

Elecard CodecWorks 4.2

User Guide



Notices

Elecard CodecWorks 4.2 User Guide

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1. Introduction

1.1 Preface

The Elecard CodecWorks program suite is intended for real-time high-quality conversion of various media content. The program is optimized for effective utilization of the hardware resources.

1.2 Using This Guide

The guide describes the CodecWorks main functions and provides instructions for the program installation and use.

1.3 System Requirements

System requirements depend on the following factors:

- type of task to be done (encoding, transcoding, multiplexing, etc);
- format, resolution and bitrate for input and output streams;
- stream processing functions (frame size changing, deinterlacing, framerate conversion, etc)
- the number of streams to be processed;

Elecard CodecWorks requires the following minimum system configuration:

- SSE-enhanced CPU (Intel® Pentium, Core2Duo, Xeon, AMD® Athlon, Opteron etc.)
- 512 MB RAM
- Any VGA card
- Windows® 2000/XP/2003 Server/Vista/7

1.4 Licensing and Technical Support

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tsup@elecard.com

2. Describing CodecWorks

2.1 CodecWorks Installing

Before CodecWorks is installed, the following should be taken into consideration:

- CPU performance is of crucial importance for real time encoding process. Take it into account, when you choose hardware for the encoding server. To estimate the CPU requirements, see the [codec performance table](#) on the Elecard website.
- The disk selected for the program installation must have enough free space for saving of the system log (for highly detailed logs) and memory dump (if abnormal end or crash occurs) files.
- To manage encoding server via SNMP protocol, the corresponding service must be installed in the system¹.

2.2 Quick Start

Elecard CodecWorks can be started as a Windows system service or as a console application². The service must be pre-registered in the system. To register the system service, select the **register Elecard CodecWorks service** command from the *Start → All Programs → Elecard → Elecard CodecWorks* menu. If the option “Start CodecWorks service after install” is selected during installation the service will be automatically registered and launched.

To manage and control encoding servers, use the **Elecard CodecWorks Manager** program that is started from the *Start → All Programs → Elecard → Elecard CodecWorks* menu.

In the application window available CodecWorks servers will be displayed along with encoding consoles started there.

Each console performs individual task (that is only one DirectShow graph) and may be started or stopped independently of all others. The task essence is determined with the encoding schema.

To change the encoding schema, select the **Change schema** command. The **Schema list** window is displayed. The typical task is a new schema creation. Click the **New** button to open the schema configuration wizard (see the *Schema Configurator* section). After the new schema is created it will be added into the list. To load the schema into the encoding console and close the window, select it from the list and press the **OK** button.

¹ See the *Management via SNMP* section.

² The console work mode is recommended on the first workspace adjustment stage because it is more visually informative. For the well-tuned system the system service mode is more convenient

To start or stop the encoding process, click the **Start** or **Stop** commands, respectively. To restart the encoding console, click **Restart**.

The **Statistics** window is used for monitoring of the console encoding process. To open the window, select the **Statistics** command. The **Statistics** window represents the encoding schema read-only parameters. Furthermore, the manager window displays status, name of selected schema, start date/time and used system resources for each console.

The **Parameters** command opens the list of component parameters that can be changed. In the schemas created with the Schema Configurator the components are grouped into separate tabs. To apply changes, press the **OK**³ button, to discard – the **Cancel** button. The parameter window can be opened with the selected console double-click too.

2.3 Program Structure and Module Description

Only one encoding server can be installed per one operational system.

Encoding console — program that builds and starts the encoding schema, receives and processes control commands from the manager (using the CodecWorks Dispatcher program), and controls license limitation. Each server allows start of several consoles (depending on the number of purchased licenses).

Dispatcher — program (console or system service at user's discretion) that dispatches work of encoding consoles, starts and restarts the consoles, provides “external communications”, gathers the server capacity statistics. Each server allows starting only one dispatcher.

Watcher service — program (console or system service at user's discretion) that supervises the dispatcher work and restarts it in case of need. The watcher service, dispatcher and encoding consoles can be started as system services or as console applications at the user's option.

CodecWorks Manager — program with graphical user interface (GUI), that manages work of encoding consoles, adjusts and starts encoding schemas, gathers statistics. One manager can manage several servers.

CodecWorks Manager (console) — console application that provides command line management of encoding servers.

Encoding schema — XML document that contains full information about the encoding DirectShow graph structure and its settings (similarly to .GRF file used in the Graph Edit program). Usually the schema is intended for encoding of the specific input stream on the concrete server.

Schema configurator — program that is intended for the encoding schema creation using the prefabricated set of sections. Each section represents structure and parameters of an encoding graph part that performs certain function (stream receiving, decoding, encoding, etc.). Templates can be used for schema preparation as well.

³ New values for some parameters can not be applied without stopping the encoding process. If the value is not applied, the corresponding error message appears.

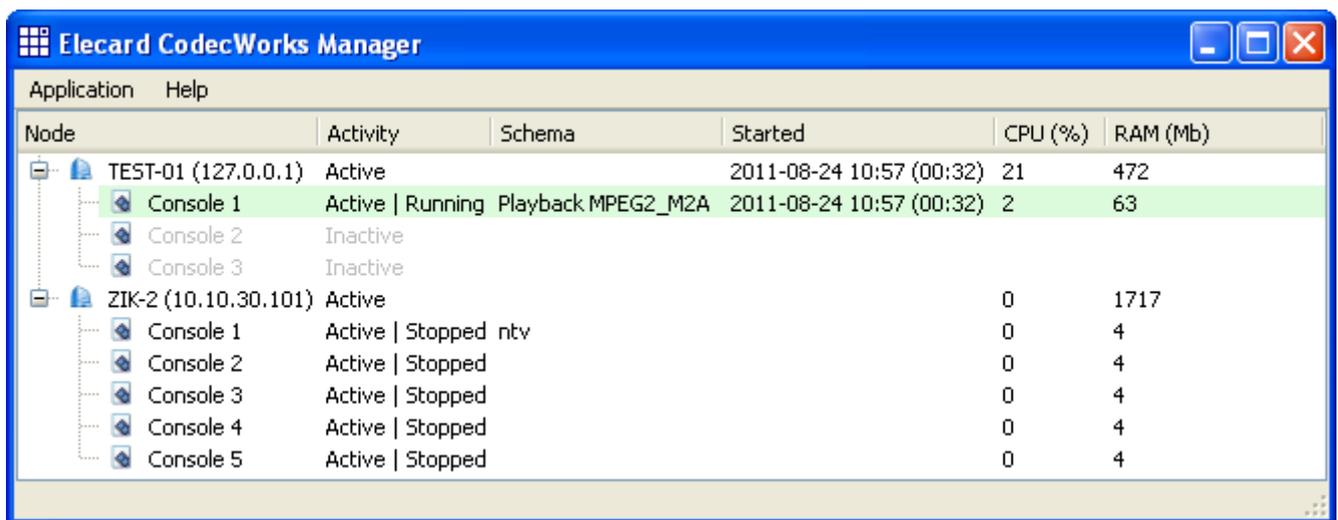
Template — XML document intended for a new encoding schema creation. The document consists of limited set of sections. The section set defines the sort of encoding tasks that are performed with the template. The template use is advisable, if nonstandard complicated schema is built. Templates are prepared by the Elecard specialists.

CodecWorks Web Server — a system module offering web server functionality. It allows controlling the encoding server via web interface. It also generates m3u8 playlists and sends the encoded streams via HTTP and HLS (HTTP Live Streaming) protocols. The web server is launched automatically when the dispatcher starts.

2.4 CodecWorks Manager

The CodecWorks Manager main window contains a list of available servers and launched encoding consoles. Activity status, start time, CPU usage (%), and used RAM (Mb) are indicated for each server and console. Besides, the selected encoding schemas are displayed for the consoles.

Figure 1.CodecWorks Manager Main Window



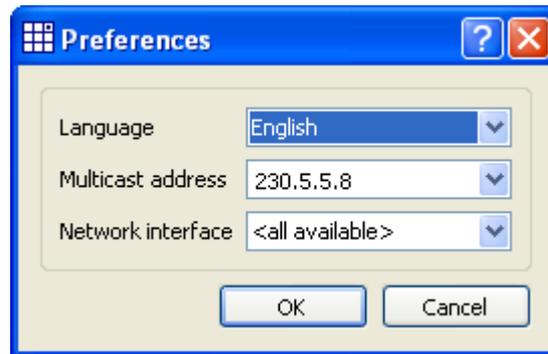
Node	Activity	Schema	Started	CPU (%)	RAM (Mb)
TEST-01 (127.0.0.1)	Active		2011-08-24 10:57 (00:32)	21	472
Console 1	Active Running	Playback MPEG2_M2A	2011-08-24 10:57 (00:32)	2	63
Console 2	Inactive				
Console 3	Inactive				
ZIK-2 (10.10.30.101)	Active			0	1717
Console 1	Active Stopped	ntv		0	4
Console 2	Active Stopped			0	4
Console 3	Active Stopped			0	4
Console 4	Active Stopped			0	4
Console 5	Active Stopped			0	4

If CodecWorks Manager is started on the encoding server (local), the manager additional adjustment is not needed. Otherwise it may be needed to choose **Preferences...** from the **Application** menu and set the **Multicast address** value for announcement receiving. The value must be matched for the corresponding setting of the CodecWorks server⁴. In some cases the **Network interface** value (used for the manager communication with encoding servers) must be specified too. If the address is set to the *127.0.0.1* value, the automatic detection is available only for local (started on the same computer) encoding node.

