

Using MOS and ENPS with Thunder



Introduction

MOS provides powerful control that can be used to manage a Thunder or Lightning in an AP ENPS environment. But what exactly MOS is, and how it allows communication between various machines is an oft-confusing subject. This paper will attempt to clarify the concepts and implementation of MOS, with special care taken to explain how MOS relates to Pinnacle Systems' **Thunder** Production Clip Server and **Lightning** Image Management System.

Sections in this paper will describe the benefits of MOS, outline the general scheme for data flow in MOS, and explain in detail how to configure MOS and ENPS on a Thunder Production Clip Server or Lightning Image Management System and how Thunder Browse integrates with ENPS.

Appendices include excerpts from the MOS protocol website's *MOS Frequently Asked Questions*, with the kind permission of Mike Palmer (Director of Technology/Development, Associated Press, and acting moderator of the MOS Group); excerpts from *ENPS Questions & Answers* obtained from the ENPS website with the kind permission of Lee Perryman (Director of Broadcast Technology, Associated Press); and instructions for obtaining IP addresses.

The information presented here is equally applicable to Pinnacle Systems Lightning Image Management System or Thunder Production Clip Server, the latter of which can store both clips and stills. However, for clarity the text will use **Thunder** with reference to either system and use the term "clip" with reference to either a clip or still, except where differentiations must be made.

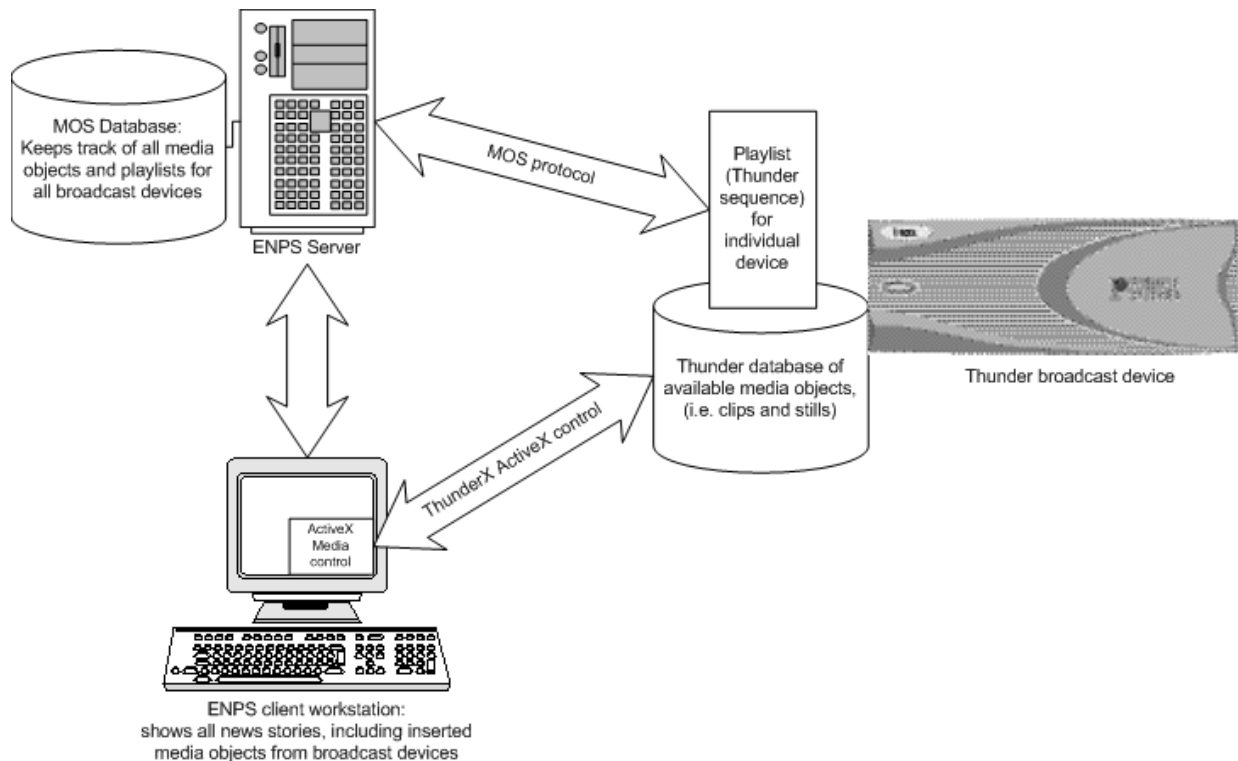


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Background

Definitions

NCS is an acronym for **Newsroom Computer Systems**, a generic term for a news production system that includes computer and video equipment.

The NCS is used for the creation, modification, and deletion of editorial information, including playlists. An NCS consists of a server, client workstations, and broadcast devices. Clips, stills, CGs, and audio all reside on their respective broadcast devices. Journalists or producers can add these objects into a story or rundown from their workstation. The actual clip does not get copied to the journalist's workstation, just the metadata -- the details and location -- of the clip. The story or rundown is in turn stored on the NCS server. The server contains information about all the rundowns and stories that have been created on all the various workstations, and all the metadata stored within them. The NCS server communicates with the broadcast devices using the MOS protocol to control playout of the objects in the stories.

Pinnacle Systems' Thunder is just such a broadcast device that can be controlled by the NCS server, and can easily be integrated into an ENPS environment. Clips or stills on a Thunder or Lightning server can be dragged into ENPS stories, and rundowns can be created, all from Thunder Browse running on an ENPS client workstation.

MOS is an acronym for **Media Object Server**, a communications protocol for control of video equipment by newsroom computer systems such as ENPS or iNEWS.

MOS, the Media Object Server protocol, is used by leading broadcast systems companies to link production devices with news production systems, allowing them to seamlessly exchange information. MOS can be used to control any device: production video servers such as Pinnacle Systems' **Thunder**, image management systems like Pinnacle Systems' **Lightning**, or audio devices and character generators. Associated Press has been the strongest advocate and earliest adopter of MOS. Many automation systems vendors are now MOS partners or MOS compliant including A.N.N. Automation, iNEWS, Louth, OmniBus, and Proximity. MOS enables users of ENPS®, AP's Electronic News Production System, to control networked Lightning and Thunder systems from their desktops or laptops using internet or dial-in connections.

The term "MOS" has duplicate meanings. It can be used both as the name of the communications protocol and also as a generic name for the device which is controlled, as in "The NCS can build and transfer playlist information to the MOS." For clarity, in this document the phrase "Broadcast Device" will be used in reference to the device that is controlled, such as Pinnacle Systems' Thunder, and "MOS" or the phrase "MOS protocol" will reference the protocol.

For more information on MOS, see the protocol web site at www.mosprotocol.com.

ENPS is Associated Press' **Electronic News Production System**. Combining video, text and audio on a computer desktop, ENPS links television and radio journalists, production areas and archives in multiple locations. This newsroom system offers access to all types of resources, at multiple sites, from a single desktop. ENPS is designed to link multiple newsrooms at separate sites so that news resources, including browse-quality audio and video, can be shared throughout a large network.

For more information on ENPS, please visit the AP's ENPS website at www.enps.com.

ActiveX: ActiveX is a general-purpose Microsoft software technology. Microsoft designed ActiveX to facilitate interaction among bits of software written by various vendors. MOS includes specifications for ActiveX controls for newsroom computer systems such as ENPS. Broadcast device vendors such as Pinnacle Systems provide these ActiveX controls which “plug-in” to the ENPS user interface so that the broadcast device appears to be part of ENPS. This allows seamless control of the broadcast device from a remote machine through ENPS.

For more information on ActiveX, see Microsoft’s website at www.microsoft.com/com/tech/ActiveX.asp

Benefits of Thunder with ENPS and MOS

For a TV station, one of the biggest appeals of MOS is the ease with which it allows news stories to be rearranged, and have the associated media assets move with the story. Through MOS, all the broadcast devices can be automatically re-synchronized when a news story is added, dropped, or moved, freeing the user from manually having to simultaneously regenerate playlists on multiple machines.

Because the ENPS server controls each broadcast device via the MOS protocol, any change to a rundown immediately updates every broadcast device. A story can be moved, and all the clips, stills, and CGs used in that story will automatically be moved with it. This frees the journalist or producer from having to think about the mechanics of putting the news together and allows them to focus completely on the actual creation of the news.

The Thunder and Lightning family Production Clip Servers and Image Management Systems have been fully integrated with ENPS to use MOS and ActiveX to deliver exceptional performance and control. While the ENPS server drives Thunder ployout via MOS, the ENPS client workstations communicate with Thunder through ActiveX for content creation. The **ThunderX** or **LightningX** ActiveX controls integrate seamlessly into the ENPS application and provide a window into the Thunder database from the journalist’s workstation in the newsroom. Through the ThunderX control the user can insert objects such as clips or stills into a story, and view the objects..

An additional reason that Thunder and Lightning work so well with ENPS is that they have built-in scheduling capabilities. The ENPS rundown goes right into the Thunder and Lightning sequence via the MOS protocol. This is a dynamic sequence that reacts automatically to last-minute changes to the rundown while it’s playing on air, allowing the technical director to simply keep taking the next item.

How a story is created and used (workflow and data flow)

The ThunderX ActiveX control appears as a window in the ENPS application, which allows the journalist to browse for media clips that are available on the Thunder. The desired media clips can then be inserted into a story, and the journalist would make any other desired changes or additions to the story. Once the story is complete, it is then added to a rundown and saved on the ENPS server. The story can be moved around within the rundown and will be played out when its position in the rundown is reached.

An example of how a journalist or producer would complete these steps, and what data changes as a result, can be seen below.

