K2™

ASI MEDIA CLIENT

User Manual

SOFTWARE VERSION 5.4

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Revision Status

Rev Date	Description
June 10, 2008	Initial release of the K2 ASI Media Client User Manual 071-8678-00

Contents

Contents

Finding Information

About this manual

This user manual describes the K2 and provides instructions for using the product in a variety of applications.

How this manual is organized

This manual is organized around the tasks required to operate the K2. The following describes the chapters included in this manual:

Chapter 1, *Product Description* — Provides an introduction to the K2 product.

Chapter 2, *Getting Started* — Provides instructions for logging on to the K2, operating the application and restarting or shutting down the server

Chapter 3, *Graphical User Interface Overview* — Contains a full description of the K2 Graphical User Interface.

Chapter 4, *Inputs Management* — Contains instructions for scanning an input, modifying it and monitoring its content.

Chapter 5, *Recording* — Contains instructions for performing record actions.

Chapter 6, *Automation System* — Contains information for using the automation system with record lists.

Chapter 7, *Message & Error Management* — Contains information on logs.

Getting more information

In addition to this manual, information is available in the following locations.

Release Notes

The K2 Release Notes are included in the K2 Media Client Release Notes. The information in this document includes software upgrade instructions, software specifications and requirements, feature changes from the previous releases, and any known problems.

NetCentral Documentation

The NetCentral product has its own documentation set, described as follows:

- **NetCentral User Guide** — This is a printed manual. It provides instructions for installing, using, and administering the NetCentral monitoring system.

- **NetCentral Help** — From the NetCentral interface access on-line help as follows:

  - For general help with NetCentral manager, select **Help | NetCentral Help Topics**. This content is identical to that in the NetCentral User Guide.

K2 ASI is monitored from NetCentral as a DELL PC device. Error messages may be available from SNMP traps.

Thomson Grass Valley Web Site

This public Web site contains all the latest manuals and documentation, and additional support information. Use the following URL.

http://www.thomsongrassvalley.com.

Dell Web Site

This public Web site contains all the latest manuals and documentation, and additional support information for the Dell Server used to implement the K2. Use the following URL.

http://www.dell.com

Grass Valley Product Support

To get technical assistance, check on the status of a question, or to report new issue, contact Grass Valley Product Support via e-mail, the Web, or by phone or fax.

Web Technical Support

To access support information on the Web, visit the product support Web page on the Grass Valley Web site. You can download software or find solutions to problems by searching our Frequently Asked Questions (FAQ) database.

World Wide Web: http://www.thomsongrassvalley.com/support/
Technical Support E-mail Address: gvgtechsupport@thomson.net.

Phone Support

Use the following information to contact product support by phone during business hours. Afterhours phone support is available for warranty and contract customers.

International (France)	+800 80 80 20 20 +33 1 48 25 20 20	Italy	+39 02 24 13 16 01 +39 06 87 20 35 42
International (United States, Canada)	+1 800 547 8949 +1 530 478 4148	Belarus, Russia, Tadzikistan, Ukraine, Uzbekistan	+7 095 258 09 20 +33 (0) 2 334 90 30
Hong Kong, Taiwan, Korea, Macau	+852 2531 3058	Indian Subcontinent	+91 11 515 282 502 +91 11 515 282 504
Australia, New Zealand	+61 1300 721 495	Germany, Austria, Eastern Europe	+49 6150 104 444
Central, South America	+55 11 5509 3440	Near East, Africa	+33 1 48 25 20 20
China	+861 066 0159 450	Netherlands	+31 (0) 35 62 38 421
Belgium	+32 (0) 2 334 90 30	Northern Europe	+45 45 96 88 70
Japan	+81 3 5484 6868	Singapore	+65 6379 1313
Malaysia	+603 7805 3884	Spain	+41 487 80 02
Middle East	+971 4 299 64 40	UK, Ireland, Israel	+44 118 923 0499

Authorized Support Representative

A local authorized support representative may be available in your country. To locate the support representative for your country, visit the product support Web page on the Grass Valley Web site.

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END-OF-LIFE PRODUCT RECYCLING NOTICE

Grass Valley's innovation and excellence in product design also extends to the programs we've established to manage the recycling of our products. Grass Valley has developed a comprehensive end-of-life product take back program for recycle or disposal of end-of-life products. Our program meets the requirements of the European Union's WEEE Directive, the United States Environmental Protection Agency, and U.S. state and local agencies.

Grass Valley's end-of-life product take back program assures proper disposal by use of Best Available Technology. This program accepts any Grass Valley branded equipment. Upon request, a Certificate of Recycling or a Certificate of Destruction, depending on the ultimate disposition of the product, can be sent to the requester.

