

IPCamera



Rebroadcasting
Streaming Audio/Video Data
in the Form of Titles

*Revision as of
February 20, 2014*

User's Guide



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Reorient or relocate the receiving antenna.

Increase the separation between the equipment and receiver.

Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

Consult the dealer or an experienced radio/TV technician for help.

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Introduction

The IPInput plugin is used to organize broadcasting of streaming audio/video data in the form of titles – in «windows» of a desirable size with main video at the background (PiP – picture in picture). Source of video can be IP cameras/TV programs broadcasted from the main station by network via IP protocol.

The plugin ensures presence of the IPCamera title element in software as additional function.

➡ **Example:** The picture displays broadcasting stream audio and video data received from IP camera. The data is broadcasted by infotainment channel in the form of titles overlayings.



The IPCamera plugin is a software option additional to:

- the ForwardTx product line: ForwardTT, ForwardTA, ForwardTP;
- the ForwardTS product line: groups of products for inserting commercials and titles overlaying.



General Information

1. Ways of Streaming IP Data

There are two ways of streaming IP audio and video data basing ForwardTx and ForwardTS products:

- in the form of titles – in one or several «windows» of desirable size over background. The IPCamera title element is used for customizing and control streaming in this case.

This case requires IPCamera plugin. Detailed information on requirements and customizing you may find in sections of this guide below;

- in the form of audio and video background – on a full screen. In this case the IPInput type of video input in FDO nAir is used. Detailed information on software requirements you can find in the [«IPInput. Rebroadcasting Streamed Audio/Video Data on Full Screen»](#) guide.

Each way has both benefits and limitations (for more information see the table below).

Table 1. Ways of streaming

Characteristic	Way of broadcasting	
	Titles	Background
Tool for adjusting and control	Title element, IPCamera title element.	Video input in FDO nAir, IPInput type.
Possible quantity of broadcasting channels (where you may switch quickly)	Any amount. Limited by PC resources.	6 – according to quantity of buttons assigned to video inputs in the FDO nAir program.
Quantity of windows where audio/video stream data is displayed simultaneously	Any amount. Limited by PC resources.	One full-screen window only.
Possibility of adjusting windows size and location	Present.	Absent.
Possibility of broadcasting several programs (channels) from one/different IP streams simultaneously	Present.	Absent.



Characteristic	Way of broadcasting	
	Titles	Background
Possibility of switching among channels in one window	Present. Switching is implemented with several seconds delay. Delay occurs because when new channel is switched on a corresponding data starts to be received and processed. Receiving and processing take time.	Present. Implemented without delay because all channels (where switching is planned) are decoded all the time (corresponding schemes work continuously).
Use of PC resources when working with several channels	Less resource-demanding because channels broadcasted on air are decoded at the moment.	More resource-demanding because all channels are decoded at the moment that increases PC load.

2. Preparation and Control Over Broadcasting. General Scheme

Adjusting and control over broadcasting and required tools for these depend on selected way of broadcasting video data from IP stream – titles or background (see the table below).

In any case you must first adjust scheme of receiving and processing data: specify network address of data source and IP interface, type of protocol; adjust if necessary parameters of demultiplexing; select program (channel) for broadcasting, etc. All configurations are implemented in the SLStreamer Pro program by creating and editing graphs.

Let MPTS (multi program transport stream) is transmitted to input from which you need to decode one TV program. In this case when creating graph you may use either the Input_IP_FDExt template (if broadcasting server works basing the FD322/FD422/FDVrt boards) or the Input_IP template (if Videoprocessor is used). In case if SPTS (simple program transport stream) is received, for example, video from IP camera then create graph by adding and customizing its nodes yourself (because appropriate template in current software set is absent).

Note: For more information on the SLStreamer Pro application, see the [«SLStreamer Lite, SLStreamer Pro. Programs for Configuring, Monitoring & Managing Digital Broadcasting Schemes»](#) user's guide.

**Table 2.** Customizing and control over streaming IP data

Steps and operations	Way of streaming	
	Titles	Background
1. Preparation		
1.1 Adjusting scheme of receiving and processing audio/video data from IP stream.	Prepared in the SLStreamer Pro application by creating graph.	
1.2 Saving scheme to XML file.	Prepared in the SLStreamer Pro program via the Save graph command.	Not required.
1.3 Adjusting schedule for stream data receiving and processing.	Not required. Data receiving and processing are implemented according to broadcasting schedule working in the FDO nAir application.	Prepared in the SLStreamer Pro program by adding tasks to schedule.
1.4 Configuring size and location of region with IP stream data on the screen.	Prepared in the FDTITLEDesigner program (title projects editor). IPCamera title element is used.	Not required.
1.5 Configuring correspondence among receiving data and broadcast control.	Prepared in the FDTITLEDesigner program. IPCamera title element is used. Task here is XML file created at the step 1.2.	Prepared in the FDO nAir program. Configure video input (the Videoinput N command) of the IPInput type.
2. Control over receiving and processing audio/video data from IP stream		
	Schemes are automatically launched when tasks are loaded to the IPCamera title elements in the FDO nAir program (according to schedule/manually).	Schemes start/stop when tasks start/stop in the SLStreamer Pro program (according to schedule/manually automatically).
3. Control over output of data on air in the FDO nAir* program		
3.1 Enabling/disabling displaying data.	Commands to control title objects: Title object on/ Title object off/ Title object abort	Objects are displayed by Videoinput N commands for which IP source is specified. Objects are not displayed by any commands of launching a full-screen video from other sources.



Steps and operations	Way of streaming	
	Titles	Background
3.2 Switching among channels in one window.	Command of loading new task for the IPCamera** title element.	Videoinput N command, where N is index of necessary input (1–6).

* – use FDO nAir buttons or schedule commands to control.

** – note that another channel requires some time to start.



Installation and Registration of Plugin

1. Software Set Requirements

Meet the following requirements for working with the plugin:

1. The main product software set is installed (Forward TT/Forward TA/Forward TP/Forward TS) and its registration is activated.
2. Software for IPCamera plugin is installed and its registration is activated.
3. Numbers of versions of the main product and plugin must coincide. It is recommended working with the latest software version.

2. Features of Plugin Installation

The IPCamera plugin is installed in addition to the basic software.

The setup file is the ForwardTxPlugins_Setup_xx_xx_xx.exe file, where xx_xx_xx denotes software version.

Complete the following steps to install and register the plugin correctly depending on the basic software:

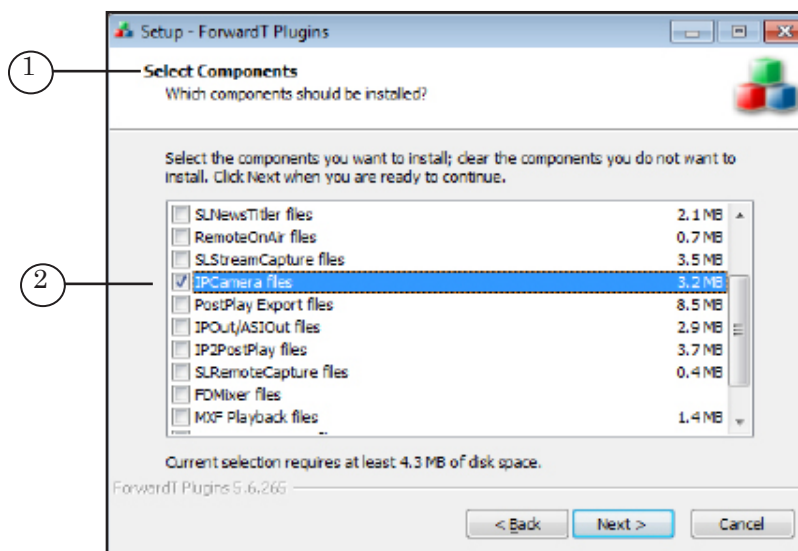
Note: Description is actual for software version starting from 5.3.0. You may find all necessary components and additional instructions at the Download page: <http://www.softlab-nsk.com/forward/download.html>.

1. Be sure that software of the latest version with all available updates is installed. In case of its absence see the «[ForwardT Software. Setup](#)» or «[ForwardTS Software. Setup](#)» guides (depending on basic product).
2. Activate registration of the IPCamera plugin. For this double click name of registration file received in set of plugin. Necessary information is added to Windows registry. Then reboot PC.

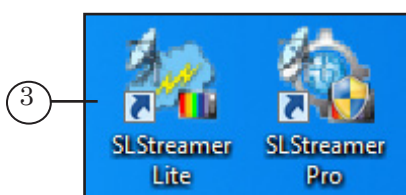
✓ **Important:** Rebooting PC is obligatory to apply registration.

3. Install the IPCamera plugin software: launch plugins installer and follow Setup - ForwardT Plugins Wizard (detailed information you may find in the «[Plugins Setup](#)» user's guide).

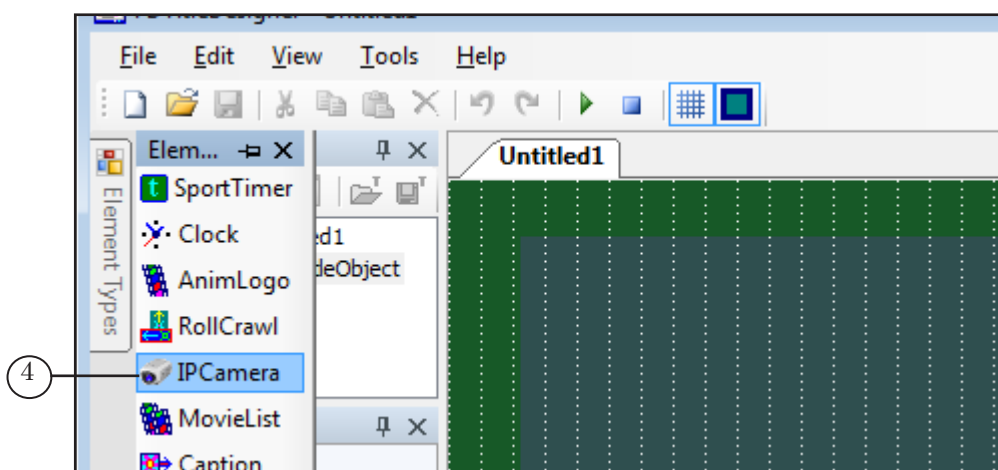
Set check marks (1) in the appeared window opposite IPCamera components (2) to be installed.



4. After installation and registration of the IPCamera plugin functional set of used product is expanded:
 1. Applications that ensure interface for customizing (receiving schemes/processing/transmitting streamed audio and video data) and working with graphs (SLStreamer Lite and SLStreamer Pro (in case of their absence)) are added to software set now. Their shortcuts appear on the desktop (3).



2. The IPCamera title element (4) is added to basic set of elements in FDTitle Designer program. The element is used for customizing and controlling data playback from IP stream in «window» of a specified size.