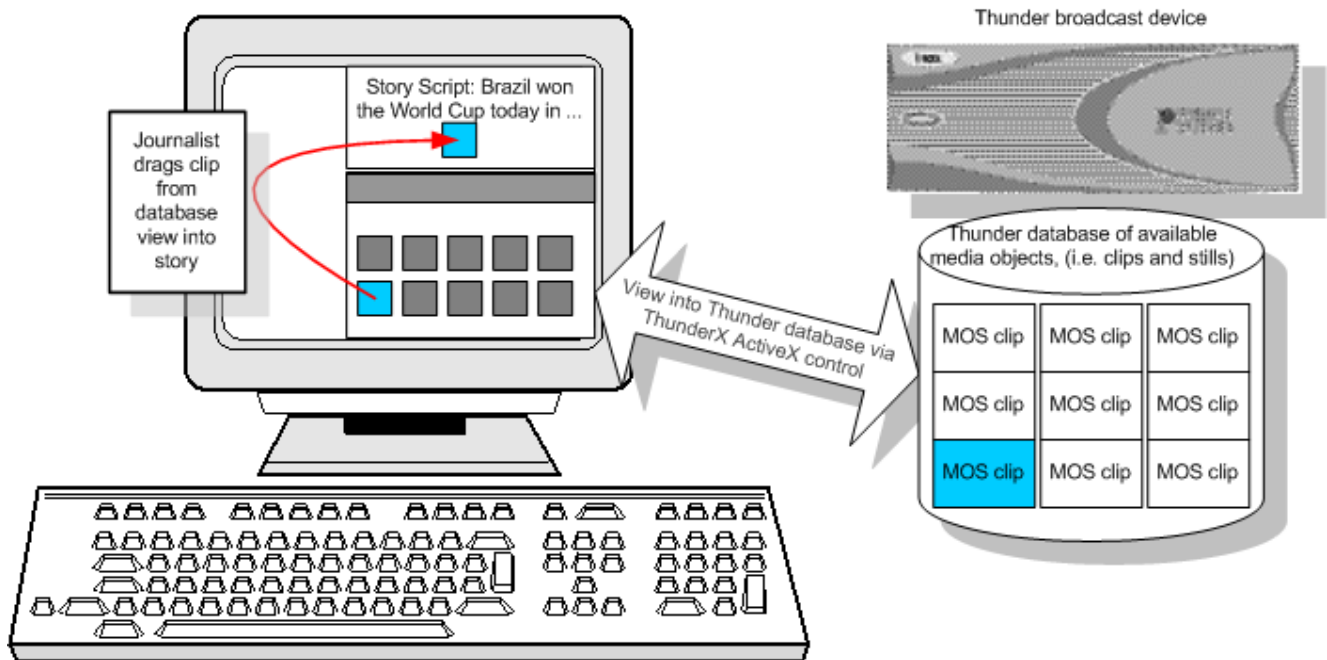
Insert object into story

Work done

A journalist works at an ENPS client workstation that has Thunder Browse software installed. She creates a story and edits the script. An integrated window in the ENPS software shows a Thunder database, and at any point she can drag a clip or still from that window directly into her story.

Data flow

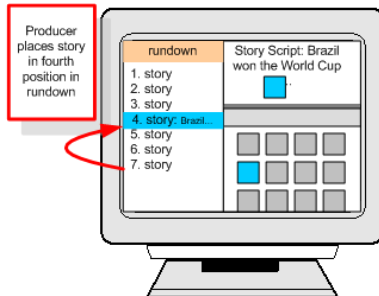
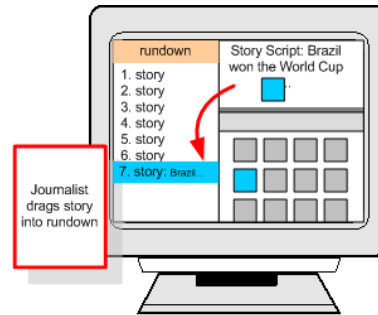
Information about the added clip is pulled from the Thunder broadcast device by the ThunderX ActiveX media control. These details become MOS object data, which includes information about the clip and also the broadcast device from which it will eventually be played back. The clip MOS object is added into the journalist's story.



Story into rundown

Work done

The journalist places the story into the rundown.

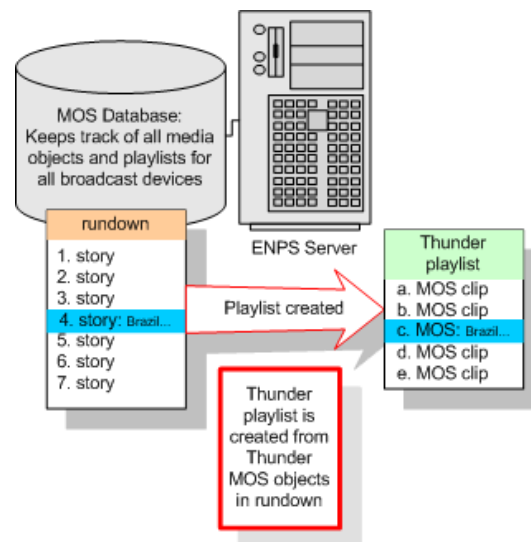


The producer decides that the story should be the fourth story to air and places it in the appropriate order.

Data flow

Each rundown has a matching playlist for each broadcast device that the ENPS server knows about. When the story is put into the rundown, the software puts a description of the story's clip MOS object into a matching playlist for the broadcast device.

The playlists are created automatically from the MOS objects that have been dropped into each story. Due to the position of each story in the rundown, and the content of the stories before, this specific clip's MOS object is automatically placed in the appropriate order in the playlist for the Thunder. For example the clip for the journalist's story is the third item in the Thunder's playlist.



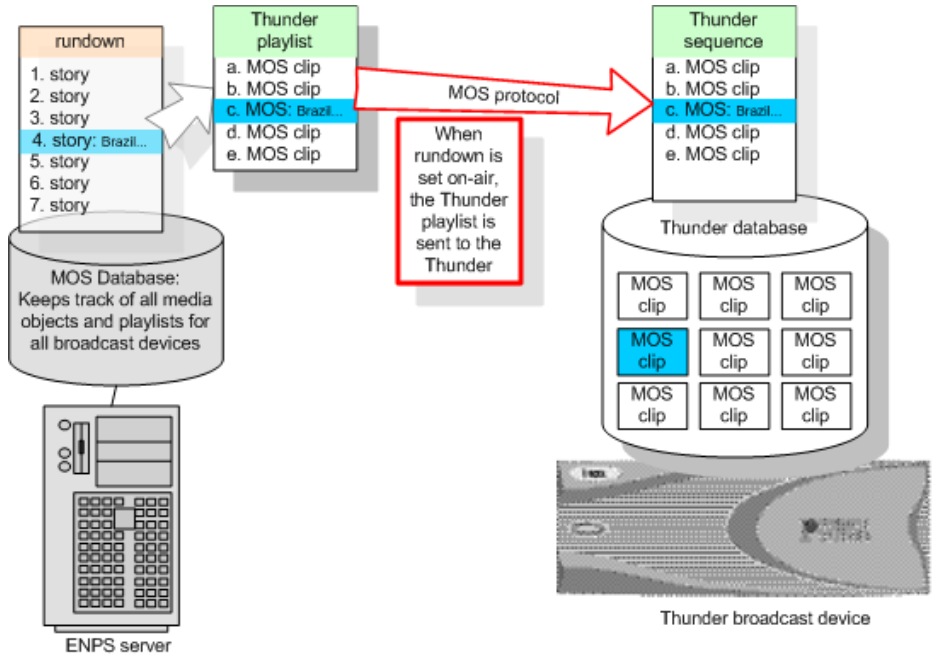
Rundown loaded for playback

Work done

As air-time approaches, the producer loads the rundown for playback.

Data flow

At this time the playlist for each broadcast device, including the Thunder is sent to that device. Now the Thunder has the playlist and knows that the clip associated with the MOS object is to be aired as the third item in its sequence for the 6 PM news.



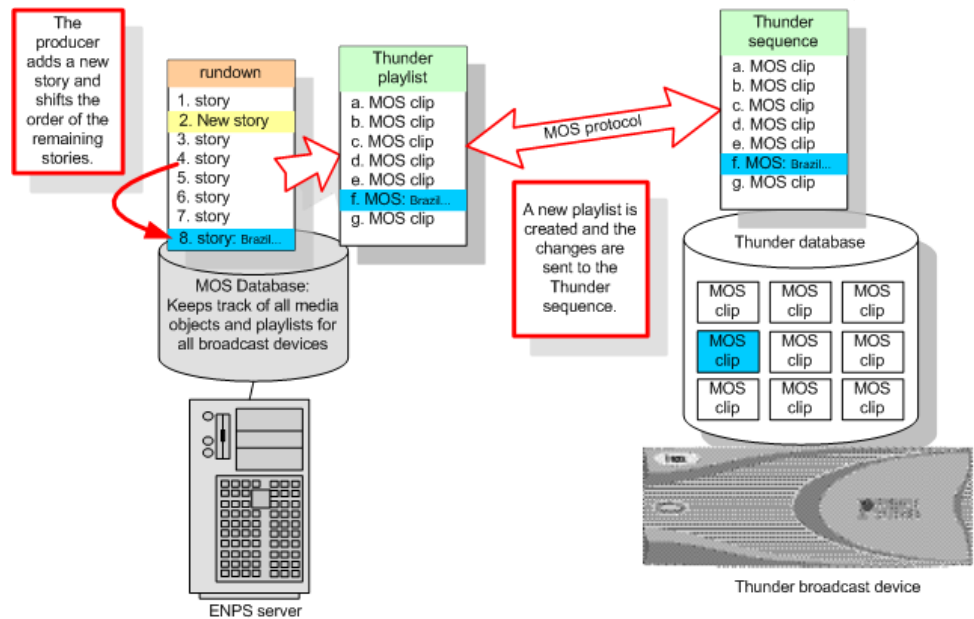
Last-second changes

Work done

During the first story, there is an important piece of late-breaking news, and the journalist's story is bumped down from the fourth story to the eighth story in the rundown.

Data flow

The ENPS server creates new playlists for each broadcast device and sends out updates to each device. Only the change is sent, not the entire playlist. This is a big advantage over older protocols because it allows the playlist to be updated quickly and while still being used on-air. MOS allows a **dynamic** link to be established between the ENPS server and the broadcast device, to ensure that the sequence of items in the production equipment always matches the producer's rundown. Because the story has been moved later in the rundown, the Thunder will end up with a new playlist where the example clip's MOS object is now the sixth item instead of the third.



Advance through playlist

Work done

There are a number of ways to playback the list that is sent down to the broadcast device, depending upon the degree of automation of flexibility that is required.

For example, there are different ways to handle advancing a production clip server such as a Thunder. Many facilities have an operator who will push a TAKE key on a dedicated button box to move through the list. That operator can also call up a "wild" clip or graphic if there is a last minute addition.

