 Mbps Network Adapter/A

3. Feature 2636 or Feature 6130 IOP with 6134 adapter - 16/4 Mbps

   Note: Not recommended for video.

4. Feature 6160 or Feature 6130 IOP with 6034 adapter - 4 Mbps

   Note: Not recommended for video.

AS/400 Configuration

Since networked multimedia can be very resource intensive, some modifications to AS/400 default configurations may be necessary. This section details some of the changes you can make to optimize network playback in a token-ring environment.

Using the Work with Controller Description (WRKCTLD), Work with Line Description (WRKLIND), and Work with Mode Description (WRKMODD) commands you can display and change configuration values to ensure they are set optimally for multimedia.

WRKCTLD - Controller Description

Check the following parameters:

MAXFRAME   Ensure your network is using as large a frame size as is possible, the AS/400 defaults are not optimized. Networks are more efficient at moving large amounts of data when the frame size used is as large as possible. The frame size will have a direct impact on how many simultaneous video streams can be supported. The frame size is changed only when MAXFRAME is changed in both the Line Description and Controller Description on the AS/400. A frame size of 16393 is recommended for optimal token-ring performance on 16 Mb LAN, use 4060 for a 4 Mb LAN.

LANMAXOUT   This enables the AS/400 to stream the data out to the PC faster.

    Use *CALC for 16 Mb LANs

Use 8 for 4 MB LANs

LANACKFRQ   This specifies the number of frames to receive before sending an acknowledgement to the PC. Specify *CALC.

LANACCPTY   Specify 3 for the priority used to access the LAN. This gives the highest AS/400 allowable priority.

WRKLIND - Line Description
Check the following parameter:

MAXFRAME   Ensure your network is using as large a frame size as is possible, the AS/400 defaults are not optimized. Networks are more efficient at moving large amounts of data when the frame size used is as large as possible. The frame size will have a direct impact on how many simultaneous video streams can be supported. The frame size is changed only when MAXFRAME is changed in both the Line Description and Controller Description on the AS/400. A frame size of 16393 is recommended for optimal token-ring performance on 16 MB LAN, use 4060 for a 4 MB LAN.

WRKMODD - Mode Description
The mode description generally used with PC connections is QPCSUPP. Check the following parameter:

MAXLENRU   Let the AS/400 calculate the maximum request unit (RU) size. Specify *CALC.

Workstation Considerations

For good video playback, it is recommended to run with at least a 25 MegaHertz 486** PC system with 16 megabytes of memory when using OS/2 or 8 megabytes of memory when using Windows. Smaller systems can be used but playback may not be optimal. Differing compression methods will have different PC requirements. In general, software motion video requires a faster PC than is required by hardware assisted video such as DVI.

OS/2 is the recommended client of choice due to its advanced multitasking, memory management, and bus-mastering capabilities. These capabilities make OS/2 2.1 a superior choice for multimedia networking. OS/2 provides a flat memory model with no buffer size restrictions when using Ultimedia Facilities APIs and the APIs can be called from multiple threads. OS/2 also provides multi-threading, which Ultimedia Facilities utilizes in its program code. In addition, OS/2's MMPM/2 supports the sharing of adapter boards and the interaction between boards more effectively than the Multimedia Extensions provides under Windows.

Workstation Adapters

The following adapters are listed in order of highest to lowest throughput. When possible upgrade to the highest performing adapter card for improved performance.

- PC Microchannel adapters:

1. LANStreamer* Card - provides the best performance and is optimized for multimedia type requirements. Recommended for LAN servers, bridges, and OS/2 desktops.

2. IBM Token-Ring Network 16/4 Adapter/A - "Shorty" adapters are best for DOS desktops because of their low memory requirements.

3. Turbo Adapter

4. Standard Adapter

- EISA bus Cards:

    1. For OS/2 the IBM 16/4 Busmaster EISA card is the best performer.

    2. For DOS and bridging devices, the IBM Token-Ring ISA-16 is best.

- ISA bus (AT*) Cards:

    1. For OS/2 the IBM Token-Ring Adapter II is the best performer.

    2. For DOS and bridging devices, the IBM Token-Ring ISA-16 is best.

Ensure the reference configuration specifies at least 16 kilobytes (KB) of memory for the token-ring adapter. Older adapters sometimes have default configurations of 8 KB; this will limit data throughput.

For the Action Media II adapter, the extended window size, which is specified in the reference configuration information, can be increased to 32 KB.

OS/2 Workstation Configuration

Use Communications Manager/2 (CM/2) Setup or equivalent software to set the request unit (RU) as large as possible. 16,384 is recommended.

Specify 4 for PC receive window (when using CM/2). This allows the PC to receive 4 frames before sending a response. This value is specified in the Data Link Control (DLC) profile information. Having this value at one half the number specified on the AS/400 (LANMAXOUT) allows the AS/400 to continue sending data without having to stop and wait for a PC response. This is desirable for video, audio, and large image serving so the AS/400 can stream data out faster to the PC.

The maximum I-Field size should be set to 16,393. This value is specified in the DLC profile information.

Windows Workstation Configuration

Make the following changes or additions to the CONFIG.PCS file on Windows workstations running Client Access/400 for DOS with extended memory support.

- CBSZ 64 - This will increase the communications buffer size to 64 KB.

- TRMF 4060 - for 4 MB LANs. This will set the frame size to 4060.

- TRMF 16393 - for 16 MB LANs. This will set the frame size to 16,393.

Utilize the File Serving IOP

When you import multimedia objects into Ultimedia Facilities you can choose to not copy the multimedia data into the multimedia repository. When you do this the data file will remain on the drive that you imported the file from and the new object will reference that file and drive. Playback of that multimedia object will then inherit the performance characteristics of whatever file system the data file is stored on.

The file serving IOP provides the power of an Intel 66 MegaHertz 486 processor under the covers of an AS/400 This results in high performance file serving capabilities and off-loads the AS/400 CPU.

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Installation and Administration
Version 3

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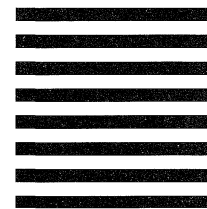Fold and Tape | **Please do not staple** | Fold and Tape

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