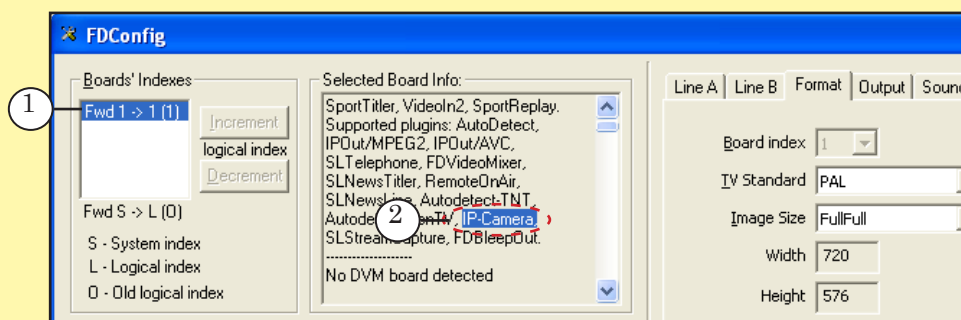




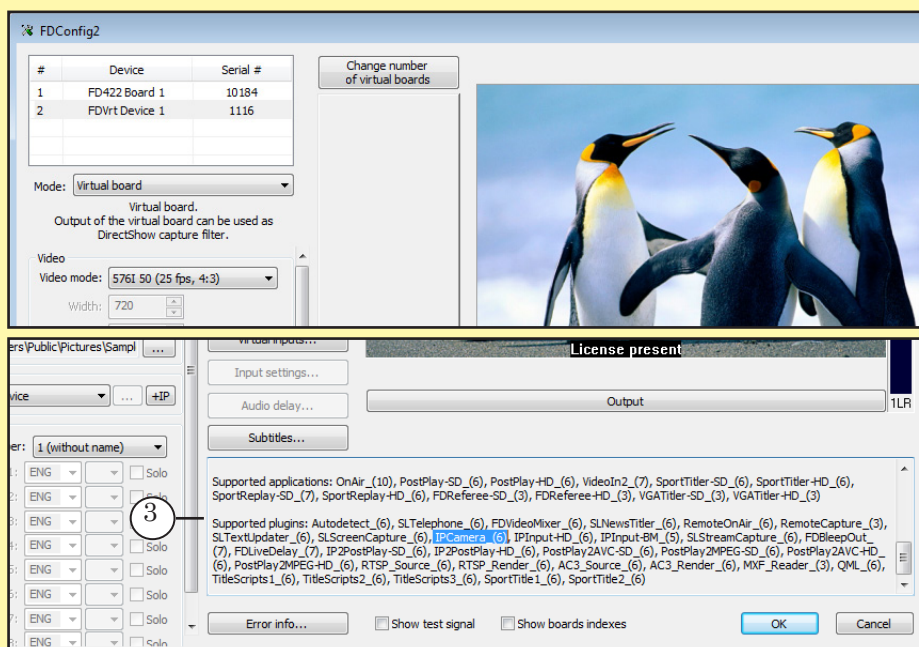
Note: We insistently recommend using software of the latest version. If it is impossible then take into account that order of plugin installation for versions lower than 5.3.0 has a feature: you should install IPOutOption software additionally via separate installer before installing IPCamera (detailed information see in the «[IPOut, ASIOut: Digital Streaming for Forward products](#)» guide).



Tip: 1. If the FD300 board is used then launch the FDConfig program. Select required board in the list (1). The IP-Camera element (2) must be present in the Supported plugins list of the Selected Board Info window.



2. If the FDExt board is used then launch the FDConfig2 program. The IPCamera item must be present in the Supported plugins area (3).





- ✓ **Important:** At customizing solutions for receiving/transmitting data via IP channels you must first customize Windows Firewall by adding exceptions: 1) the SLGraphInstance.exe, SLGraphScheduler.exe, SLGraphWrapper.exe programs (are located in the ~\Bin folder, where ~ is a folder where ForwardTS software set is installed, C:\Program Files\ForwardTS is by default); 2) port that is opened for receiving/transmitting stream. Starting from 5.05.345 version exceptions in Windows Firewall are added at plugin installation automatically.



IPCamera Title Element

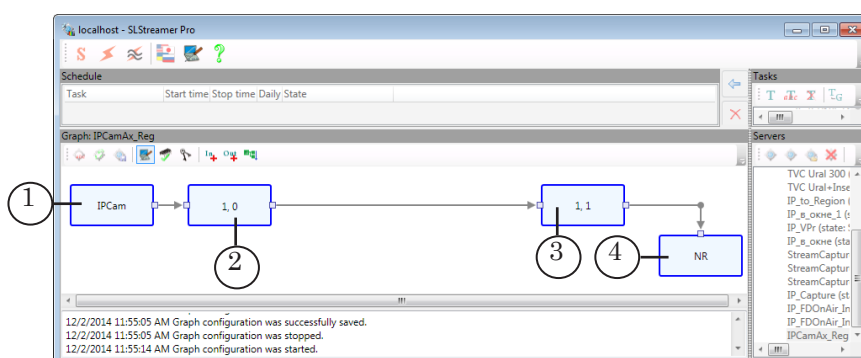
1. General Workflow

The section contains general information on preparation and control over streaming audio and video data from IP stream in the form of titles. Steps in details are given below:

1. Launch the SLStreamer Pro program.

Note: For more information on the SLStreamer Pro application, see the [«SLStreamer Lite, SLStreamer Pro. Programs program Configuring, Monitoring & Managing Digital Broadcasting Schemes»](#) user's guide.

2. Create graph for streaming program from IP source to broadcasting server. The graph must have 4 nodes: Input device (1) – node parameters determine where from and how stream is transmitted to broadcasting server; Input program (2) – contains identifiers of program that are selected from input stream, PIDs of audio and video streams; Output program (3); Output device (4) – specify parameters of output scheme device. Specify named region in title layer of board used for broadcasting (specified in FDO nAir) as output device.



Graph can be created in the following ways:

1. Via template (appropriate not for all cases). Standard software set includes templates of graphs for receiving and decoding TV programs received by MPTS (multi program transport stream). Selection of template depends on board used at broadcasting server:

- Input_IP – FD300 board or Videoprocessor module;
- Input_IP_FDExt – FD300/FD422/FD842/FDVrt board.

In this case graph is created via template that already has all necessary nodes placed in needed order. User must only adjust nodes according to a concrete situation by specifying IP address, program index, etc. (see the «Creation and Customizing Graph With Template (step 2)» section).



2. Without template by adding nodes to graph manually.
For example, for receiving video stream from IP camera you should create graph with nodes without template (see the «Creation and Customizing Graph Without Template (step 2)» section).

✓ **Important:** Customize graph when stream from IP source is being transmitted to PC network adapter.

3. Leave mode of configuration and save graph to XML file.
You may delete graph after saving.

Note: If necessary to output video from different IP sources in titles then create and save to files graphs created for each of the sources (steps 2, 3).

4. Close the SLStreamer Pro program.

5. Create title project in the FDTitle Designer program by adding the IPCamera title element. Customize size and location of the element, i.e. windows where video is displayed. Load task (XML file with description of graph) created at step 3. Be sure that Z coordinates are assigned to adjacent elements of project correctly (with step 2). Save project.

Note: Title project may contain several elements of the IPCamera type. To display video from different sources load corresponding tasks to them. Insert elements to different title objects for independent control. For more information see the [«FDTitle Designer. Title Project Editor»](#) user's guide.



6. Load title project created at step 5 in the FDO nAir program. Create broadcasting schedule. If necessary insert commands for controlling title objects with IPCamera elements to schedule.
7. Launch schedule for execution in the FDO nAir program. You may work with buttons of interactive control also to control switching broadcasting on/off, etc.

Note: For more information see the «[FDO nAir. Broadcast Automation](#)»; «[FDO nAir Commands. Broadcast Automation](#)» user's guides.

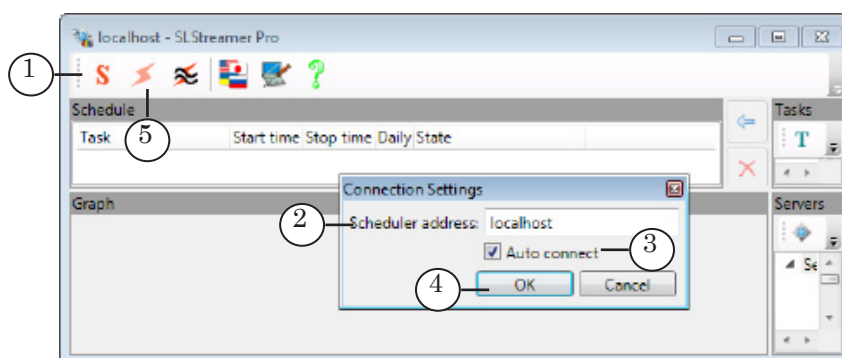
2. Launching SLStreamer Pro Application, Start of Work (Step 1)

1. Launch the SLStreamer Pro application (1) via the Start menu command: Programs > ForwardT Software > IPOutOption > SLStreamer Pro or program shortcut located on the desktop.
2. Adjust connection to Scheduler at first launch.

Note: Scheduler is a service from software set used to control schemes of receiving, processing, transmitting streaming audio and video data and store their description.

Complete the following:

1. Click the Connection Settings button (1) on a toolbar.
 2. Specify PC IP address (or DNS) (2) where necessary Scheduler is running. Local PC is in our example.
 3. Put the Auto connect mark (3) to connect with the service automatically.
 4. Click OK (4).
3. Click the (5) button to connect with Scheduler manually if automatic connection is not executed during further sessions.

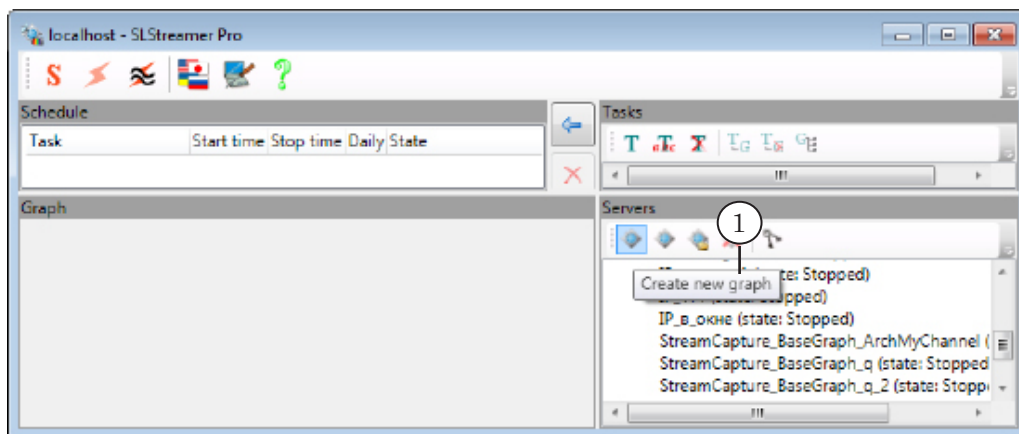




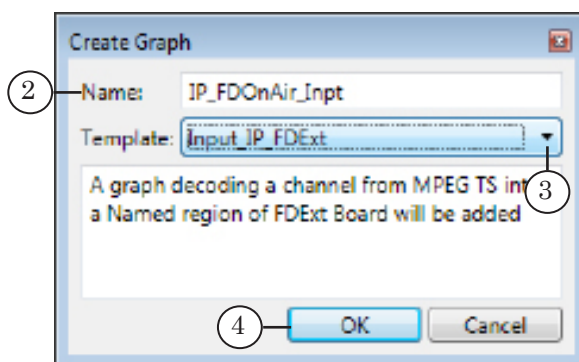
3. Creation and Customizing Graph Via Template (Step 2)

3.1. Adding Grpah and Task

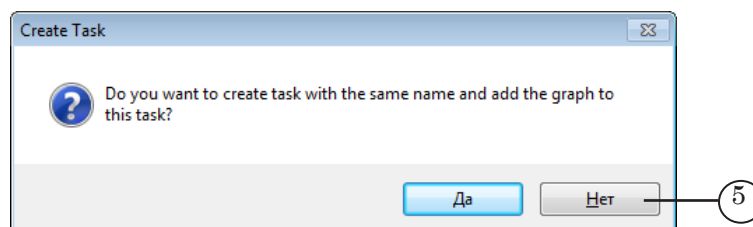
1. Click the Create new graph button (1) on toolbar in the Servers window.