Other facilities use the "tally low" signal from the switcher to trigger the Thunder, so that the Thunder is automatically advanced whenever the technical director takes the Thunder clip server **off** the program channel.

Installation and Configuration

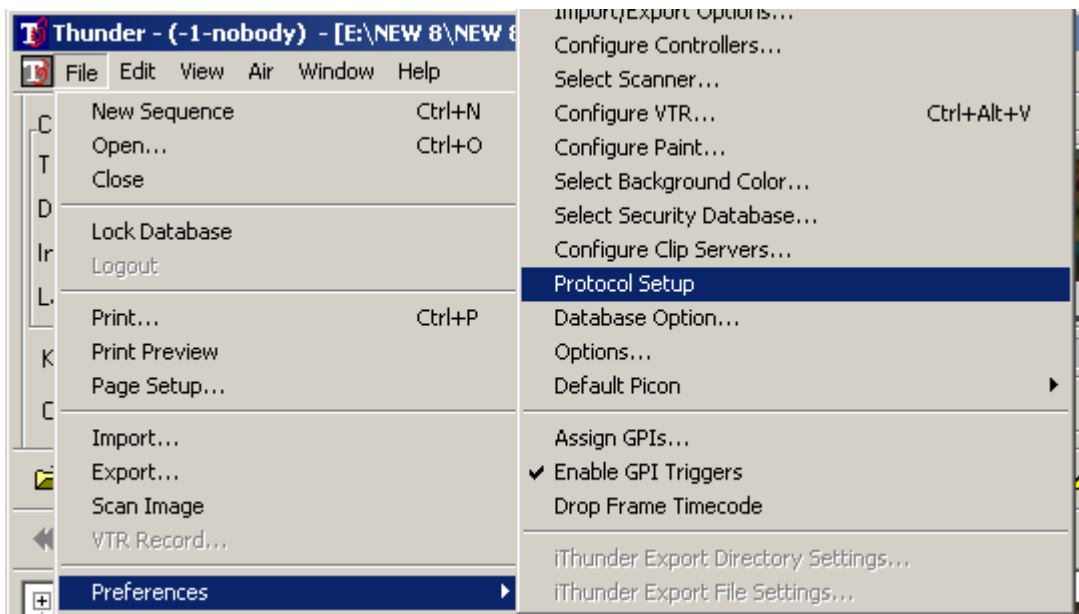
Setting up a Thunder system in an ENPS environment requires three steps: setting up the Thunder broadcast device to communicate with the ENPS server via MOS, installing the ENPS client software on a workstation, and configuring that workstation to use Thunder Browse and the ThunderX ActiveX control.

Installation of ENPS Client

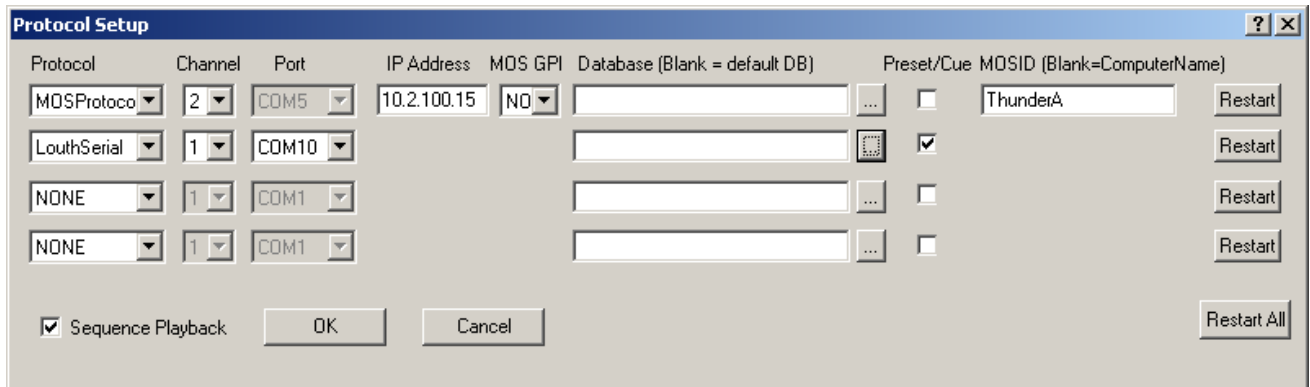
Please see your system administrator for installation of the ENPS client. The system administrator must add you as a new user to the ENPS user database before you can log in to ENPS, and can also verify that the ENPS client is licensed properly.

Setting up the Thunder/Lightning broadcast device

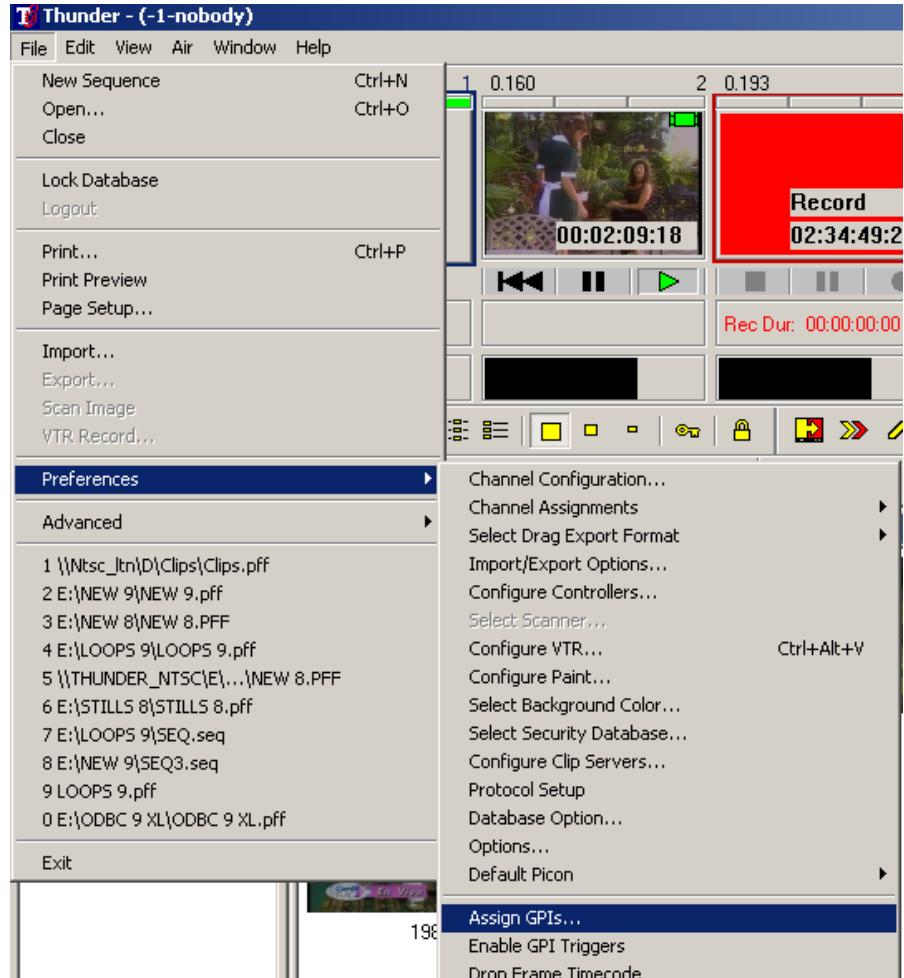
1. Configure a MOS connection using **File > Preferences > Protocol Setup**.



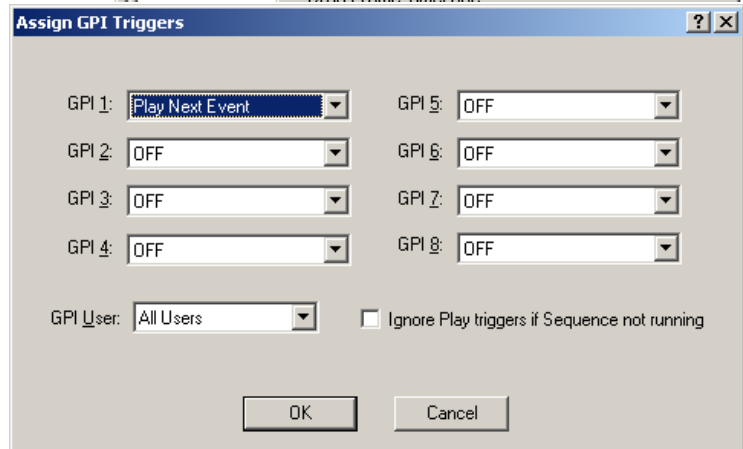
2. Select **MOSProtocol**, select a channel, type in IP address of ENPS server, and select a database. *(For details on determining the IP address of the ENPS server, see [Appendix C: Getting IP Addresses.](#))* If you want MOS to be playable by GPIs, select a GPI trigger under MOS GPI. ThunderX uses the computer name as the MOS ID to identify the Thunder. If you wish, you may now assign a different name in the MOSID field. Click on **Restart** or **Restart All**, then **OK**.



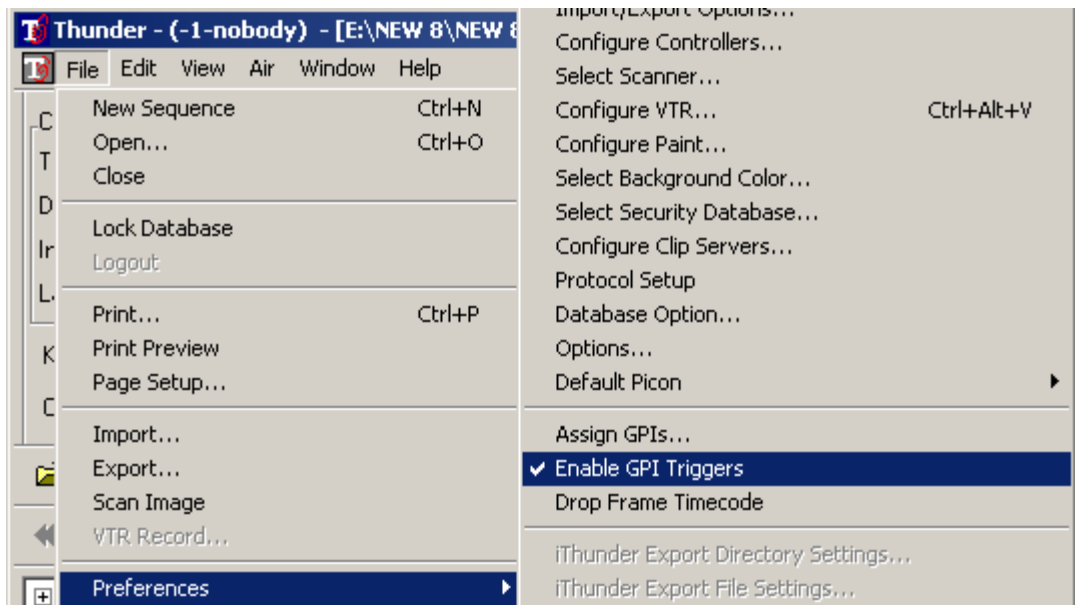
- If you selected a MOS GPI, the GPIs must also be configured from **File > Preferences > Assign GPIs**.



