

***FDP**PostPlay*

*Retransmitted signal delay
server*

User's Guide

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ForwardT Software 4.0.0

SoftLab-NSK, Ltd.

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1 Introduction

FDPostPlay is a system of retransmitted signal delay. The system is created by SoftLab-NSK. Its main function is recording television broadcast with the ability to play back the recorded material later (for example, within several hours, days, etc). Broadcast is recorded simultaneously with the playback on the same working PC where the *FDPostPlay* system is installed. Physically the system represents a PC with the installed *FDPostPlay* software and the *FD300* board for video and audio data input/output. Installing an additional board gives an ability to record and play back twice more channels simultaneously. Mind that video data compression is software-based; therefore the processing power of the working PC should be sufficient for executing the task (particularly it is recommended to use a dual-processor system – see 1.3).

1.1 Overview

The retransmitted signal delay system presents a program server of video data delay and storage and a set of client applications for it. The video server allows several users to access the stored video and audio data through several channels; thus, it represents a sort of a file server. The video server can input video data from video devices and other remote storages simultaneously with broadcasting, and delay them for several hours (even days) before broadcasting. The server provides client applications with an interface for controlling its work and allows to preview the recorded material for selecting the required clips to play them back subsequently (**Error! Reference source not found.**).

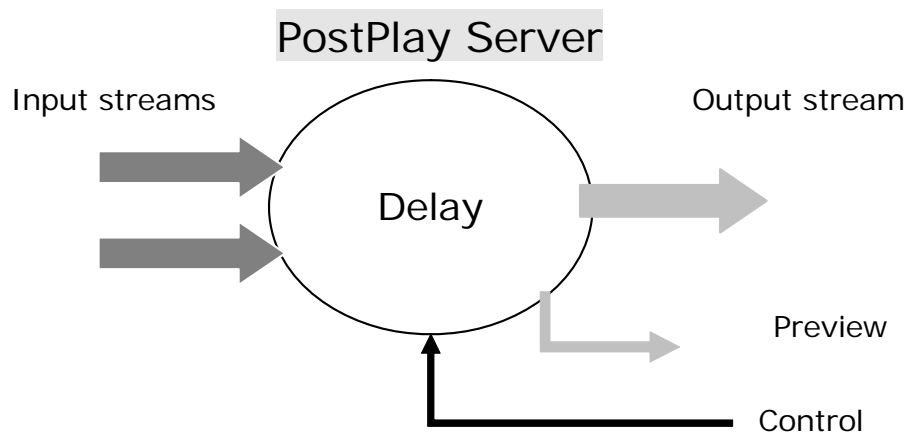


Figure 1. Scheme of the broadcast server operation

1.2 Basic features

The broadcast video server automatically controls broadcasting video data. Data is stored in digital format on the server hard disks. Station program director creates a broadcast schedule on a computer joined to one common network with the automatic server. Then he sends the prepared broadcast schedule to the broadcast server.

The server plays back the data according to the schedule round-the-clock. When using such equipment, on-air operations sharply differ from the same work in an analog studio. In case of need it is sufficient simply to correct the schedule straight on the server and the broadcasting will be correspondingly modified.

Basic capabilities provided by the server:

- Support of input, delay and output of uninterrupted video data stream on the broadcast video server with the ability to control the video data delay during an interval from several minutes up to scores of hours.
- Availability of a broadcast schedule of selected clips of delayed video data on the broadcast server.

1.3 System requirements


The *FDPostPlay* video server operates on the basis of the *Windows 2000/XP* operating system (the *Windows 9x/ME/NT* systems are not supported) and it must be furnished with an *FD300* board for data input/output. The *FDPostPlay* system is delivered with the *ForwardTP/TP2* packages (there must be a working registration of one of the products).


Minimum requirements:

- processor with real clock speed of 1,5 GHz or more (no less than Athlon XP 1700+);
- operating memory of 512 MB;
- hard disk of 40 GB with rotation speed of 7200 rpm with the Ultra DMA mode.

Recommended requirements:

- dual-processor system with processors of 2 GHz or more;
- the DDR operating memory of 1 GB or more;
- two hard disks with total volume of 350 GB or more (for a day delay); besides, it is recommended to separate the *Windows* system disk and storage disks of the *FDPostPlay* system physically (on individual controllers).

 **IMPORTANT:** *It is strongly recommended to use hard disks with the NTFS file system since the FAT file system does not allow to create a continuous file with a data size of more than 4GB. The FDPostPlay system in the current realization cannot avoid the limitation. The size of a file in a storage on each disk with the FAT file system cannot exceed 4GB, which is a substantial limitation.*

 **Note:** *For recording twice more channels it is required to install an additional FD300 board. The requirement of using a dual-processor system is obligatory in that case. To learn how to calculate the required hard disks volume, see section 2.2.*

2 FDPostPlay. Technical information

2.1 Data storage

There should be created a *Storage* (of inputted video and audio data) corresponding to every data channel being recorded. Physically a *Storage* is a set of files on the computer hard disks, but logically it represents a continuous cyclical data array.

Before the work is started, it is necessary either to open the earlier created storage or to create a new one. It is required to specify the logical drives in the system where a storage will be located and the amount of space on each of the drives that must be reserved for audio and video data (the *FDPostPlay VideoIn* application is intended for this purpose, see 5).

It is not recommended that a storage be located on the system disk, or it's necessary to limit its total volume to have a reserve of free space for normal operation of the virtual memory. The best choice is to locate the system with temporary files on one physical hard disk, and all the storages – on another one(s). The system hard disk and disk(s) with storages must be connected to physically separate controllers.

2.2 Estimating storage volume

Disks volume necessary for data storing directly depends on the maximum time for which the broadcasting must be delayed, and also on the video data compression ratio and audio data size. The data size of a storage is formed of the following components (in decreasing order of the occupied volume):

- Video data;
- Audio data;
- Service information (preview images etc.).

The way of estimating the volume for each component is described below.

2.2.1 Video data volume

Video data volume depends on the average data rate specified in the data compression parameters. There is a special case when the rate is constant: the DV compression format. In that case video rate is approximately 3.5 MBytes/sec (both for the PAL and NTSC standards), the corresponding table follows:

Duration of video (DV compression format)	1 sec	1 min	1 hour	3 hours	24 hours
Data size	3.5 MB	206 MB	12.07 GB	36.2 GB	290 GB

Different codecs can produce different average data rate. In the *FDPostPlay* software package the **Forward JPEG (SoftLab-NSK JPEG)** and **SoftLab-NSK MPEG2 I-frame** codecs are supplied in addition to the **DV** codec. It is recommended to use **MPEG2 I-frame** as the most optimized in respect of the operating speed and requiring less computing load on the processor than other codecs with the same image quality.

To provide a high-quality image, it is recommended to specify the average data rate of about 3...5 MBytes/sec. The table for codec with the average compression rate of 4 MBytes/sec is given below:

Duration of video (rate of 4 MBytes /sec)	1 sec	1 min	1 hour	3 hours	24 hours
Data size	4 MB	240 MB	14.06 GB	42.2 GB	337.6 GB

When using various codecs and data rates, do not forget to check carefully whether the compression at the specified rate provides acceptable image quality.

2.2.2 Audio data volume

Audio is recorded only in an uncompressed format (linear PCM). It is recommended that audio be always recorded with parameters of 16 bits/44100 Hz (or 48 kHz). When recording stereo sound, audio data volume increases 2 times more in comparison with mono sound.

Thus, at rate of 44100 Hz/16bits per channel, it is necessary to allocate 88200 bytes for mono sound and 176400 bytes for stereo sound per each second of audio. The following table gives the values of data size for typical audio durations:

Audio duration (44100 Hz/16 bits)	1 sec	1 min	1 hour	3 hours	24 hours
Data size (mono)	86.2 KB	5.05 MB	303 MB	908 MB	7.3 GB
Data size (stereo)	172.3 KB	10.1 MB	606 MB	1817 MB	14.6 GB

The same table for audio sampling frequency of 48 KHz is given below:

Audio duration (48 kHz/16 bits)	1 sec	1 min	1 hour	3 hours	24 hours
Data size (mono)	93.8 KB	5.5 MB	330 MB	989 MB	8 GB
Data size (stereo)	187.5 KB	11 MB	660 MB	1978 MB	15.9 GB

If the audio sampling frequency is different, audio data size (in bytes) can be easily calculated according to the following formula:

Audio Size = $F_s * 2 * \text{Channels} * t$, where:

- **F_s** – audio sampling frequency in Hz (for example, 32000);
- **Channels** – number of channels (1 – for mono and 2 – for stereo);
- **t** – time in seconds.

To present the result in kilobytes it is necessary to divide it by 1024; to present it in megabytes – to divide it by 1024 again.

2.2.3 Service information volume

Service information includes special headers of a small total size, and images with frames for previewing. These images can occupy a lot of space, thus you should take account of their part in the total data size of a storage.

Let it was specified at creating a storage: to generate preview images every second (to do it oftener is impossible); the image size is, for example 96x72 pixels. The images are stored in the **RGB** uncompressed format (4 bytes/pixel), therefore one image size is about 27 KB, which makes 1620 KB per minute. The corresponding table follows:

Duration	1 sec	1 min	1 hour	3 hours	24 hours
Data size	27 KB	1.58 MB	95 MB	285 MB	2278 MB


Moreover it is important to remember that all the images for previewing are stored in the operating memory. Therefore it is recommended to generate no more than 1 image per 10 seconds; at that the size will decrease 10 times more:

Duration	1 sec	1 min	1 hour	3 hours	24 hours
Data size	2.7 KB	162 KB	9.5 MB	28.5 MB	227.8 MB

It's possible to compress preview images (see 5.2) in the JPEG format, which decreases their size several times more (from 2 up to 10).

2.2.4 Conclusions

The information given above illustrates how one can estimate disks volume necessary for broadcasting with the required delay using the corresponding video data compression formats. An example usually covering the typical requirements is cited below:

 **Note:** *To delay broadcasting for a day using the DV video format with stereo sound, it is required to have disks volume of 300GB minimum for storing the data, also some additional volume is necessary to store service information. Thus, it is recommended to reserve approximately 350 GB on disks.*

Remember that it is recommended to physically separate the system hard disk and disks for data storing to increase the system total productivity and stability.

3 *FDPostPlay*. Installation manual

To install the *FDPostPlay* system:


- install the *FD300* board(s) correctly and make sure it works properly;
- install the *ForwardTP/TP2* software and make sure the system started successfully;
- adjust the input/output parameters of the *FD300* board(s).

For more detailed description of installation process, see the *FD300 board* and *ForwardT Software Installation* User's Guides.

3.1 Adjusting the input/output parameters of the *FD300* board

Launch the *FDConfiguration* application (menu **Start** → **Programs** → **ForwardT Software** → **Board Setup** → **FD300 Configuration**). Adjust the following parameters in the corresponding tabs:

- **Format**. Select the required TV standard (PAL/NTSC/SECAM) and image size (full resolution).
- **Output**. Specify **Analog Video Output** settings: Y/C+CVBS or YUV+CVBS, the rest are defaults.
- **Line A/Line B**. Select an input line and specify image parameters (brightness, contrast, etc.), having connected video signal source to the corresponding input line.
- **Sound**. Make sure the **Allow low-level audio and video synchronization** mode is enabled on the *FD300* board used for audio input. For audio data input it is strongly recommended to use one of the audio devices of the same *FD300* board that is used to input video data into the storage. Otherwise synchronization of video and audio data is not guaranteed.

 **IMPORTANT:** the *FD300* board registration (the *ForwardTP/TP2* product) must allow to input/output a video stream. In the **Selected Board Info** field of the *FDConfiguration* application (see 3.1) the following lines must be present: **Video capture supported** (*ForwardTP*) or **Dual channel video input supported** (*ForwardTP2*) and **Fullmix supported**. Besides, in the **Supported applications** list the **PostPlay** (*ForwardTP*) or **VideoIn2** (*ForwardTP2*) and **OnAir** applications must be mentioned (among others).

4 FDPostPlay. User's Guide

When the *FDPostPlay* system with an *FD300* board for data input/output is successfully installed and configured, it is possible to launch the system for data input/output. For working with the *FDPostPlay* system the following applications are used:

- *FDPostPlay Indicator* (in the system tray on the taskbar) shows the current state of the *FDPostPlay* system and also allows to launch other system applications from the local menu.
- *FDPostPlay VideoIn* is intended for video and audio data input and also for creating and controlling storages (see 5).
- *FDPostPlay Preview* is intended for selecting and previewing clips from sections of the inputted data to play them back subsequently (see 6).
- *FDOnAir* is the broadcast video server that provides playback of selected video clips according to the schedule (see 7).

The software package also contains macros for *Microsoft Excel* that allow to automatically generate clips from the inputted data to play them back subsequently from the worksheet (see the *PostPlay clips creation by Macro in Microsoft Excel* document).

4.1 The *FDPostPlay Indicator* and the *FDPostPlay* system start

If the *FDPostPlay Indicator* is installed, its icon is on the system tray of the taskbar. A right click on the icon opens the local menu:

- Start VideoIn** launches the *FDPostPlay VideoIn* application for storage creating, selecting or configuring (it also can be launched by double-clicking the *FDPostPlay Indicator* icon). See the application description in section 5.
- Start Preview** launches the *FDPostPlay Preview* application for the preview of a storage content and for selecting clips. See the application description in section 6.
- Start OnAir** launches the *FDOnAir* application for broadcasting automation and also for playing back clips created in the *FDPostPlay* system. See the instruction on playback of the PostPlay clips in the *FDOnAir* application in section 7.
- FD300 Sound Configure** opens the dialog of configuring the *FD300* board audio mixer.
- About FDPostPlay Software** opens the information dialog about the *FDPostPlay* software with the current version number.
- Advanced** opens a submenu with additional commands; it is not recommended to call these commands without necessity:
- FD300Configuration** launches the *FDConfiguration* application for adjusting parameters of the *FD300* board(s) (see 3.1).
- PostPlay Configuration** opens the *PostPlay flow configure* dialog (Figure 2) for specifying bandwidth and frame rate values at data reading/writing.

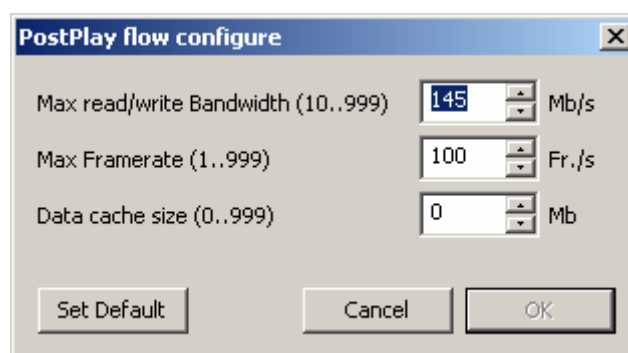




Figure 2. The *PostPlay flow configure* dialog

At data reading/writing in chunks of 10 MB, problems with the mainboard system resources busyness emerge, i.e. the PCI bus is busy longer than for one frame, which can result in loss of frames at data playback on the *FD300* board. In order to avoid that, it is necessary to limit the speed of transmitting data between the *FDPostPlay* system and the computer hard disk. For this purpose in the **Max read/write Bandwidth (10 ... 999) MB/s** parameter field of the dialog set the data rate value four times as much as the storage stream rate, i.e. 20MBytes/sec if the storage stream rate is equal to 5MBytes/sec. The **Max Framerate (1 ... 999) Fr./s** parameter value determines the number of queries to the disk per second. The number should be no less than 25, but no more than 100, the optimum value is 50 frames per second. The **Set Default** button sets the default parameters values: 21 MBytes/sec, 100 frames/sec.


In the **Data Cache Size (0...999)** parameter field the size of data cache for inputted data is specified. The **Set Default** button sets the default value of the parameter equal to 0.

 **Note:** For the correct operation of the *ReplayMachineConsole* application included in the *ReplayMachineSoftware*, the parameter value should be no less than 200MB. (For more details see *SportReplay. Multichannel Video Recording and Instant Replay system. User's guide, section 4.*)

FDPostPlay Service. The submenu contains commands for the *FDPostPlay* system service stop/start: **Start** – starts the service, **Stop** – stops the service, **Auto start with Windows** – starts it automatically at the system start (is set by default).

 **IMPORTANT:** stopping the *FDPostPlay* service can stop the operation of the *FDPostPlay* system!

SLTM Service. The submenu contains the commands for the *FD300* board system service stop/start: **Start** – starts the service, **Stop** – stops the service, **Auto start with Windows** – starts it automatically at the system start (is set by default).

 **IMPORTANT:** stopping the *SLTM* service can stop the operation of the *FDPostPlay* system and also of all the applications working with the *FD300* board!

Start Indicator with Windows. The option allows to launch the *FDPostPlay Indicator* with the system start.

Exit – closes the *FDPostPlay Indicator* application. The command does not stop the *FDPostPlay* system operation. If necessary, the *FDPostPlay Indicator* can be launched again later (system menu **Start** → **Programs** → **ForwardT Software** → **PostPlay** → **Indicator**).

Before starting the work with the *FDPostPlay* system, it is necessary to launch the *FDConfiguration* application and adjust the parameters of the *FD300* board(s) used for data input/output (see 3.1).

After adjusting the *FD300* board(s) parameters it is necessary to launch the *FDPostPlay VideoIn* application for creating a storage or selecting an earlier created one.

5 FDPostPlay VideoIn

The *FDPostPlay VideoIn* application is intended for creating, deleting and configuring storages for video and/or audio data of the *PostPlay* server, and also for inputting, compressing and recording video and/or audio data into storages. The *FDPostPlay VideoIn* application main window is shown in Figure 3.