To simplify management for group of servers, set the same *Multicast IP* and *Multicast Port* values for all servers of the group (but make it unique for each group). In this case the manager displays only servers from the specified group.

⁴ To manage group of servers, set the same *Multicast IP* and *Multicast Port* values for all nodes. In this case the manager automatically detects all servers from the group and performs centralized monitoring and management.

Figure 2.CodecWorks Manager Preferences Dialog Box



The **Preferences** dialog box allows setting the user interface language.

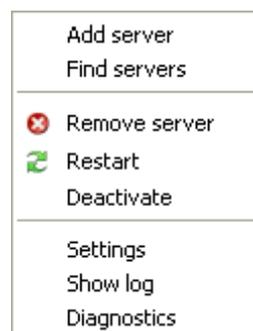
The settings of the local server as well as commands for turning it off can be accessed via context menu that is called with the right-click on the CodecWorks Manager window.

If the **Local server**→ **Activate (console)** is selected, the **Elecard CodecWorks Watcher** console (watchdog service) is started. It starts the **Elecard CodecWorks Dispatcher** program automatically. The dispatcher activates encoding consoles according to the initial configuration. If the **Local server**→ **Activate (service)** is selected, no other windows are opened – the processes are launched as system services.

Right-click the encoding server or console to open its shortcut menu. These menus provide main commands for management of the servers and consoles.

2.4.1 Encoding Server Management

Figure 3.Encoding Server – Shortcut Menu



The **Find servers** command starts detection of the CodecWorks compatible servers using announcements that are sent with the CodecWorks dispatchers to the network multicast group (specified in the manager settings).

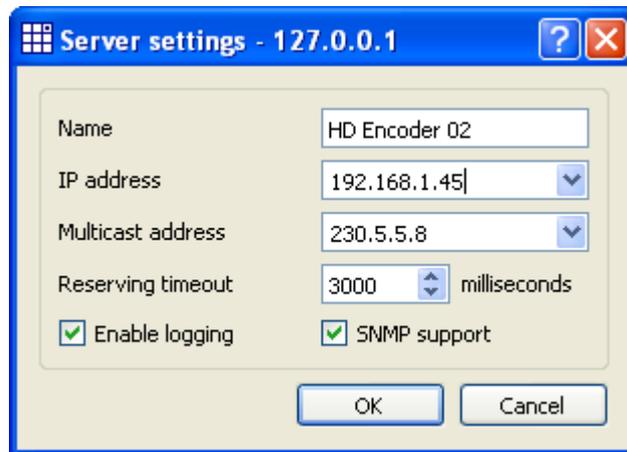
The **Add server** command opens the dialog box for manual addition of a new CodecWorks server. Enter the IP-address of the required server and click **OK**

The **Restart** command forces the CodecWorks server restart, and the **Deactivate** command turns off the encoding server. The server computer is not restarted or turned off.

The **Remove server** command removes selected server from the server list.

The **Settings** command opens the **Server settings** dialog box.

Figure 4. Server Settings Dialog Box



The dialog box allows specifying the server name, IP-address for multicast announcements, and IP-address of the used network interface. The **Reserving Timeout** parameter specifies the time interval (in seconds) for starting of reserve encoders, if the work server response is not received. The **Enable logging** option enables recording of system messages into the encoding server log. The **SNMP support** enables the SNMP management (if the SNMP protocol is not used, disable it to save the system resources).

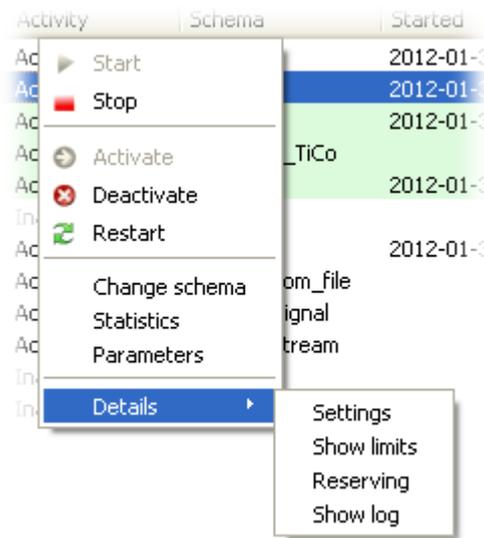
If the manager and the CodecWorks server are installed on the same computer, the local server settings are available from the manager shortcut menu (right-click in the manager window), even if the server is turned off. Moreover, the server start (as console or service) is available too.

The **Show log** command opens the selected server actual system log for preview. A new log-file is created on every launch of the server. To get the history of the archived files select the **Show old logs** command in the context menu.

The **Diagnostics** command reports detailed information about the CodecWorks server configuration. This report should be sent to Elecard Technical Support Team if any issue occurs. From the window shortcut menu select the **Save to file...** command.

2.4.2 Encoding Console Management

Figure 5. Encoding Console – Shortcut Menu

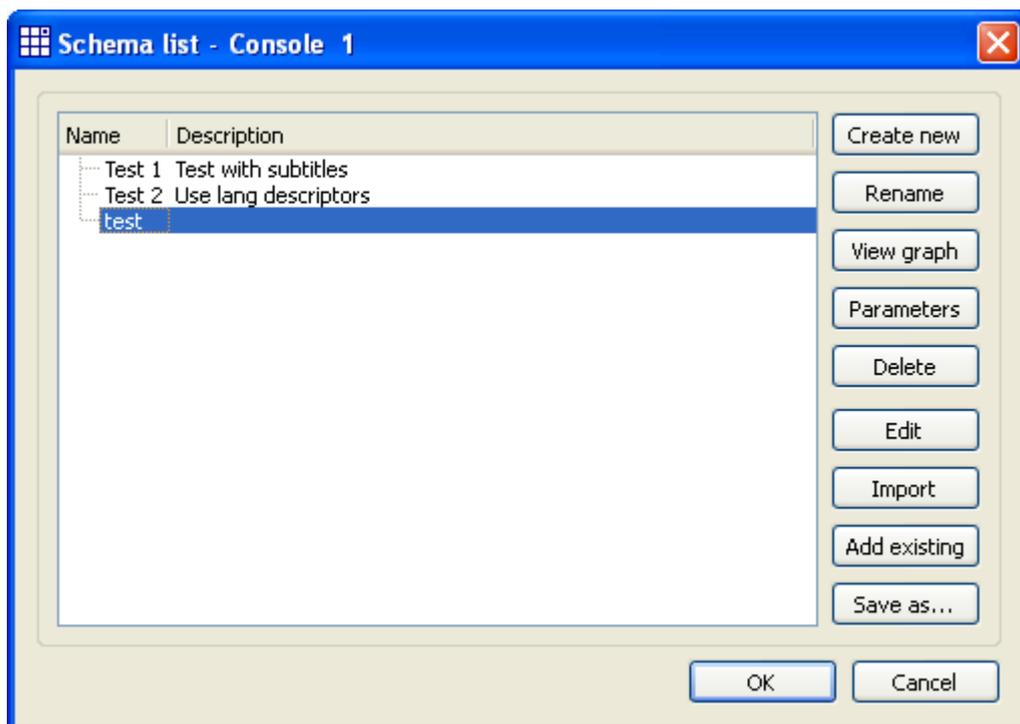


To start or stop the encoding process, click the **Start** or **Stop** command, respectively.

The **Activate** command activates the encoding console. If the console is not used, it can be deactivated with the **Deactivate** command. The console can be restarted with the **Restart** command whether it is in the *Start* or *Stop* state. The restarted console returns to the pre-restart state.

The **Change schema** command displays the list of available encoding schemas. The **Schema list** dialog box allows you to add, save, rename or delete encoding schemas.

Figure 6. Schema List Dialog Box



To apply the selected schema, press the **OK** button.

To create a new schema, press the **Create new** button. The appeared configurator window allows schema preparation. For details see the *Schema Configurator* section. When the schema adjustment is completed, specify the schema name and short description.

The **Rename** button allows editing the schema name and description.

The **View graph** button visualizes the filter graph that corresponds to the selected encoding schema.

The **Parameters** button displays the list of schema components and the component parameter values. The information is read-only. Tool tips on the parameter names display the parameter identifiers. The identifiers can be used, if the encoding process is managed via console or SNMP.

To remove the selected schema from the list, press the **Delete** button. If the schema is used in any encoding process, it can not be removed.

If an encoding schema was prepared with configurator, the **Edit** button opens the schema for editing in the configurator program.

The **Add existing** button opens the dialog box for a schema file selection. The selected schema validation is performed before the schema addition. The schema is added to the schema list, if the validation is succeeded. The schema is considered to be valid, if all used components are present (contained in the *Components* folder or registered in the system), their parameters are adjusted according to the current system environment, and the task execution is not restricted with the console license limitation. Some scheme parameters related to the system environment (network interface IP-address, etc.) will be cleared, if the console is started. The new parameter values must be set.