- Set this trigger to issue a **Play Next Event** command.



5. Also, turn the GPIs on using **File > Preferences > Enable GPI triggers.**



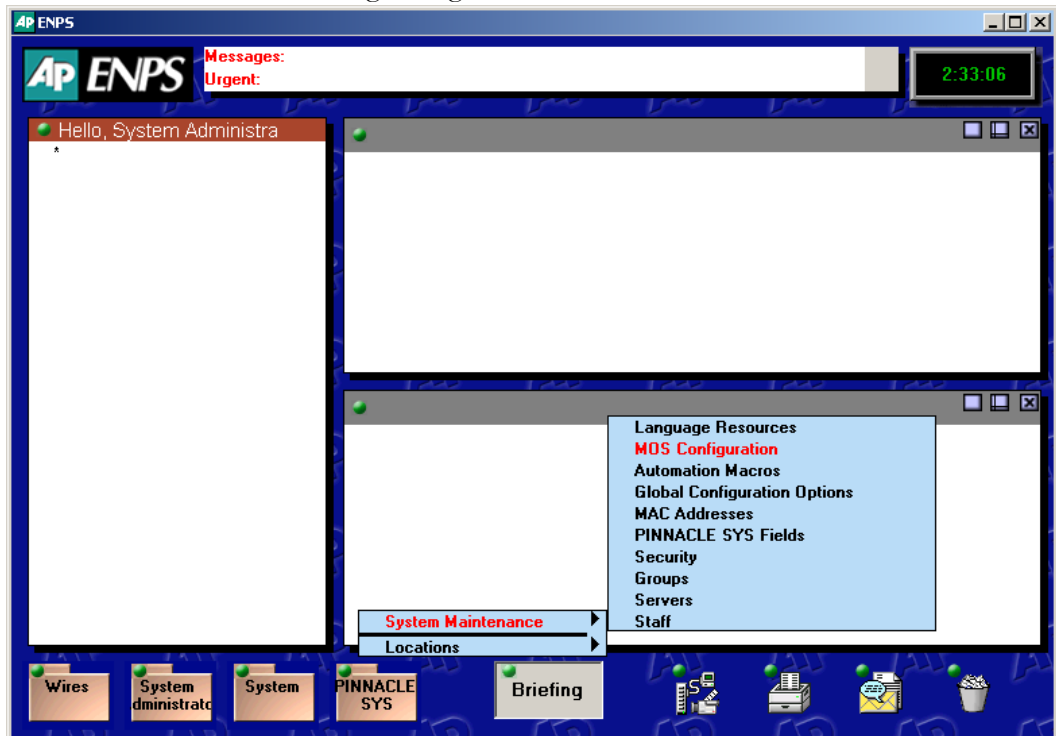
Setting up ENPS Client to use ThunderX

ThunderX

Install ThunderX on the client machine by running either the Thunder Browse or ThunderX installer.

ENPS client

1. To configure the ENPS client to see the ThunderX ActiveX control, click on the fourth folder's rover (the green dot in the upper left of the folder) and select **System Maintenance > MOS configuration**. Click **New** in the resulting dialog.

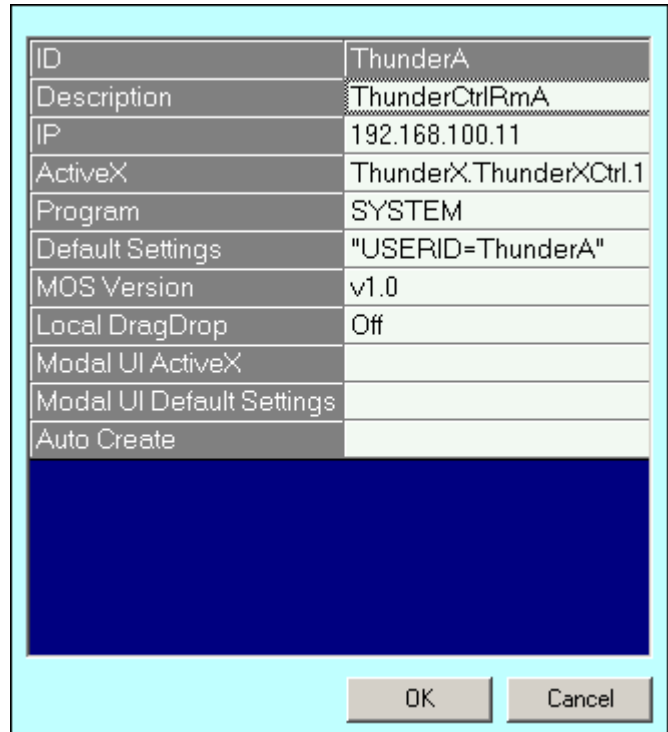


2. Add a new ID. The ID can either be the computer network name of your Thunder or Lightning or a different name that you set up in the MOSID field in the Protocol setup ([see step 2](#) in the section *Setting up the Thunder/Lightning Broadcast Device* above).



3. Double-click anywhere on the new row and enter the following values:

- **Description:** A description to help you identify your Thunder
- **IP:** IP address of Thunder/Lightning broadcast device. (For information on how to obtain the IP address, see [Appendix C: Getting IP Addresses.](#))
- **ActiveX = ThunderX.ThunderXctrl.1** for Thunder running version 5.2 or later, or **LightningX.LightningXctrl.1** for Lightnings or if you are running Thunder version 5.1 or earlier.
- **Program:** Enter the folder ID for the ENPS folder where the Thunder MOS items will be stored.
- **Default Settings:** If you are setting up more than one Thunder, ENPS can be set up so that ThunderX can switch between the different Thunders easier. The database information for each Thunder is now saved and used to bring up the correct settings and database when a specific Thunder is accessed.



ID	ThunderA
Description	ThunderCtrlRmA
IP	192.168.100.11
ActiveX	ThunderX.ThunderXctrl.1
Program	SYSTEM
Default Settings	"USERID=ThunderA"
MOS Version	v1.0
Local DragDrop	Off
Modal UI ActiveX	
Modal UI Default Settings	
Auto Create	

This setting is **only** necessary if you have more than one Thunder and wish to switch between them. If you are only running one Thunder, or do not wish to switch between multiple Thunders using MOS, then configuring this setting is not necessary.

In the Default Settings box assign the machine name of each Thunder. You must add **"USERID=name"** including the quotation marks (where 'name' is your Thunder name) into the Default Settings field.

- **Local DragDrop: OFF**

4. Click on the Media rover and select the desired Thunder or Lightning broadcast device.

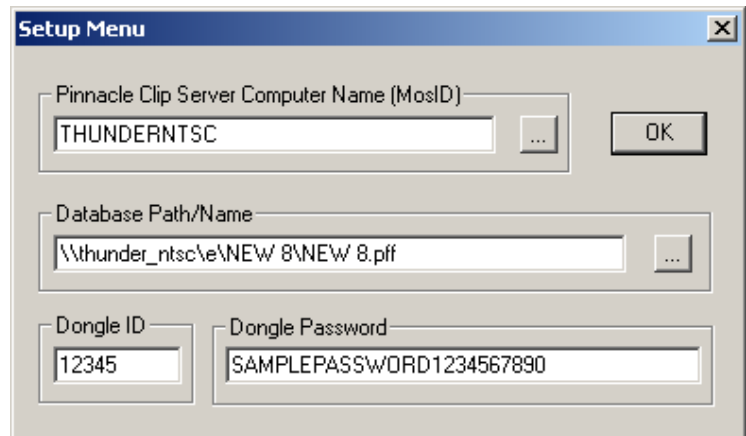


5. In the Setup Menu dialog, enter the computer name of the Thunder or Lightning broadcast device in the **Pinnacle Clip Server Computer Name (MosID)** field. If you wish to browse the network to find the broadcast device name, click on the ellipsis ("...") button.

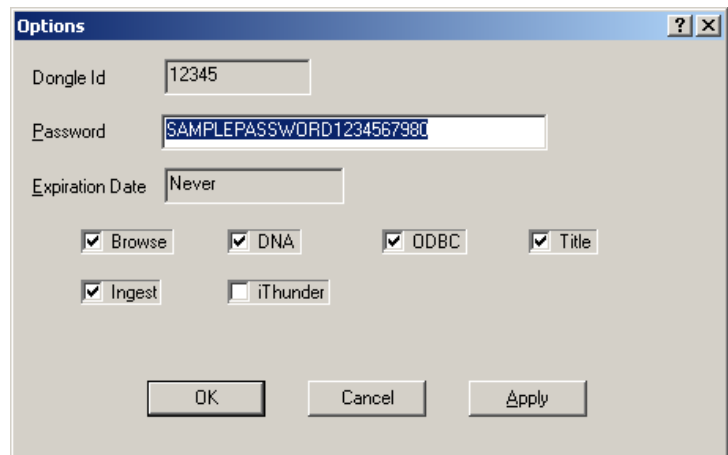
Also add the path to the desired database in the **Database Path/Name** field. If you wish to browse the network to find the database path name, click on the ellipsis ("...") button.

The dongle ID and the password are the ID and password of the dongle on the Thunder server. The number of ThunderX client licenses will be controlled by the dongle on the server, and will be determined by the number of client licenses that you purchased.