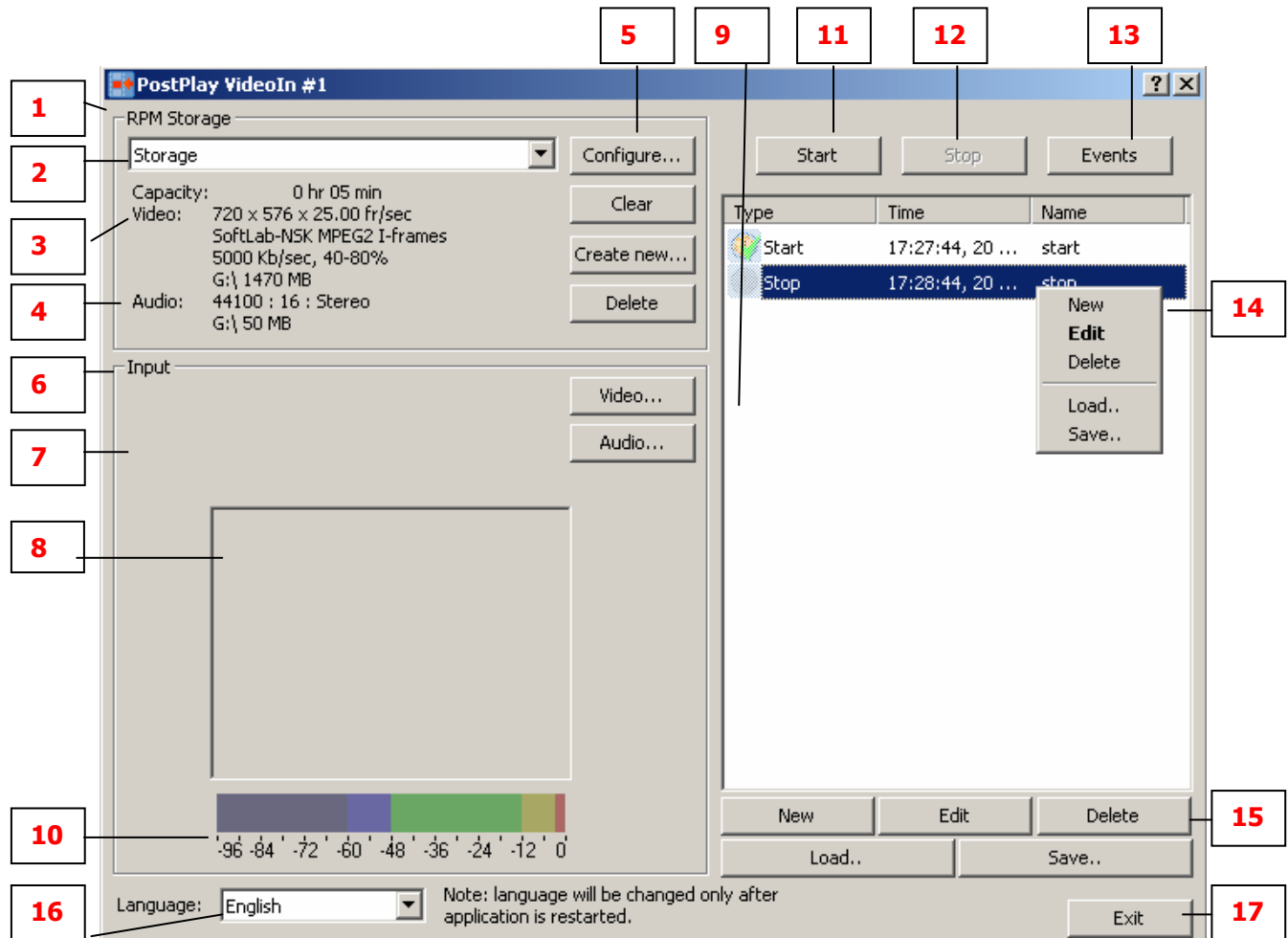


Figure 3. The *FDPostPlay VideoIn* application main window

5.1 The *FDPostPlay VideoIn* application main window

The *FDPostPlay VideoIn* application main window contains three main parts:

1. The **RPM Storage** parameters group (1). The elements of the group are intended for controlling storages. They can be controlled only when data are not being inputted at the moment. These elements are:
 - The drop-down list with the current storage name (2). All the operations are carried out with the selected *Storage*. If the **<Connect>** element is selected in the list, there will appear a window of selecting a computer from the network to be connected to the *FDPostPlay* system installed on a remote computer through the network. If the connecting to the remote server has been carried out, a list of storages located there is displayed. The **<Local>** element appears in the list for the return to the local server (see 5.5 for more details).
 - The information field (3) with description of the current *Storage* is located below: **Capacity** – storage value (in minutes and seconds), it is the maximum period of a signal delay; **Video** – video format, namely: 720 x 576 x 25.0 frames/sec – size in pixels and the frame rate; video compression format and compression parameters are listed below:
 - **SoftLab-NSK MPEG2 I-frames** –the name of the video codec being used.

- **5000 KB/Sec, 40 – 80%** – average rate of compressed video data (in kilobytes per second) and range of compression quality in percentage terms. These parameters determine the quality of the image and are specified not for all the codecs (some codecs support only fixed data rate).
- **D:\ 240 MB, E:\ 1470 MB** (other drives names and data capacities can be displayed) – a list of computer logical drives with capacities allocated for video data of the current storage on each of them (in MegaBytes).

Audio parameters (4):

- **44100: 16: Stereo** – sampling frequency (in Hz), resolution (number of bits per signal sample), number of channels (**Mono** – one channel, **Stereo** – two channels).
- **D:\ 20 MB, E:\ 50 MB** (other drives names and data capacities can be displayed) – a list of computer logical drives with capacity allocated for audio data of the current storage on each of them (in MegaBytes).

On the right of the storage name are storage control buttons (5):

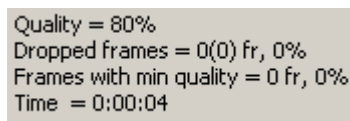
- **Configure...** – opens the dialog of the selected storage settings (see below).
- **Clear** – clears the current storage (deletes its content) without physical deleting its files from the drives.

 **IMPORTANT:** *the operation can take a lot of time and cannot be cancelled!*

- **Create new...** – opens the settings dialog (see below) for creating a new storage.
- **Delete** – physically deletes the current storage from the drives (with its files).

 **IMPORTANT:** *the operation can take a lot of time and cannot be cancelled!*

2. In the **Input** group (6) a frame of the inputted video of reduced size is displayed (8 – preview window). Frames are updated at the rate specified for previewing images generation (see below). Above the preview window is an information field, where at the normal state of data inputting process, approximately the following information (7) is displayed (Figure 4):



```
Quality = 80%
Dropped frames = 0(0) fr, 0%
Frames with min quality = 0 fr, 0%
Time = 0:00:04
```

Figure 4. Information field at correct data inputting

- **Quality** – the current quality of video data compression (the quality range is specified at adjusting the storage settings – see 5.2 and also a remark about quality in section 5.4).
- **Dropped frames** – number of frames dropped at video data input (in frames and in percentage terms of the total number of the inputted frames). The number of frames dropped by the *FD300* board at inputting is displayed before the brackets (such situation can occur if the application does not have time to take out frames from the board input queue), the total number of the dropped frames (both by the board and the application) – in the brackets. At normal operation the number is equal to 0. If some frames are dropped at input, it means that either the computer productivity is not sufficient for video data compression, or the disk speed is not fast enough for recording the compressed video data in real time. For more details about the possible reasons and solutions to such problems, see section 9.1.
- **Frames with min quality** – number of video frames with the minimum quality (in frames and percent). The number should be insignificant (the best value is 0), otherwise the real storage value may prove to be less than the value specified at its creating, which may cause the problem of free space shortage on the drives for data in the storage (see 5.4).
- **Time** – the total time of inputting data into the storage (in hours, minutes and seconds).

The video parameters (width, height and frame rate) in the current storage should coincide with the video parameters of the selected *FD300* board. Otherwise data input is impossible (the **Start** button is disabled) and the following error message appears in the information field (the **input** group) of the main window (Figure 5):

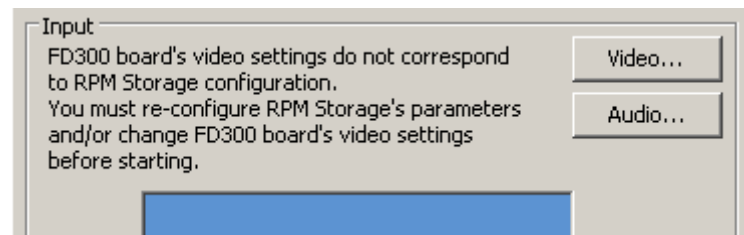


Figure 5. Information field at incorrect video parameters

To start data input, change either the video settings in the storage (the operation will completely clear the storage), or the video format parameters in the *FD300* board settings. For this purpose press the **Video...** button (9) on the right of the preview window. In the **Format** tab select a TV standard (PAL/NTSC) corresponding to the frame rate in the storage (PAL/SECAM corresponds to 25 frames/sec, NTSC – 29.97 frames/sec) and frame size (it should coincide with the frame size in the storage). In the **Input** tab you can select the required video input line of the *FD300* board to which the video source is connected, and adjust its parameters. To get information about settings in the **Format** and **Input** tabs, press the **Help** button in the right bottom part of the window with the tabs.

There is an audio indicator under the preview window (10) displaying the current volume of the inputted audio. When adjusting audio parameters, ascertain that the signal volume is sufficient and does not exceed the maximum possible value (0 dB). A double click on the indicator opens the *Audio Indicator Tuning* dialog (Figure 6).

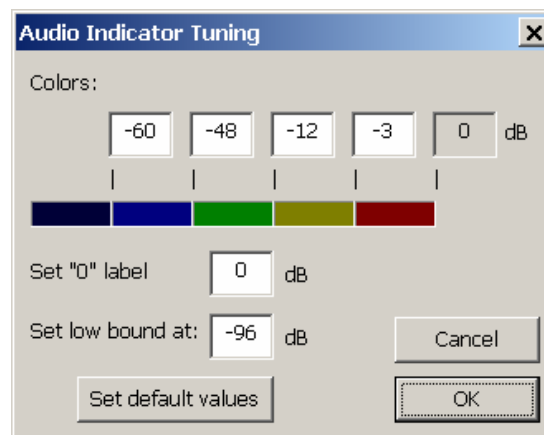


Figure 6. The audio indicator tuning

This dialog is intended to adjust the appearance and properties of the audio indicator:

- In the **Colors** group you may specify the volume corresponding to each color of the indicator displayed below.
- The **Set "0" label at** parameter allows to set the level of 0 dB (the maximum volume) on the indicator at the specified real volume. For example, if you want the volume of -3 dB to be displayed as the maximum possible level (0 dB), set the parameter at -3 dB. The default value is 0 dB.
- The **Set low bound** parameter allows to set the low bound of the indicator (the indicator range). The default value is -96 dB.
- Pressing the **Set default values** button allows to restore the default settings of the indicator.

A right click on the audio indicator opens the local menu:

Audio level meter the command opens the *Audio Indicator Tuning* dialog (Figure 6).

Min dB limit the commands of the submenu allow to quickly select an indicator range, i.e. its low bound (see above).

The **Audio...** button on the right of the preview window (under the **Video** button, 9) allows to select an audio device for audio input into the storage from the drop-down list in the opened window. It is strongly recommended to use an audio device on the same *FD300* board that is used for video data input. Otherwise synchronization of video and audio data is not guaranteed (see section 8.2).

3. In the right top part of the main window are buttons to start/stop data input into the current **Storage: Start (11)** – starts inputting, **Stop (12)** – stops inputting. The **Events** button (13) activates the reaction to the events listed below.

A right click on the field with the events list opens the local menu (Figure 3) with the following commands:

- **New** – opens the *Event* dialog (Figure 7) for adding a new event;
- **Edit** – opens the *Event* settings dialog (Figure 7) for changing its parameters;
- **Delete** – deletes a selected event;
- **Load...** – opens a system file opening dialog for loading a file with the schedule *.VideoInSchedule; after loading the schedule the dialog of date selecting is opened (Figure 8);
- **Save...** – opens a system dialog for saving the events list (schedule) to the *.VideoInSchedule file.

A right click on the name of the selected event in the list allows to add or change parameters of the selected event in the *Event* dialog (Figure 7) or to delete the event by the **Delete, Edit**, commands. If you set the mouse cursor on any place in the window except the events list, the **Delete, Edit** commands become inactive.

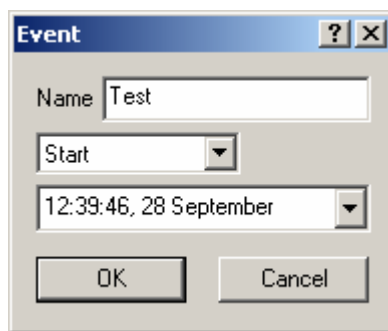


Figure 7. The *Event* settings dialog

In the *Event* dialog it is possible to specify: a user-defined name of the event (can be empty), a type (**Start/Stop**) and also a date and time of the event. With such events it is possible to set input only of the required parts of the television programs at the specified time. The date is specified manually or selected by the calendar. Pressing the button on the right of the field in the date window opens the calendar.

The events list (schedule) in the window can be saved to a file with the *.VideoInSchedule extension for the subsequent use of the prepared schedule. The **Save...** command opens a system dialog of files saving where a folder to store the schedule is selected. The **Load...** command loads a prepared schedule from a file to the application. After that a dialog for changing the date of the loaded schedule is opened (Figure 8).

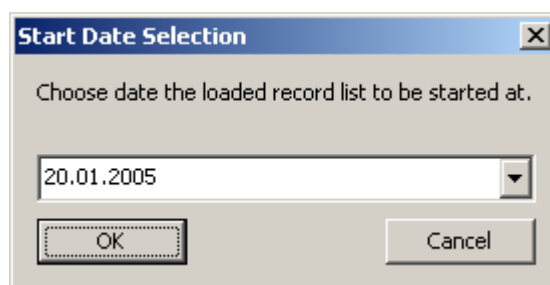



Figure 8. Selecting the start date

In the right bottom part of the dialog (Figure 3) under the events list are two lines of buttons (15): **New, Edit, Delete, Load..., Save...**. Functions of these buttons completely coincide with the operations of the contextual menu commands.

In the left bottom part of the application main window is a drop-down list (16) to select a language for the users' interface. Note that the selected language will be applied only after the application restart.

 **Note:** pressing the **Close** button (the cross in the right top corner of the application main window) only closes the main window and places its icon on the system taskbar, but does not exit the application.

To exit the application, press the **Exit** button (17) in the right bottom corner of the application main window. If data input is performed at the moment, a confirmation request for data input abort and exiting the application will appear.

5.2 Storage settings

The storage configuration dialog (Figure 9) is opened by pressing either the **Configure** or **Create new...** buttons in the application main window (see 5.1). It consists of three sections: general storage parameters, **Video** and **Audio** parameters groups.

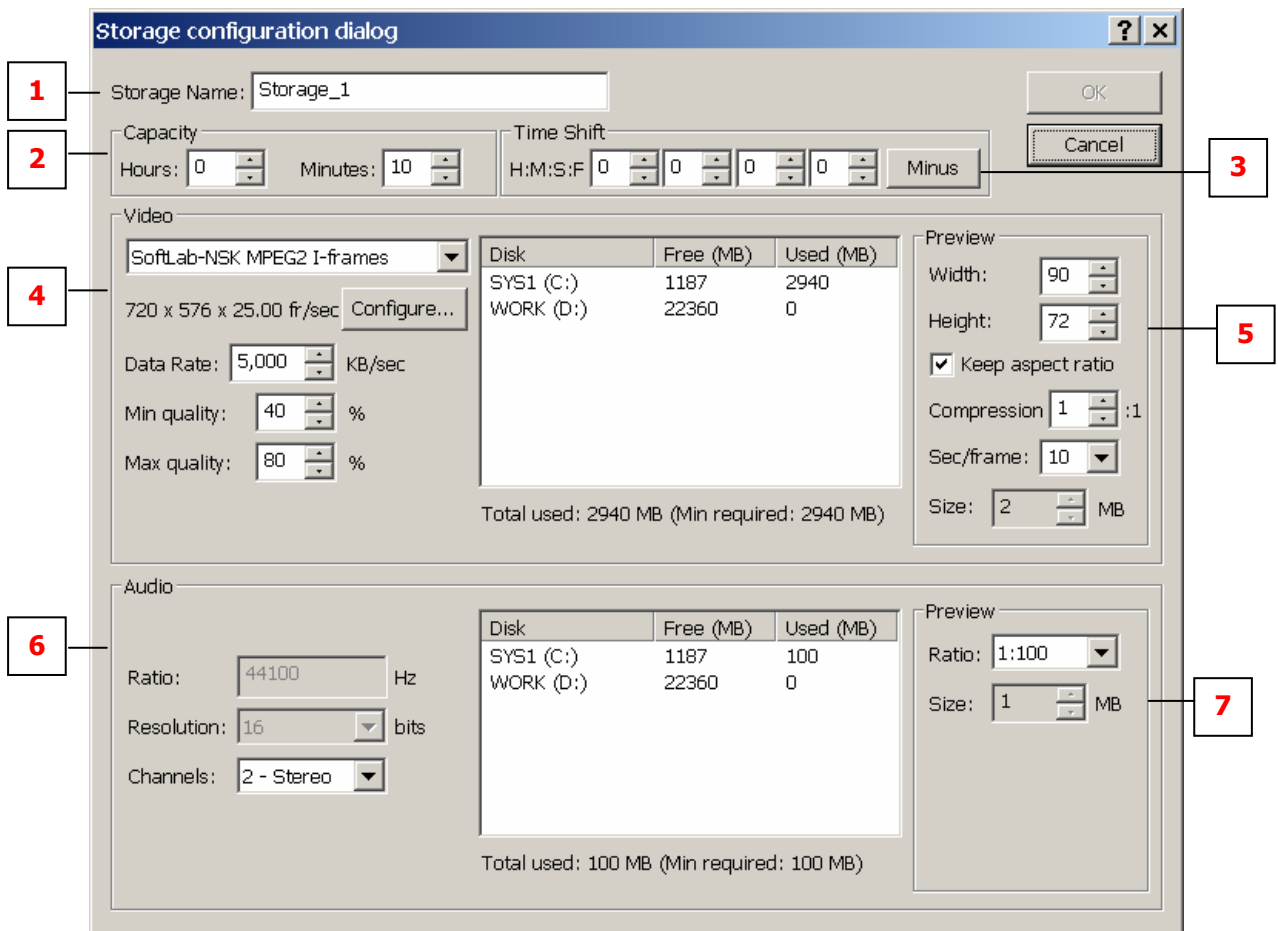


Figure 9. The storage configuration dialog

In the first (topmost) part of the dialog the general parameters are specified.

- In the **Storage Name** field (1) the name of a storage is specified. The name is added to the drop-down list in the application main window where a storage can be selected.
- In the **Capacity** group (2) the storage volume is specified; that will be the maximum time of delaying the signal: **Hours, Minutes**.
- In the **Time Shift** (3) group a time shift (hours, minutes, seconds, frames) is set – when the time data is logged into a storage, the shift is added to the current system time. It simplifies considering the difference between the time of data input and playback. For example, if the standard delay is three hours, then in the **Time Shift** group it is required to specify the shift of three hours exactly. Pressing the **Minus** button allows to specify a negative shift (its value will be not added, but subtracted from the system time).

For example, the difference between two time zones is +3 hours: data is broadcast for New York, while the *FDPostPlay* relaying system is in Los Angeles. The application starts recording the data transmitted for New York where it is 5 p.m., when it is 2 p.m. in Los Angeles. The same data will

be played back in Los Angeles in three hours. Specifying the shift of +3 hours enables logging into the storage the time value corresponding to the playback moment instead of the recording moment. Subsequently at previewing and selecting clips from the inputted data for relaying it in the *FDPostPlay Preview* application (see 6), it will be possible to operate with local time instead of keeping in mind the difference between the time zones.

In the **Video** section (4) of the dialog, the parameters of video data compression and previewing are adjusted. A codec that will be used for video data compression is selected in the drop-down list. A format of video data going from the *FD300* board is displayed under the list: width and height of image, frame rate (for example, 720 x 576, 25 frames/sec).

A video codec selected for video data compression can be configured after pressing the **Configure** button. An average compressed video data rate (in kilobytes per second) is specified in the **Data Rate** field. If the selected codec does not allow to specify the data rate, the field will be grayed out. In the **Quality** group the minimum and maximum values of compression quality are specified (in percentage terms). The application will dynamically change the current compression quality within the limits trying to get the specified average compressed video data rate. It is assumed that the specified data stream will be successfully recorded, and then read from the disk by the RPM server, and the computer processing power will be sufficient (see 1.3). For more details about the codecs that are recommended for video data compression, see section 8.1.

In the video **Preview** group (5) the parameters of video data previewing are adjusted. The **Width** and **Height** fields are intended for specifying the width and height of the preview image (in pixels). The **Keep aspect ratio** check box allows to keep proportions of the preview image according to the initial frame (at that, it is possible to specify only width or height – the second parameter changes automatically). The **Compression** field makes possible compressing preview images in the JPEG format, which decreases their size several times more (from 2 up to 10). Set the compression rate value (1:1 means no compression). The preview images displaying is not interrupted at setting the new value. In the **Sec/frame** field a time interval (in seconds) between the adjacent preview images is specified. The **Size** field shows the memory size (in megabytes) taken by all the preview images for the specified storage value (the maximum delay time). It is not recommended that the size exceeds half of the operating memory on your computer (see 2.2.3). If it does, at closing the dialog a warning message will appear. As memory size occupied by preview images depends on the time of the signal delaying, it is advisable to specify the delay time before adjusting the preview parameters.