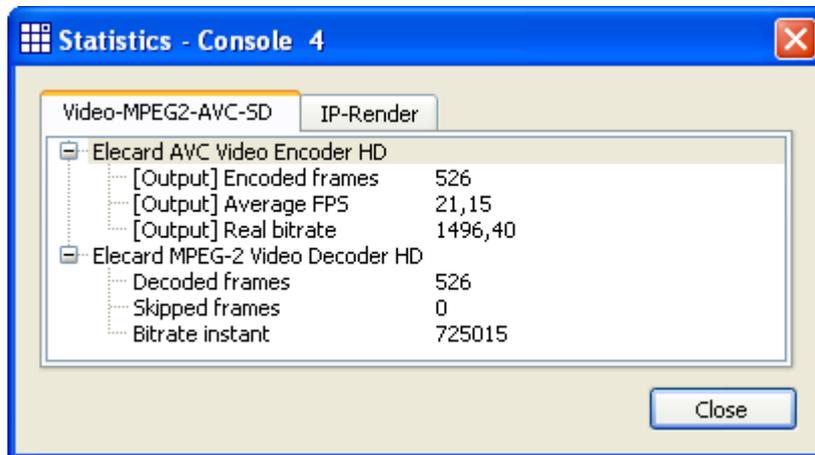
There is one more way for an encoding schema loading – import from another CodecWorks server. The **Import** button opens the dialog box. Type the server IP-address. From the list of consoles operating on the server select the required schema. In all other respects, import is similar to the **Add existing** option.

***Note:** Usually, if a scheme uses a specified multiplexed input stream (not raw video), the scheme can not be used for another input stream encoding. So the **Add existing** and **Import** options are used relatively seldom.*

The **Save as...** button saves the selected schema to a file.

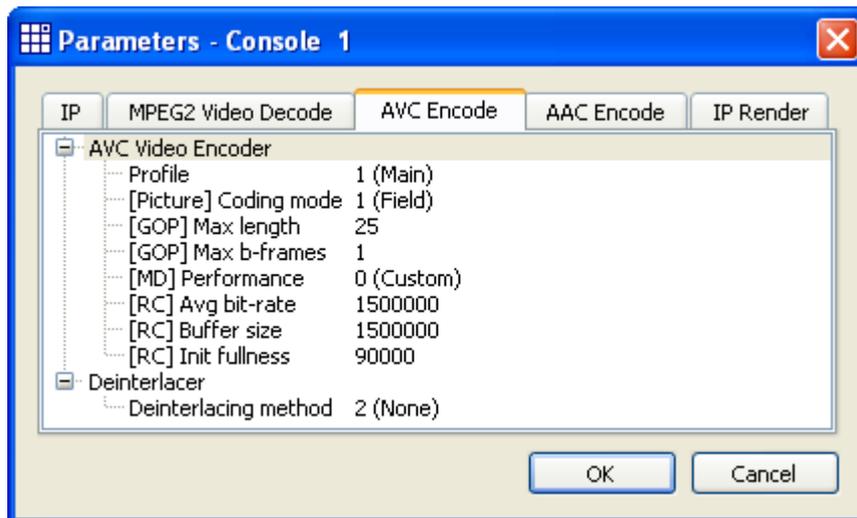
The **Statistics** command displays the tree-type list of read-only parameters that are intended for control of the encoding schema operation.

Figure 7. Statistics Window



The **Parameters** command displays the tree-type list of adjustable schema parameters.

Figure 8. Parameters Window



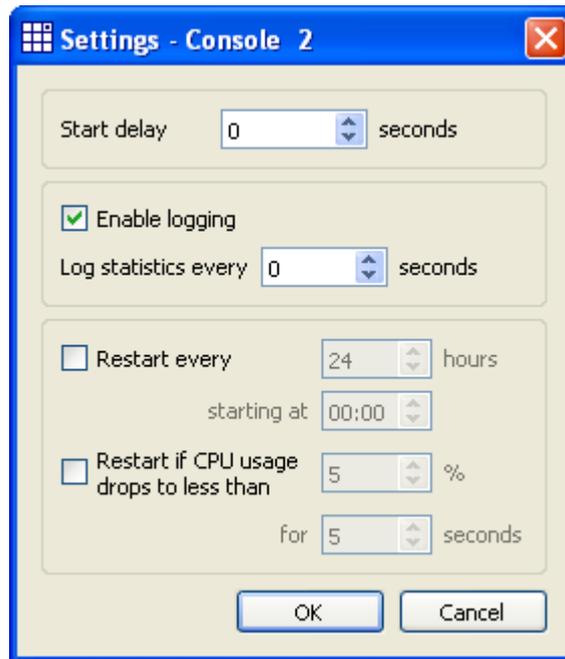
To edit a parameter value, click the parameter. To save changes, press the **OK** button, to discard – the **Cancel** button.

Components in the **Statistics** and **Parameters** windows are grouped into separate tabs according to sections involved into encoding schema.

The **Parameters** window tab names are changeable. Right-click the tab and select the **Rename** command. It is useful, if the prepared schema contains several sections of the same name.

The **Details** → **Settings** command opens the console **Settings** dialog box.

Figure 9. Console Settings Dialog Box



The **Start delay** option allows you to set delay time (in seconds) between the CodecWorks server start and the console start (if needed⁵).

The **Enable logging** option enables logging of the console system messages. Set frequency of saving encoding graph statistics to the system log in seconds. If the value is set to zero, then the log will contain only system messages: encoding start and stop chronology, encoding schemas used and downloaded modules.

In some cases automatic restart of the encoding console is needed (at regular intervals or at low level of CPU usage). For that select the required option and set the corresponding parameter values.

The **Details** → **Show limits** menu command displays the license limitation list for the selected console (depends on the purchased license).

To adjust the reserving settings, select the **Details** → **Reserving...** command (see the *Reserving* section).

The **Details** → **Show log** command opens the console system log for preview.

The **Save to file...** shortcut menu command allows you to save the console system log to text file. To preview the log previous records, select the **Show previous logs** command.

Some commands are available for simultaneous execution in several consoles. Press and hold down the CTRL (or SHIFT) key and select necessary consoles using the mouse. Open the shortcut menu and click one of available commands. For instance, you can simultaneously start or stop encoding in the selected consoles.

⁵ For instance, if A console sends data and B console receives the data. Both consoles work on the same server. Simultaneous start of A and B consoles may produce unpredictable results. In that case, it is recommended to start the B console with delay.

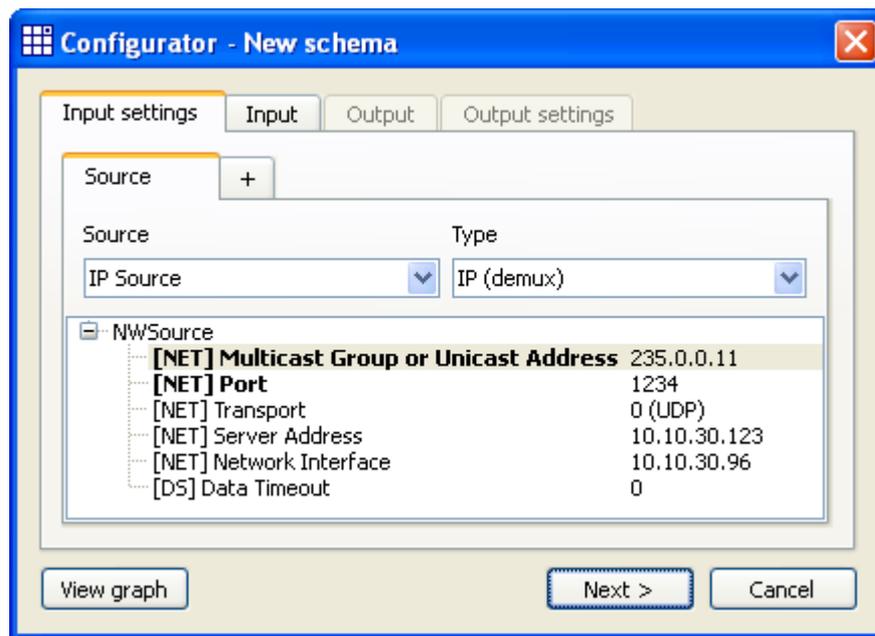
2.5 Schema Configurator

The encoding schema preparator is intended for facilitation of the schema creation (graph building) process.

To open the configurator, click the **Create new** button in the **Schema list** dialog box.

On the **Input settings** tab select the source type and adjust the source parameters. The parameters for differing sources may be different. The mandatory parameters are red highlighted.