2. Specify graph name in the appeared window (2).
3. Specify template via the drop-down list (3):
Input_IP (FD300 board/Videoprocessor) or Input_IP_FDExt (FD300/FD422//FDVrt board).

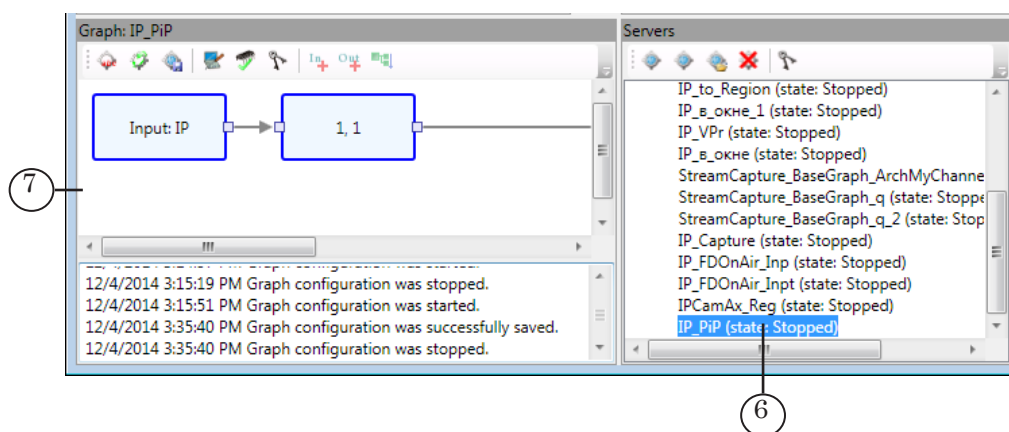


4. Click OK (4).
5. Click No (5) in the appeared window.





6. New graph from selected template is created. Its name is added to graph list (6). The graph itself is displayed in graph working area (7). Mode of graph configuration is switched on automatically.



7. Configure graph nodes consequently in configuration mode. We recommend customizing nodes as they are ordered in graph (in a left-right direction) because settings of graph depend on settings of the previous nodes in the majority of cases.

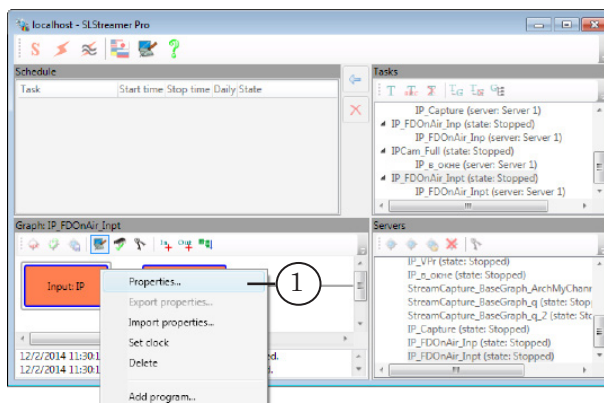
- ✓ **Important:** Configure graph nodes obligatory.
- ✓ **Important:** Customize graph when stream is being received from IP source to network adapter.



3.2. Input Device

Node of input device is the first in order.

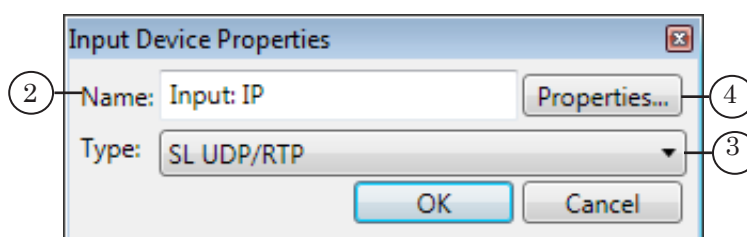
1. Open context menu by right-clicking node. Select Properties... (1).



In the Input Device Properties window:

2. Specify name of node (2).
3. Be sure that type of device in the Type drop-down list (3) is selected. The type depends on used protocol of data transmitting, for example, select SL UDP/RTP if stream is transmitted via UDP.

- Note:
1. You can find a list of supported types of devices with detailed description in the [«SLStreamer Lite, SLStreamer Pro. Programs Configuring, Monitoring & Managing Digital Broadcasting Schemes»](#) user's guide.
 2. See lists of configured parameters for different types of input devices with comments in corresponding tables in the same guide.
 4. Click Properties... (4) to configure device working parameters.

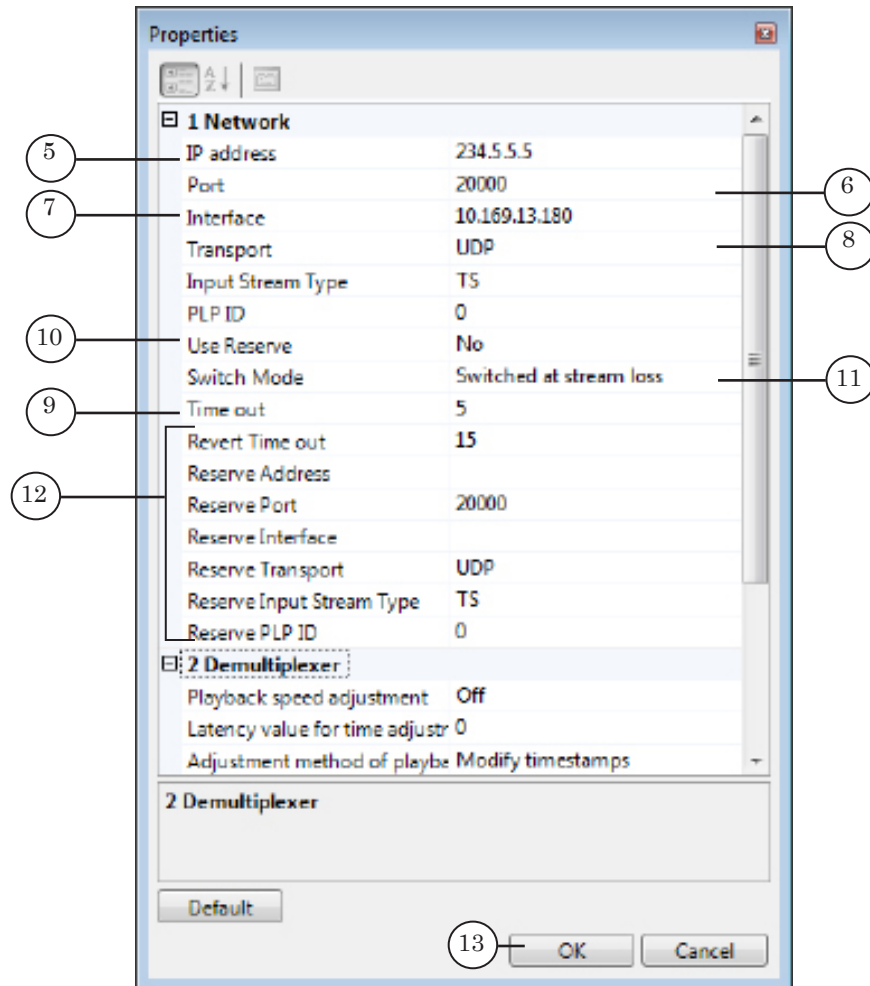


5. Customize parameters of device in the appeared window, for example, if you deal with UDP:
 1. Specify IP address in case of a multicast broadcasting in the IP address field (5), 234.9.9.9 is in our example. Specify IP address or DNS name of received node in case of unicast broadcasting.
 2. Specify port index used for receiving data in the Port field (6).
 3. Select IP address used for receiving stream data in the Interface drop-down list (7).

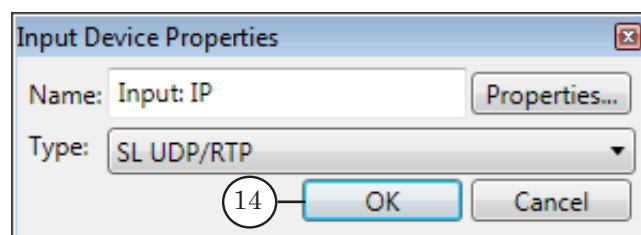


- Specify protocol for transmitting data (8), UDP is in our case.
- Specify timeout (in sec) in the Timeout field (9), 5 sec is specified by default.

If stream is lost then at specified time period attempt to reconnect with graph occurs (graph is stopped or restarted again). If reserve mode is on then switching to reserve stream happens.



- If necessary switch reserve mode on via the Use Reserve line (10) by selecting Yes. Specify mode of switching to reserve stream (11) and customize reserve stream parameters (12).
- Remain default values in the Demultiplexer area.
- Close windows with properties consequently by clicking OK (13, 14). All modifications are saved.