The **Audio** parameter group (6) displays information about the audio parameters being entered at the moment. In the **Ratio** field audio sampling rate is displayed; in the **Resolution** field – bits per sample (8/16 bits); and in the **Channels** field – number of channels (mono/stereo). Audio parameters (except the number of channels) are specified at adjusting the video board parameters in the *FDConfiguration* application.

In the audio **Preview** field (7) the rate of recording data for previewing the audio wave form is set relative to the audio sampling rate. It is recommended to set the default value (1:100). The memory volume (in MegaBytes) required by the data is displayed next to the field.

Both the **Video** and **Audio** groups contain a field along with a list of the computer logical drives where it is possible to specify the volume allocated for a storage on each of the drives. Under these fields is information on the volume totally allocated for video and audio data on all the drives, and in the brackets the minimum required volume at the current storage capacity is shown, for example: **Total used: 340 MB (Min required: 236 MB)**.

The **Min required** parameter shows the total (on all the drives) files size necessary for saving the specified time of video and audio data with their current settings (their parameters are adjusted in the **Video** and **Audio** groups correspondingly); and **Total used** shows the current capacity allocated for the data totally on all the drives.

In the list of the local drives it is necessary to specify the amount of data that will be located on each drive. For that double-click on the **Total used** field opposite the corresponding drive name. The total capacity of all the drives should be not less than the value displayed in the **Min required** field. Otherwise at attempt to apply the settings, a warning message will appear.

 **IMPORTANT:** *It is better to adjust the files location and size after specifying the storage capacity (the maximum delay time) and adjusting the parameters of audio and video data, when*

the **Min required** field value is exactly known. After switching the **Audio** check box off (if it is possible), the audio data will not be saved, and so it will not be necessary to adjust the audio data parameters. For more details about estimating the storage capacity, see section 2.2.

5.3 Order of storage initialization and configuration

Before the *FDPostPlay VideoIn* and *FDPostPlay Preview* applications are launched, it is required to adjust the *FD300* board parameters. For this purpose launch the *FDConfiguration* application (menu **Start** → **Programs** → **ForwardT Software** → **Board Setup** → **FD300 Configuration**), specify video format, image sizes and adjust inputs and output of the *FD300* board.


Then launch the *FDPostPlay VideoIn* application and create a storage by clicking the **Create new...** button. A storage configuration dialog (Figure 9) will open.

The way of storage parameters configuring:

- Specify required storage capacity (the maximum delay time) in hours and minutes.
- Specify a time shift if necessary (see section 5.2).
- In the **Video** group select a codec (for example, **SoftLab-NSK MPEG2 I-frame**); specify average data rate, minimum and maximum quality (to get information about selecting a codec for video compression, see section 8.1).
- In the **Video** group specify the capacity allocated for the data (for each drive) so that the total capacity on all the drives is no less than the value specified in the **Min required** field. If the space on the drives is scarce, it is necessary to decrease the storage capacity (step 1) or to reduce the average rate of the compressed video data (step 2).
- For audio input check the **Audio** check box (in some versions of the *FDPostPlay* system it is impossible to input video data without audio).
- In the **Audio** group specify audio data allocation to the drives (as well as for video data in step 4).
- In the video **Preview** group specify the image size for operational previewing in the *FDPostPlay Preview* application (for example, 80x60 pixels). Specify the rate of preview frames (the **Sec/frame** field) so that they did not occupy more than a half of the operating memory on your computer (the **Size** field under the **Sec/frame** field).
- In the audio **Preview** group it is recommended to use the default value (1:100).
- To apply the changes, press the **OK** button. If warning messages appear, read their information carefully and make appropriate changes to eliminate the emerging problems (for example, if the space allocated for data on drives is scarce, or previewing video/audio data size is too large).

5.4 Recording audio and video data

Click the **Start** button in the main window to begin the recording process. The button is grayed out when there is no storage or the current video format of the board does not coincide with the video format of the data in storage (see 5.1, Figure 5). In the **Input/Video** group the current information about the inputted frame and the current image of video preview are displayed. The information about the current video compression quality, number of the dropped frames and the time since the beginning of the data input gets updated simultaneously with the image.

 **Mind the current value of the compression quality:** if it is less than the minimum value, it means that the recorded rate of the compressed video data exceeds the specified average rate, and so the space allocated to the drives can be inadequate to store the video data with the total duration specified in the storage settings. Besides, if the value in the **Dropped frames** field is more than 0, make sure the performance of the working computer is sufficient for the *FDPostPlay* system operation (see 1.3), and also check whether it is necessary to defragment the disks being used (it must be done before creating the storage), also see section 9.1.

5.5 Working with remote storages

The application allows to input the data into a storage located on another computer with the operating *FDPostPlay* system through the network. To work with a remote storage, it is necessary to select the

Connect... element from the **RPM Storage** list in the application main window (see 5.1). The *Remote Connection* window of selecting a remote computer will appear (Figure 10).

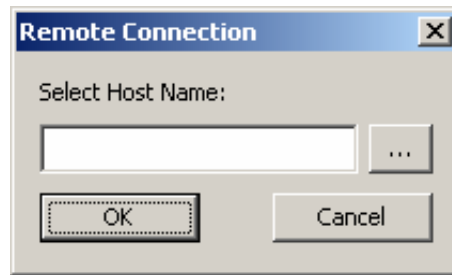


Figure 10. The remote connection window

In the **Select Host Name** field type the network name or IP address of the required computer. Pressing the button on the right of the field opens the system window of remote computer selection, where the required computer can be selected without typing its name manually.

After pressing the **OK** button, the application will try to connect to the *FDPostPlay* system located on the specified computer. If the *FDPostPlay* system is not found on the computer (or it is not operating at the moment), or connection fails for some reason (for example, the access rights are not appropriate), an error message will appear.

Note: In order that the client (in that case *FDPostPlay VideoIn*) application has an access to the *PostPlay* server located on a remote computer, the current user account with the operating *FDPostPlay VideoIn* application must have access to the remote computer. To get the access it is necessary to create an account with the same name and password on the remote computer or to include a user on the computer with the client application in the user group on the remote computer (for more details, see 8.3).

If the connection was carried out successfully, in the **RPM Storage** list in the application main window a list of the storages located on the selected remote computer is displayed (be attentive). The list is supplied with the **Local** element. The element is selected for disconnection from the remote computer and return to the list of the local storages. Then the list will again consist of the storages located on the local computer, where the *FDPostPlay VideoIn* application was initially started.

IMPORTANT: Data is inputted into the remote storage through the network that must guarantee transmission of the inputted data rate, otherwise some frames can be dropped, or the input will be impossible at all. For example, if video data rate in the compression parameters is set at 4 MB/sec (see 5.2), and at the same time stereo sound is inputted (data rate of 176 KB/sec at frequency of 44100Hz/16 bits or 192 KB/sec at 48000 Hz/16 bits), then for transmitting such rate with the service information to the remote storage the network must guarantee a steady ability to transfer about 5 MB/sec. The previous experience shows that such data rate can be provided only by the local network with the speed of 100 Mbits/sec minimum, provided that there is no other network activity at the moment (data transmission by other computers). Note that the actual maximum data transmission rate achievable in the network with the speed of 100 Mbits/sec is no more than 7-8 MBytes/sec.

Note: It is strongly recommended that the facility of remote data input be not used without absolute necessity; and if using it, it is obligatory to make sure whether the network provides sufficient data transmission speed and no dropped frames are at input. It is recommended to test the data input process during at least several hours. The best result is achieved when using a local network with the data rate of 100 Mbits/sec at least, where are only two computers: a server of data input (with the installed *FDPostPlay* system and the *FDPostPlay VideoIn* application that carries out data input and transmission through the network) and a broadcast server (with the installed *FDPostPlay* system that accepts data through the network, and the *FDOnAir* application that broadcasts the data).

6 FDPostPlay Preview

The *FDPostPlay Preview* application is intended for previewing the data already input into a storage, and for selecting clips from the data in order to play them back subsequently in the *FDOOnAir* application (see 7). Mind that none of the clips processing operations (creating, editing, deleting) changes data in the storage. The application can be launched from the local menu of the *FDPostPlay Indicator* application (see 4.1).

6.1 Selecting computer and storage

When the application is started, it requires selecting a type of the PostPlay server to work with: remote (located on a remote computer connected to the network) or local (located on the computer where the application is launched) (Figure 11).

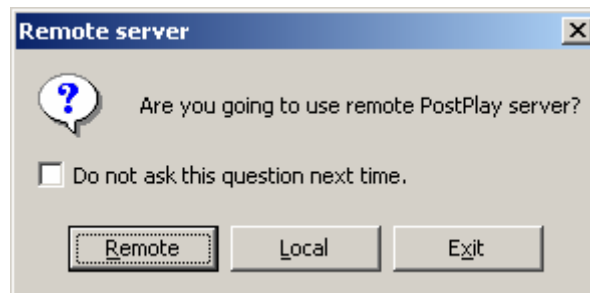


Figure 11. Request for selecting a type of the PostPlay server

The following buttons are available: **Exit** to exit the application, **Local** to select a local server and to work with local storages, and **Remote** to select a remote server. Pressing the **Remote** button opens a window of selecting a remote computer (Figure 12).

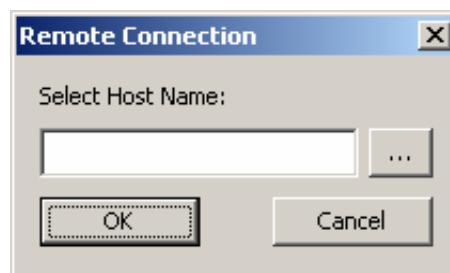


Figure 12. Selecting the name of a remote computer

In the **Select Host Name** field type the network name or IP address of the required computer. Pressing the button on the right of the field opens the system window of remote computer selection, where the required computer can be selected without typing its name manually.

Note: *in order that the client (in that case, the FDPostPlay Preview application) has access to the PostPlay server located on a remote computer, it is necessary that the current account, in which the FDPostPlay Preview application runs, have access to the remote computer. For this purpose it is necessary to create an account with the same name and password on the remote computer or to include the user in the user group on the remote computer (for more details, see 8.3).*

After pressing the **OK** button, the system will attempt to connect to the *FDPostPlay* system located on the specified computer. If the *FDPostPlay* system is not found on the computer (or it is not operating at the moment), or connection failed for some reasons (for example, there are no appropriate access rights), you will receive an error message.

If the check box **Do not ask this question next time** is checked and the **Local** button is pressed, then a local server is automatically selected at the next application start. If the **Remote** button is pressed, at the next start the window of remote computer selection will be automatically displayed, and the request for selecting a server type will be skipped. The option can be disabled in the application general settings (see 6.5.1).

After a server type is selected and connection is established, a window with a list of storages located on the selected computer is displayed (if there are no storages on the selected computer, you will be propositioned to select another computer). It is necessary to select a storage from the list where clips for playback will be created (at least one storage should be created beforehand in the *FDPostPlay VideoIn* application, see 5).

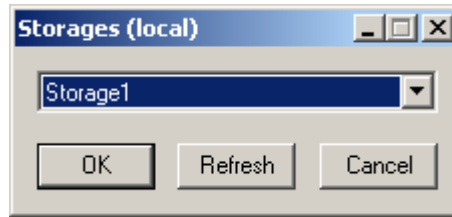


Figure 13. Selecting a storage

The selected type of the PostPlay server (local or remote) is indicated in the title bar of the **Storages** window (Figure 13) in brackets: “local” or “on [computer name]”. Select the required storage name from the list and press **OK**. After selecting a storage, the application main window will appear (Figure 14).

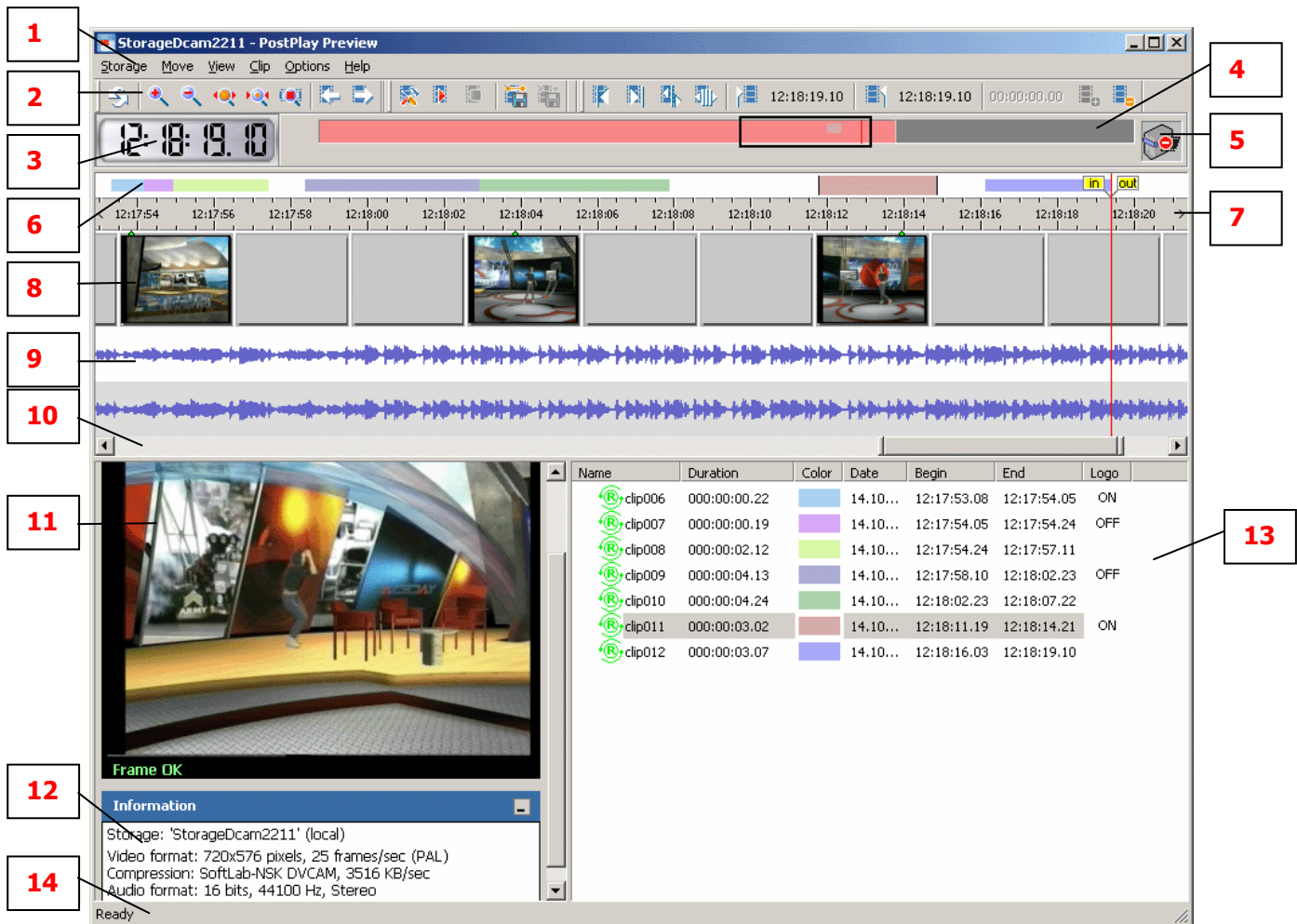


Figure 14. The *FDPostPlay Preview* application main window

6.2 *FDPostPlay Preview* application main window


The *FDPostPlay Preview* application main window contains the following parts (top-down):

- main menu (1);
- toolbar (2);
- current time position (3);

- storage overview (4);
- status indicator of data input (5);
- clips line (6);
- time ruler (7);
- the current working area of the storage with video track (8) and audio track if present (9) (in audio track one or two audio channels are shown depending on the type of audio data: mono or stereo);
- scroll bar of the working area (10);
- window of the current frame preview (11);
- information field (12);
- list of clips created in the storage (13);
- status bar (14).


The purposes of these parts are described below in detail.

6.2.1 Main menu

 **Note:** Almost all the commands of the main menu can also be performed from the toolbar (see 6.2.2) or by the «hot keys» (see 6.10).

The commands of the **Storage** menu allow to carry out the following operations:

Open...	open (select) the required storage on the current computer.
Export to AVI	commands of the submenu save a part of the data from storage to an external AVI file: the Current clip... , Selected clip(s)... , All clips... commands allow to save the corresponding clips from the clips list (see 6.2.11). The MarkIn – MarkOut... command saves the range between the marks of a clip beginning and end (it is available if these marks are previously specified with the Clip/Mark In/Out menu commands, see below). For more details, see 6.8.
Export Clip Info	commands of the submenu export information about clips of the current storage to a text file (in the CSV format that is compatible with Microsoft Excel). The corresponding commands allow to export from the clips list (see 6.2.11): Current clip, Selected Clips, All Clips .
Import Clip Info	import information about clips from the text file. For more details about clips import/export, see section 6.9.
Exit	exits the application.

 **Note:** To select another computer with the PostPlay storages (for example to change a remote storage to a local one or vice versa, see 6.1), it is necessary to exit the program and start it again.

The commands of the **Move** menu allow moving within the storage:

Left by ... frame(s)	move left by specified number of frames.
Right by ... frame(s)	move right by specified number of frames.

The spacing of moving left/right is specified in the application settings (see section 6.5). There is an ability to use simultaneously three different values of spacing. The following values are specified for them by default: 1 frame, 10 frames, and 1 second. Moving can also be carried out with the keyboard using the following keys: **→**, **←**, **Ctrl+→**, **Ctrl+←**, **Shift+→**, **Shift+←**.


Previous Clip Bound	go to the previous clip bound (also the Ctrl+↑ keys).
Next Clip Bound	go to the next clip bound (also the Ctrl+↓ keys).
Go to Storage Begin	go to the beginning of the storage (also the Ctrl+Home keys).

- Go to Storage End** go to the end of the storage (also the **Ctrl+ End** keys)
- Go to Time...** open the *Select time and date* dialog for specifying the current time manually (also the **Ctrl+G** keys, see 6.6).

The commands of the **View** menu are intended for controlling the elements of the main window, for changing preview mode of the storage and for previewing the data:

- Toolbars** commands of the submenu allow to hide/show the following toolbars: **View**, **Clip bar**, **Play/Export** (see 6.2.2).
- Columns** commands of the submenu allow to hide/show corresponding columns in the clips list (see 6.2.11). The **Reset** command restores all the columns to the initial state and displays them.
- Timeline** commands of the submenu allow to hide/show the following parts of the working area (timelines, see 6.2.8): **Clip line**, **Video Frames** (video track, it cannot be hidden), **Audio Wave Form** (audio track, if it is present in the storage).
- Status Bar** allows to hide/show the status bar at the bottom of the main window.
- Zoom In** scale up displaying the storage (also the «+» key).
- Zoom Out** scale down displaying the storage (also the «-» key).
- Zoom Out Full** set the scale of displaying the entire storage (also the «*» key).
- Zoom Out Clip** set the scale of displaying the entire selected clip (also the «/ » key). Note that the current time mark (cursor) does not change its position on the command.
- Zoom Out Ultra** switch on/off the frame-by-frame mode of previewing a storage (also the **Ctrl+Z** keys, see 6.7).
- Refresh** allows to update (re-draw) the entire application main window (also the **F5** key) if necessary.
- Play** start playback (previewing) the data of the storage in the preview window (see section 6.2.9) or on the *FD300* board, depending on the playback settings (also the **Ctrl+P** keys). Playing back is carried out from the current time (position of a vertical cursor in the working area) either up to the data end, or up to the moment when playback is stopped by the user with the following command.


If data are played back on an *FD300* board, the selected board should not be used by another external application; otherwise an error message will appear.
- Stop** stop playback (previewing) started by the previous command (also the **Ctrl+P** keys).