Figure 10.Schema Configurator – Input Settings

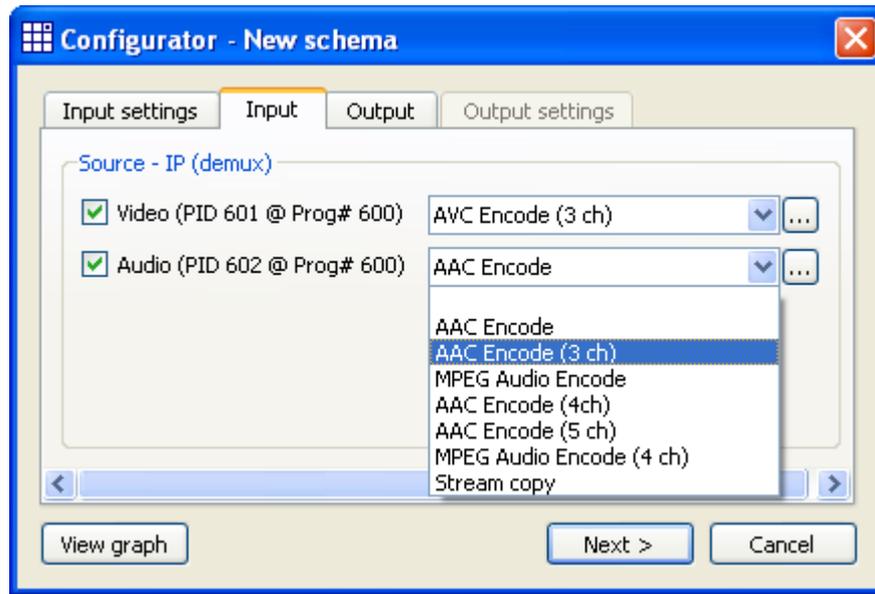


For instance, if the template with IP source is selected, the broadcast stream parameters must be set (address, port, etc). The parameter values may be set automatically, if the list of available announcements is opened in the *Multicast Group or Unicast Address* field and one of the announcements is selected.

Addition of several input sources is available. To add a new source, select the + tab.

After the input stream parameter adjustment click the Input tab or select the Next button.

Figure 11.Schema Configurator – Input



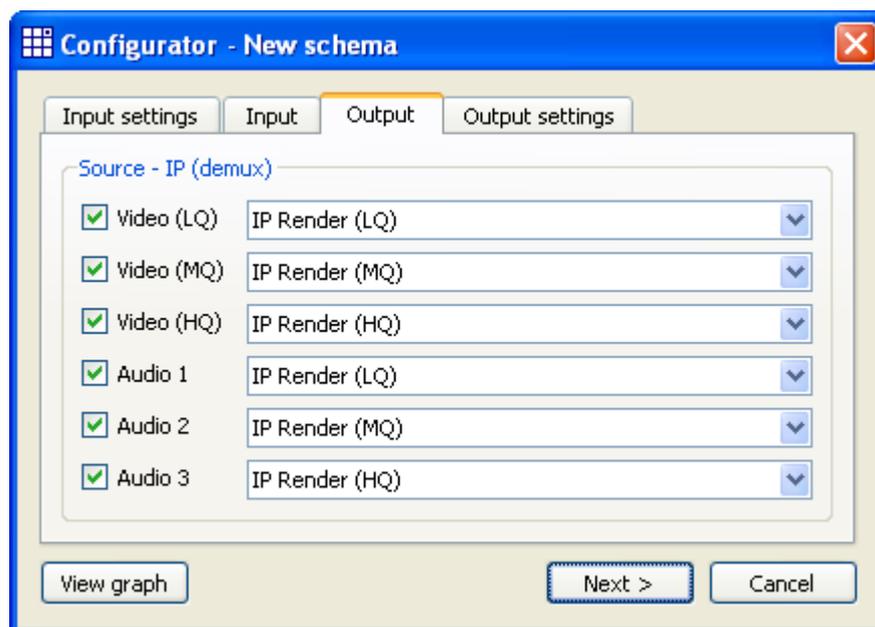
If the source parameters are set properly, the elementary stream list is displayed on the **Input** tab. The transformation section (encoding profile) must be selected for each required stream using the corresponding profile list.

If several sources are selected in the **Input Settings** tab, the elementary streams will be grouped according to their source.

To refresh the elementary stream list, press the **F5** key.

To preview or edit parameters of an encoding profile, click the  button to the right of the profile listbox.

Figure 12.Schema Configurator – Output

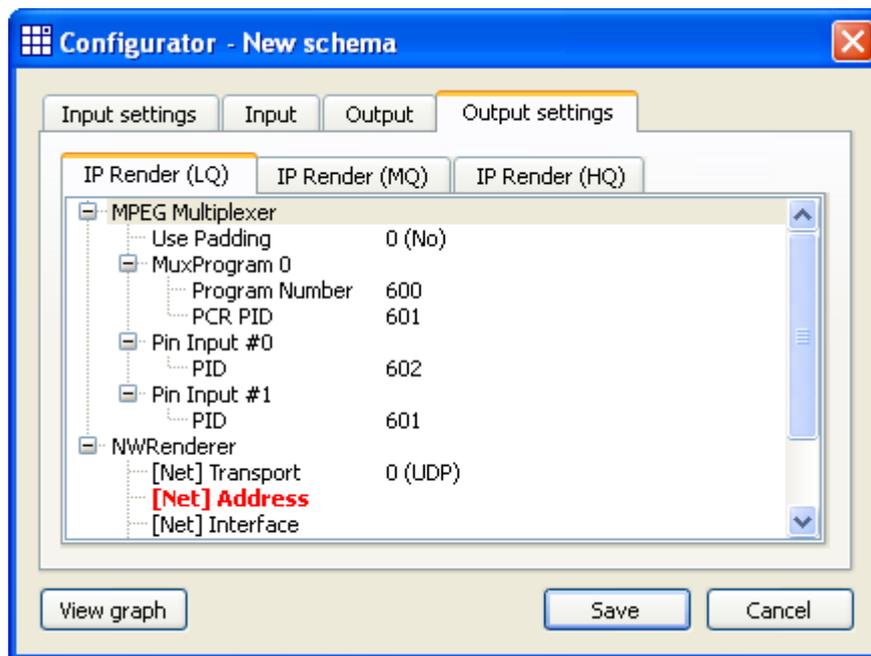


On the **Output** tab select the output component for each encoded stream. This is the schema section that is responsible for the output stream generation.

If you need to send an encoded stream to several output devices of the same type (for instance, to create several single-program transport streams), select the required output device (for instance IP Render) for an elementary stream, right-click listbox, click the **Increase output number...** command, and specify the required number. These actions enable selection of additional input devices in the list.

The **Output settings** tab allows you to adjust the output parameters.

Figure 13.Schema Configurator – Output Settings



The **View graph** button displays the built graph structure at every step. To preview or edit component parameters, right-click the component. Read-only parameters are displayed with italic font. If parameter is displayed with gray font, it will not be presented in the **Parameters** window (**Statistics** window for read-only parameters) of the encoding console. To change a parameter visibility mode, double-click the parameter name⁶.

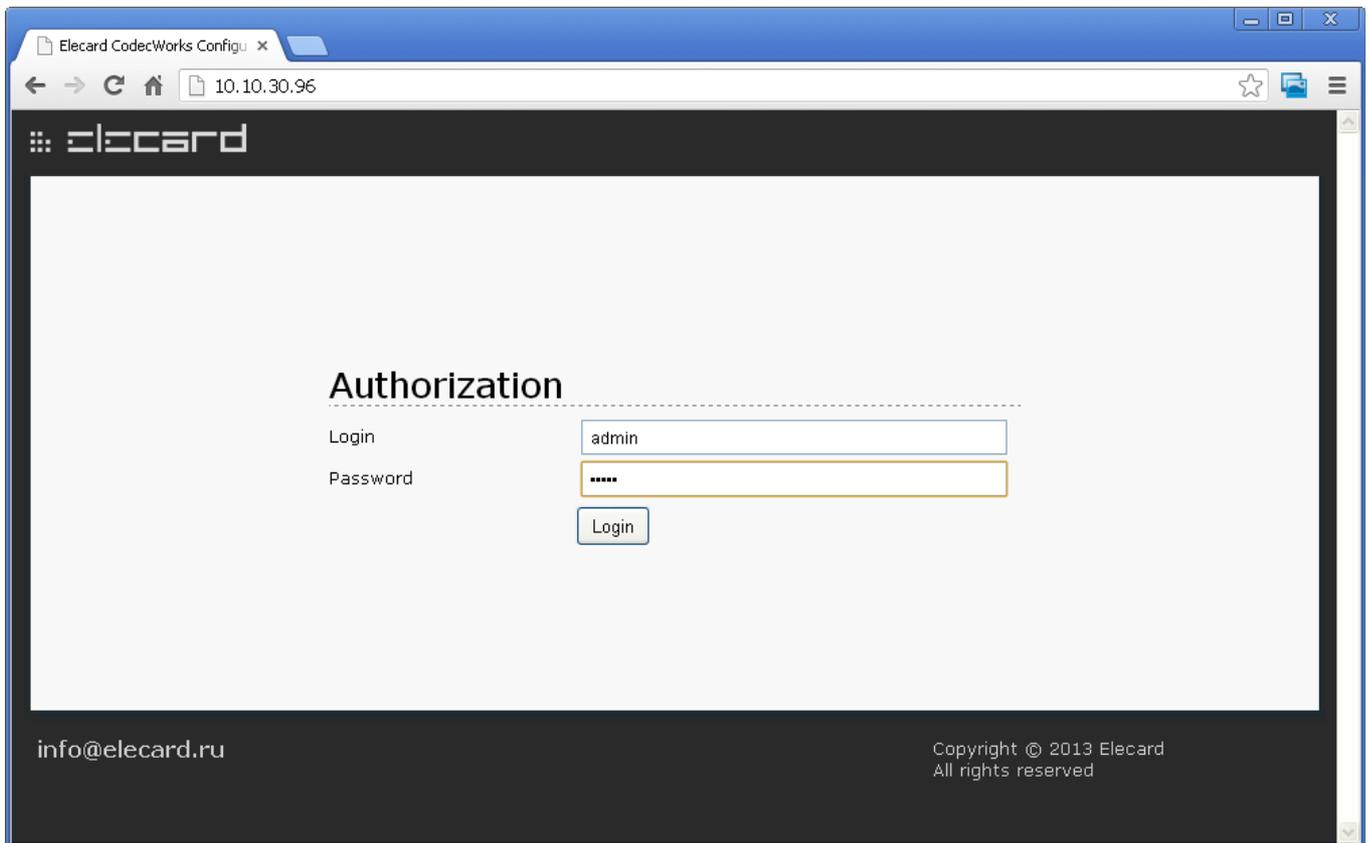
When the adjustment is completed, click the **Save** button and specify the schema name and short description. After that the created schema appears in the list of schemas available for the selected console.