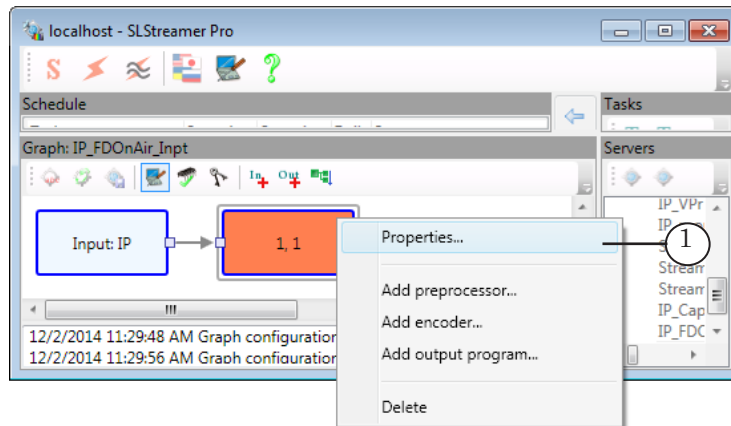




3.3. Input Program

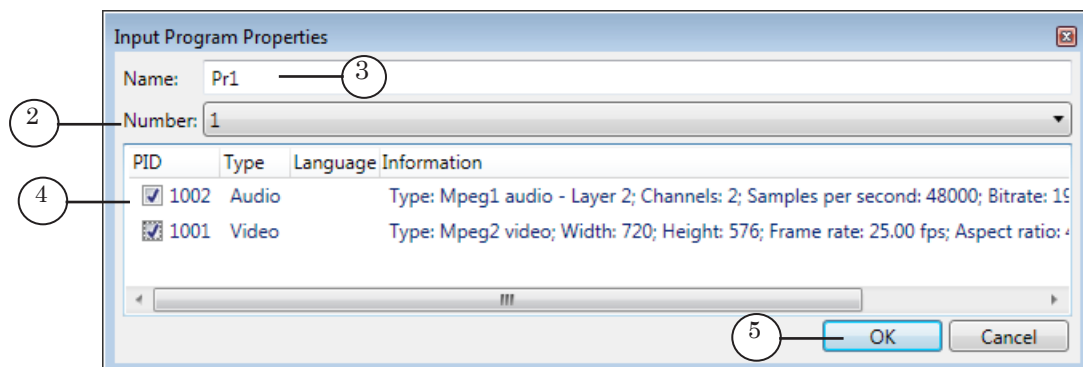
Node of input program is the second in order. Configure the node when IP stream is being received by network adapter and when the Input Device node is configured.

1. Open context menu by right-clicking node. Select Properties... (1).



Configure parameters in the Input Program Properties window:

2. Select necessary program from stream according to number (2).



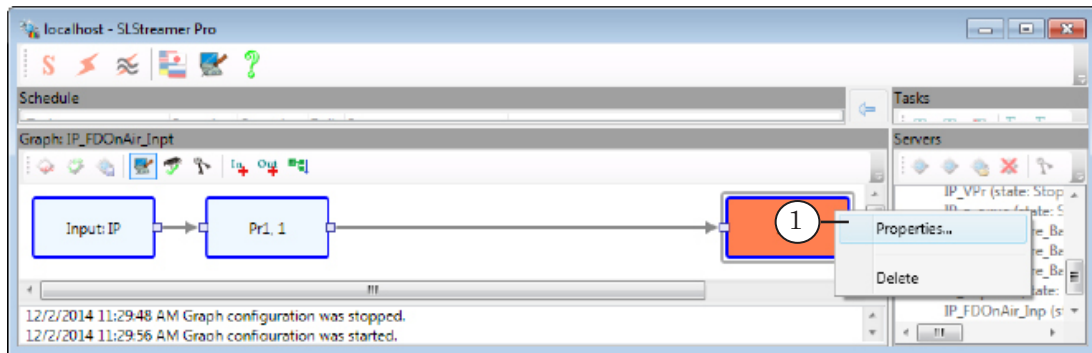
3. Specify program name (3).
4. Select audio and video streams in the (4) table by putting corresponding check marks, video with PID=1001 and audio with PID=1002 streams are in our example.
5. Click OK (5) to save properties and close the window.



3.4. Output Program

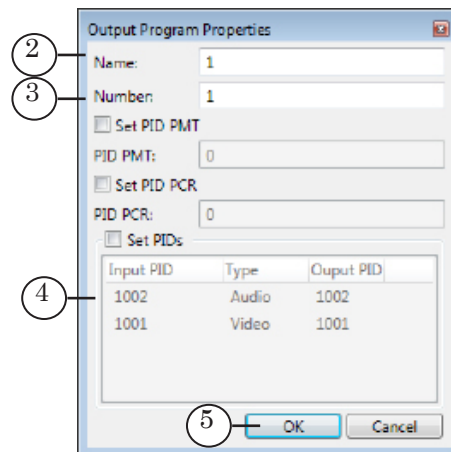
Node of output program is the third node in graph.

1. Open context menu by right-clicking node. Select Properties... (1).



Specify parameters in the Output Program Properties window:

2. Specify program name (2).
3. Specify program number (3). The number is used to identify this program.
4. PIDs (4) are specified automatically in our example.
5. Click OK (5) to save properties and close the window.

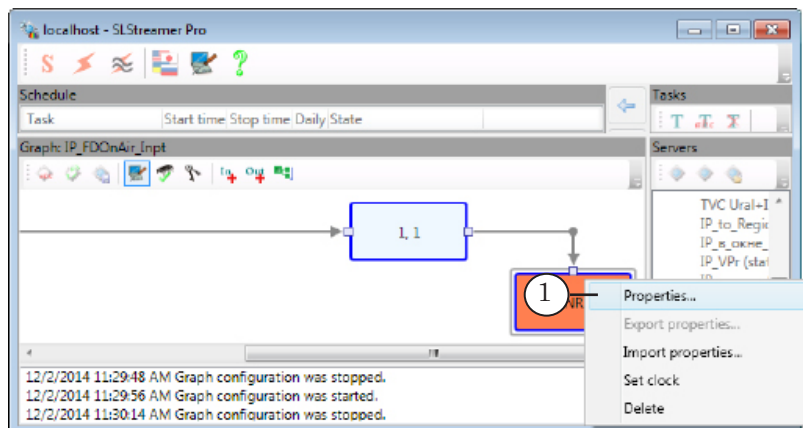




3.5. Output Device

Node of output device is the fourth node in graph.

1. Open context menu by right-clicking node. Select Properties... (1).

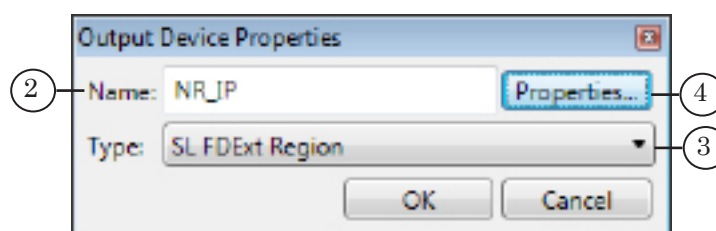


In the Output Device Properties window:

2. Specify node name (2).
3. Select type of output device that corresponds to named region (depending on used board) in the drop-down list (3):
 - Named Region – FD300 board or Videoprocessor module are used;
 - SL FDEExt Region – FD322/FD422/FDVrt board are used.

Note: You can find list of output devices types with detailed description in the [«SLStreamer Lite, SLStreamer Pro. Programs for Configuring, Monitoring & Managing Digital Broadcasting Schemes» user's guide](#).

4. Click Properties... (4).



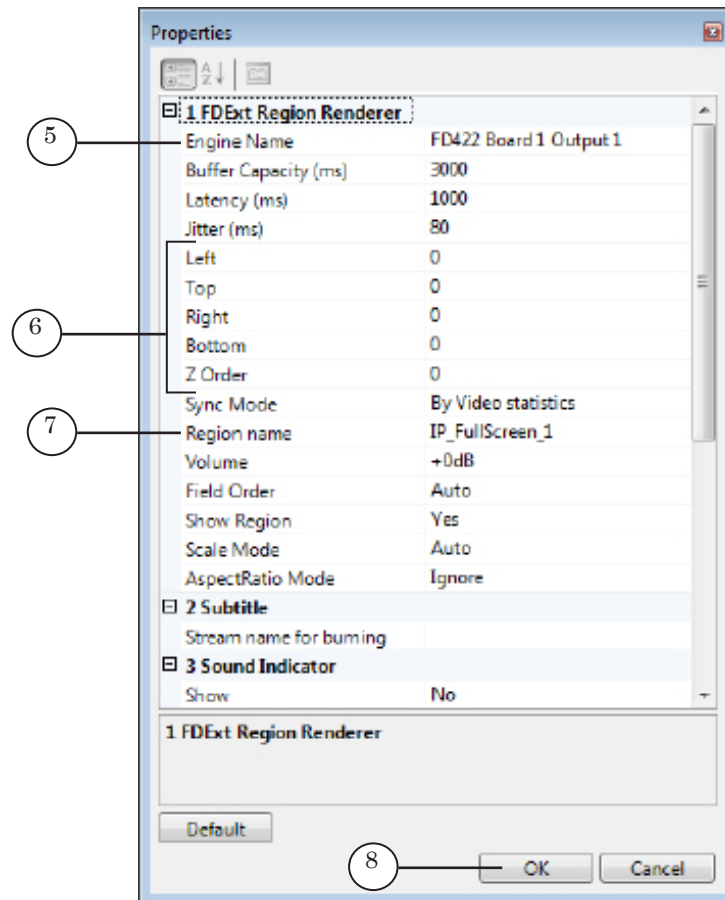
5. In the Output Device Properties window:

1. Be sure that device used for broadcasting in FDO nAir is selected. The device is selected in the list indicated as:

- Engine Name (5) if SL FDEExt Region is specified at step 3;
- Device Type if SL FDEExt Region is specified.

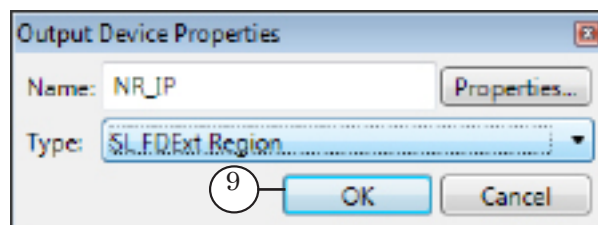


2. We recommend remaining default values in the (6) and (7) fields where region coordinates and name are specified. The properties will be specified at further customizing in the FDTITLEDesigner program.



Note: In other cases (if IPCamera title element is not used) at customizing output to named region you must necessarily specify name of region in the Region name field (7).

6. Click OK (8, 9) to save properties and close windows.

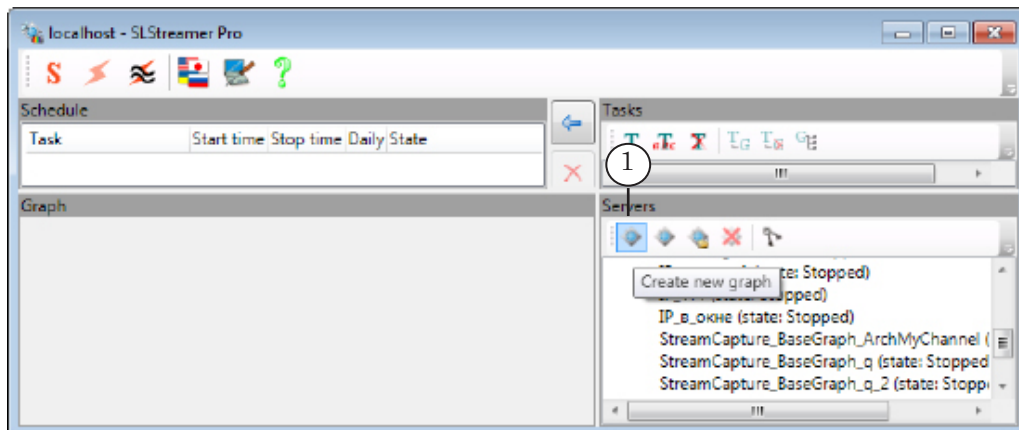




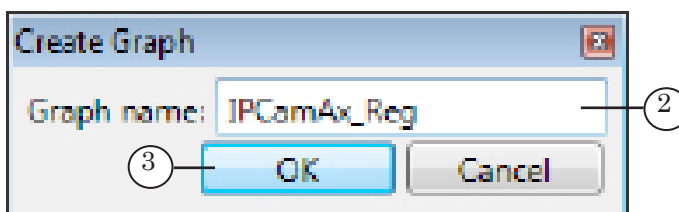
4. Creation and Customizing Graph Without Template (Step 2)

4.1. Adding Empty Graph

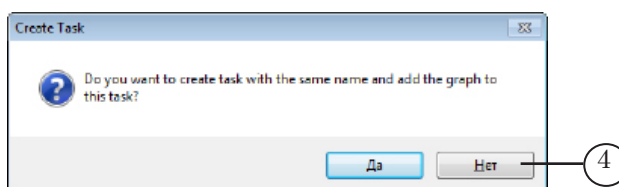
1. Click the Create new graph button (1) on toolbar in the Servers window.