 **Note:** If keep the **Ctrl** key pressed when stopping playback, the same current time will be set as at the start of the playback. That can be useful if necessary to preview a clip more than once. Playback can also be stopped by a double click on the working area.

- Autoscroll to End at data input** at data input enables automatic scroll of the storage working area window to the right – to the end of the storage. As a result, the latest inputted data will be located at the right bound of the window. The command is also accessible by the **Ctrl+R** keys.


By the commands of the **Clip** menu clips are marked and added (see 6.3).

- Mark In** mark the clip beginning (also the **Home** key).
- Mark Out** mark the clip end (also the **End** key).

 **Note** that a clip ends by a frame earlier than its ending time mark.

Add Clip	add a clip marked by the two previous commands (also the Insert key), at that the dialog of clip editing is displayed (see 6.4), where the starting and ending time of the clips are specified in correspondence with the Mark In and Mark Out time, set by the two previous commands.
Delete Clip(s)	delete the selected clips from the list (see 6.2.11).
Edit Clip	open the dialog of the current clip editing (see 6.4).
New Clip	add a clip without specifying previously its beginning and end. In that case the starting and ending time must be specified manually in the dialog of clip editing (see 6.4). The command is also accessible by the Ctrl+plus keys on the keypad or Shift+«+» . The command is used for creating a clip corresponding to the data that is not present in the storage yet (that is, the data has not been inputted yet by the <i>FDPostPlay VideoIn</i> application, see 5), but it is known beforehand when the data will be inputted, and what starting and ending time of the clip will be to specify. In that case it is impossible to set the beginning and end of the clip by the Mark In and Mark Out commands, so they can be specified only manually.
Select All Clips	select all the clips in the list (also the Ctrl+A keys).
Move Clip Bound	the command allows to shift the nearest to the current time mark clip so that the clip bound nearest to the mark (the beginning or the end) moved towards it (and the other clip bound remains as it was). The command is also accessible by the Space key. Before the command execution you will be requested for confirmation if the corresponding option is enabled in the general settings of the application (see 6.5.1).
Move Clip Begin	move the clip beginning to the current time mark, at that the clip duration is changed. The command is also accessible by the Shift+Home keys. Before the command execution you will be requested for confirmation if the corresponding option is enabled in the general settings of the application (see 6.5.1).
Move Clip End	move the clip end to the current time mark, at that the clip duration is changed. The command is also accessible by the Shift+ End keys. Before the command execution you will be requested for confirmation if the corresponding option is enabled in the general settings of the application (see 6.5.1).
Offset Clip	move the clip beginning to the current time mark, the clip duration is not changed. The command is also accessible by the Shift+Space keys. Before the command execution you will be requested for confirmation if the corresponding option is enabled in the general settings of the application (see 6.5.1).
Offset Clips	the command shifts the clip nearest to the current time mark (we shall call it the first in the group) and all the clips to the right of it (which follow it). The beginning of the first clip moves to the current time mark, and all the other clips in the group move by the same interval, and their position relative to each other and to the first clip in the group does not change. Durations of the clips do not change. The command is also accessible by the Ctrl+SPACE keys. Before the command execution you will be requested for confirmation if the

corresponding option is enabled in the general settings of the application (see 6.5.1).

 **Note** that locked clips are not shifted by the command! For more details about locking clips see 6.2.11.

The commands of the **Options** menu allow to open the **General** and **Playback** settings dialogs. The application settings are described in more detail in section 6.5.










In the **Help** menu the **About PostPlay Preview...** command opens the information dialog about the application and its version number. The **Command-line Usage...** command displays the information about launching the application from the command line (see 6.11).


6.2.2 Toolbars

The toolbars contain buttons for carrying out basic operations of selecting clips from the storage and they duplicate some commands of the main menu. The toolbars can be moved by the mouse and hidden/shown by the commands of the **View/Toolbars** menu (see 6.2.1). If the mouse cursor points some button on a toolbar, a tool tip explaining its purpose appears.



The **Clip bar** allows carrying out the basic operations with clips:

-  go to the previous clip bound (the same as the **Move/Previous Clip Bound** menu command).
-  go to the next clip bound (the same as the **Move/Next Clip Bound** menu command).
-  move clip bound to the current time (the same as the **Clip/Move Clip Bound** menu command).
-  move the current clip beginning to the current time (the same as the **Clip/Move Clip Begin** menu command).
-  move the current clip end to the current time (the same as the **Clip/Move Clip End** menu command).
-  shift the clip beginning to the current time mark without changing clip duration (the same as the **Clip/Offset Clip** menu command).
-  move all the following clips (except the locked ones) to the current time (the same as the **Clip/Offset Clips** menu command).
-  mark the clip beginning (the same as the **Clip/Mark In** menu command). The clip starting time that was marked last time is displayed on the right of the button; click on the button to move to the time value.
-  mark the clip end (the same as the **Clip/Mark Out** menu command). The clip ending time that was marked last time is displayed on the right of the button; click on the button to move to the time value.

 **Note** that a clip ends by a frame earlier than its ending time mark.

On the right is displayed the current duration between the **Mark In** time and **Mark Out** time marked by the two previous commands.



add the clip marked by the two previous commands to the clips list (the same as the **Clip/Add Clip** menu command).



deletes the clips selected from the list (see 6.2.11).



IMPORTANT: If the corresponding option is off in the general settings of the application (see 6.5.1), clips are deleted without a warning! The locked clips can not be deleted (see 6.2.11).



The **View** toolbar allows to carry out the following actions:



re-draw (update) the content of the main window when necessary (the same as the **View/Refresh** menu command).



zoom in the storage previewing (the same as the **View/Zoom In** menu command).



zoom out the storage previewing (the same as the **View/Zoom Out** menu command).



show the entire storage (the same as the **View/Zoom Out Full** menu command).



show the entire current clip (the same as the **View/Zoom Out Clip** menu command).





switch on the frame-by-frame previewing mode (the same as the **View/Zoom Out Clip** menu command, see 6.7).



go left by one step (the same as the **Move/ Left by ... frame(s)** menu command).



go right by one step (the same as the **Move/ Right by ... frame(s)** menu command).

The step size (in frames) is determined by the value specified in the first item of the **Move** menu. Keeping the **Ctrl** and **Shift** keys pressed, with the  and  buttons it is possible to move by the number of steps specified in the second and third items of the **Move** menu, respectively.



go to the beginning of the storage (the same as the **Go to Storage Begin** menu command).



go to the end of the storage (the same as the **Go to Storage End** menu command).



autoscroll to the end of the storage at data input into it (the same as the **Autoscroll to End and data input** menu command).



The **Play/Export** toolbar contains the commands that control playback (preview) and data export from the storage to an AVI file/s (see 6.8):



open the playback settings dialog (the same as the **Options/Playback** menu command, see 6.2.11).



start playback from the current position on the time ruler (the same as the **View/Play** menu command). The video will be displayed in the **Preview**

window (see 6.2.9) or on the selected *FD300* board (depending on the application settings, see 6.5.2). Note that the video may be played back with delays due to the fact that the playback is carried out in such a way that does not break the uninterrupted data input from an input channel into the same storage if the data input is being performed by the *FDPostPlay VideoIn* application at the moment (see 5).



stop playback (the same as the **View/Stop** menu command) started by the previous command.



Note: If keep the **Ctrl** key pressed when stopping playback, the same current time will be set as at the start of the playback. That can be useful if necessary to preview a clip more than once. Playback can also be stopped by a double click on the working area.



export the current clip from the storage to an AVI-file (the same as the **Storage/Export to AVI/Current Clip** menu command). For the command to be available, at least one clip in the storage must be selected in the clips list (see section 6.2.11). If several clips were selected in the list, the current clip is the last selected one.



export the **MarkIn...MarkOut** range from the storage to an AVI-file (the same as the **Storage/Export to AVI/MarkIn – MarkOut...** menu command). For the command to be available, the starting and ending time of a clip in storage must be marked by the **Clip/Mark In** and **Clip/Mark Out** menu commands.

For more details about data export from a storage to an AVI file, see 6.8.

6.2.3 The current time



Figure 15. The current time window

In the window (Figure 15) the current time in storage is displayed. Time is displayed in the «hours: minutes: seconds: frames» format and corresponds to the time of data in the storage pointed by the current position of the time mark – a vertical cursor in the working area (see 6.2.8).

The current time can be changed by moving within the storage by commands of the **Move** menu, the **←**, **→** keys and their combinations with the **Shift/Ctrl** keys on the keyboard (see 6.10), and also by the commands of the **View** toolbar (see 6.2.2). A double click on the window opens a dialog of selecting the current time, which is specified manually (see 6.6).

The information about the current time mark position relative to the selected clip is displayed in the status bar. Depending on the context one of the following messages can be displayed in the status bar: “Before the beginning of clip: [clip name]”, “At the beginning of clip: [clip name]”, “At the end of clip: [clip name]”, “After the end of clip: [clip name]”.

6.2.4 Storage overview

This window (Figure 16) contains an overview of the entire storage, where the current working area is displayed.

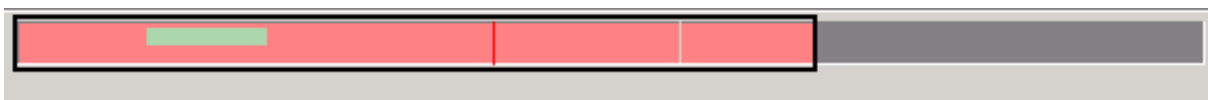





Figure 16. Storage overview

The frame shows a part of the storage where the current working area is located. The active working area is moved within the limits of the storage by placing the mouse cursor inside the frame (the cursor becomes hand-shaped ) and moving the cursor left or right with the left button pressed. It is possible to change the size of the working area (that is to specify a part of the storage that will be

displayed in the working area) by leading the cursor up either to the left bound (the cursor takes the  form) or right bound (the cursor takes the  form) of the frame and moving the cursor left or right with the left button pressed. A left or right click outside the frame moves the working area to the specified place.

The part of the storage containing data is marked by pink color. The framed current working area can be located in that very part. The part of storage, where is no data is marked by dark grey color; you cannot work in it. The current clip selected in the clips list is shown as the colored rectangle (see 6.2.11).

6.2.5 Indicator of data input status



Figure 17. Indicator of data input status

The indicator of data input status shows whether the data are inputted into the current storage by the *FDPostPlay VideoIn* application at the moment (see 5). When data input is not performed at the moment, the status indicator is static (Figure 17, left), and during the data input it is animated (Figure 17, right). Note that data can be inputted into the storage from a remote computer through the network (see 5.5).

6.2.6 Clips line



The clips line located above the time ruler displays the clips present in the storage as colored rectangles. Their colors correspond to the colors of the clips in the list (see 6.2.11). If some clips intersect by time, their colors in the intersection areas become correspondingly blended.

To define which rectangle represents the required clip, it is necessary to select the clip in the clips list – the corresponding rectangle will become higher than others, and its bounds will be marked by black vertical lines.

6.2.7 Time ruler



The time ruler located above the working area shows the time corresponding to the data in storage. The beginning and end of the uninterrupted data sections are marked by the < and > characters (between the corresponding time marks the data were uninterruptedly inputted into the storage in the *FDPostPlay VideoIn* application). Bounds between the sections are marked by white vertical lines (these bounds are marked by the same lines in the layout of the storage, see 6.2.4).

6.2.8 Working area

This part of the main window contains the current working area (Figure 18) along with video and audio tracks (there can be no audio track in it if the storage does not contain audio or its displaying is disabled by the **View/Timeline/Audio WaveForm** menu command).

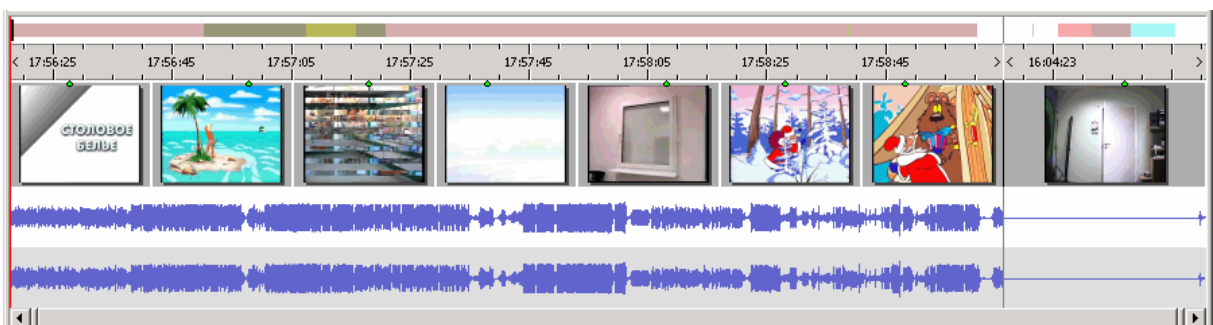



Figure 18. Working area

Assigning a current working area (selecting a part of the storage that will be displayed in the working area) is possible by the **View/Zoom In**, **Zoom Out**, **Zoom Out Full**, **Zoom Out Clip** menu commands. It is also possible to scale and assign the working area by the **+/-** keys of the keypad, moving the scroll bar (at the bottom of the working area under the video and audio tracks) and the storage overview window (see 6.2.4).

In normal mode the video track displays not the actual frames, but reduced images for previewing recorded into the storage with a certain rate (no more frequent than one image per second) by the *FDPostPlay VideoIn* application (see 5.2). There is a special mode for a close preview of a storage, which is switched on by the **View/Zoom Out Ultra** command of the menu (see 6.7).

 **Note:** Playback (previewing) can be started by a double click on the working area. The video is played from the point where the cursor was at the double clicking. A second double click on the working area stops the playback. Keeping the **Ctrl** key pressed at stopping the playback sets the current time in the same position as it was at the start of playback. That can be useful if necessary to preview a clip more than once.

6.2.9 The preview window (current frame)

The preview window displays the current frame of the video track pointed by the cursor (the current time mark) in the working area. Depending on the playback settings of the application, the current frame can also be displayed on the selected *FD300* board (see 6.5.2).

The current state is displayed in the bottom part of the window:

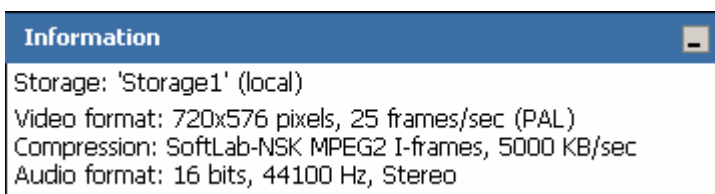
- **Searching...** – the frame is being searched for in storage at the moment, for example, right after changing the current time (the operation can take several seconds);
- **Frame OK** – the frame from the PostPlay server is received and displayed successfully;
- **Frame Absent** – the frame corresponding to the current time is not found in the storage: it might have been dropped at input;
- **Playing...** – playback (previewing the data in storage) is performed at the moment.

If preview is carried out on the *FD300* board, the window displays only the current state of the system and the inscription: **External Monitor (board number N)**, where **N** is the number of the *FD300* board selected in the playback settings (see 6.5.2).

A right click on the window opens the local menu with the following commands:

- Play** start preview (playback; the same as the **View/Play** menu command);
- Stop** stop playback started by the previous command (the same as the **View/Stop** menu command);
- Zoom** commands of the submenu allow to set a scale of displaying video in the preview window: **Large** or **Small**.

6.2.10 Information field



Under the preview window is an information field with information about the current storage:

Storage: [Storage name] (local) – where [Storage name] – the name of the current storage; it is indicated in the brackets whether it is local or remote; in the latter case it will be indicated thus: (to [Computer name]), where [Computer name] – the network name or IP address of the selected computer).

Video format: 720x576 pixels, 25 frames/sec (PAL) – format of video data in the storage (size and frame rate, standard – PAL/NTSC).

Compression: [Video codec name] – the full name of the video codec used for video data compression at input into the storage.

Audio format: 16 bits, 44100 Hz, Stereo – format of the uncompressed audio in the storage (resolution, sampling rate, mono/stereo).

6.2.11 Clips list

All the clips present in the storage are listed in the clips list (Figure 19).


































Name	Color	Date	Begin	End	Duration	Duration (real)	Logo
 клип011		17.08.2004	05:25:52.09	05:26:04.24	000:00:12.15	00:00:12.15	
 клип006		17.08.2004	05:26:04.14	05:26:07.15	000:00:03.01	00:00:03.01	ON
 клип008		17.08.2004	05:26:07.16	05:26:13.21	000:00:06.05	00:00:06.05	
 клип007		17.08.2004	05:26:14.01	05:26:22.23	000:00:08.22	00:00:08.22	
  клип009		17.08.2004	05:26:23.02	05:26:27.19	000:00:04.17	00:00:04.17	
  клип010		17.08.2004	05:26:27.19	05:26:34.03	000:00:06.09	00:00:06.09	
 клип002		17.08.2004	05:26:55.17	05:28:36.18	000:01:41.01	00:01:41.01	ON
 клип001		17.08.2004	05:28:01.00	05:28:20.06	000:00:19.06	00:00:19.06	
  клип003		17.08.2004	05:29:04.12	05:29:09.09	000:00:04.22	00:00:04.22	
 клип004		17.08.2004	05:29:09.09	05:29:25.22	000:00:16.13	00:00:16.13	OFF
 клип005		17.08.2004	05:29:25.22	05:29:40.13	000:00:14.16	00:00:14.16	



Figure 19. Clips list

The columns display the following information for each clip:

Name	clip text name (if a clip is locked by the user, on the left of its name the padlock icon  is displayed; if the clip is locked during playback in the <i>FDOnAir</i> application, then the  icon is displayed, see below). On the left of the name is also one of the following icons displaying the status of the clip:  – the beginning of the clip is already replaced (data in the storage corresponding to the clip beginning is already replaced with new data inputted from the <i>FDPostPlayVideoIn</i> application);  – the clip contains uninterrupted data in storage; “normal” state;  – the beginning of the clip contains uninterrupted data in storage, but its end is not inputted yet (it is in future);  – the clip is completely determined in future, and the corresponding data is not inputted into the storage yet;  – the clip beginning and end are present in storage, but in the middle of the clip is a break (or several) between the sections of uninterrupted data input.
Color	color representing the clip in the clips line (see 6.2.6) and storage layout (see 6.2.4).
Date	calendar date of the clip beginning (in the «day.month.year» format).
Begin	the starting time of the clip (in compliance with the time of the clip beginning data in the storage), displayed in the «hours: minutes: seconds: frames» format.
End	the ending time of the clip (in compliance with the time of the clip end data in the storage).

 **Note** that a clip ends by a frame earlier than its ending time mark.

Duration	calculated clip duration equal to the difference between the times of its beginning and end (it may not agree with the actual amount of data in the clip range).
Duration (real)	actual clip duration according to the duration of the data already inputted in the clip range of the storage (when the clip is not completely inputted, or when in the middle of the clip is a break between sections of uninterrupted data).
Logo	a command that informs the <i>FDO nAir</i> application (see 7) that at playback of the clip it is necessary to execute corresponding operation with the current (specified in the <i>FDO nAir</i> application) logotype: ON – to switch on, OFF – to switch off, (empty) – to keep the current state of logotype. To get the necessary state of the command, click the field in a line of the corresponding clip as many times as is necessary. For more details about the use of logotype, see the <i>FDO nAir</i> User's Guide.
Titles	a command that informs the <i>FDO nAir</i> application (see 7) that at playback of the clip it is necessary to execute corresponding operation with the current (specified in the <i>FDO nAir</i> application) titles: ON – to switch on, OFF – to switch off, (empty) – to keep the current state of titles. To get the necessary state of the command, click the field in a line of the corresponding clip as many times as is necessary. For more details about the use of titles, see in the <i>FDO nAir</i> User's Guide.