⁶ The default parameter values are optimized for speed and quality in most cases. The default visibility mode provides access to the base set of encoding parameters. Advanced user is able to expand the list of visible parameters.

2.6 Web interface

CodecWorks server can be controlled via web-interface. To call it enter server IP address into the web browser.

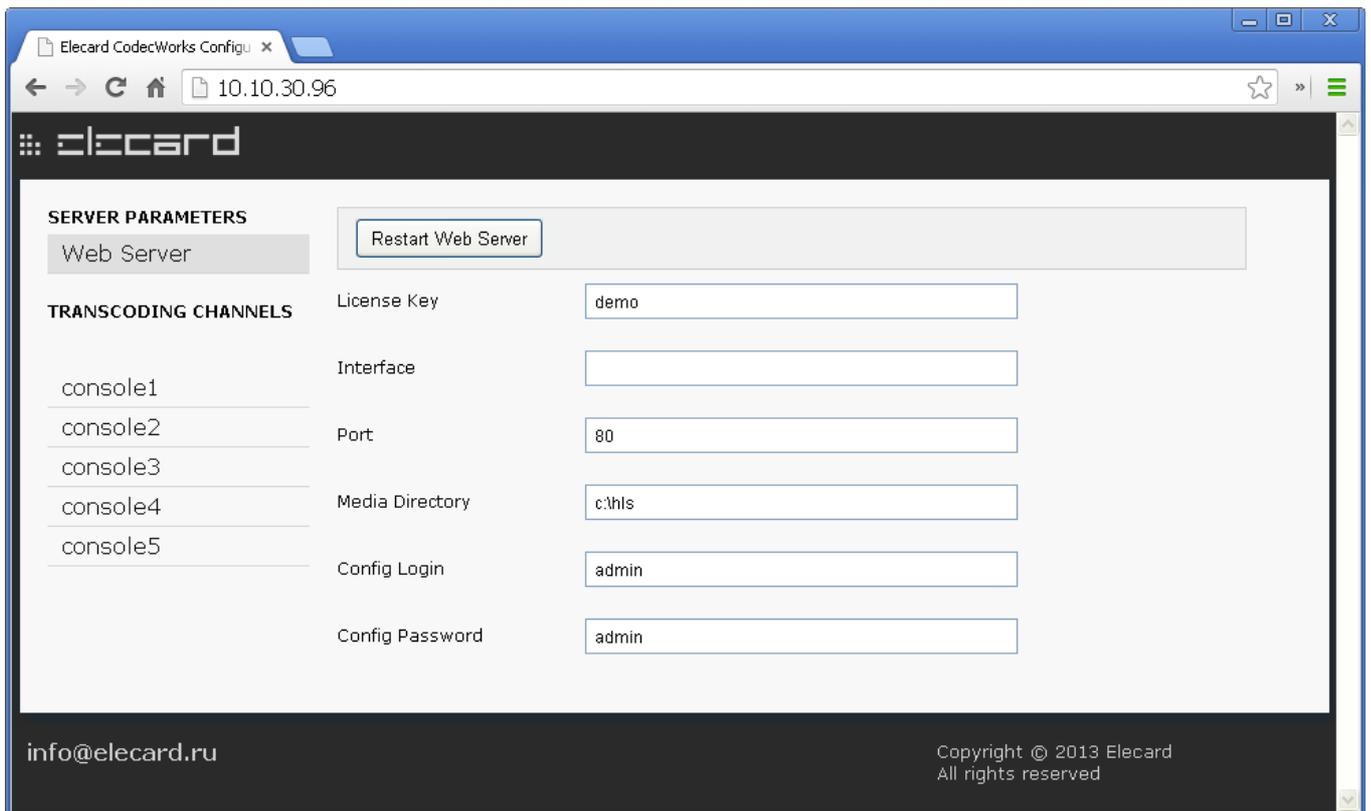
Figure 14. Web interface — Authorization



To enter, type in user name and password. The default values are *admin/admin*. If the input data is correct, the main form of the web interface opens.

In the left panel there are control elements to access web-server settings (**Server Parameters** > **Web Server**) and switch between encoding consoles of the server.

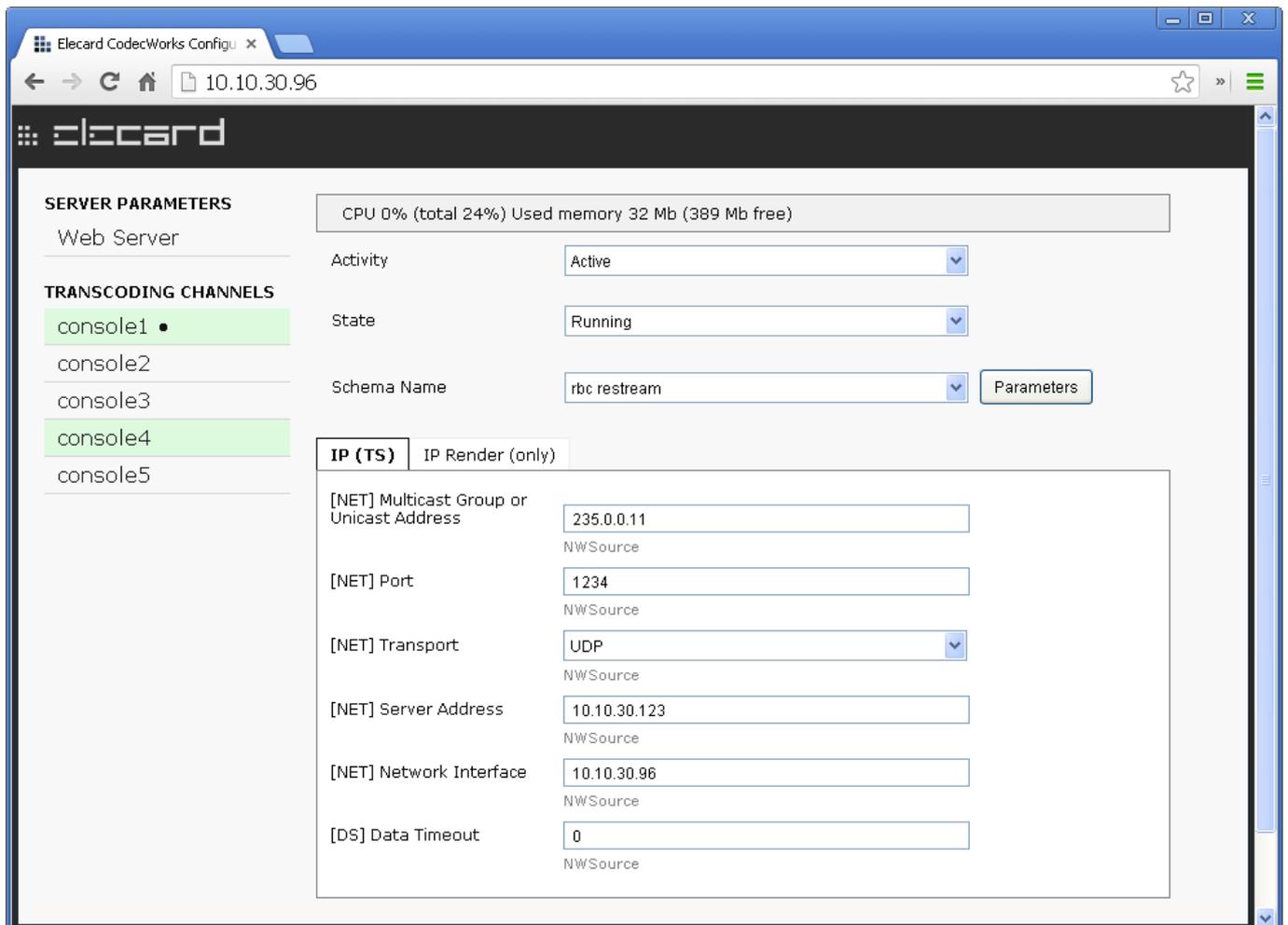
Figure 15. Web interface — Settings



In the webservice settings it is possible to set network **Interface** and **Port**. The field **Media Directory** defines the catalogue to save content into, if the streaming is performed via HTTP and HLS protocols. It is also possible to set a username and password to access the web-interface. Besides, there is a button in the form to restart the server.

When one of the consoles from the list is selected a corresponding form to control it appears.

Figure 16. Web interface — Encoding console parameters



In the upper part of the form there is CPU and RAM load statistics.