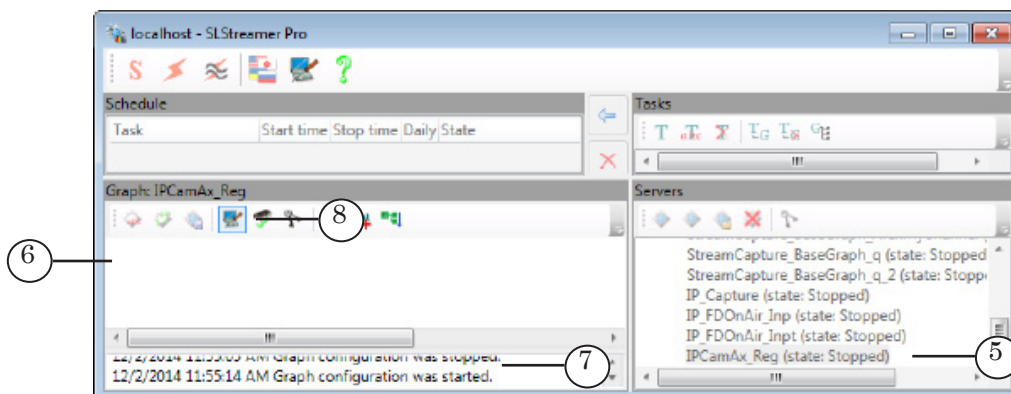
2. Specify graph name in the appeared window (2). Click OK (3).



3. Refuse creating task by clicking No (4) in the appeared window.



4. New graph with specified name (5) is added to list with graphs. Graphs section (6) is empty because graph has no nodes yet.





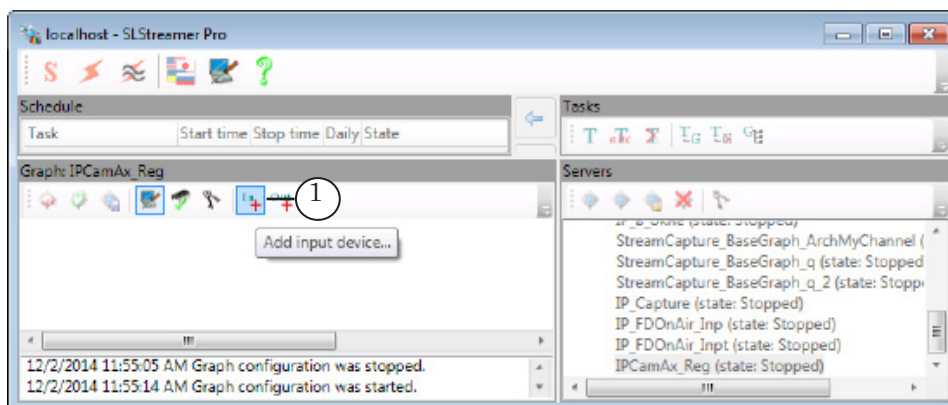
Mode of graph configuration is switched on automatically, i.e. record in protocol area (7) and the (8) button appear. The button is used as switcher in this case – if the mode is on, the button is released, if the button is not released – the mode is off. Click once the button to change modes.

7. Add and configure graph nodes consequently in configuration mode. Next sections provide with a detailed instructions. Work order on customizing receiving RTSP stream from Axis IP camera is described here.

4.2. Input Device

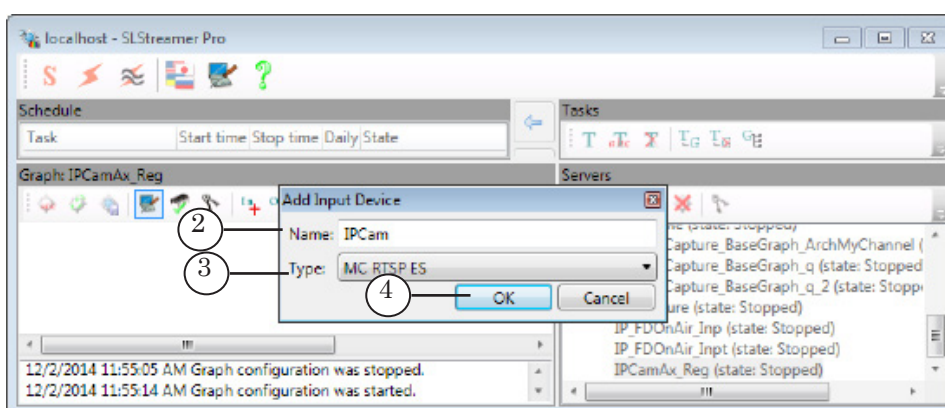
✓ **Important:** By the moment of adding and customizing input node there must be data on input. In our case it denotes that camera must be connected to IP network and must be switched on.

1. Click Add input device... (1).



2. Specify name of node (2) in the appeared window. It can be any set of symbols.

Specify type of device (3) in the drop-down list, MC RTSP ES is in our case.

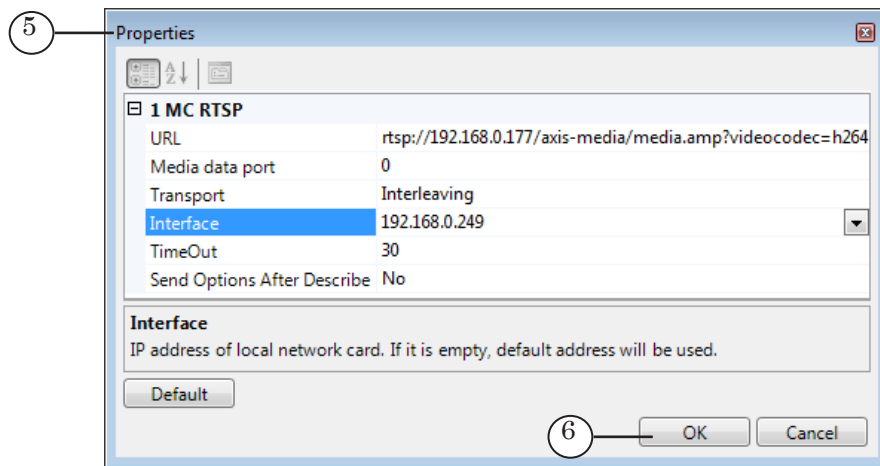


- Click OK (4) to pass to the next step.



3. Specify in the Properties window (5):

- URL – camera URL (format of line see in the guide supplied with IP camera);
- Media data port – port number used for receiving stream;
- Transport – type of stream and transport protocol;
- Interface – IP address of PC network adapter;
- TimeOut – timeout (in seconds) if input audio and video stream is absent then graph is stopped and restarted again in specified time period.



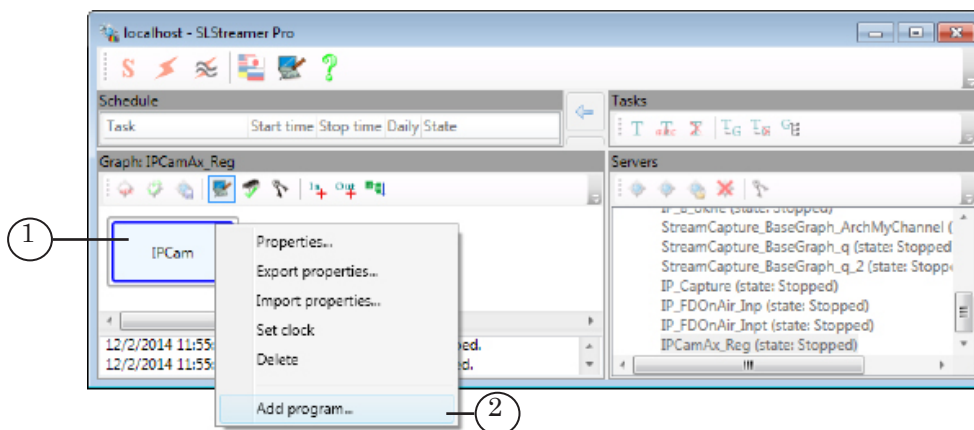
4. Click OK (6) when customizing is finished.

5. Window with customized node in the Graphs area appears.

4.3. Input Program

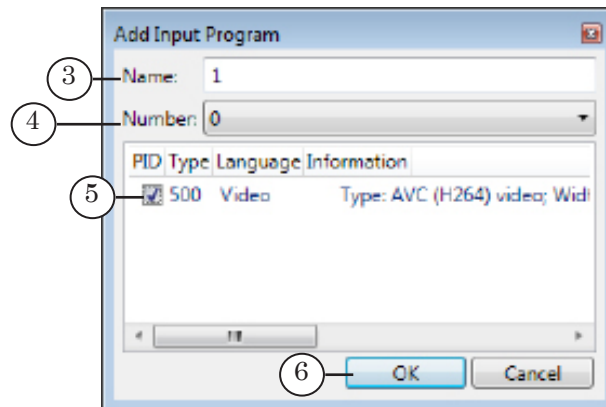
Configure node when IP stream is being received by network adapter and if the Input device node has configured. If input stream is absent it is impossible to add the Input program node.

1. Open context menu by right-clicking the Input device node (1).
Select Add program... (2).





2. Specify name of the Input program node (3) in the appeared window:



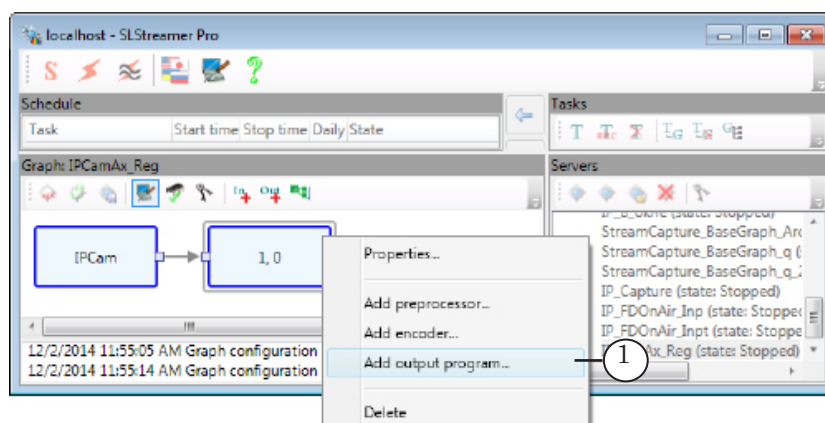
The Number drop-down list (4) contains numbers of all programs detected in input stream. Select program for further processing in the list. In our case input receives stream with one program.