A clip can be locked by the user or by another application. The padlock icon  on the left of the clip name means that the clip is locked by the user. The  icon on the left of a clip name means that the current clip is used by the *FDO nAir* application and consequently is locked (only for the period of opening the clip and preparing it for the playback, which usually takes no more than a few seconds; when the clip is opened and prepared or is being played back, it is already unlocked). A locked clip is protected from accidental deleting or editing. A clip can be unlocked by the corresponding command from the local menu (see below).

Commands intended for clips processing can be called from the **Clip, View, Move** submenus of the main menu, corresponding toolbars or the local menu that is displayed at a right click on the clips list. The following commands of the local menu are available:

Edit	edit the current clip (change its name and/or starting/ending time), opens the dialog of clip editing (see 6.4). If a clip is locked manually (not by an external application), it can be unlocked by the corresponding command (see below). The dialog of clip editing can also be opened by a double click on the name of the required clip in the list.
Add Clip	add a clip (its starting and ending time should be previously set by the Mark In/Mark Out commands); also opens the dialog of clip editing with previously set starting and ending times.
Delete Clip(s)	delete the clips selected in the list. When executing the command, all the information about the clip is lost irretrievably. A warning about that will appear every time if such option is enabled in the application settings dialog in the Clips tab. Otherwise clips will be deleted without a warning. A locked clip cannot be deleted. If a clip is locked manually, you will be propositioned to unlock it (Figure 20). If a clip is locked by an external application (for example, if the clip is being broadcast), wait until it is released.

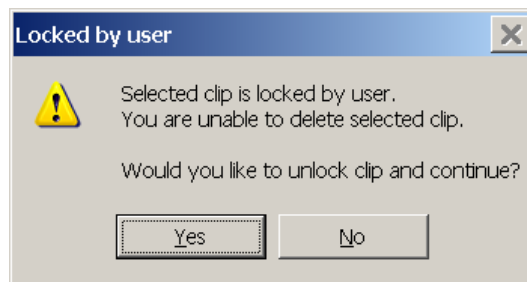



Figure 20. Warning message at attempt to delete a locked clip

 **IMPORTANT:** If the option is disabled in the general settings of the application (see 6.5.1), clips are deleted without a warning! The locked clips cannot be deleted (see below).

Go to the (**Begin** and **End**) commands of the submenu allow to move the current time mark in the working area (see 6.2.8) to the beginning or end of the selected clip. It can also be done by a double click on the corresponding field on the right of the clip name. The **Select time...** command specifies the current time manually, analogously to the **Move/Go to Time...** command of the main menu. Also opens the dialog of selecting the current time (see 6.6).

Zoom Out Clip

set a scale of displaying in the working area so that the clip selected in the list is displayed entirely (analogously to the **View/Zoom Out Clip** command of the main menu). Note that the current time mark (cursor) does not change its position.

Locked/Unlocked

opens the dialog of locking/unlocking clips (Figure 21).

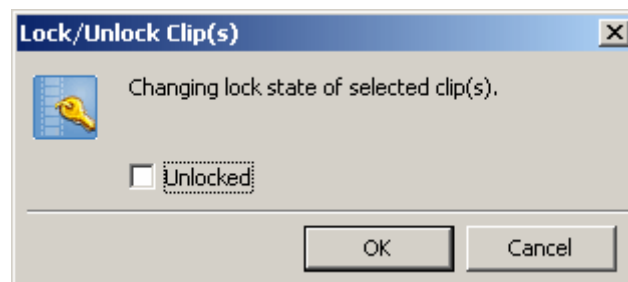





Figure 21. The dialog of locking clips

The **Locked/Unlocked** option of the dialog allows to lock/unlock the clips selected in the list. If a clip is locked (the padlock icon  is displayed in the list on the left of its name), it cannot be deleted without preliminary unlocking. At attempt to delete such a clip you are requested for clip unlocking confirmation.

New Clip add a new clip with the beginning and end time specified manually in the dialog of clip editing (see 6.4), analogously to the **Clip/New Clip** command of the main menu.

6.3 Defining a clip

To define a clip, it is necessary to perform the following sequence of operations.

- Moving the current position within the storage either by the mouse or appropriate commands (see the **Move** menu and the toolbars description), determine the beginning and end of the required clip accurate within 1 frame; preview the frame in the **Preview** window (current frame) or on the *FD300* board. Use the commands for previewing (playback) when necessary.
- Mark the beginning of the clip by the **Clip/Mark In** menu command (or with the  button of the toolbar), and its end by the **Clip/Mark Out** menu command (or with the  button on the toolbar).

- Add the clip to the list with the **Clip/Add Clip** menu command or the  button on the toolbar.

A clip can also be added by the **Clip/New Clip** menu command; in that case the starting and ending time are specified directly in the dialog of clip editing (see 6.4).

After the clip has been added to the list, it becomes available for playback in the *FDO nAir* application (see 7). The clip is available for playback until the data is replaced by new data inputted into the storage by the *FDPostPlay VideoIn* application (see 5). Then the clip is automatically deleted from the clips list.

6.4 Clip editing dialog

At adding a new clip (the **Clip/Add Clip** and **Clip/New Clip** menu commands), or editing one already added, a dialog of clip editing (Figure 22) is opened.

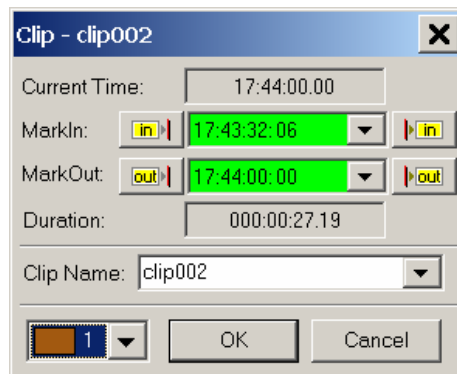



Figure 22. Dialog of clip editing

In the title bar of the dialog after the **Clip** inscription goes a clip name or [New] (at adding a new clip with the starting and ending time specified manually). The dialog contains the following fields:

- Current Time** position of the current time mark in the working area (see 6.2.8);
- MarkIn** the current starting time of the clip;
- MarkOut** the current ending time of the clip.

 *Note that a clip ends by a frame earlier than its ending time mark.*

- Duration** the current clip duration equal to the difference between values in the two previous fields;
- Clip Name** the current clip name, which can be edited or selected in the drop-down list (a set of templates is specified in the application general settings, see 6.5.1).
- Color** color representing the clip in the clips line and the layout of the storage. It is selected from the drop-down list. At adding a new clip, the first color in the list is the default one, at editing a clip – the current color of the clip.

Edited fields with **MarkIn** and **MarkOut** times can have different colors of the backgrounds. The **green** background means that data corresponding to the specified time is present in the storage. The **red** background means that the specified time is already in the past, and the data corresponding to that time is not already present in the storage. The **cyan** background means that the specified time corresponds to the future, and the data is not in the storage yet (but they might be present in future if the data input into the storage is performed at the specified time).

6.5 Application settings

The **Options** menu commands allow to change the application general settings as well as settings of the playback (previewing the data in the storage). For opening the corresponding settings dialog use the **General** and **Playback** commands.

6.5.1 General settings

The **Options/General** menu command (also the **F8** key) opens the *Application options* dialog. The dialog contains three tabs: **General** (Figure 23), **Clips** (Figure 24) and **Advanced** (Figure 25).

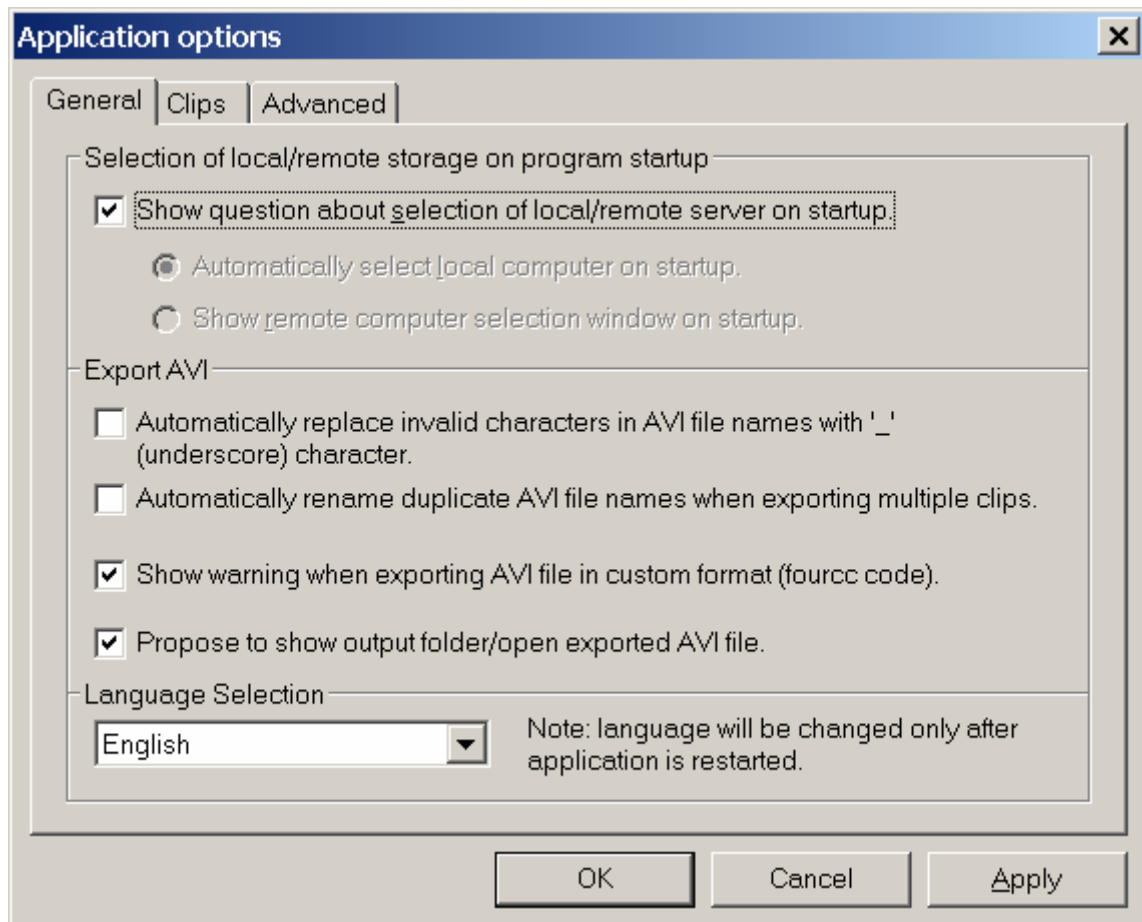


Figure 23. General settings of the application

In the **General** tab the following options are specified.

Show question about selection of local/remote server on startup – if the option is checked, at the application start you will be propositioned to select either local or remote computer before selecting the storage (see 6.1). If the option is off, you can enable one of the two options: **Automatically select local computer on startup** or **Show remote computer selection window on startup**. In both cases a request for selecting a computer type (local/remote) will be skipped, and the local computer (with a list of its storages) will be automatically selected, or the window of selecting a remote computer will be displayed, respectively.

Automatically replace invalid characters in AVI file names with \\' (underscore) character – if the option is checked, at exporting clips to AVI files characters invalid for file names (for example, >< etc) will be automatically replaced in the file name with the \\' character (underscore).

Automatically rename duplicate AVI file names when exporting multiple clips – if some exported clips have identical names when the option is checked, the corresponding AVI files will be automatically given different names. They will differ by a serial number after the \\' character (underscore) is automatically added to the clip name.

Show warning when exporting AVI file in custom format (FourCC code) – if the option is checked, at AVI file export (see 6.8) you will be requested for confirmation for saving it with a custom format.

Propose to show output folder/open exported AVI file – if the option is checked, after a successful AVI file export (see 6.8) you will be requested whether it is required to open the exported AVI file or show the folder with the file

In the **Language Selection** group you can select a language of the application user interface. Language will be changed only after the application restart. Therefore after selecting the language at pressing the **OK** or **Apply** buttons a request for the application restart will appear.

In the **Clips** tab (Figure 24) of the application general settings dialog it is possible to specify templates at your discretion for the clip names used most often .

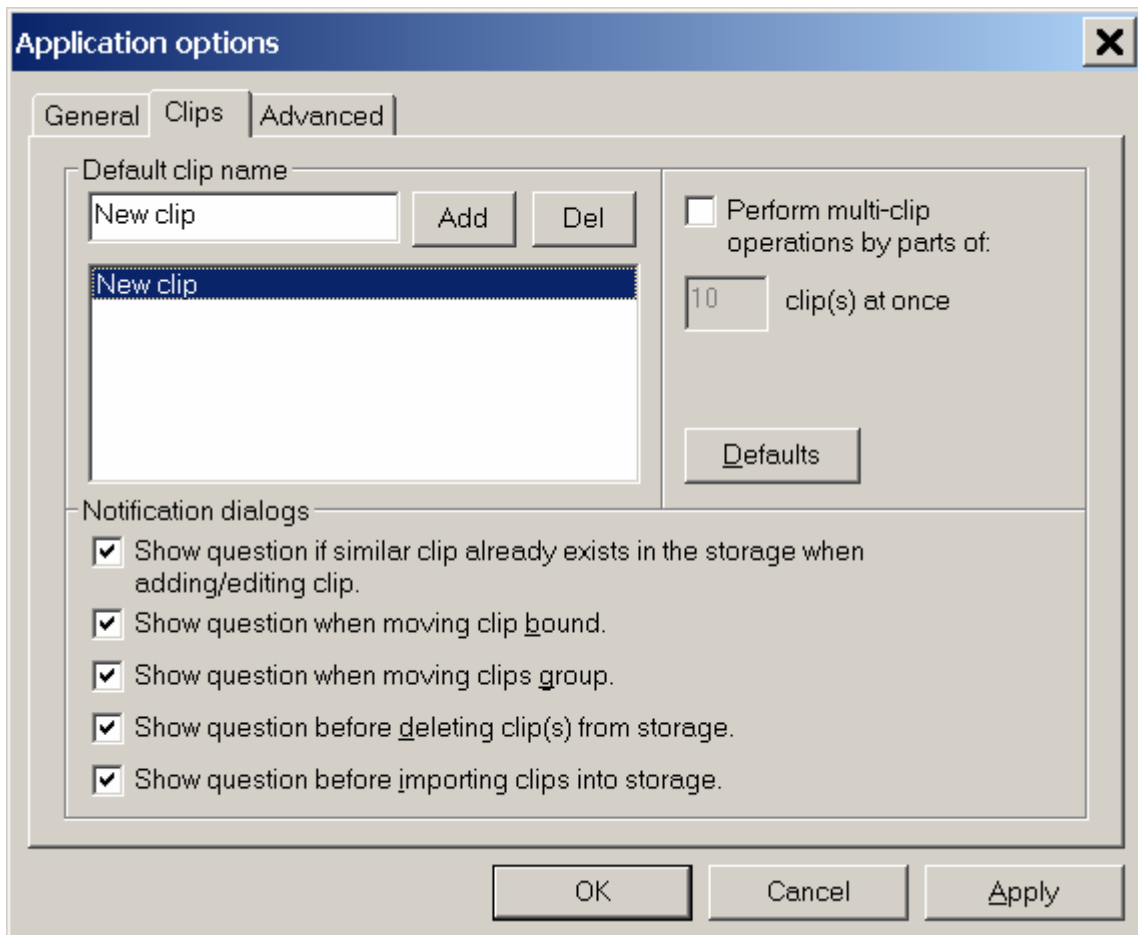


Figure 24. The *Clips* page of the settings dialog

A template of a clip name is specified in the edit box. When a template is specified, it can be added to the list of templates by pressing the **Add** button. To delete a template from the list, select the required template in the list and then press the **Del** button.

When the templates list of clip names is specified, they will be added to the drop-down list of names in the clip editing dialog (see 6.4). You will not have to type a clip name manually; just select the required name in the drop-down list.

In the **Clips** tab it is also possible to enable/disable displaying warning messages during the work.

Show question if similar clip already exists in the storage when adding/editing clip – if the option is on, at attempt to give the clip a name already existing, a warning will be displayed.

Show question when moving clip bound – if the option is on, before moving the clip bound to the current time (the **Clip/Move clip bound** menu command) a request for confirmation will appear; otherwise the clip will be moved without a warning.

Show question when moving clip group – if the option is on, before moving a group of clips to the current time (the **Clip/Offset clips** menu command) a request for confirmation will appear; otherwise the group of clips will be moved without a warning.

Show question before deleting clip(s) from storage – if the option is on, before deleting clips from the list (see 6.2.11), a request for confirmation will appear (even if the clips are not locked); otherwise the clips will be deleted without a warning (a warning will appear only when among the selected clips are locked clips).

Show question before importing clip(s) into storage – if the option is on, at successful import of information about clips from a text file (see 6.9.2), you will be requested if it is necessary to add the imported clips to the storage; otherwise the imported clips will be added to the storage without a warning.

Values of step size used for moving within the storage can be specified in the **Advanced** tab (Figure 25) of the application options dialog (in frames and time units). It is possible to adjust three values of steps. Each of the step sizes has a corresponding menu item and key combination. A step cannot be equal to zero. After new adjustments are applied, the **Advanced** menu will change its appearance (see an example on Figure 26). Pressing the **Default** button restores the initial parameters of the step sizes.