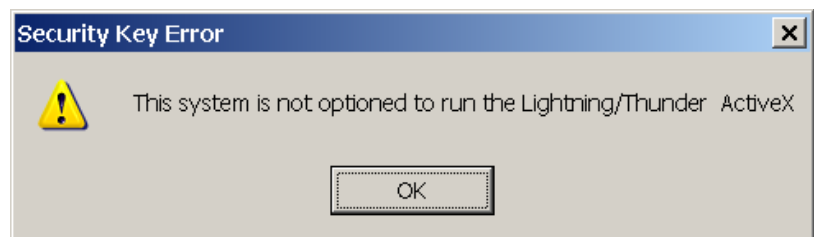
Enter the **Dongle ID** and **Password** from the dongle on the Thunder or Lightning broadcast device, **not** the dongle on the client Browse workstation. See step 6 for information on reading the dongle password.



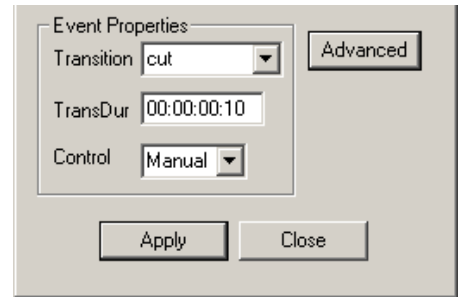
- To get the dongle ID and password from the Thunder broadcast device, you will need to be at the desired machine running the Thunder software. Go to **File > Preferences > Options...** The easiest way to correctly transfer the password from the Thunder broadcast device to the client Browse workstation is to copy the password into a text file and open and read the file across the network.



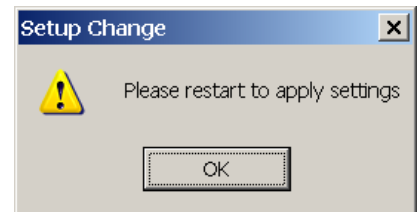
- Once this setup information has been entered, it should not need to be reconfigured. However, if the dongle is removed, or for any other reason the data has changed, the warning dialog will appear and the setup information will need to be reconfigured.



8. If you want to change the database you will be able to do it at any time while in the ThunderX application by pressing **F9** or clicking on the **Advanced** button in the Options dialog.



9. If you want to change the database you will be able to do it at any time while in the ThunderX application by pressing **F9**. After you have entered the dongle password or ID, or changed the database, you will need to close ThunderX and restart it.



10. The database will open in a window in the bottom edit window of the ENPS client software.

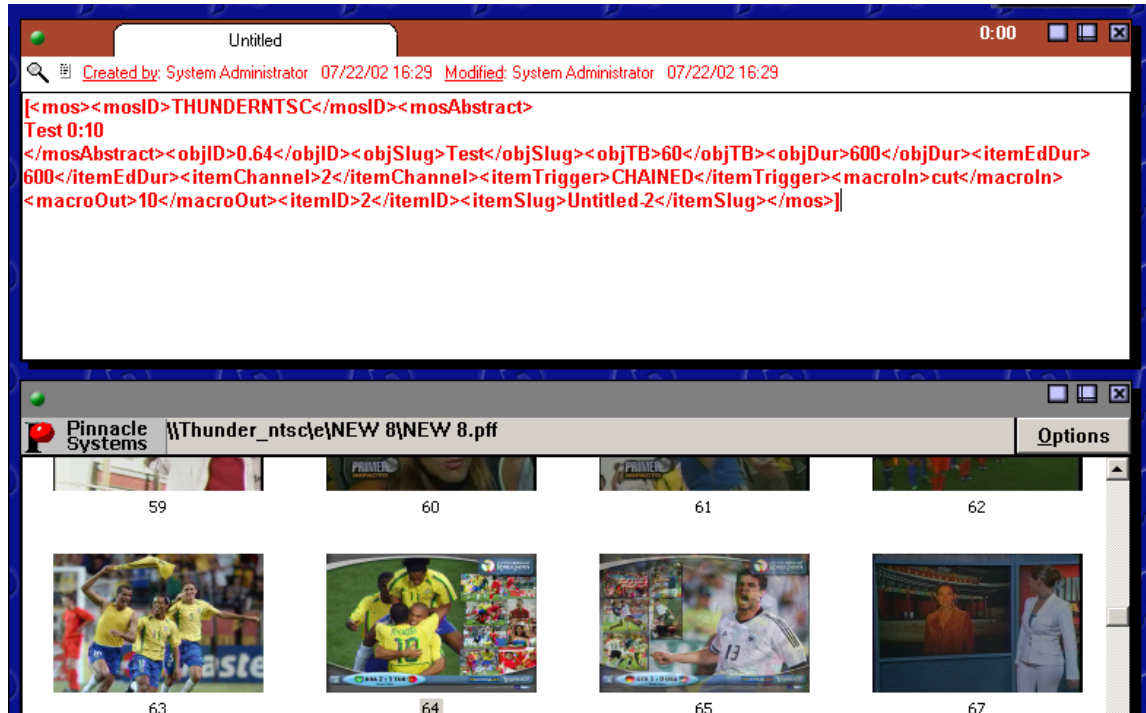


Using MOS in a Live-to-Air Environment

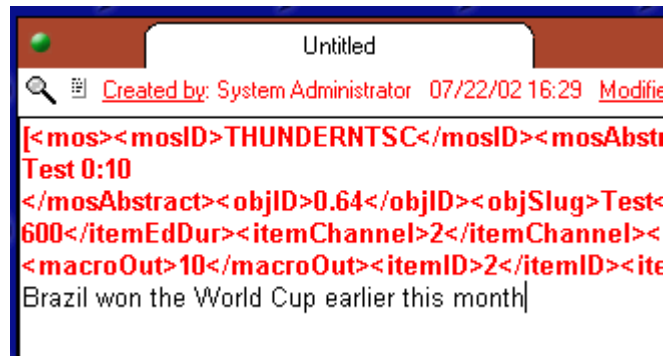
This is a brief description of one possible way to create a new story and rundown and play to air. ENPS is a considerably flexible program that enables the user to perform different steps to create the same result. For more information, refer to the sections “Writing Stories” and “Using MOS” in the ENPS Help.

Create a story

1. Simply drag a MOS object into the upper-right edit window to start a new story.



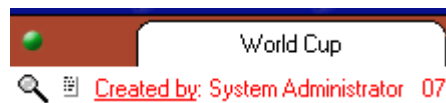
2. Write the script for the story.



3. Retitle the script by double-clicking on “Untitled” in the tab above the story, then type in a name and hit enter.

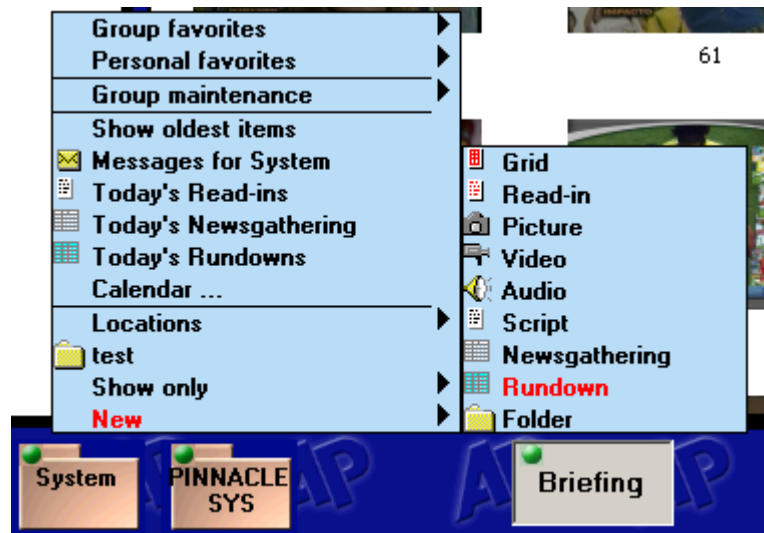


4. The new title is displayed in the tab.



Add story to rundown

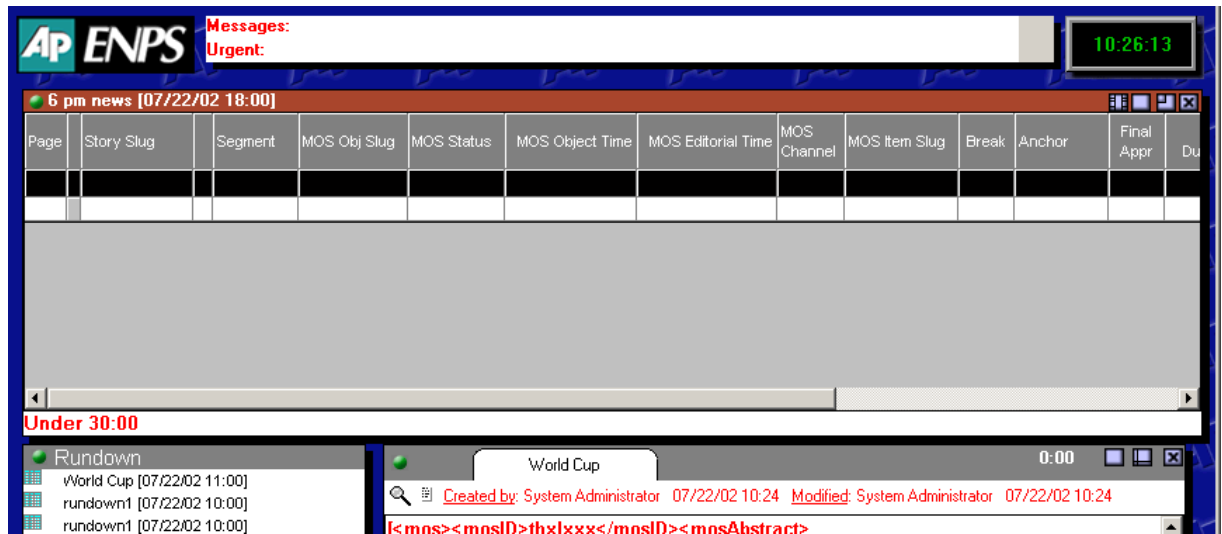
1. Create a new rundown by clicking on the third folder's rover and selecting **New > Rundown**.