The **Activity** field shows the actual state of the encoding console and allows changing it (*Active* – switched on, *Inactive* – switched off).

There are the following values of the **State** field: *Stopped* – encoding is stopped, *Running* – encoding is in progress.

In the **Schema Name** field the current encoding schema is set.

Under it there is a form to control parameters of the encoding schema. Depending on the template used the parameters are grouped by tabs. New parameter values are applied immediately after the values are changed. In case it is impossible to apply a new value, a warning pops up. Usually the problem cause is that some parameter values cannot be changed without stopping the encoding process.

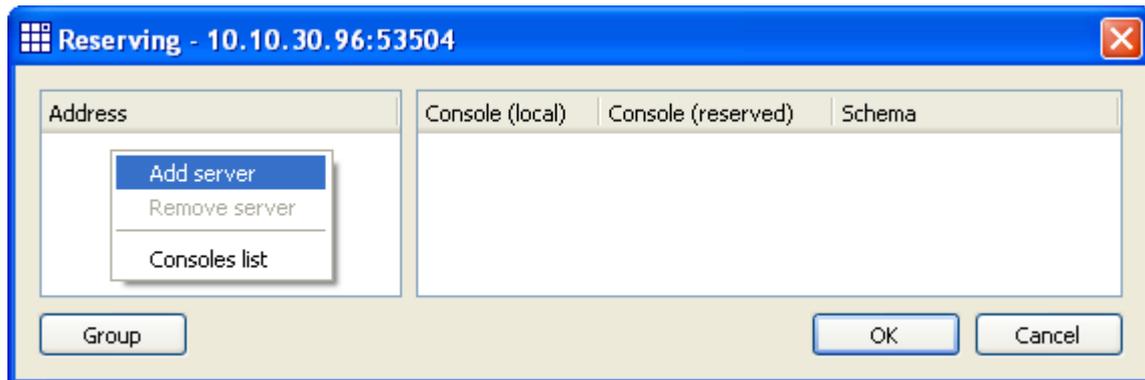
When the **Parameters** button is clicked, the form for parameters control is replaced by the form showing statistics of the encoding schema.

2.7 Reserving

The reserving function increases reliability of the CodecWorks encoding systems. One reserve server can backup several encoding servers (*N+1 model*). Several reserve servers can serve one and the same group of encoding servers (*N+M model*).

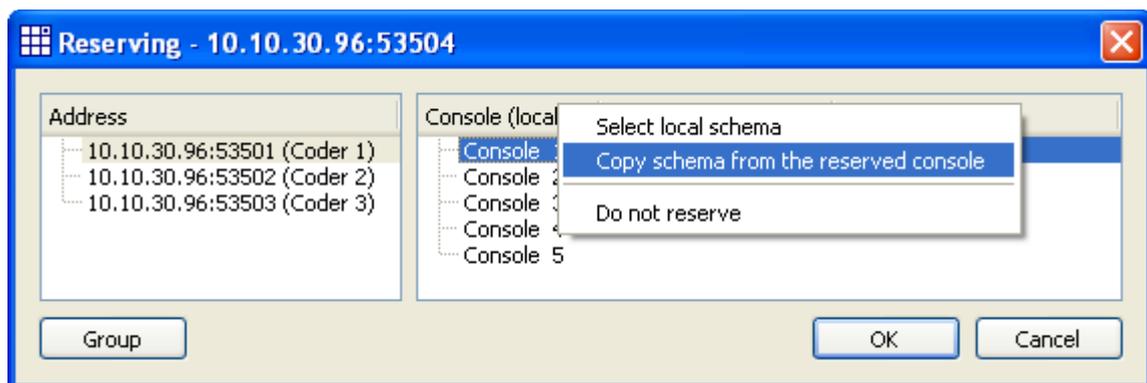
When **Reserving** is selected in a context menu of the reserve server, a control window for setup opens. The left panel is designed to add/remove encoding servers that need to be reserved.

Figure 17. Reserving window



It is required to add into the list all servers that the given server will backup. When a server is selected in the list, available consoles of the reserve server are shown in the right panel. The corresponding consoles should be selected for the server being reserved and encoding schemas for the reserve server should be set up. These schemas will be launched when the connection to main servers is lost.

Figure 18. Reserve schema selection



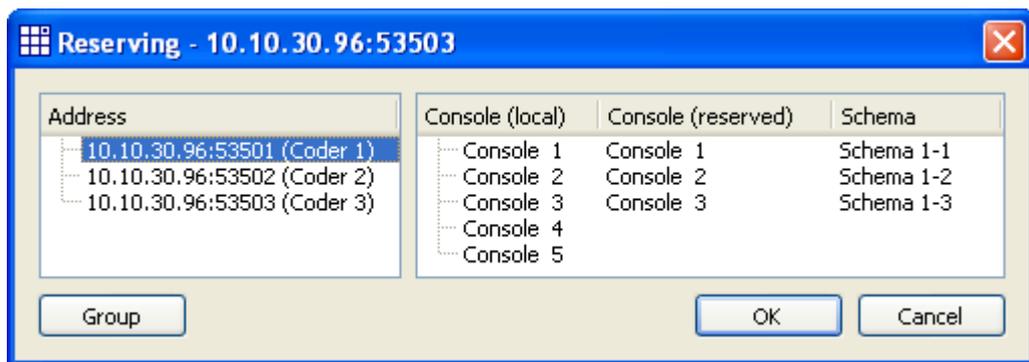
It is possible to create a schema on the reserve server and add it as a local one, or copy it from a corresponding console of the reserve server. In the second case there will be a list of reserve server consoles for selection.

Figure 19. Selection of a console to reserve



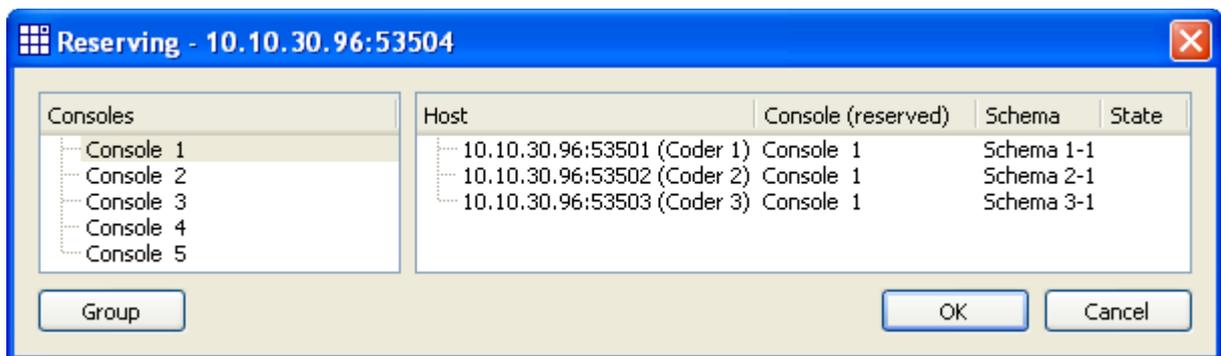
Correspondence of the main and reserve consoles for other servers in the left panel is specified in the same way. As a result for each server that needs to be reserved there will be lists of correspondence between reserve and main encoding consoles.

Figure 20. Reserving window after setting up



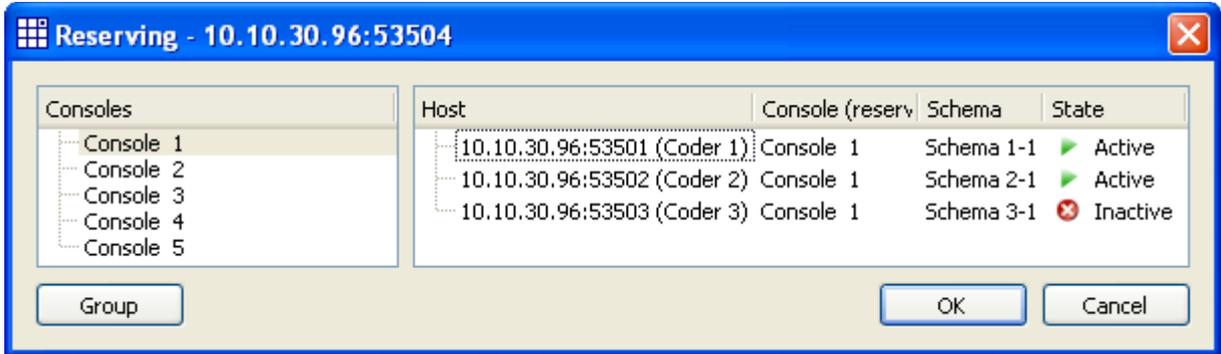
In the context menu of the left panel there is the **Consoles list** option. When this option is selected the structure of information displayed in the window is changed. On the left the list of consoles for the current reserve server is displayed. On the right for the selected console the list of servers for reservation is shown along with consoles numbers and encoding schemas to be started in the reserve mode.

Figure 21. View by consoles



Before switching on the reserve mode by clicking the **OK** button make sure the servers to be reserved are accessible and operable. For this purpose there is the **Check servers state** command in the context menu of the right panel. The server state is displayed in the **State** column.

Figure 22. Reserving window after servers state checking



To enable reserving on the N+M model it is required to specify the list of the all backup servers in the settings of every reserve server. When the **Group** button is clicked the window **Reserving group** is opened. It is required to select **Add server** context menu command. After an IP address is entered the selected server will be added into the group with the current server.