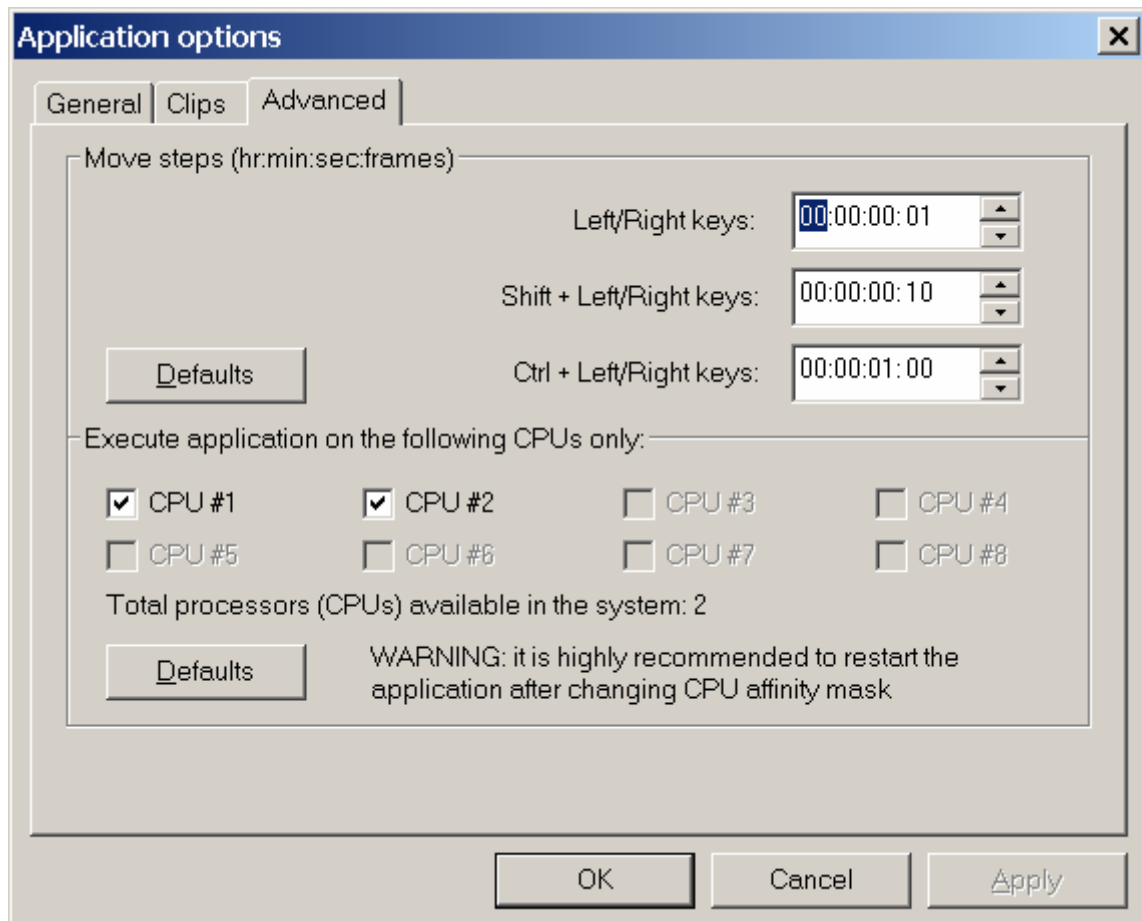


Figure 25. The *Advanced* page of the settings dialog

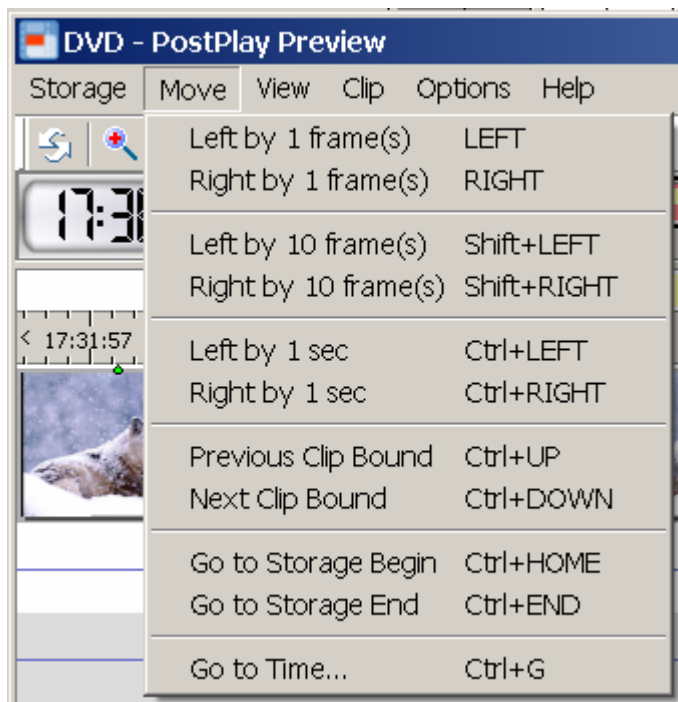


Figure 26. The *Move* menu after specifying move steps

6.5.2 Playback settings

The **Options/Playback** menu command (also the **F9** key) opens the dialog of playback settings, i.e. settings of previewing data in the storage (Figure 27).

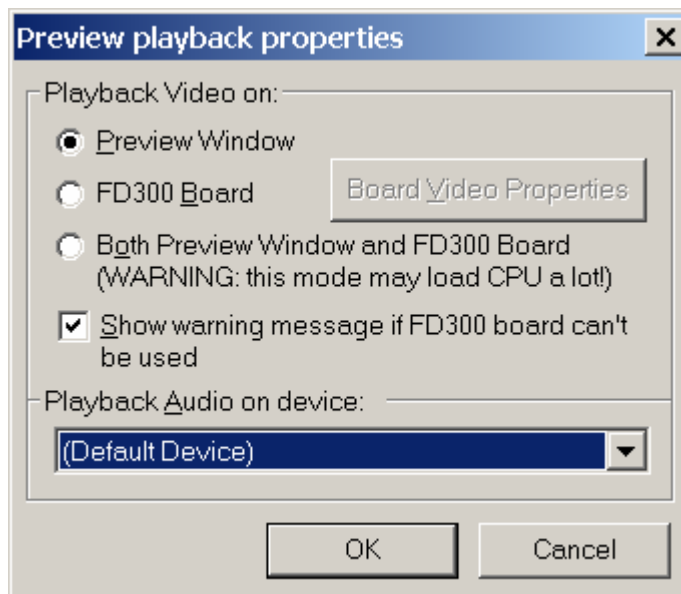



Figure 27. Playback settings

The dialog allows specifying where the video frames will be displayed: in the current frame **Preview** window (see 6.2.9), on the *FD300* board or both in the **Preview** window and on the *FD300* board simultaneously. For that select the **Preview Window**, or the **FD300 Board** option (the latter option may be unavailable – see below), or the **Both Preview Window and FD300 Board** option. Audio device for playing back audio is selected in the **Playback Audio on device** drop-down list.

 **Note:** If only one *FD300* board is installed in the system, and it is used for broadcasting with the *FDO nAir* application (see 7), then video previewing on the board is impossible (at attempt to start playback, you will be given a message reporting that the selected board is used by another

application). You must not select for previewing the same audio device on the FD300 board that is used for broadcasting!

If initialization of playback module on the FD300 board from the dialog is impossible, or the boards are not available for some reason (the board software is not installed or does not operate correctly, or boards are not installed in the computer), a warning message will appear, and the FD300 board will be unavailable for selecting. The **Show warning message if FD300 board can't be used** option can be unchecked if it is required to disable displaying the warning message.

When the FD300 board is selected and correctly functioning, the **Board Video Properties** button becomes available. Pressing the button opens a dialog for adjusting the playback module on the FD300 board. To get a detailed description of the settings, press the **Help** button in the dialog. It is strongly recommended to study the options before working with them.

If the selected board is used by another application (for example, by *FDO nAir* or *Forward AV Studio*) for video playback, previewing in the *FDPostPlay Preview* application on the same board is impossible. At attempt to start the playback (by the **View/Play** menu command) an error message will appear.

6.6 Selecting the current time and date

The *Select time and date* dialog is opened (Figure 28) by the **Move/Go to Time** menu command or by a double click on the current time indicator (see 6.2.3).

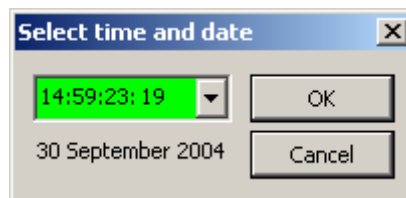


Figure 28. Dialog of time and date selection

Time is specified in the “hours: minutes: seconds: frames” format. Time can be typed manually (frames number can also be adjusted by the **↑** and **↓** keys on the keyboard). A click on the button with down-directed arrow opens the date selecting window (that can be useful if data are saved in the storage on different days). The specified date is displayed under the current time field.

The entry field for specifying time can have different-colored backgrounds. The **green** background means that the storage has data corresponding to the specified time. The **red** background means that the specified time is already in the past, and there is no data corresponding to that time in the storage. The **cyan** background means that the specified time is in the future, and there is no corresponding data in the storage yet (though it might be present in future, if data capture is performed at the specified time).

If the storage has no data corresponding to the specified time, the time field background changes its color from green to red or cyan. Moving to the specified time is pointless in that case. If the background is green, press **OK** for moving to the specified time and date or **Cancel** for closing the dialog without setting the current time and date.


6.7 Frame-by-frame preview

The frame-by-frame mode of previewing video is enabled in the working area by the **View/Zoom Out Ultra** (also the **Ctrl+Z** keys) menu command. The mode allows previewing video track in detail accurate within a frame. But the mode has several restrictions:

- Since video is always displayed in frame-by-frame mode, a scale of displaying cannot be changed (the **View/Zoom In/Zoom Out/Zoom Out Full/Zoom Out Clip** menu commands are not available).
- The scrollbar in the bottom part of the working area allows to move only one frame left/right (but all the **Move** menu commands and the corresponding “hot keys” remain available).
- At every shift by a frame, the required video frame is extracted from the storage and decompressed; the procedures are performed in such a way that minimizes the load on the computer processor and

disk (in order not to break the simultaneous process of data capture into the storage and/or broadcasting from it). Thus, moving frame-by-frame is performed slower than in normal mode.

- At switching to the frame-accurate previewing mode or at movement by more than one frame in the mode (for example, at movement by a second or by arbitrary time), several frames are extracted from the storage at the same time. The operation can take several seconds.
- Because of the necessity to extract a full frame from the storage at any movement within the working area, which takes a lot of time, the commands of playback are disabled.

 **Note:** In view of the listed restrictions and high load on the entire system, it is not recommended to use frame-by-frame preview mode without necessity, especially when data is being broadcasted from the storage.

Remember that the **Preview** window (see 6.2.9) or previewing on the *FD300* board (see 6.5.2) can be used for exact positioning.

6.8 Data export to an AVI file

6.8.1 Description of the data export procedure

The data export procedure allows to export some part of data from the storage to an external AVI file (at that audio can be exported to a separate WAV file). It is possible to export the current clip, selected clips or all the clips (see 6.2.11). It is also possible to save a certain data range between the marks of a clip beginning and end specified previously by the **Clip/Mark In** and **Clip/Mark Out** commands. The sequence of operations at data export procedure is described below.

1. To start the procedure, select the required clips and call the required command of the **Storage/Export to AVI** menu: **Current Clip**, **Selected Clip(s)**, **All Clips**, **Mark In – Mark Out**.
2. The application verifies whether the data for the selected clips is present in the storage. If data is partially or entirely absent in the selected fragments of the storage, the corresponding warning messages will appear (see the table in section 6.8.3).
3. Adjust the parameters of data export in the opened *Export AVI file from Storage...* dialog (see section 6.8.2): specify the files names and their locations, the way of audio data saving, set compatibility with the required video format.
4. Start the procedure of saving data to the disk by pressing **OK** in the *Export AVI file from Storage...* dialog. Press the **Cancel** button to stop the export procedure.
5. At export of a group of clips, the names of the resulting files will coincide with the clips names. During data processing, the application is verifying accuracy and uniqueness of the files names. If an incorrect name is detected, the corresponding warning message will appear (see 6.8.3).
6. The course of the writing process is displayed in the *File writing progress...* window (Figure 29). The sequence number of the file being processed and the total number of clips are displayed in the title bar. Information about the current state of writing is displayed in this window.

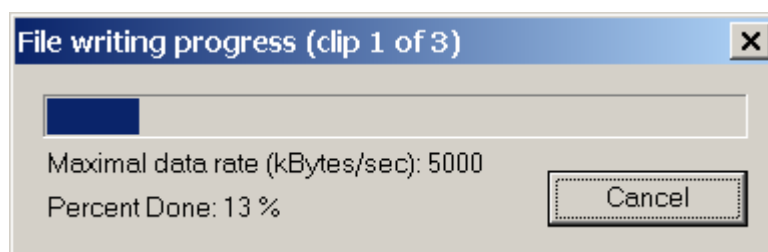


Figure 29. Window displaying the current state of export

Pressing the **Cancel** button stops the procedure of data writing on the disk. You will receive an enlarged *Cancel export* confirmation request (Figure 30) asking about further actions with the results: cancel export and delete the file being processed at the moment, delete all the resulting files, cancel export and save the current file, continue the export procedure.

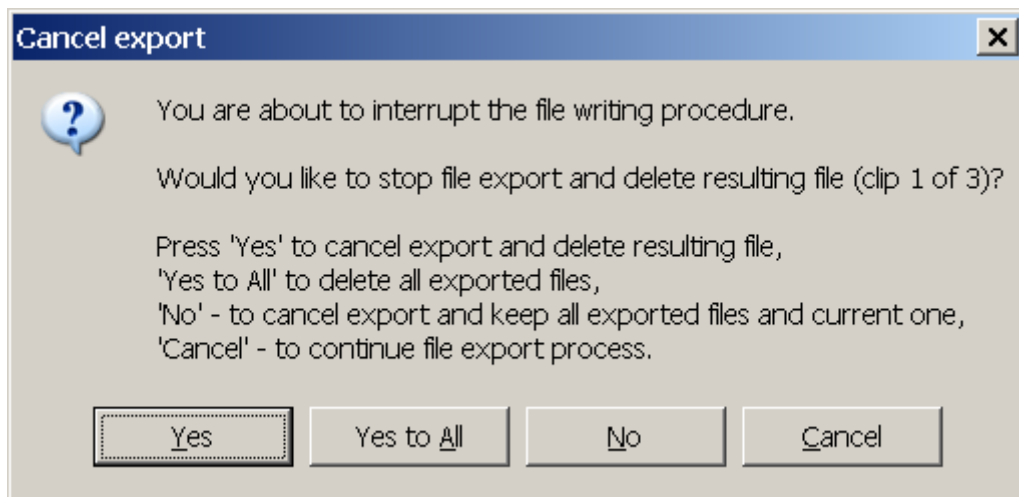


Figure 30. Dialog of cancelling export

7. When data export is complete, a report about the number of the exported files is displayed (Figure 31) with the request for opening the folder with the resulting files or opening the exported file in case if only one file was exported (if the option **Propose to open exported AVI file/show folder** is checked in the application settings).

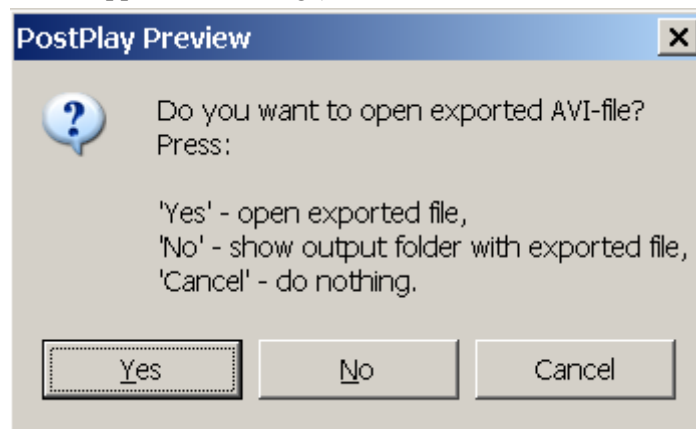


Figure 31. Clips export completion notification

6.8.2 Adjusting the clips export settings

The export settings are adjusted in the *Export AVI file from Storage...* dialog (Figure 32). In the window is also information on the number of processed clips (that number can be less than the number of clips selected in the list if some data is absent in the storage), the size of exported data and the free space on the disk drives.

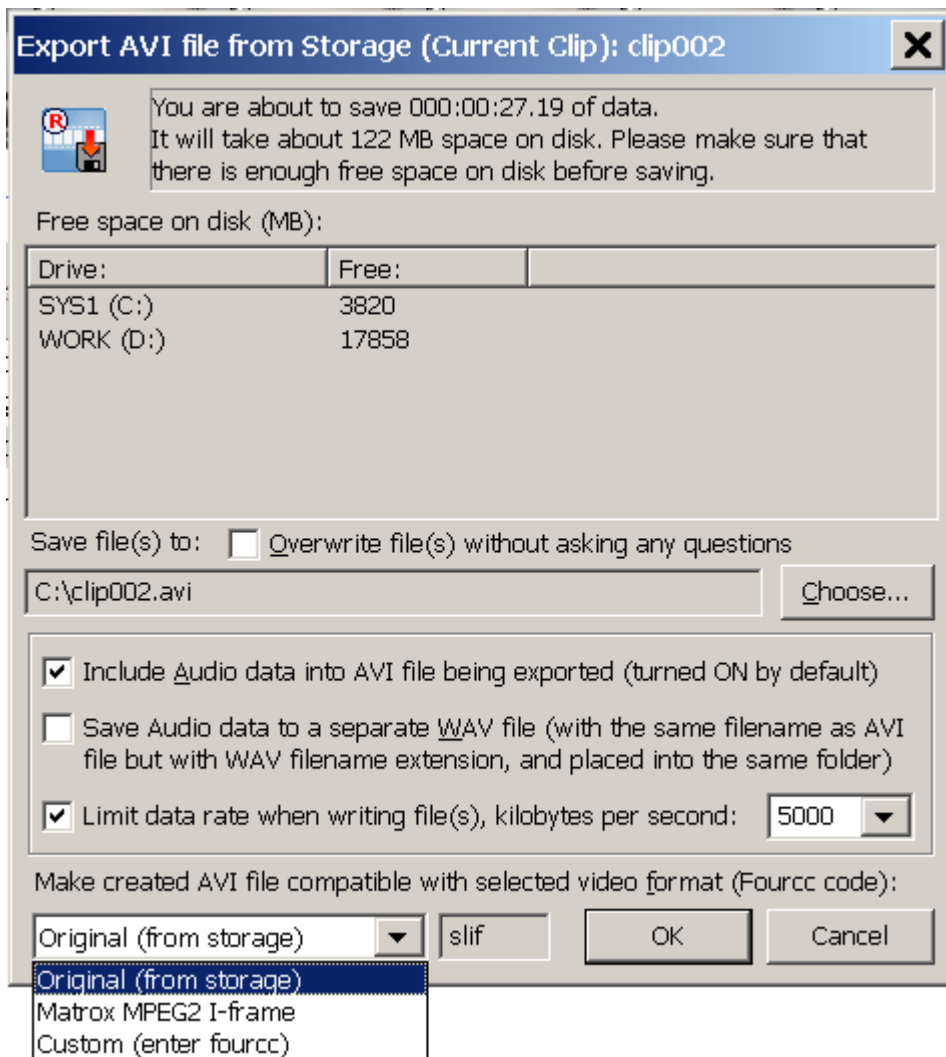


Figure 32. Data export to an AVI file

In the top part of the dialog is information about the data duration (presented in the «hours: minutes: seconds: frames» format) that will be saved (according to the durations of selected clips or the marked range **MarkIn – MarkOut**). An approximate size of data that will be saved on the drive is also displayed in the same place (the specified free space must be reserved on the drive for the files to be exported).

There is a list of all the local drives of the computer and free space capacities on each of them (in MegaBytes) displayed below. In the **Save File As...** field are the current path and name of the AVI file which data will be exported to. If several clips are being exported, only the folder name, where the files are to be written to, is specified in the field. The **Choose...** button allows to specify the required file path and name or a folder for data export.


The **Include Audio data into AVI file being exported (turned ON by default)** option controls exporting audio data. If the option is checked, video and audio data will be exported together to the same file. The option may be disabled for exporting only video data to an AVI file (for example, when necessary to save audio data in a separate WAV file). The option is checked by default.


Save Audio data to a separate WAV file (with the same filename as AVI file but with WAV filename extension, and placed into the same folder) is an option allowing to export audio data to a file with the WAV format saved to the same folder where the exported AVI file is created. The file is saved under the same file name but with the *.wav extension. It can be useful when the Matrox editing systems are used for the subsequent editing of the exported clip. Such systems do not support audio stream in the AVI files and require using audio from a separate WAV file.

If the **Overwrite file(s) without asking any questions** option is checked (unchecked is its default state) and the resulting files already exist (AVI only or AVI+WAV), they are deleted without a

warning. If the option is disabled, you are warned that the specified file(s) already exist, and you have to confirm overwriting them with the new files.

The FOURCC required for data export is specified in the drop-down list **Make created AVI file compatible with selected video format (FOURCC)** located in the bottom part of the dialog. The choice of the code depends on a particular video codec and also on the applications which will use the exported AVI file.

 **IMPORTANT:** *Be careful when specifying a custom FOURCC! If the code is incorrect or arbitrary, without a video codec supporting it, the exported AVI file may become impossible to use. In that case the application will display a warning message, if the respective option is enabled in the application settings.*

 **Note** *that video data will be exported to an AVI file in the same compression format as in the storage; i.e. they cannot be recompressed by using a different codec at export. That is caused by the fact that the recompressing takes much time and loads the processor, which is inadmissible when data is being captured into the storage and/or storage data is being broadcasted at the moment. For the same reason data is exported in such a way that minimizes processor and disk load, so the process may take much time.*

Pressing the **OK** button launches the process of data recording (either to an AVI file or to AVI and WAV files) on the disk. The **Cancel** button closes the dialog without saving data.