The (5) area contains list of PIDs – identifiers of audio and video packets of specified program detected in input stream. Select necessary ones by putting corresponding marks.

4. Click OK (6).
5. Window with elements for program customizing is closed. Node with specified name in the Graphs area appears.

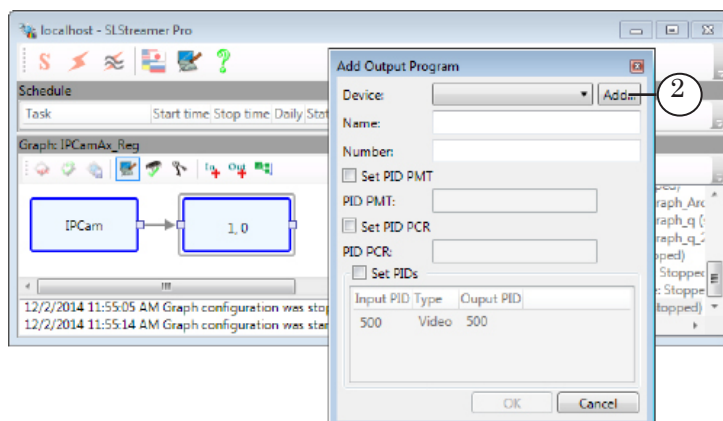
4.4. Output Program and Output Device

1. Right-click Input program node and select Add output program... (1) in the context menu.





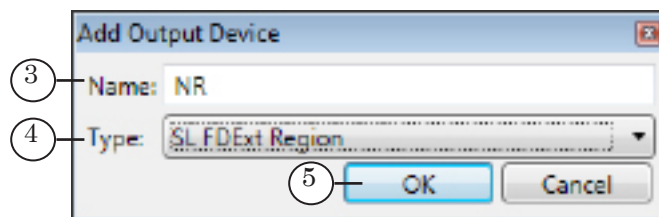
2. Click Add... (2) in the appeared window.



3. The Add Output Device window appears. Specify name of node (3) in the appeared window. Select type of output device depending on used board in the (4) drop-down list:

- Named Region – FD300 board or Videoprocessor module are used;
- SL FExt Region – FD322/FD422/FDVrt boards are used.

Click OK (5) to pass to customizing region parameters.

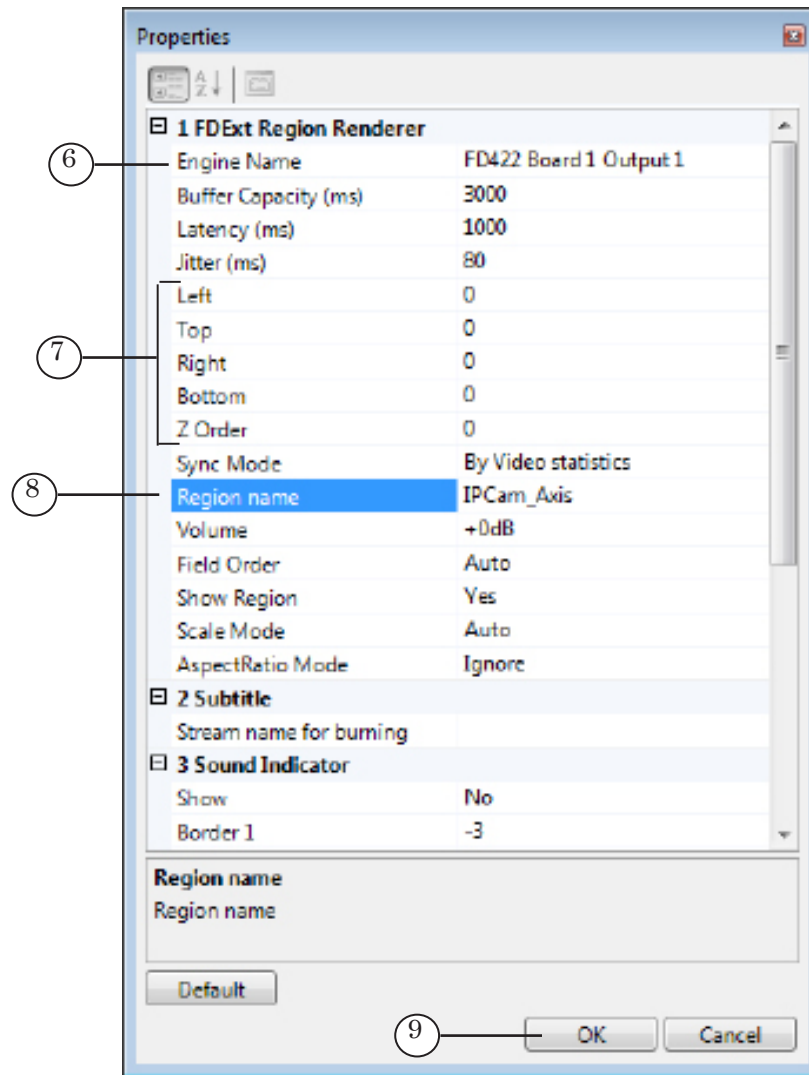


4. In the appeared window in the FExt Region Renderer table:

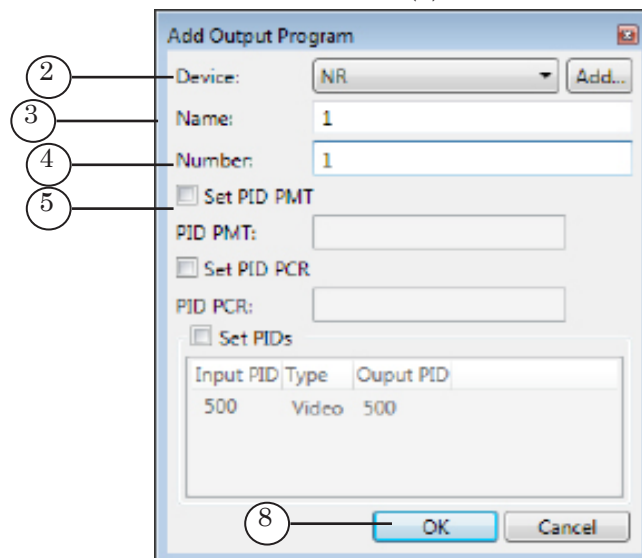
- Engine Name (6) – select device used by FDO nAir program (broadcasting server). For example, select FD422 Board 1 Output HD when dealing with FD422 board in HD mode;
- remain default values for other parameters. Coordinates (7) and name of region (8) are specified later in the FDTitleDesigner program.

Click OK (9) to finish customizing the node.

Note: For more information on properties see the «[SLStreamer Lite, SLStreamer Pro. Programs for Configuring, Monitoring & Managing Digital Broadcasting Schemes](#)» user's guide.

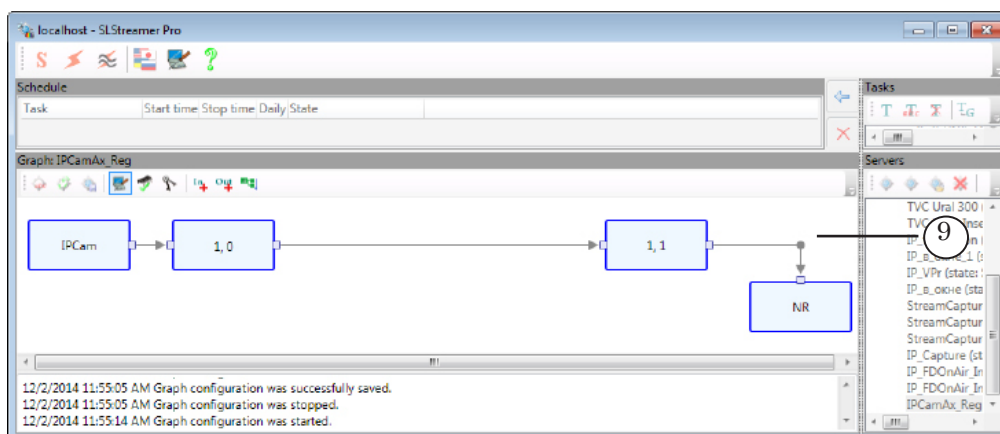


5. Continue customizing in the Add Output Program window:
 1. Be sure that name of node specified at the previous step is added to the Device list (2).



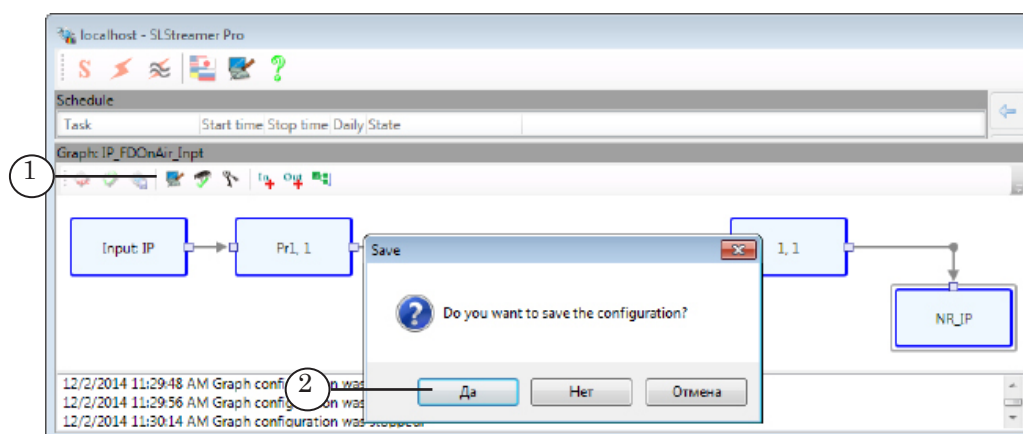


2. Specify name (3) and number (4) of output program. Name must be specified with Latin characters.
3. If the PIDs are not specified then they are assigned automatically.
4. Click OK (8) to finish customizing.
6. The window is closed. Nodes in the Graphs area (9) appear.



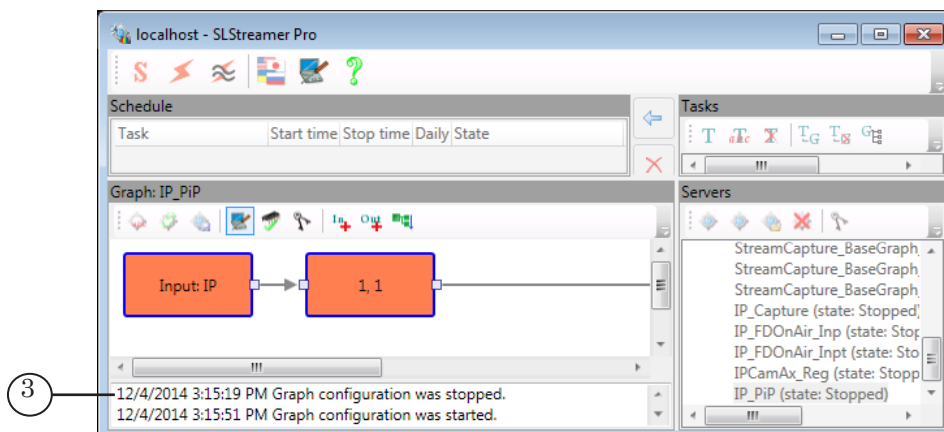
5. Finishing Graph Configuration (Step 3a)

1. Click Graph Configuration (1) to complete graph configuration and quit configuration mode.
2. Save configuration in the appeared window by clicking Yes (2).