Figure 23. Reserving group window



See a group of the 3 main and 2 reserving servers as an example below.

Figure 24.Backup servers in standby state

Node	Activity	Schema	Started	CPU (%)	RAM (Mb)
Coder 1 (10.10.30.96:53501)	Active		2013-08-22 17:15 (20:13)	23	457 free
Coder 2 (10.10.30.96:53502)	Active		2013-08-23 11:28 (02:00)	28	457 free
Coder 3 (10.10.30.96:53503)	Active		2013-08-23 12:37 (00:51)	31	457 free
Reserv 1 (10.10.30.96:53504)	Active		2013-08-23 13:24 (00:03)	23	457 free
Console 1	Inactive Reserving				
Console 2	Inactive Reserving				
Console 3	Inactive Reserving				
Console 4	Inactive				
Console 5	Inactive				
Reserv 2 (10.10.30.96:53505)	Active		2013-08-23 13:24 (00:04)	28	457 free
Console 1	Inactive Reserving				
Console 2	Inactive Reserving				
Console 3	Inactive Reserving				
Console 4	Inactive				
Console 5	Inactive				

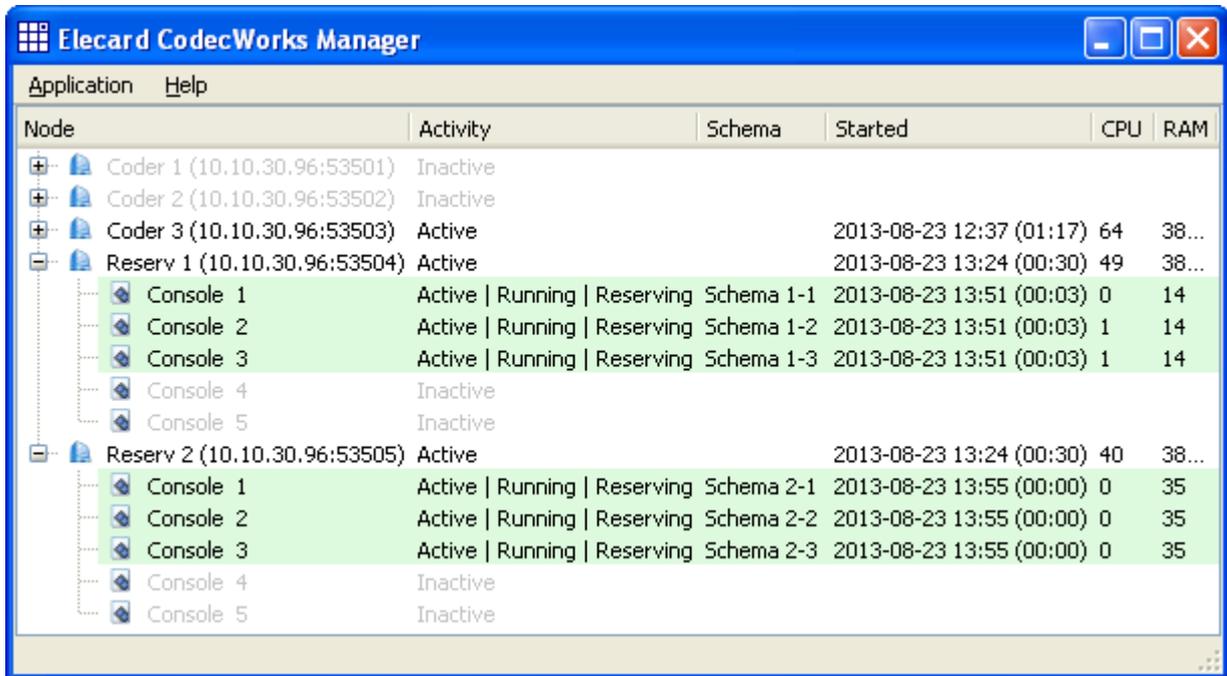
In case one of the main servers crashes (Coder 1), consoles of the reserve server are launched (Reserv 1).

Figure 25.Backup server activation

Node	Activity	Schema	Started	CPU	RAM
Coder 1 (10.10.30.96:53501)	Inactive				
Coder 2 (10.10.30.96:53502)	Active		2013-08-23 11:28 (02:25)	20	41...
Coder 3 (10.10.30.96:53503)	Active		2013-08-23 12:37 (01:16)	19	41...
Reserv 1 (10.10.30.96:53504)	Active		2013-08-23 13:24 (00:29)	22	41...
Console 1	Active Running Reserving	Schema 1-1	2013-08-23 13:51 (00:02)	1	14
Console 2	Active Running Reserving	Schema 1-2	2013-08-23 13:51 (00:02)	1	14
Console 3	Active Running Reserving	Schema 1-3	2013-08-23 13:51 (00:02)	0	14
Console 4	Inactive				
Console 5	Inactive				
Reserv 2 (10.10.30.96:53505)	Active		2013-08-23 13:24 (00:29)	14	41...
Console 1	Inactive Reserving				
Console 2	Inactive Reserving				
Console 3	Inactive Reserving				
Console 4	Inactive				
Console 5	Inactive				

The second reserve server (Reserv 2) keeps track of the remaining main servers and in case connection is lost with one of it (Coder 2), the reserve server starts to encode as a main server.

Figure 26. Second backup server activation



Node	Activity	Schema	Started	CPU	RAM
Coder 1 (10.10.30.96:53501)	Inactive				
Coder 2 (10.10.30.96:53502)	Inactive				
Coder 3 (10.10.30.96:53503)	Active		2013-08-23 12:37 (01:17)	64	38...
Reserv 1 (10.10.30.96:53504)	Active		2013-08-23 13:24 (00:30)	49	38...
Console 1	Active Running Reserving	Schema 1-1	2013-08-23 13:51 (00:03)	0	14
Console 2	Active Running Reserving	Schema 1-2	2013-08-23 13:51 (00:03)	1	14
Console 3	Active Running Reserving	Schema 1-3	2013-08-23 13:51 (00:03)	1	14
Console 4	Inactive				
Console 5	Inactive				
Reserv 2 (10.10.30.96:53505)	Active		2013-08-23 13:24 (00:30)	40	38...
Console 1	Active Running Reserving	Schema 2-1	2013-08-23 13:55 (00:00)	0	35
Console 2	Active Running Reserving	Schema 2-2	2013-08-23 13:55 (00:00)	0	35
Console 3	Active Running Reserving	Schema 2-3	2013-08-23 13:55 (00:00)	0	35
Console 4	Inactive				
Console 5	Inactive				

The time required to switch to reserve consoles is specified by the **Reserving timeout** parameter in the server settings. It defines the maximal delay between the main server crash and reserve server launch. To prevent from false triggering caused by delays in the network this parameter cannot be less than 100 milliseconds.

2.8 Command Line Management

The console application *cwManagerConsole.exe* is included into the Elecard CodecWorks package. The application allows command line management of the encoding server. For instance, it may be useful in any batch-mode processing.

If the application is started, the command line parameter information is printed:

Usage :

```

cwManagerConsole.exe command_name [parameters] [/host
ip_address:port] [/console console_number]
cwManagerConsole.exe /diagnostics [/host ip_address:port]
cwManagerConsole.exe /help
cwManagerConsole.exe /help commands

```

The application execution with the */help* option prints the same information.

To print information about available commands, start the application with the */help commands* options. The following list is printed:

```
---Information commands---
```

```
ListConsoles  
GetLog  
GetPerfInfo  
ListLoadedLibs  
GetLimits  
GetState  
ListSchemas  
GetGraphName  
GetGraphSource  
GetGraphStatistics  
GetGraphParameters  
GetGraphParameter <parameter_number>
```

```
---Control commands---
```

```
Activate  
Deactivate  
Restart  
ClearLog  
Start  
Stop  
SetGraph <graph_name>  
SetGraphFromFile <local_file_name>  
AddGraph <local_file_name>  
SetGraphParameter <parameter_number> <new_value>
```

Information commands

This list contains commands that provide any type of information about the encoding server and started processes.

ListConsoles

Prints the list of encoding consoles that are available on the CodecWorks server with the specified address (*/host* option). The loaded encoding schema name and state (0 – wait, 1 – pause, 2 – encoding) is printed for each console.

Example:

```
cwManagerConsole.exe ListConsoles /host 192.168.1.45:1535
```

GetLog

Prints the current system log of encoding server (or console, if the */console* option is specified)

Examples:

```
cwManagerConsole.exe GetLog /host 192.168.1.45:1535
```

```
cwManagerConsole.exe GetLog /console 2 /host 192.168.1.45:1535
```

GetPerfInfo

Prints information about the CPU usage and available system main memory, if only the */host* option is specified. If the */console* option is specified too, the CPU and memory information for the specific console is printed.

Examples:

```
cwManagerConsole.exe GetPerfInfo /host 192.168.1.45:1535
```

```
cwManagerConsole.exe GetPerfInfo /console 2 /host  
192.168.1.45:1535
```

ListLoadedLibs

Prints the list of DLLs (names and versions) loaded by the server.

Example:

```
cwManagerConsole.exe ListLoadedLibs /host 192.168.1.45:1535
```

GetLimits

Prints the license limitation list for the selected console.