6.8.3 Possible errors at data export

Error messages that can be displayed during video data export are described in the table below.

Message text	Cause	Suggested operation*
<i>No data to export</i> (Figure 33)	there is no actual data in the storage in the time range of a clip	exclude the clip from the export list
<i>Incomplete export data</i> (Figure 34)	there is a fragment of a storage among the selected clips which is not entirely filled with data	export the shortened clip
<i>Invalid file name</i> (Figure 35)	there are characters invalid for filenames (\ / : * ? " > <) in the names of the exported clips	automatically replace invalid characters in the filename with the ' _ ' character (underscore)
<i>Duplicate filenames</i> (Figure 36)	there are clips with duplicate names among the exported clips	automatically rename files for the clips with duplicate names. After the ' _ ' character (underscore) a file serial number will be automatically added to the filename.
<i>Overwrite file(s)</i> (Figure 37)	in the specified folder are already files with the same names as the names of the files being exported	overwrite such files

* Notes:

If a message window contains the **Yes to All** button, the operation can be applied to all clips of the kind in the processed group.

If a message window contains the **Do not ask question next time** check box, it can be checked to disable requesting for confirmation. It can also be performed in the application settings dialog.

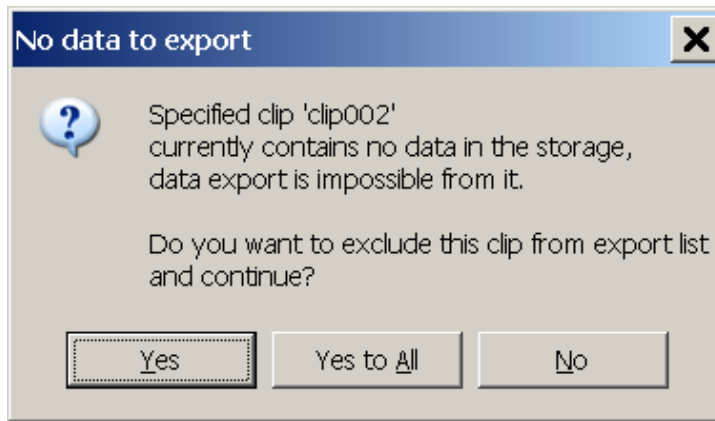


Figure 33. Message about absence of data (in the storage) for export

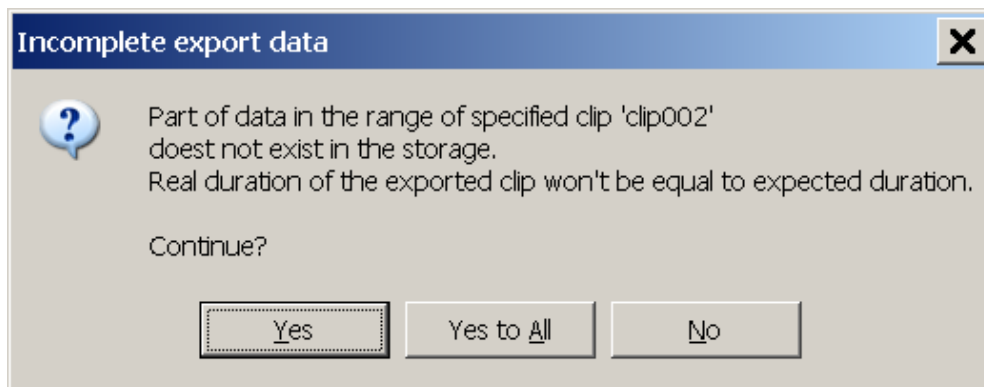


Figure 34. Message about incomplete export data in the storage

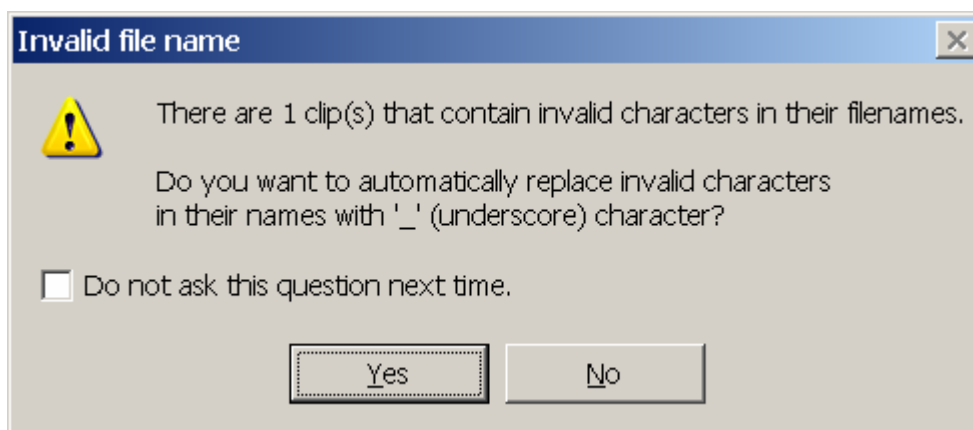


Figure 35. Warning message about invalid characters in a filename

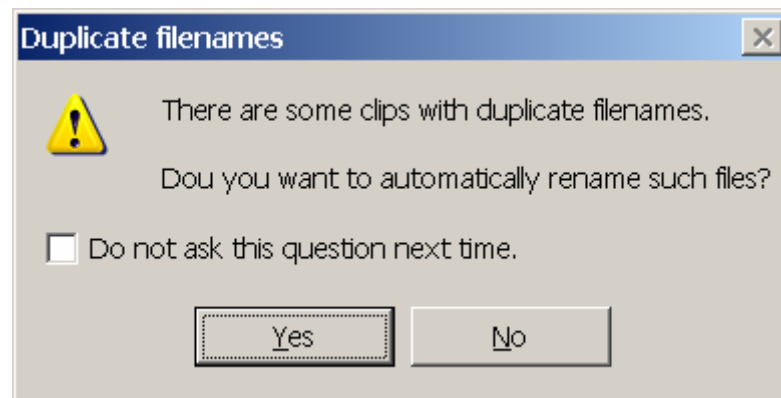


Figure 36. Confirmation request for renaming files with duplicate names

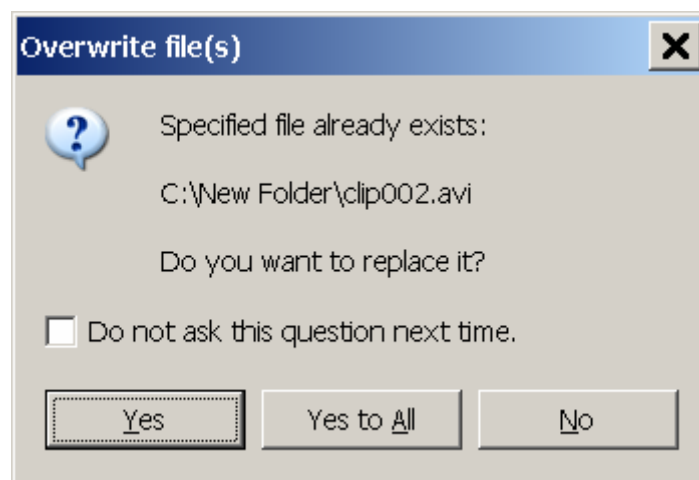


Figure 37. Confirmation request for file(s) overwriting


6.9 Clip information export/import

The **Storage/Export Clip Info** menu commands are used for export of clips information from the current storage to a text file; and the **Storage/Import Clip Info** commands are used for import of clips information from a text file. That can be useful for exchanging clips between storages, or for automatically creating the clips the information of which is specified in a text file.

6.9.1 Clip information export

It is possible to export either the current clip, or the selected clips (see 6.2.11), or all the clips from the list. For this purpose select the appropriate command in the **Export Clip Info** submenu: **Current Clip...**, **Selected Clips...** or **All Clips...**

Information is exported to a text file in the CSV format compatible with Microsoft Excel (the file can be imported to a spreadsheet for analysis, processing or printing). Only information about clips is saved to a file: text name, starting date/time, duration, indications of clips locking and logotype switching on/off (see 6.2.11).

 **Note** that video and audio information is not saved from the storage at that! The ability to export/import clip information is intended only for exchanging clips information between storages, or for creating clips automatically in the storage using a text file with the clips information.

To get some idea about a format in which the information is saved to a text file, export several clips and open the resulting file in any text editor, for example, in Windows notepad (notepad.exe).

There is an individual line (in such a text file for each clip) containing a clip information in the following format (semicolons are used as separators between the fields):

19.04.2004;16:04:19.19;Clip;00:01:40.00;Locked;LogoOn;TitlesOff

- The first field displays the date of clip start in the “day.month.year” format (in the given example **19.04.2004**). When clips information is exported from the storage, the starting date is always specified, but it can be omitted at export from a Microsoft Excel spreadsheet (for example, if the information has already been processed) or when a text file is being created manually. If the date is not specified, at attempt to import the information you will be requested for specifying the start date for clips (for more details, see 6.9.2).
- The second field displays the time of clip start in the “hours:minutes:seconds.frames” format (in the given example **16:04:19.19**).
- The third field displays the text name of a clip in the CSV format (in the example **Clip**). It means that if a name contains a semicolon, which is a separator here, the name should be quoted (for example, «**Clip; number 2**»). Besides, if the clip name contains quotation marks, the name must be also quoted at the beginning and end, and each quotation mark inside the name must be doubled (for example, «**Clip““10””**»). If a text file is created by export of clips information from the storage, or from a Microsoft Excel spreadsheet in the CSV format, the conventions are held automatically.
- The fourth field displays a clip duration in the “hours:minutes:seconds.frames” format (in the given example **00:01:40.00**).
- The fifth, sixth and seventh fields may be absent, or only one of them may be present. If a clip is locked, the **Locked** field is present. If the command of switching on a logotype is assigned to a clip, the **LogoOn** field is present; if the command of switching it off – **LogoOff**. If the command of switching on titles corresponds to a clip, the **TitlesOn** field is obligatory; if the command of switching them off – the **TitlesOff** field.

If a text file is created manually, it is required to observe the given format of the clip information presentation. If a clip information specified in the file is incorrect or incomplete, at import of the file the application will display an error message (see 6.9.2). In any case, it is not recommended to create manually text files with clips information without necessity (it is more visual and usually more convenient to create clips immediately in the application using commands of the **Clip** menu).

If a file that already exists is specified at export, you will be requested for the file overwriting (Figure 38):

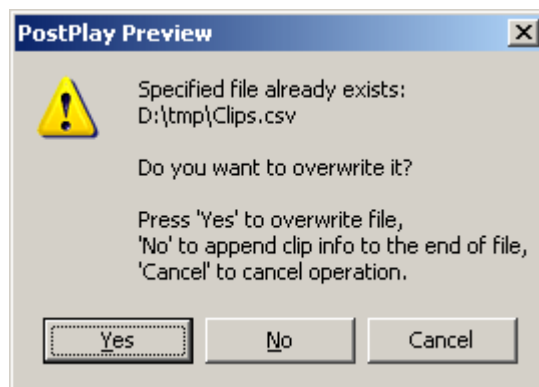


Figure 38. Request for the existing file overwriting at clips export

Use the following buttons: **Yes** to replace the existing file; **No** to append the information about the clips being exported to the end of a file already existing (it allows to combine information about clips from different storages into one file); **Cancel** to cancel the export operation.

6.9.2 Clip information import

The **Storage/Import Clip Info...** menu command is intended for clips information import from a CSV text file saved by the commands of export from the storage (see the previous section 6.9.1) or from a Microsoft Excel spreadsheet.

If the clips information is presented in the file in a wrong format, you will receive an error message (if it is possible, the number of line in the file where the clip information is incorrect or incomplete will be displayed in the message). If the clips information is read off successfully, you receive a

confirmation request for adding the imported clips into the storage (Figure 39). Displaying the confirmation request for import can be disabled in the application general settings (see 6.5.1), or you can check **Do not ask this question next time** for this purpose.

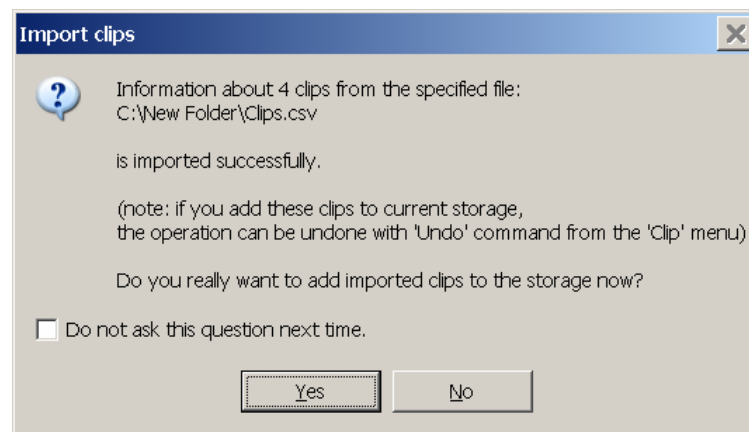


Figure 39. Confirmation request for clips import

As it was mentioned above (see 6.9.1), at export of clips information to a text file, their start dates are specified in the first field. Still sometimes at clips import it is necessary that the date is not specified explicitly (for example, at importing a clips list prepared several days before the broadcast where only clips starting times and durations are specified). In that case the first field is absent, and at clips import the following request is displayed (Figure 40):

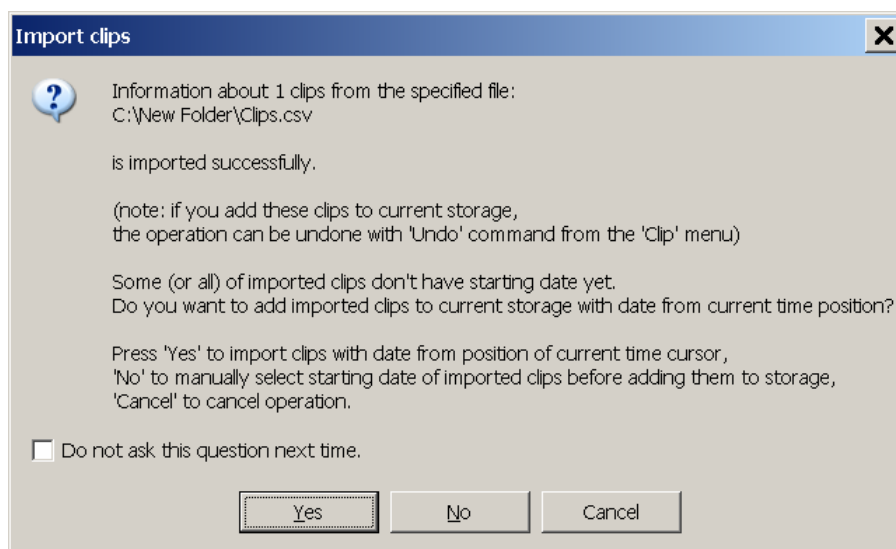



Figure 40. Request for specifying the starting date of the imported clips

Pressing **Yes** assigns the date corresponding to the current time mark as the starting date for all the clips not having the date specified. To find out the date corresponding to it, open the dialog of time and date selection (see 6.6). Pressing **No** opens the same dialog (see 6.6) where is necessary to specify the required date (time specified in the window is ignored). The date will be specified as the starting date for the clips not having it.

Note that if the **Do not ask this question next time** option is checked, next time the mode of selecting the starting date for files not having it will be set automatically. To enable the feature of manually choosing the mode again, check the option of confirmation request for clip import in the application general settings (see 6.5.1).

 **Note:** *some of the imported clips may have the ending time that turns out to precede the starting time of the data in storage. Such clips are meaningless in the PostPlay system, and they are removed automatically.*

If such clips are among the imported clips, the application displays a report that a part of the clips is removed immediately after the import (Figure 41).

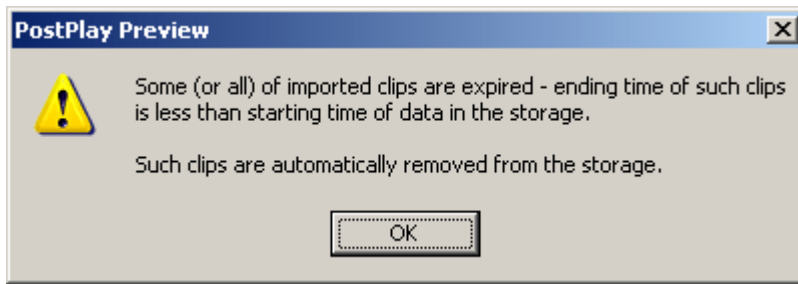


Figure 41. Message about deleting a part of the imported clips

6.10 Hot keys

For a quicker execution of the application basic commands there is a set of hot keys listed along with the corresponding menu commands in the table below.

Menu command	Hot keys	Action
Storage		
Open...	Ctrl+O	Open the storage
Export to AVI / Current clip...	Ctrl+E	Export of the current clip to an AVI file
Export to AVI / Selected clips...	Shift +S	Export of the clips selected in the list to AVI files
Export to AVI / All clips...	Shift +L	Export of all the clips from the list to AVI files
Export to AVI / MarkIn – MarkOut	Ctrl+M	Export of the “MarkIn – MarkOut” range to an AVI file
Export Clip Info/ Current clip...	Ctrl+U	Export of the current clip information to a text file
Export Clip Info / Selected clips...	Ctrl+S	Export of the selected clips information to a text file
Export Clip Info / All clips...	Ctrl+L	Export of all the clips information to a text file
Import Clip Info...	Ctrl+I	Import of the clips information from a text file
Move		
Left to ... frame(s)	← Shift+← Ctrl+←	Move left by the specified number of frames
Right to ... frame(s)	→ Shift+→ Ctrl+→	Move right by the specified number of frames
Previous Clip Bound	Ctrl+↑	Go to the previous clip bound
Next Clip Bound	Ctrl+↓	Go to the next clip bound
Go to Storage Beginning	Ctrl+Home	Go to the beginning of the storage
Go to Storage End	Ctrl+End	Go to the end of the storage

Menu command	Hot keys	Action
Go to Time...	Ctrl+G	Go to a custom time (specify manually)
View		
Zoom Out	–	Zoom out the working area
Zoom in	+	Zoom in the working area
Zoom Out Full	*	Zoom out to the full storage view
Zoom Out Clip	/	Zoom out to the entire view of a selected clip
Zoom Out Ultra	Ctrl+Z	Enable/disable frame-by-frame previewing mode
Refresh	F5	Update (redraw) all the windows
Play	Ctrl+P	Start playback
Stop	Ctrl+T	Stop playback
Autoscroll to End and data input	Ctrl+R	Autoscroll of the storage working area window to the end of the storage
Clip		
Mark In	Home	Mark the clip beginning
Mark Out	End	Mark the clip end
Add Clip	Insert	Add a clip (after “MarkIn” and “MarkOut” times are specified)
Delete Clip(s)	Delete	Delete the selected clips
Edit Clip	Ctrl+Enter	Edit a clip
New Clip	Ctrl + «+» (on the keypad) Shift + «+»	Add a new clip
Select All Clips	Ctrl+A	Select all the clips
Move Clip Bound	Space	Move a clip bound to the current time
Move Clip Begin	Shift + Home	Move the current clip beginning to the current time mark
Move Clip End	Shift + End	Move the current clip end to the current time mark
Offset Clip	Shift + Space	Move the clip beginning to the current time mark without changing the clip duration
Offset Clips	Ctrl + Space	Move all the clips to the current time mark
Options		
General	F8	Application general settings
Playback	F9	Playback settings

6.11 Launching from the command line

The application supports a set of commands for quick launch of the application from the command line with the ability to open the required storage:

FDPostPlayPreview.exe -host [PCName] -storage [StorageName],

where [PCName] is the network name or the IP-address of a remote computer, and [StorageName] is the name of a storage to be opened. If a computer name is not specified, the storage is opened locally, if a storage name is not specified, a dialog for selecting a storage on the selected computer is displayed (see 6.1, Figure 13).