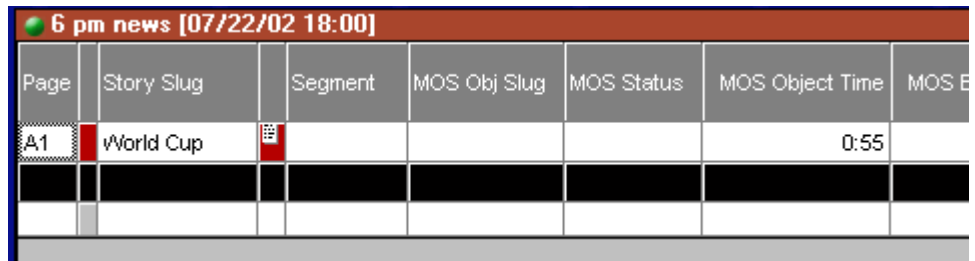
2. Add a title for the rundown in the Program field, and make any other changes, such as start or end times.
Click on **Go**.

A screenshot of a software form for creating a rundown. The form has a light blue background. On the left, there are fields for: Program (6pm News), Start Date (7/22/2002), Start Time (18:00:00), End Date (7/22/2002), End Time (18:30:00), and Duration (30:00). Below these is a checkbox for 'Duration based' which is checked. Underneath is a 'Blank Rundown' section with a text area containing 'r1' on two lines. At the bottom left is a 'Scripts:' label and a dropdown menu set to 'Blank Script'. On the right side, there is a list of fields with values: On Air, MOS Control Active, Program Name, Use Summary Item, Editor, Director, Auto Archive, Enable CTOS Archive, MOS Redirection, MOS Channel, MOS Editorial Start (2002-07-22T18:00:00), MOS Story Send, MOS Editorial Duration (00:30:00), MOS Macro In, MOS Macro Out, MOS Trigger, and Prevent Manual Bar. At the bottom right are three buttons: 'Go', 'Cancel', and 'Apply'.

3. The new rundown is displayed along the top of the window.

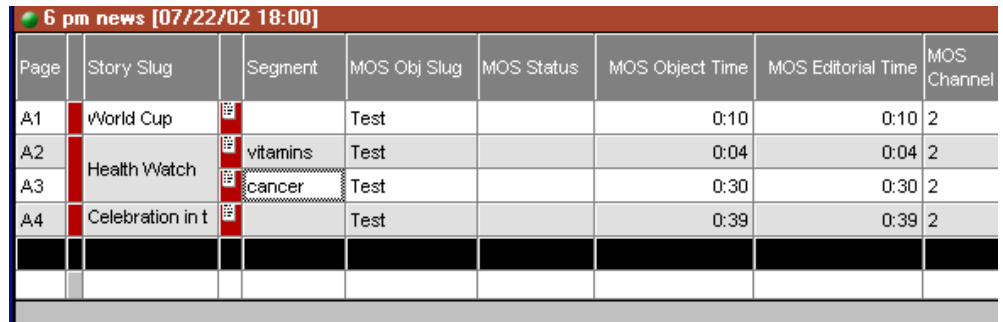


4. Add story to the rundown simply by dragging the tab of the story into the rundown list. The story name will appear in the Story Slug column.



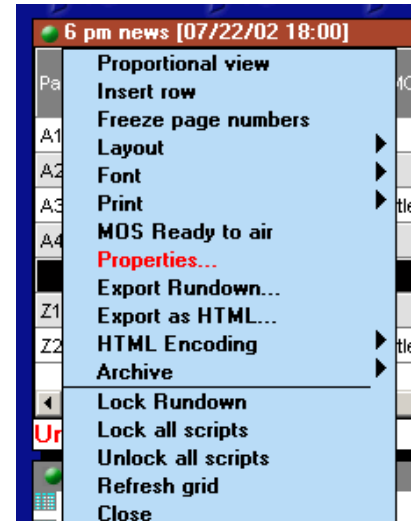
5. Add other stories to the rundown if desired.

The stories can also be repositioned into a different order.

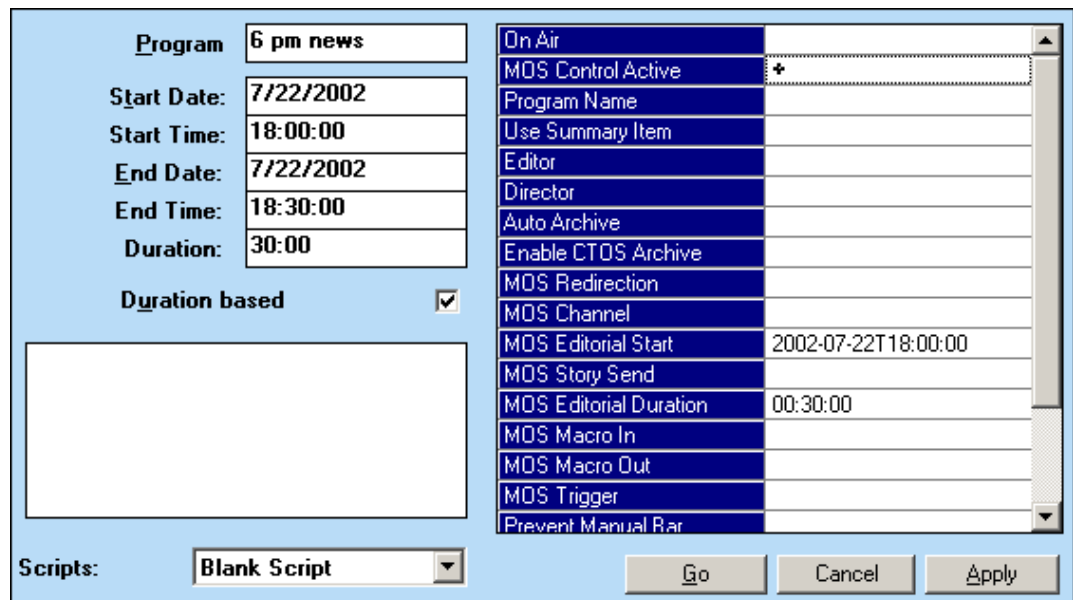


Play to air

1. When the rundown is ready to be played to air, click on the rundown rover and select **Properties**.



2. Click in the **MOS Control Active** box. Make sure that a '+' appears in the box.



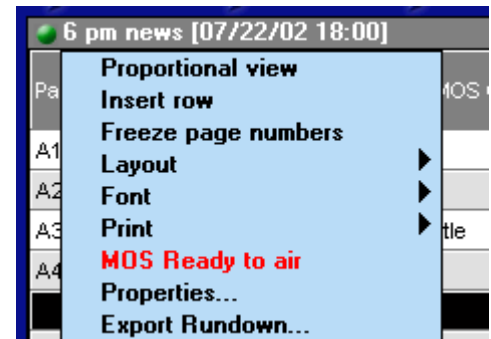
- The MOS Status column will change from blank to “NOT READY” with a red background. This indicates that there is MOS communication with the Thunder broadcast device, but that rundown is not ready to air.

The results that occur on the Thunder are that a new sequence has been created with the clips, but it has not yet been cued.

Page	Story Slug	Segment	MOS Obj Slug	MOS Status	MOS Object Time	MOS Editorial Time	MOS Channel	MOS Item Slug
A1	World Cup			NOT READY	0:55	0:55	2	Untitled-2
A2	WC script							
A3	Health Watch		title	NOT READY	0:21	0:21	2	Untitled-2
A4	HW script							
Z1	Celebration in th							
Z2	park		title		0:11	0:11	2	Untitled-2

Under 29:59

- Click on the rundown rover and select **MOS Ready to air**.



- Setting the rundown ready to air cues the sequence on the Thunder. The MOS Status column should display “READY.”

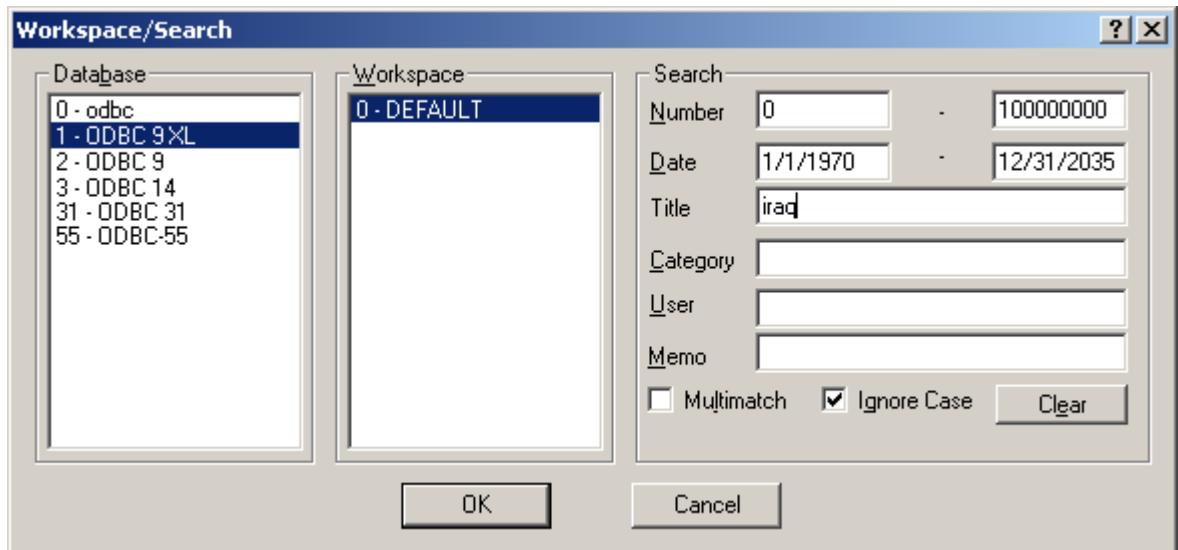
Page	Story Slug	Segment	MOS Obj Slug	MOS Status	MOS Object Time	MOS Editorial Time	MOS Channel	MOS Item Slug
A1	World Cup			READY	0:55	0:55	2	Untitled-2
A2	WC script							
A3	Health Watch		title	READY	0:21	0:21	2	Untitled-2
A4	HW script							
Z1	Celebration in th							
Z2	park		title		0:11	0:11	2	Untitled-2

6. Note that any stories that are above the black line are considered active. Stories can be dragged from below the black line to above the black line and automatically added to the rundown.