Example:

```
cwManagerConsole.exe GetLimits /console 2 /host  
192.168.1.45:1535
```

GetState

Prints current state of the specified console (0 – wait, 1 – pause, 2 – encoding).

Example:

```
cwManagerConsole.exe GetState /console 2 /host 192.168.1.45:1535
```

ListSchemas

Prints the list of encoding schemas that are available for the specified console.

Example:

```
cwManagerConsole.exe ListSchemas /console 2 /host  
192.168.1.45:1535
```

GetGraphName

Prints the name of current encoding schema for the specified console.

Example:

```
cwManagerConsole.exe GetGraphName /console 2 /host  
192.168.1.45:1535
```

GetGraphSource

Prints the source XML code of current encoding schema for the specified console.

Example:

```
cwManagerConsole.exe GetGraphSource /console 2 /host  
192.168.1.45:1535
```

GetGraphStatistics

Prints the read-only parameter list (names and values) of current encoding schema for the specified console.

Example:

```
cwManagerConsole.exe GetGraphStatistics /console 2 /host  
192.168.1.45:1535
```

GetGraphParameters

Prints the changeable parameter list (names, values, and identifiers) of current encoding schema for the specified console. The parameter identifier is used in the *GetGraphParameter* and *SetGraphParameter* commands.

Example:

```
cwManagerConsole.exe GetGraphParameters /console 2 /host  
192.168.1.45:1535
```

GetGraphParameter <parameter_number> [short]

Prints value of the encoding schema parameter (specified with *parameter_number*). If the 'short' option is not set, the server response will include the name and value of the parameter, otherwise just value.

Example:

```
cwManagerConsole.exe GetGraphParameter 45 short /console 2 /host
192.168.1.45:1535
```

Control commands

This list contains commands that provide the encoding server management.

Activate

Activates the specified console.

Example:

```
cwManagerConsole.exe Activate /console 2 /host 192.168.1.45:1535
```

Deactivate

Deactivates the specified console.

Example:

```
cwManagerConsole.exe Deactivate /console 2 /host
192.168.1.45:1535
```

Restart

Restarts the CodecWorks service (or console, if the */console* option is specified).

Examples:

```
cwManagerConsole.exe Restart /host 192.168.1.45:1535
cwManagerConsole.exe Restart /console 2 /host 192.168.1.45:1535
```

ClearLog

Clears the system log of the CodecWorks server (or console, if the */console* option is specified).

Examples:

```
cwManagerConsole.exe ClearLog /host 192.168.1.45:1535
cwManagerConsole.exe ClearLog /console 2 /host 192.168.1.45:1535
```

Start

Starts encoding process in the specified console.

Example:

```
cwManagerConsole.exe Start /console 2 /host 192.168.1.45:1535
```

Stop

Stops encoding process in the specified console.

Example:

```
cwManagerConsole.exe Stop /console 2 /host 192.168.1.45:1535
```

SetGraph <graph_name>

Loads the specified XML-schema into the console. Only schemas presented in the Schema list window are available for the loading.

Example:

```
cwManagerConsole.exe SetGraph "my schema" /console 2 /host  
192.168.1.45:1535
```

SetGraphFromFile <local_file_name>

Loads XML-schema from the specified file into the console.

Example:

```
cwManagerConsole.exe SetGraphFromFile "C:\my schema.xml"  
/console 2 /host 192.168.1.45:1535
```

AddGraph <local_file_name>

Adds XML-schema from the specified file into the console.

Example:

```
cwManagerConsole.exe AddGraph "C:\my schema.xml" /console 2  
/host 192.168.1.45:1535
```

SetGraphParameter <parameter_number> <new_value>

Sets new value for the encoding scheme parameter.

Note: Some parameters can not be changed without the encoding process stop.

Example:

```
cwManagerConsole.exe SetGraphParameter 45 1500000 /console 2  
/host 192.168.1.45:1535
```

Note: If the required /console option is missed, the command is executed for the first console (with number 1).

Rebuild

It serves for automatic rebuilding of the encoding schema. It might be required for situations when input stream characteristics change (mediatype, PID etc).

Example:

```
cwManagerConsole.exe Rebuild /console 2 /host 192.168.1.45:1535
```

If the console manager is started with the */diagnostics* option, the detailed configuration information (diagnostic log) will be printed for the CodecWorks server.

Example:

```
cwManagerConsole.exe /diagnostics /host 192.168.1.45:1535 > diag.txt
```

2.9 Management via HTTP Protocol

The dispatcher processes HTTP-POST requests for management of encoding servers.

Sample of an HTTP-POST request:

```
<?xml version="1.0" encoding="UTF-8" ?>
<XMLConfig console="2">
  <GetValue Name="SchemaParameter">
    <Parameter>162</Parameter>
  </GetValue>
  <SetValue Name="SchemaParameter">
    <Parameter><p>45</p><p>1500000</p></Parameter>
  </SetValue>
  ....
  ....
</XMLConfig>
```

Simultaneous call of several commands is possible. Report is formed for each command. In case of error, the *<Fault>* tag is used instead of the *<RetVal>* tag. The following illustrates the HTTP-OK message body:

```
<XMLConfig console="2">
  <GetValue Name="SchemaParameter">
    <RetVal>[8] [NET] Server Address=10.10.30.214</RetVal>
  </GetValue>
  <SetValue Name="SchemaParameter">
    <Fault>No input signal detected</Fault>
  </SetValue>
  ....
  ....
</XMLConfig>
```

For the HTTP management details, contact the Elecard Technical Support Team:
tsup@elecard.com

2.10 Management via SNMP Protocol

Simple Network Management Protocol (SNMP) is intended for network monitoring and management of network devices.

The special *cwAgent.dll* module is a network agent that is embodied as extension of the SNMP Windows service (SNMP extension agent DLL). The agent allows monitoring of a CodecWorks node using any SNMP client. To enable the monitoring, select the **SNMP support** option in the **Server settings** dialog box.

The SNMP service is not installed in the system by default. Use the *Add or Remove Programs* section of the Windows *Control Panel* for the service installation. Open the **Add/Remove Windows Components** tab and select the **Management and Monitoring Tools** group. Click **Details...** and select the **Simple Network Management Protocol** check box.

When the installation process is finished, go to *Services* and make sure you have two new services **SNMP Service** and **SNMP Trap Service**.

To adjust the installed services, go through the following steps:

1. Open the **SNMP Service Properties** dialog (right-click **SNMP Service** and click **Properties**).
2. Select the **Agent** tab and type the **Contact Person** and **Location** values.
3. Select the **Log On** tab and enable *Profile 1* using the **Enable** button. Make sure the **Local system account** option button is selected.
4. Select the **Security** tab. Select the **Send authentication trap** check box. Click **Add** under **Accepted community names**. Add *public* community with *READ WRITE* rights. If you want to accept requests only from particular clients, select **Accept SNMP packets from these hosts** and add their host names or IP-addresses to the host list below.

The MIB-files describing the management data structure are located in the CodecWorks directory.

3. Advanced Features

3.1 Preparation of Encoding Schemas

Note: Knowledge of DirectShow technology basics and GraphEdit program is required to prepare encoding schemas without assistance.

The encoding schema preparation is needed, if the suitable template for building of the required encoding schema is not supplied.

Register all components (DirectShow filters) required for the schema in your system. Execute the *register_filters.bat* file in the CodecWorks root directory.

Start the GraphEdit program, build required filter graph, and adjust filter settings. Add the Elecard Graph Export/Import Filter to the filter graph, open the filter settings, open the **Main** tab, and click the **Save XML Graph** button. Then in the CodecWorks manager select the **Change schema** command for the console. To load the created file, click the **Add existing** button.

To change previously prepared schema, press the **Load XML Graph** button on the Elecard Graph Export/Import Filter property page and select the required file.

When the schema preparation is completed, it is recommended to unregister the components using the *unregister_filters.bat* file.

3.2 Additional Functions

3.2.1 Component Property Page Displaying

Parameter adjustment is available only for the encoding schema components that support special Elecard ModuleConfig technology. However, it is possible to open Property Page of any third party component and adjust its settings. By default, this option is disabled. To enable the option, set the “1” value for the following subkey in the registry database:

HKEY_CURRENT_USER\Software\Elecard\Elecard CodecWorks Manager\Preferences\ShowFilterPropertyPage.

After the manager restart the **Property page** button appears in the encoding schema **Parameters** dialog box. This button opens the list of components used in the current schema. Select the required component and press the **OK** button.

Note 1: This option is available, if the manager and the CodecWorks server are installed on the

same computer. The server must be started in the console mode (not service). The Property Page window can be opened, if the component is registered in the system.

Note 2: The Property Page settings are not saved in the encoding schema file. Depending on the component implementation and on the CodecWorks configuration, the settings can be saved as default values or are valid only for the current console session.

3.2.2 Pause Mode

Besides the *Start* and *Stop* modes, the *Pause* mode is available too. To enable this mode, set the “1” value for the following subkey in the registry database:

HKEY_CURRENT_USER\Software\Elecard\Elecard CodecWorks Manager\Preferences\ShowPause.

This setting enables the **Pause** command.

Note: This mode is applicable only for narrow range of tasks (for instance, file playback) and is not suitable for stream processing.