To get information about launching the application from the command line, launch the application with the **help** or **?** key (the / slash sign can be used instead of the minus):

FDPostPlayPreview.exe -help

FDPostPlayPreview.exe -?

The **Help/Command line Usage...** menu command can also be used for this purpose.

7 Using the *FDOnAir* application for playing back PostPlay clips

 **Note:** For more details about using the broadcast automating application, see the *FDOnAir User's Guide*. The section describes only the way of adding the required PostPlay clips to the broadcast automation schedule.


In the right part of the *FDOnAir* application main window is a window with tabs for data of different types, which can be added to the schedule. Among them is the **PostPlay** tab (with the  icon), where all the clips created by the *FDPostPlay Preview* application (see 6) are listed. These clips can be added to the schedule (in the left part of the application window) to be played back at the specified time (Figure 42).




Figure 42. The *FDOnAir* application main window with PostPlay clips list and a schedule

The full name of a clip in the list consists of the storage name and clip name, for example, “StorageTest\clip001”. To add a clip to the schedule, double-click the required clip in the list; the clip will be added to the active schedule (in the left part of the window, Figure 42). When the **State** field displays **Ready**, the clip is ready for playback.

In addition to mere playback, it is possible to add titles over the clip (for example using RollCrawl or other title objects, see the *FDOnAir User's Guide*). For this purpose it is required to create a schedule where playback of several title objects starts simultaneously with a clip playback (**Title Script** files with the *.spt extension, or other title objects). To create such a schedule, perform the following operations:


- Add the required *PostPlay* clip to the current schedule. The following operations with the clip are performed in the left part of the application window.
- Click in the **Length** field on the right of the clip. After that the field changes its color and the clip length is displayed in brackets. The event following the clip will be played back simultaneously with the clip.
- Add the required number of titles (**Title Script** files with the *.spt extension or other title objects) to the schedule after the clip. These titles will be overlaid on the clip at playback.

- Enable the command of waiting for the clip playback completion (click the  icon). If the titles end before the clip end (as it usually happens), the application waits for the clip completion.
- Then it is possible to add another clip, video file, etc to the schedule.

Thus, when creating a playback schedule in the *FDOOnAir* application, it is possible to manipulate PostPlay clips in the same way as video files.

7.1 PostPlay clips remote playback

To play back the PostPlay system clips located on a remote computer through the network, it is necessary to adjust the parameters of the PostPlay system service execution on the computer from which the broadcast is performed by the *FDOOnAir* application (see above).

 **Note:** *the local network used for this purpose should provide a data rate sufficient for consistent data transmission throughput (the required data rate is formed of video data rate and uncompressed audio data rate specified in the storage settings, see 5.2, 5.5). Besides, it is necessary that the user account performing broadcast on the computer with the FDOOnAir have access rights to the remote computer with the PostPlay system which the data will be broadcast from.*

For setting clips broadcast from a remote PostPlay system, perform the following sequence of operations on the broadcast computer:

1. Exit the *FDOOnAir* application, if it is running. Close also all the other applications using the PostPlay system (*FDPPostPlay VideoIn* and *FDPPostPlay Preview*) if they are running
2. Stop the PostPlay service by the *FDPPostPlay Indicator* application (see 4.1). For this purpose execute the **Advanced/PostPlay Service/Stop** command in the indicator local menu and confirm that the service operation should be stopped. Make sure the service is stopped.
3. In the system **Start** menu click the **Run** command, type **dcomcnfg** in the **Open** field and press **Enter**. That starts the Component Services application. In the left list open the **Component Services/Computers/My Computer/DCOM Config** items. A click on the **DCOM Config** item displays in the right window a list of all the system services installed on the computer (Figure 43).

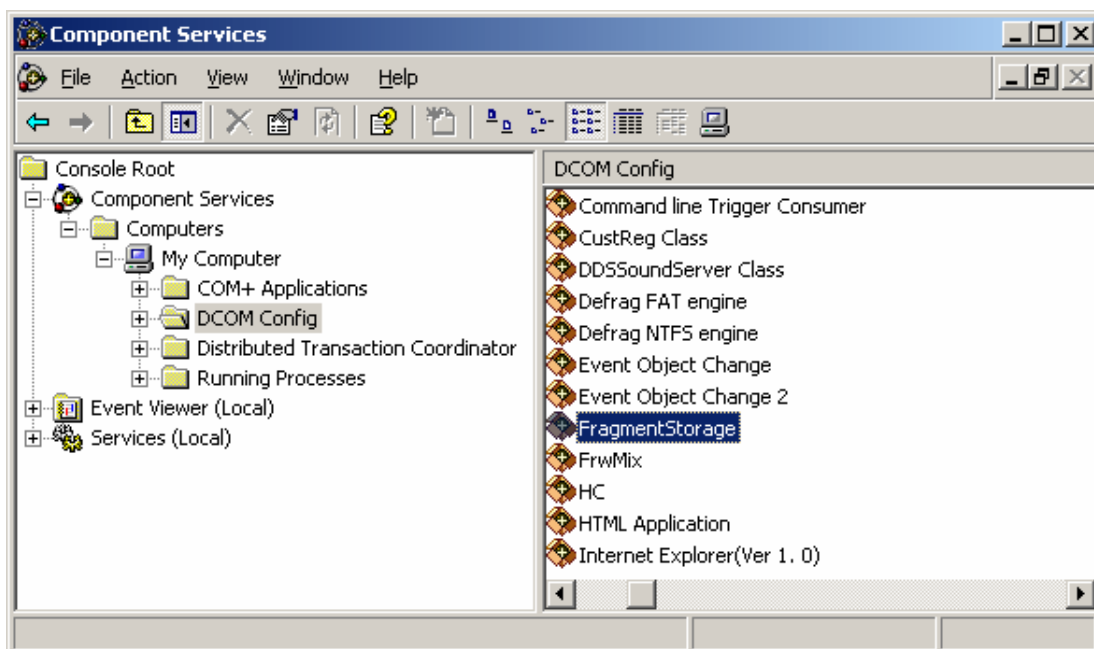


Figure 43. A list of system components in the *Component Services* application

4. In the components list select **FragmentStorage** and right-click it. The **Properties** command of the local menu opens the service properties window.
5. Select the **Location** tab. The option enabled by default in the tab is **Run application on this computer**. Disable the option and check the **Run application on the following computer**. After that the field for specifying computer network name and the **Browse** button becomes

available. Pressing the **Browse** button opens the window of searching/choosing computer from the network. Select a computer having the PostPlay system, which the PostPlay clips should be broadcasted from. For example, if the network name of the required computer is **REMOTEPc**, the properties window looks in the following way (Figure 44).

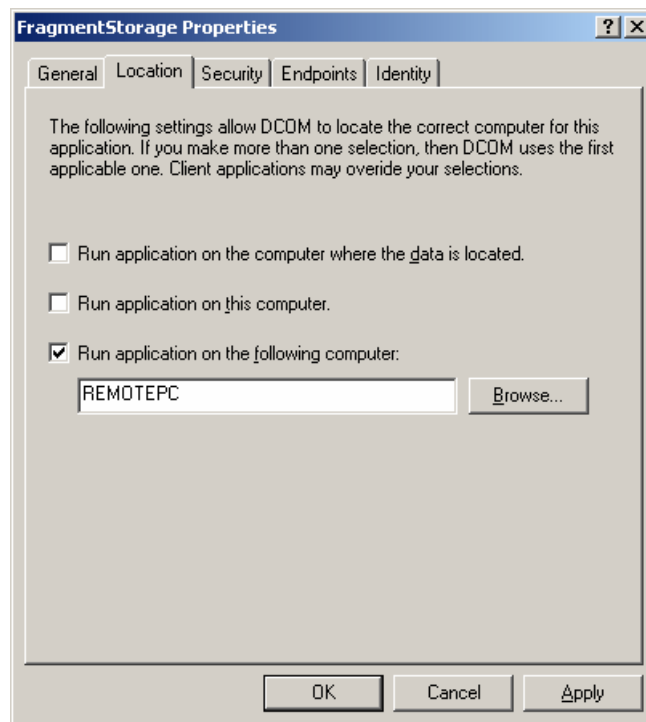


Figure 44. Remote computer selection for the **FragmentStorage** service

6. Make sure the computer network name is specified correctly and press **OK**.
7. In the system components list (Figure 43) select **RPMServer**, open the properties window (like in item 4) and then perform the operations described in items 5 and 6.

IMPORTANT: make sure the computer network name is specified correctly and it coincides with the name specified for the **FragmentStorage** service!

8. Make sure there is an account (on the remote computer) created with the same name and password as those of the user working on the computer with the *FDOnAir* (for example, named USER1). That account on the remote computer should have adequate access rights (it is better, if the user is included into the **Power Users** or **Administrators** group of the remote computer). Address to the system administrator of the remote computer (or the administrator of the network used) for more detailed information and/or access rights to the remote computer (see 8.3).
9. Start the PostPlay service by the *FDPostPlay Indicator* application (see 4.1). For this purpose execute the command **Advanced/PostPlay Service/Start** from the indicator local menu and wait until the service start. If the service cannot be started, make sure that computer network name is specified correctly (items 5-7) and that the user has adequate access rights to the remote computer. Also check whether the remote computer is working, the PostPlay system is installed on it and operating correctly, and whether the network connection is stable.
10. Launch the *FDOnAir* application. In the **PostPlay** tab (see section 7, Figure 42) appears a list of clips in the storages located on the remote computer (with the network name specified in items 5-7). It is possible to manipulate them as if they were located on the local computer (where the *FDOnAir* is operating).

Note: If it is specified that the PostPlay system services run on a remote computer, access to the storages on the local computer is impossible. In order to make them available again, it is necessary to adjust the PostPlay startup parameters to the local computer (see below).

If it is necessary that the *FDOnAir* application play back the PostPlay clips from the local computer again (from the one where the *FDOnAir* application is started), perform the same sequence of operations that described in items 1-10. But in the **FragmentStorage** and **RPMServer** services

settings (items 5, 7) it is necessary to uncheck the **Run application on the following computer** check box and check the **Run application on this computer** check box. After that the properties window looks in the following way (Figure 45):

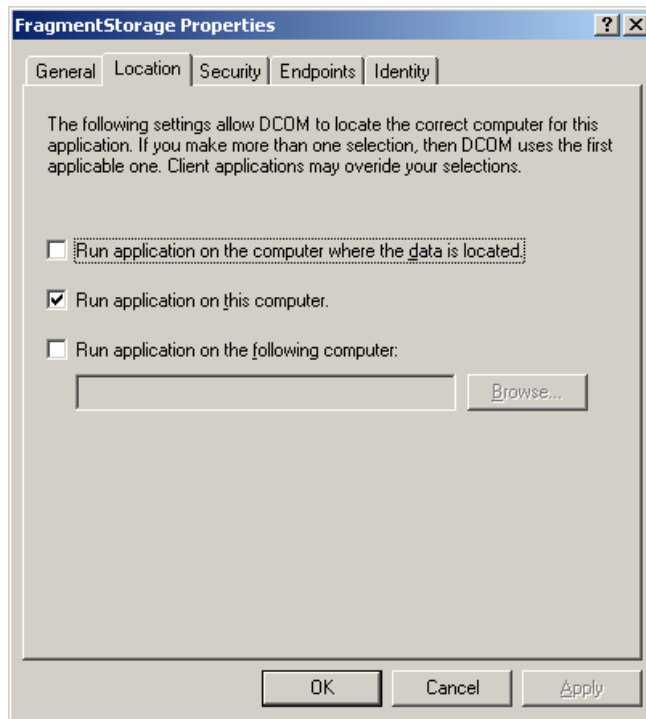


Figure 45. Local computer selection for the FragmentStorage service

For more details about adjusting the access rights to a remote PostPlay system, see 8.3.

8 Recommendations

8.1 Selecting and adjusting video codecs

The *FDPostPlay* software package includes several codecs for video data compression and decompression. Any of them can be selected for video data compression in the storage configuration dialog (Figure 9) of the *FDPostPlay VideoIn* application (see section 5). An example list of the installed codecs is shown on Figure 46.

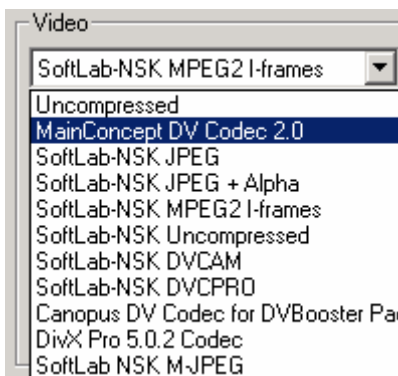







Figure 46. Example list of the installed video codecs

IMPORTANT: it is **not recommended** to use codecs using interframe correlation of images, in particular **DivX**, **XviD** and other modifications of the **MPEG4** compression! The *FDPostPlay* system works correctly only with codecs compressing frames independently of one another. The *FDPostPlay VideoIn* application usually lists only the codecs which do not use interframe correlation, but some codecs (including **DivX** and **XviD**) give incorrect information about themselves (they inform that they do not use the correlation), so they may be present in the list.

Besides it is **not recommended** to use uncompressed data format named **Uncompressed** (24 bits/pixel, the data rate of 30 MBytes/sec). Though the format provides the highest quality of image, it imposes very high requirements on the disk subsystem speed. The system must provide a double data stream: simultaneous streams at data input and output, which can only be provided by **RAID** systems, and it requires huge capacity for storing data.

The names of codecs delivered with the *ForwardTP* software package begin with the words **SoftLab-NSK**. These are the following codecs:

Codec name	Description
SoftLab-NSK JPEG	The codec is compatible with the Forward JPEG compression format without alpha-channel. It is used only for keeping compatibility with the <i>Forward</i> board.
 SoftLab-NSK JPEG + Alpha	The codec is compatible with the Forward JPEG compression format with alpha-channel. It is used only for keeping compatibility with the <i>Forward</i> board. As alpha-channel is usually not used at retransmission, it is not recommended to use the codec.
 SoftLab-NSK MPEG2 I-frames	The codec is compatible with the MPEG2 I-frames compression format. The type of data compression is MPEG2 (only the key frames). It is one of the most efficient codecs in respect of compression speed, therefore it is recommended for video data compression in the FDPostPlay system .
 SoftLab-NSK Uncompressed	The uncompressed YUV format (16 bits per pixel) is compatible with the Forward Uncompressed format. It provides the highest image quality but the data rate is too high – approximately 20 MBytes/sec, which imposes great

	requirements both on the disks subsystem speed and its capacity. Therefore using the codec is not recommended in most cases.
SoftLab-NSK DVCAM	The codec is compatible with the DVCAM standard format (video in the DV format). The provided image quality is not very high; at compression and decompression the codec requires a bigger load on the computer processor than other codecs. Therefore it is not recommended to use without necessity.
SoftLab-NSK DVCPRO	The codec is compatible with the DVCPRO format. It provides high image quality but at compression and decompression requires a bigger load on the computer processor than other codes. Therefore it is not recommended to use without necessity.
SoftLab-NSK M-JPEG 	The codec is compatible with the Motion JPEG standard format. It is one of the most efficient codecs in respect of compression speed, therefore it is recommended for video data compression in the FPostPlay system.
SoftLab-NSK Y16+Alpha RLE 	This is a special codec used for storing images with alpha-channel in the internal format of the <i>FD300</i> board. It does not compress images without alpha-channel, therefore it is not recommended to use this codec.

To provide image quality acceptable for professional use (for example, when relaying television programs), it is required to specify the compressed video data rate no less than 4 MBytes/sec. Data rate of 6 MBytes/sec is usually sufficient for any purpose (for example, for video editing with recompression).

Therefore when working with the *FPostPlay* system, it is recommended to use either **SoftLab-NSK MPEG2 I-frames** or **SoftLab-NSK M-JPEG** codecs with data rate from 4000 to 6000 KB/sec (the **Data Rate** field in the storage configuration dialog, see 5.2, Figure 47).

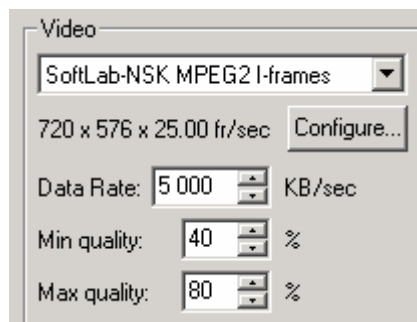


Figure 47. Example of adjusting video codec parameters

In any case, it is strongly recommended to always check whether the selected codec with the adjusted parameters provides the required image quality.

8.2 Selecting sound card for audio input

There may appear a problem of audio and video mistiming at inputting video data simultaneously with audio data (as is often the case). To avoid the problem, select an audio device working on the same *FD300* board where video data are captured from the input channel, and enable low-level synchronization of audio and video on the board (see 3.1 and the *FDConfiguration* application User's Guide).

For the same reason, it is strongly recommended not to use other audio devices for audio input, for example, a separately installed audio board, or an audio subsystem built into the mainboard.

8.3 Getting access rights to remote PostPlay system

Network access to the PostPlay system located on a remote computer can be required in the following cases:

1. Data input to a remote storage with the *FDPostPlay VideoIn* application (see 5.5).
2. Previewing and creating clips in a remote storage with the *FDPostPlay Preview* application (see 6.1).
3. Broadcasting clips from a remote storage with the *FDOnAir* application (see 7.1).

In any of these cases it is necessary for a user starting a client application to have adequate access rights to the PostPlay system on a remote computer.

For example, a user named **USER1** with a certain password enters the system on a client computer. In order that the client application (*FDPostPlay VideoIn*, *FDPostPlay Preview* or *FDOnAir*) started by the user has access to the PostPlay system located on a remote computer, it is necessary to create on it an account with the same name (**USER1**) and the same password. It is desirable that **USER1** be included in the **Power Users** or **Administrators** group on the remote computer; otherwise his access rights may be inadequate to start the PostPlay system services on the remote computer.

For creating such an account on the remote computer and including it in the required users group, address the administrator of the computer or the administrator of the network.

9 Solving problems

Possible problems emerging at the *FDPostPlay* system work and ways of solving them are listed in the section.

9.1 Dropped frames at data input

In the **Input** field of the *FDPostPlay VideoIn* application main window the following message may appear: “**Dropped Frames:** (number of frames)”. The message indicates that some frames were dropped at data input, i.e. not saved into the storage. It usually means that the system for some reason has no time to compress video data and save them to the disk at the procedure of input. Possible causes and solutions are listed in the table below.

Cause	Solution
<p>The computer processing power is not enough for video data compression by the selected codec with the current parameters.</p>	<ol style="list-style-type: none"> 1. Make sure whether the working computer meets the minimum requirements described in section 1.3. 2. Use only the recommended SoftLab-NSK MPEG2 I-frames or SoftLab-NSK M-JPEG codecs as the most efficient ones. 3. Try to reduce the image quality or compressed data rate in the selected video codec settings. 4. Check if there are no other working applications loading down the processor. 5. Use a multiprocessor system. In case of input/output of more than one data channel, the requirement is obligatory.
<p>Speed of the disk subsystem is not enough for simultaneous data input and playback.</p>	<ol style="list-style-type: none"> 1. With the help of system Device Manager make sure that the Ultra DMA mode is enabled on all the used hard disks. 2. Defragment all the hard disks. It is strongly recommended to perform that every time before creating a storage. 3. When operating high data rates or uncompressed formats, it is strongly recommended to use several hard disks united into a RAID. Note that at simultaneous recording and reading from the same disk its performance is considerably less than it is at only reading or recording from/to it. 4. It is strongly recommended to locate a storage on hard disks physically separate from the system disk.