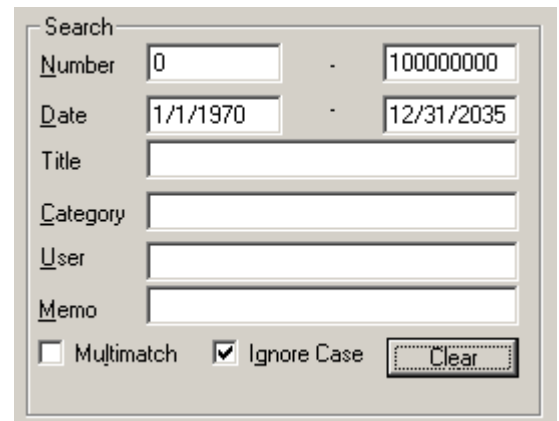
6 pm news [07/22/02 18:00]							
Page	Story Slug	Segment	MOS Obj Slug	MOS Status	MOS Object Time	MOS Editorial Time	MOS Ch
A1	World Cup			READY	0:55	0:55	2
A2	WC script						
A3	Health Watch		title	READY	0:21	0:21	2
A4	HW script						
A5	Celebration in th						
A6	park		title	READY	0:11	0:11	2

Features

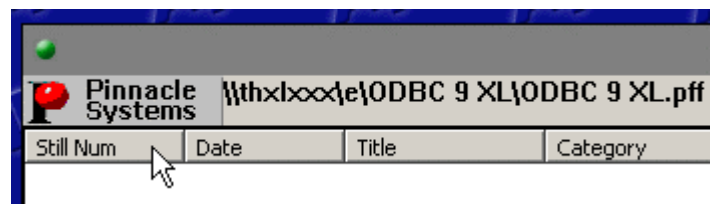
- ▶▶ **Searching:** The F4 searching feature has been added to ThunderX. Selecting inside the database view and pressing **F4** will bring up the familiar Thunder search dialog. Enter a search criteria and click **OK** and the window will show the filtered results.



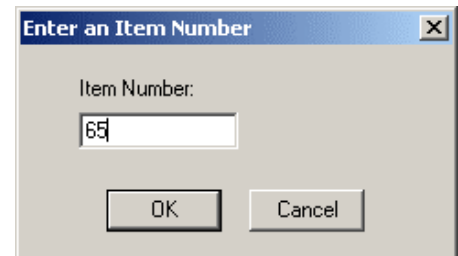
To return to a full database view, press F4 again and then click on the **Clear** button and then **OK** again. This will clear all search filter criteria and show all items in the database.



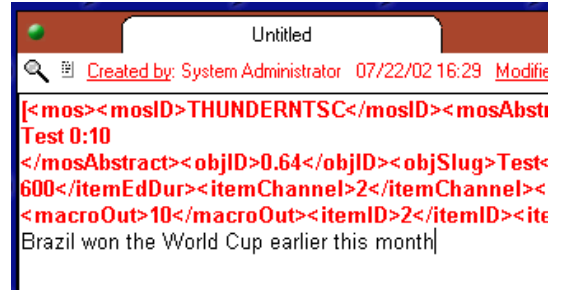
NOTE: If the previous search did not yield any results, then to bring up the search dialog again, you must click on the column headers then press **F4**.



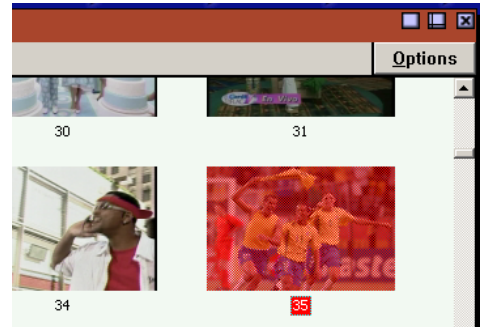
- ▶▶ **Jump to a clip:** Enter the number of a clip on the number keypad, and that clip or still will be immediately selected.



►► **Show clip in story:** To see the clip that is in a story, double-click on the story in the rundown. The story will appear in the upper-right edit window.

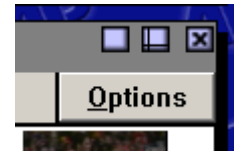


Double-click anywhere on the MOS tag for the item, and the clip will be highlighted in the ThunderX database window.



Options

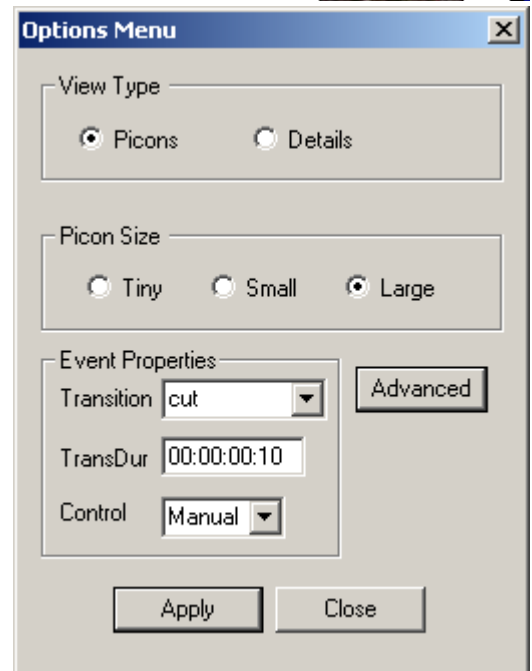
The **Options** button is in the upper-right corner of the edit window of the Thunder database.



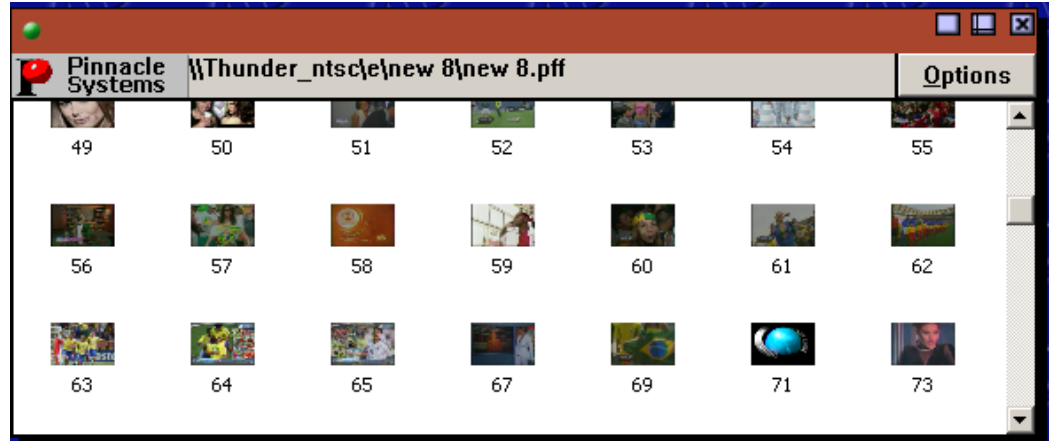
Clicking this button brings up a menu which controls certain options for viewing and playing out items in the database. Just as in the database on the Thunder itself, the picons can be viewed in three different sizes and with or without clip details.

Event Properties controls the playout manner of the clips. Currently cuts are the only transition available. Transition duration (TransDur) does not affect cuts.

The **Advanced** button will bring up the Setup Menu. For more information, see [“Setting up ENPS client to use ThunderX.”](#) “Apply” **must** be clicked before “Close” for changes to take affect.



Tiny picons without details.



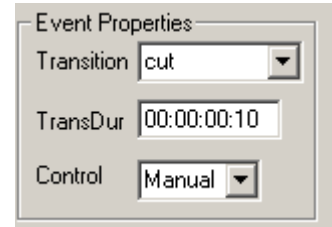
Tiny picons with details.

Still Num	Date	Title	Category	User	Memo
0	07/19/02	Template			
1	06/24/02	Test			
3	06/06/02	Template	Category	user	5.2 Build 5
5	06/06/02	Template	Category	user	5.2 Build 5
6	06/06/02	Template	Category	user	5.2 Build 5
7	06/06/02	Template	Category	user	5.2 Build 5
8	06/06/02	Template	Category	user	5.2 Build 5

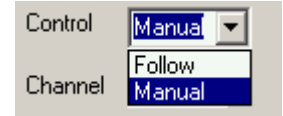
Small picons without details.



The **Event Properties** can change how the clip plays out from the Thunder sequence that is created from the rundown.

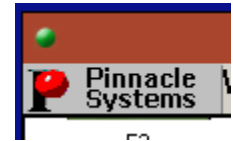


Control offers either **Manual** or **Follow**, where Manual requires a manual take to play the next item in the sequence and Follow automatically plays the next item.



Versions:

This document applies to ThunderX 5.0.0.11. This can be found by clicking on the Pinnacle icon in the upper left corner of the database view.



Appendix A: MOS Frequently Asked Questions

MOS is an acronym for?

MOS is short for Media Object Server Communication Protocol. The MOS Protocol is intended to be a global industry solution to the problem of "How do I get my brand-X computer system to communicate with my brand-Y media server?"

What does MOS do?

Media Object Server Communications Protocol allows Newsroom Computer Systems (NCS) and Media Object Servers (MOS) to exchange information using a standard protocol (language and vocabulary).

This protocol enables the exchange of the following type of messages:

1. **Descriptive Data for Media Objects.** The MOS "pushes" descriptive information and *pointers* to the NCS as objects are created, modified, or deleted in the MOS. This allows the NCS to be "aware" of the contents of the MOS and enables the NCS to perform searches on and manipulate the data the MOS has sent.
2. **Playlist Exchange.** The NCS can build and transfer playlist information to the MOS. This allows the NCS to control the sequence that media objects are played or presented by the MOS.
3. **Status Exchange.** The MOS can inform the NCS of the status of specific clips or the MOS system in general. The NCS can notify the MOS of the status of specific playlist items or running orders.

What is a "MOS?"

A Media Object Server (MOS) is any device capable of storing Media Objects.

What are Media Objects?

Media Objects are defined as:

1. **CGs** (Character Generator Objects)
2. **Audio**
3. **Still Store**
4. **Video**

It is generally assumed, though not a requirement, that these objects will be stored in a non-linear device.

Other types of Media Objects may be later added to this list.

What is the NCS responsible for?

In General, the Newsroom Computer System is responsible for the creation, modification, and deletion of editorial information, including playlists

What is the MOS responsible for?

In General, the Media Object Server is responsible for the creation, modification, and deletion of media objects and their associated meta-data.

www.mosprotocol.com

Appendix B: ENPS Questions & Answers

What is ENPS?