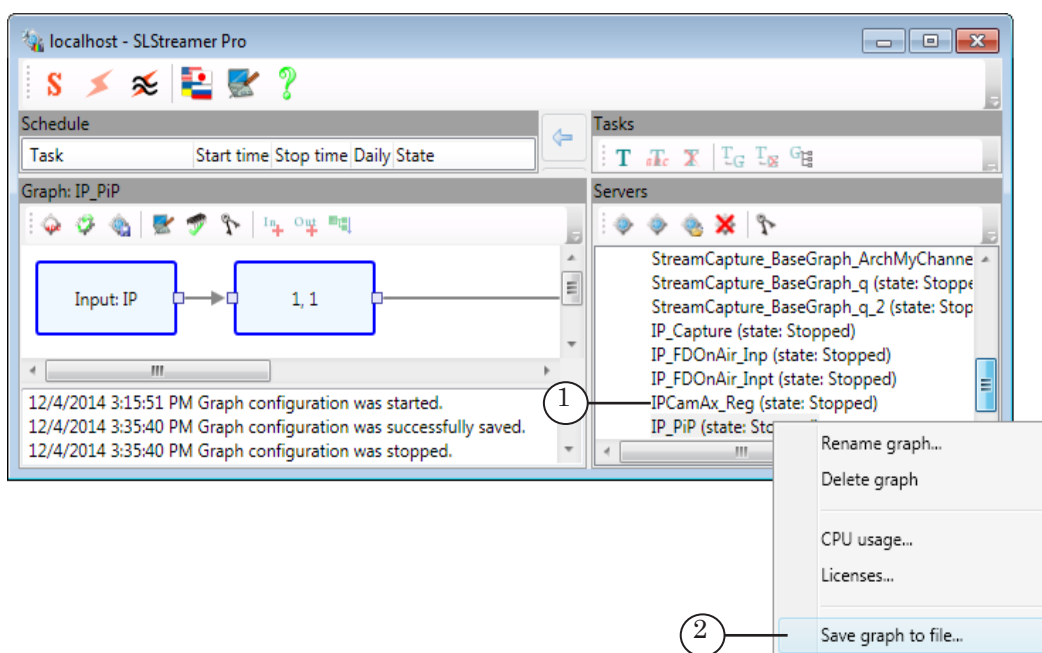
- Graph is configured. Corresponding message (3) appears in protocol area.



6. Saving Graph to File (Step 3b) and Exiting Program (Step 4)

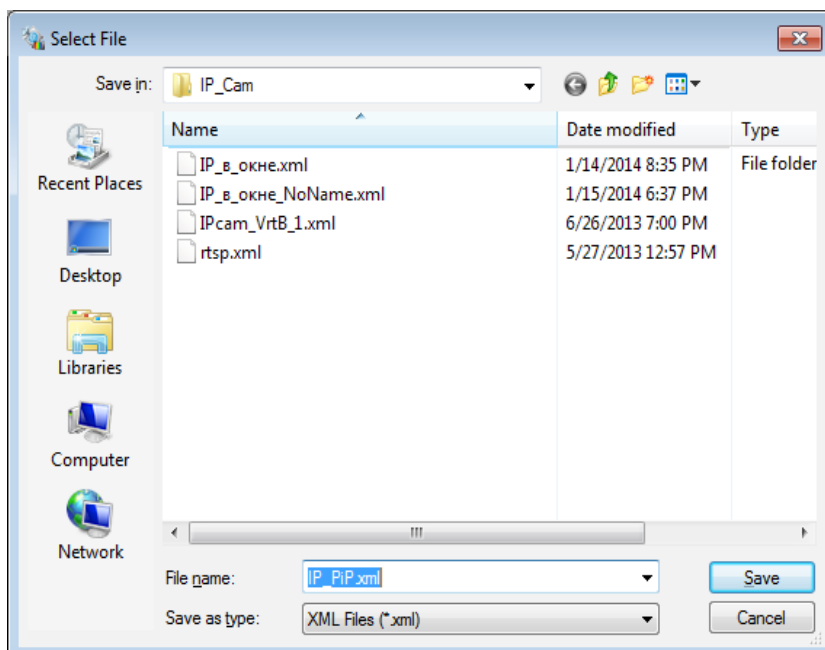
Description of graph is necessary to save it to XML file. The file is used as a task for the IPCamera title element.

- Select necessary graph by clicking it in the Servers area (1).
- Open graph context menu by right-clicking it.
- Select the Save graph to file... command (2).





4. Specify folder and name of file via standard dialog window. Click Save.



Note: You may delete graph after saving it in the SLStreamer Pro program.

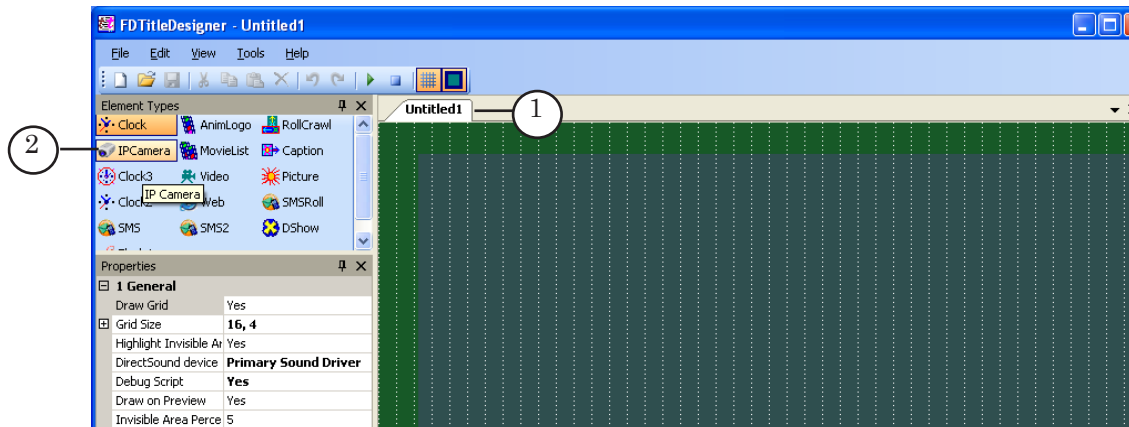
5. Close the SLStreamer Pro program by clicking Close.



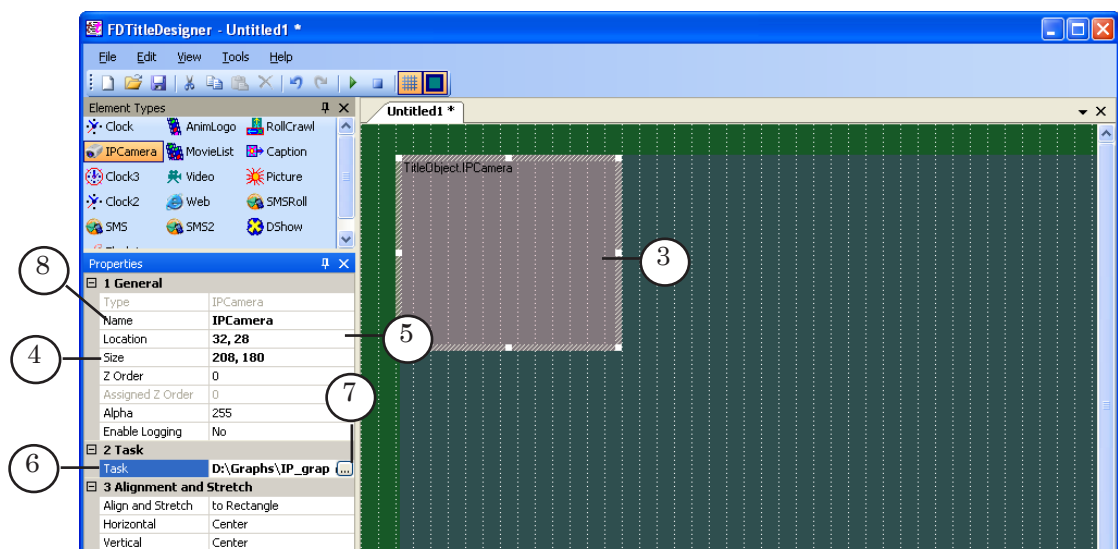
7. Creation of Title Project (Step 5)

Create title project with the IPCamera title element in the FDTTitleDesigner program. The program is launched via the Start menu command: All Programs > ForwardT Software > Titles > Title Designer or the program shortcut.

1. Empty title project (1) appears at first program launch automatically.
2. Click the IPCamera button (2) on the Element Types panel.



3. Click mouse cursor in project work area, hold left mouse button and drag pointer in the right-down position to specify element bounds (3).
4. Specify element size (4) and location (5) on the screen.
5. Click Task line (6) and then click the (7) button to specify task for element. Specify the XML file with file description created at the previous step in the SLStreamer Pro program. A full path to the file is displayed in the Task line.



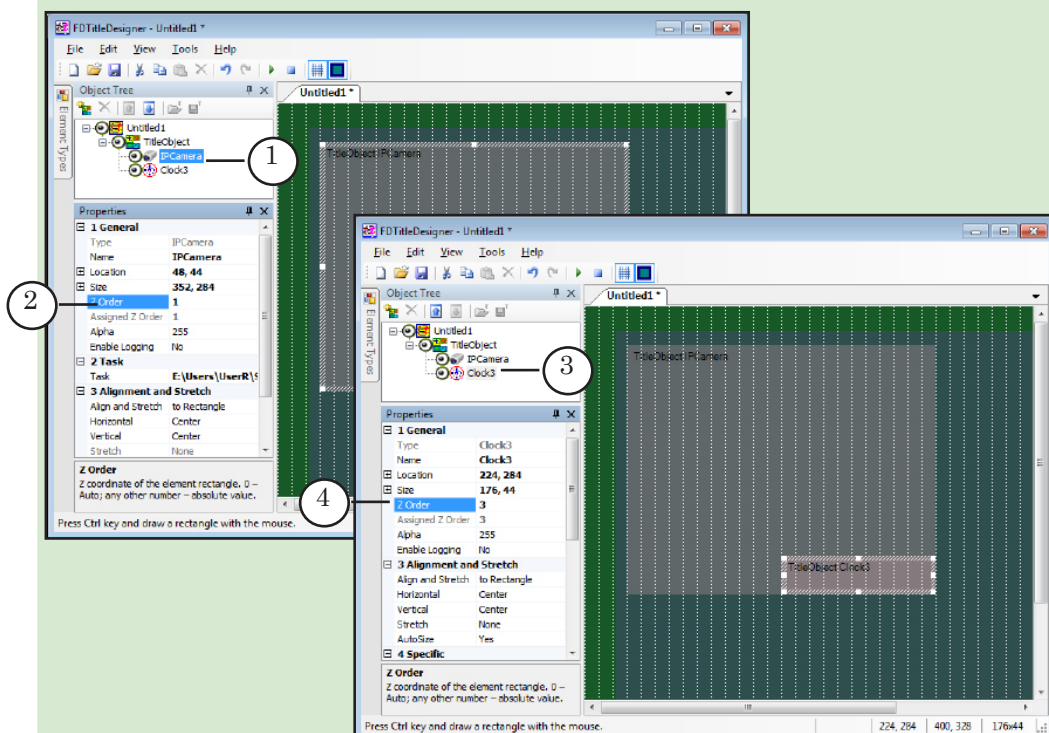


- Specify title element name (7), IPCamera is in our example. If there are several elements in the project then each of them must be named.
- If any other elements (of any type) except IPCamera are inserted to title object then be sure that Z coordinates are distributed for them correctly.