ENPS is the world's most advanced electronic news production system. Its development followed a two-year effort by the British Broadcasting Corporation to replace its existing newsroom computer system with a state-of-the-art successor. The BBC competition, in which more than 50 information technology companies participated, was won by The Associated Press, and ENPS is an AP product.

The BBC's television and radio operations in the United Kingdom, along with BBC News and Current Affairs and BBC World Service, have more than 12,000 users working in 48 languages. Combining text, audio and video on each BBC desktop, ENPS will be the largest broadcast newsroom computer system in the world, linking radio and television journalists, production areas and archives in more than 100 locations. This new technology -- the first newsroom system ever to offer access to all types of resources, at multiple sites, from a single desktop -- is being expanded to meet the needs of news organizations worldwide.

ENPS is designed to link multiple newsrooms at separate sites so that news resources, including browse-quality audio and video, can be shared throughout a large network. It uses standard hardware running Microsoft Windows.

How do I obtain the latest information about ENPS?

AP has created a Web page as an electronic distribution point for updates to this Q&A, product backgrounders and news releases. You can always get up-to-the-minute ENPS information on the Internet at <http://www.enps.com>, or you can request information via fax from London on +44 (0)20 7482 7801 or Washington on +1-202-736-1124.

What are the key features of ENPS?

ENPS combines standard hardware and operating systems with a unique, intuitive user interface, allowing journalists to use "drag and drop" techniques for almost every function. Rather than limiting access to material in a single newsroom, ENPS allows users to work with information from any newsroom in the organization, in any format.

All the standard features of large newsroom systems -- news wires, scripting, rundowns, archives, assignments, production device control -- are included. Among the ENPS enhancements that journalists are sure to notice are:

- No menu or tool bars and no confusing command lines to take up screen space.
- Quick searching of all news resources, no matter what type, with a single query.
- Video and audio playback within the same workspace as text handling.
- Consistent interface and functionality.

How will ENPS improve my news operation?

ENPS cuts training and support costs, reduces the time it takes to research a topic, makes better use of archives and other expensive news resources, and ensures journalists get the whole story, not just the pieces that are easiest to locate in the local newsroom. Your staff will come to see their ENPS workstations as tools that are just as essential as cameras, microphones, and traditional notebooks.

Do I need to install a new network for ENPS?

ENPS is designed to work with any TCP/IP network, whether it is a LAN or a WAN. If your network currently does not use the TCP/IP protocol, then it is likely to be due for an upgrade anyway, allowing you to take full advantage of Internet and intranet applications.

Other applications running in conjunction with ENPS, such as audio or video editing devices, may require greater bandwidth than standard 10mb Ethernet.

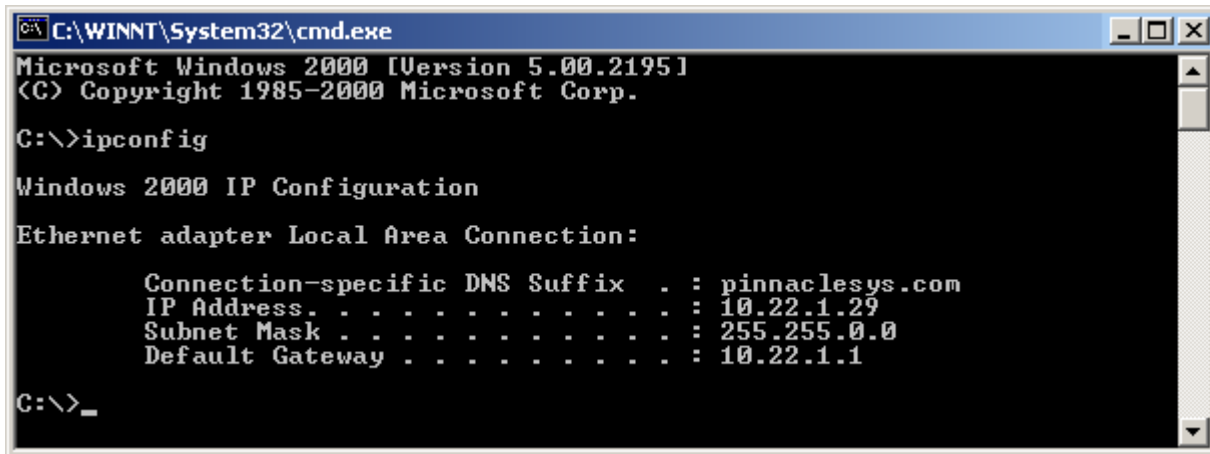
www.enps.com/products/enps/q-a.asp

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Appendix C: Getting IP Addresses

There are two easy ways to determine the IP address of a machine. Both ways are accessed from the Command prompt. Go to **Start > Run** and type in “cmd”.

If you are at the machine of which you wish to determine the IP address, type **ipconfig** and press enter. This will provide the IP Address of the machine, in this example 10.22.1.29.



```
C:\WINNT\System32\cmd.exe
Microsoft Windows 2000 [Version 5.00.2195]
(C) Copyright 1985-2000 Microsoft Corp.

C:\>ipconfig

Windows 2000 IP Configuration

Ethernet adapter Local Area Connection:

    Connection-specific DNS Suffix  . : pinnaclesys.com
    IP Address . . . . . : 10.22.1.29
    Subnet Mask . . . . . : 255.255.0.0
    Default Gateway . . . . . : 10.22.1.1

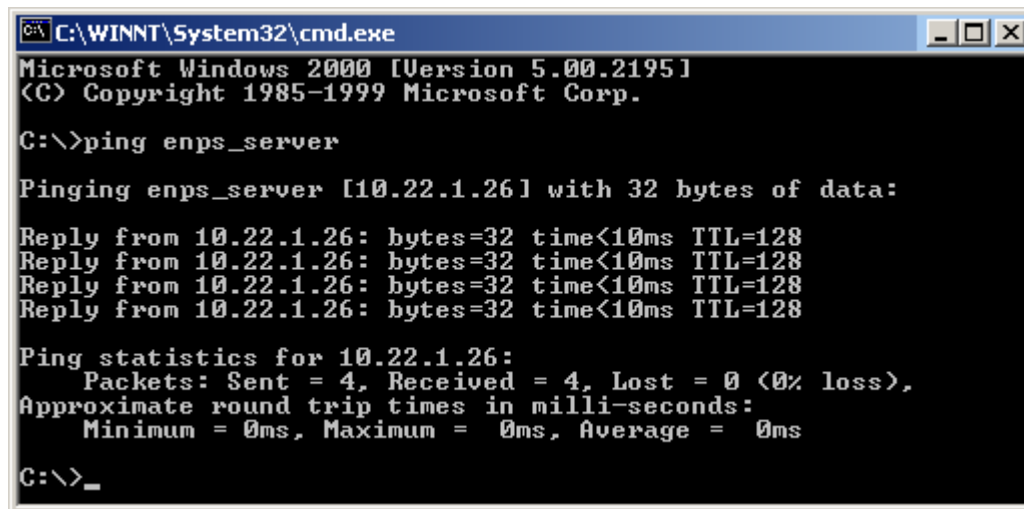
C:\>_
```

If you wish to determine the IP address of a remote machine on the network, type **ping** and the network name of the desired machine, e.g. “**ping enps_server**”.

This results in the output

Pinging enps_server [10.22.1.26]...

which reveals that the IP address for enps_server is 10.22.1.26



```
C:\WINNT\System32\cmd.exe
Microsoft Windows 2000 [Version 5.00.2195]
(C) Copyright 1985-1999 Microsoft Corp.

C:\>ping enps_server

Pinging enps_server [10.22.1.26] with 32 bytes of data:

Reply from 10.22.1.26: bytes=32 time<10ms TTL=128
Reply from 10.22.1.26: bytes=32 time<10ms TTL=128
Reply from 10.22.1.26: bytes=32 time<10ms TTL=128
Reply from 10.22.1.26: bytes=32 time<10ms TTL=128

Ping statistics for 10.22.1.26:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms

C:\>_
```

Many NT networks use a DHCP server to assign IP addresses, rather than giving fixed addresses to each machine. Under DHCP, the IP address for each machine is dynamically allocated, meaning that it can change. However, our experience has been that these addresses are stable, especially if the machine is left on.

How to Contact Pinnacle Systems

Pinnacle Systems can be reached via World Wide Web, telephone, email, and “snail-mail.” When calling for technical support, first obtain information on your system from the Help > About.

Pinnacle Systems, Inc.
280 N. Bernardo Avenue
Mountain View, CA 94043

Whenever contacting Pinnacle Systems for technical support, please have the information available:

- **Product name**
- **Product Serial Number**
- **Version:** Version number may be located by clicking on the Pinnacle logo in the upper-left hand corner of the edit window.
- **Type of Defect:** Crash, Video Glitch, Bug/Doesn't work right, Feature Request, or Usability/Improvement.
- A **precise description** of the problem.
- **Exact steps** to repeat the problem (even if it's 15 steps), if it can be reproduced.

Broadcast Support Americas and Canada

Phone:	Domestic (866)753-0491 Int'l 406-676-3385
Fax:	(650) 930-1601
Hours:	6am – 6pm (M-F) Pacific Time
Email:	broadcast-support@pinnaclesys.com
Web Support:	www.pinnaclesys.com/support

Broadcast Support Europe

Phone:	(44) (0) 1895 442-003
Fax:	(44) (0) 1895 442-275
Email:	broadcast-support-uk@pinnaclesys.com
Web Support:	www.pinnaclesys.com/support

Broadcast Support South Asia

Phone: (65) 284-2336
Fax: (65) 285-9486
Email: pacrim-support@pinnaclesys.com
Web Support: www.pinnaclesys.com/asia
Supports Regions: Taiwan, India, Pakistan, Bangladesh, Sri Lanka, Australia, New Zealand, Thailand, Viet Nam, Philippines, Brunei, Singapore, Malaysia, Indonesia

Broadcast Support Beijing

Phone: (86) 10 6641 0053 or (86) 10 6641 0063
Fax: (86) 10 6641 0073
Email: broadcast-support-cn@pinnaclesys.com
Web Support: www.pinnaclesys.com/asia
Supports Regions: China, Hong Kong, Korea

Pinnacle Systems Corporate

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