✓ **Important:** Remember that for work of the IPCamera title element two title layers (two Z coordinates) are required. It denotes that the nearest element in the same title object located above (lower in the list in objects tree) must have Z coordinate at least 2 units more. For example, if Z coordinate of the IPCamera element is 1 then for the next element Z coordinate must be 3 or more (see example below).

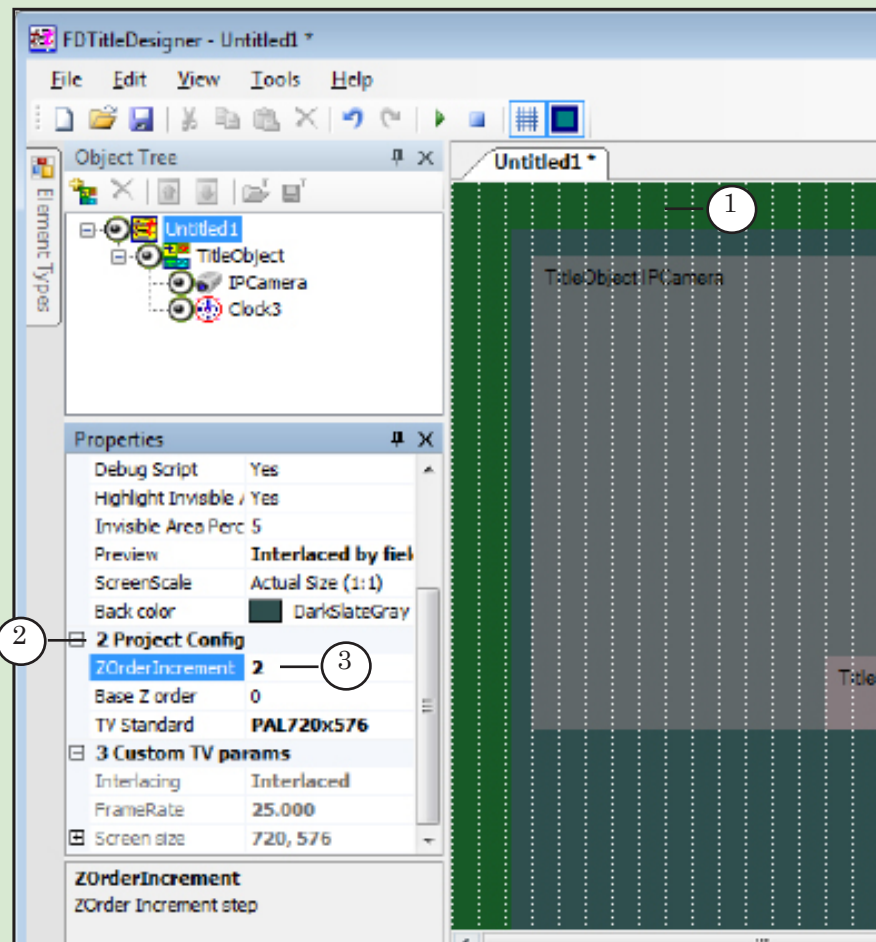
➡ **Example:** Z coordinates can be assigned manually or automatically.

- At assigning coordinates manually take into account above given requirement in the Important section obligatory. For example, let there are 2 elements in the object: IPCamera and Clock3. Select the IPCamera element (1) by clicking it. Specify, for example, 1 (2) in the Z Order field. Then select the Clock3 element (3). Specify, for example, 3 (4) in the Z Order field.





2. For Z coordinates to be distributed correctly automatically it is necessary to specify value 2 or more for the ZOrder Increment property of title project. For this: click any empty place (1) in working field of project, open the Project Config group of elements (2) in the Properties table. Click the ZOrder Increment line (3), specify necessary value, 2 is in our example.

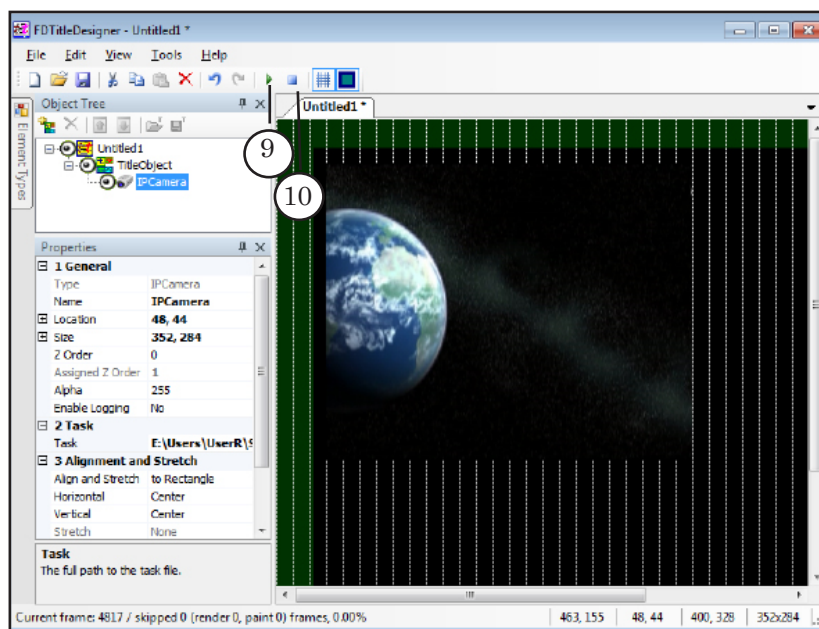


More information on Z coordinate you may find in the «FDTitle Designer. Title Projects Editor» user's guide.



8. Be sure that received data is displayed in title element correctly. For this click the Start Preview button (9). If stream with audio and video data is received to network adapter in this case then video is displayed in region.

Click Stop Preview (10) to stop previewing.



9. Save title project to file and close the FDTitle Designer program.

More information on creation and use of title projects you may find in the «[FDTitle Designer. Title Project Editor](#)» user's guide.



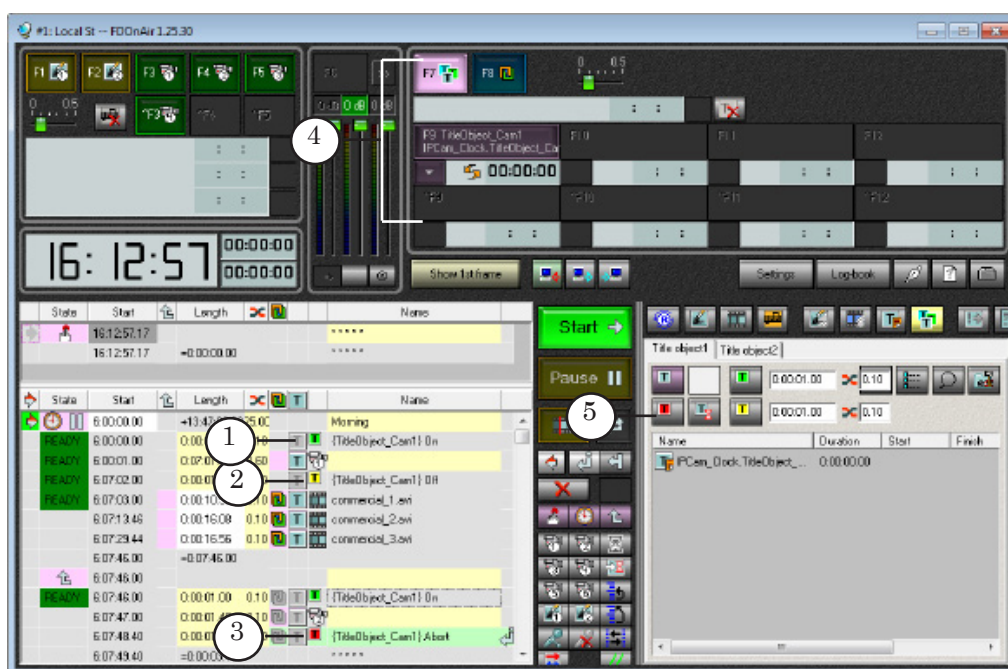
8. Launching and Customizing FDO nAir Program (Steps 6, 7)

Launch the FDO nAir application via the the Start menu command: Programs > ForwardT Software > OnAir.

Load title project with IPCamera title element created earlier. Control over switching broadcasting on/off and switching among channels in one window is implemented via:

- Load title object;
- Title object on (1);
- Title object off (2);
- Title object abort (3);
- buttons of interactive control over title objects (4);
- commands of control over title objects by schedule automatically.

Note: Buttons for adding commands to schedule are located on file pages of control over title objects (5). More information on commands of control over titles you may find in the [«FDO nAir Commands. Broadcast Automation»](#) user's guide.



Tip: Remember that start of graph may take several seconds. So, to display stream data at switching channels on/off without delay it is recommended to load corresponding task to title objects in advance and switch objects to the «On» mode at necessary time moment.



Useful Links

ForwardT Software set: description, download, documentation, solutions

<http://www.softlab-nsk.com/forward/index.html>

Support

e-mail: forward@softlab.tv

forward@sl.iae.nsk.su

forward@softlab-nsk.com

Forum

<http://www.softlab-nsk.com/forum> (currently available in Russian only)

Documentation for more information:

1. [ForwardT Software Setup. User's Guide.](#)
2. [IPOut, ASIOut: Digital Streaming Options for Forward T Products. User's Guide.](#)
3. [ForwardTS Setup. User's Guide.](#)
4. [IPInput. Rebroadcasting IP Stream Audio/Video Data. User's Guide.](#)
5. [SLStreamer Lite, SLStreamer Pro. Programs for Configuring, Monitoring & Managing Digital Broadcasting Schemes. User's Guide.](#)
6. [FDOnAir. Broadcast Automation. User's Guide.](#)
7. [Plugins Setup. User's Guide.](#)
8. [FDTitle Designer. Title Project Editor. User's Guide.](#)

Translation from
July 7, 2015

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