Grass Valley will be responsible for all costs associated with recycling and disposal, including freight. However, you are responsible for the removal of the equipment from your facility and packing the equipment to make it ready for pickup.

For further information on the Grass Valley product take back system please contact Grass Valley at + 800 80 80 20 20 or +33 1 48 25 20 20 from most other countries. In the U.S. and Canada please call 800-547-8949 or 530-478-4148, and ask to be connected to the EH&S Department. Additional information concerning the program can be found at: www.thomsongrassvalley.com/environment

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Product Description

The K2 is an MPEG-2 transport stream capture device that uses the K2 SAN for media storage. It receives a live Multiple Program Transport Stream from an ASI input and provides advanced record capabilities of this stream (manual or triggered captures). Material recorded by K2 then manifests as a K2 clip on the SAN.
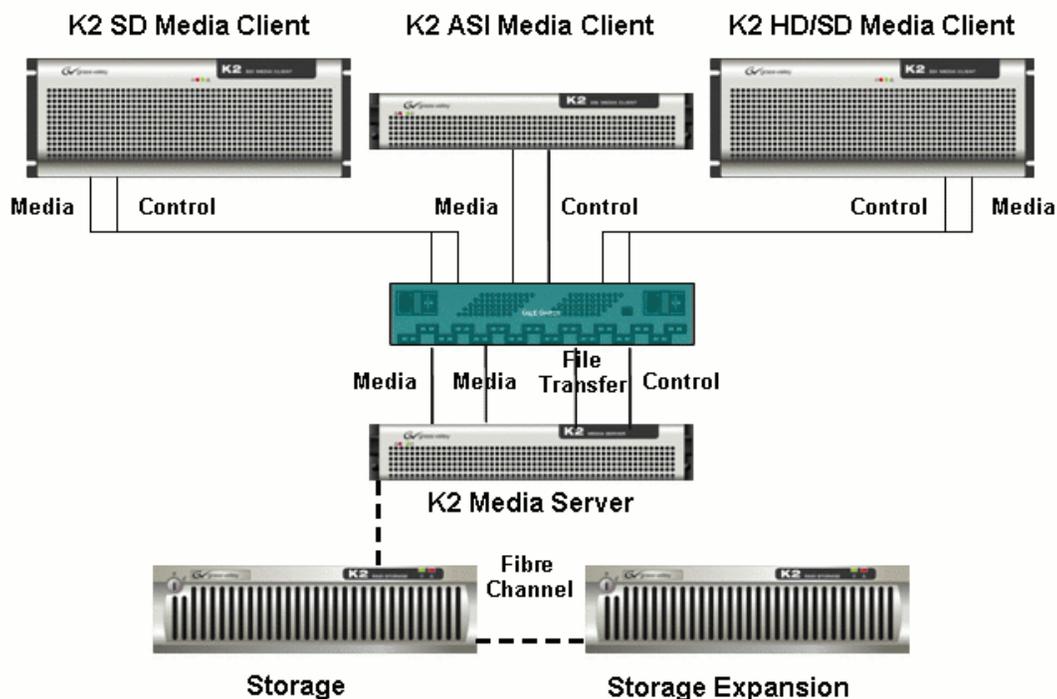
The K2 comes with the following items:

• A 2-RU rackable device

• An ASI input card, limited to 84 Mb/s

• A dual port Gigabit Ethernet adapter for remote control and iSCSI access to shared storage

• An RS-422 card for remote control

• A Software Suite, which allows operating captures locally or remotely

The K2 product is further described in the following section:

•

K2 Features

This section provides an overview of K2 features.

Grass Valley K2 components & features are:

- High performance ASI input scanning
- Real-time program de-multiplexing and analysis
- Support for MPEG-2 video with SD or HD contents
- Frame-accurate manual or automated capture capabilities
- Support for in-band (SCTE35) or out-band (GPI) commands
- Interfacing with most popular automation systems through VDCP
- Easy-to-Use Graphical User Interface, based on dynamic video thumbnails
- SNMP Monitoring

Chapter **2**

Getting Started

Topics in this chapter include:

System Prerequisites

Before operating the K2, it must be cabled and configured to access shared storage on a K2 Storage System. Refer to the K2 Instruction Guide for procedures.

The K2 ASI Graphical User Interface (Remote ASI Video Client application) should be installed on the Control Point PC. Refer to the K2 Instruction Manual for procedures.

Starting K2 ASI Client

When the K2 ASI unit starts up, the K2 ASI application software (namely Video Server and Browser Server) initiates automatically.

To operate K2 ASI actions, open the remote ASI video application (namely Video Client) locally or from the Control point PC. This application allows connecting to any K2 ASI device on the network.

Refer to the K2 Instruction Manual for installing ASI video application

To prevent unauthorized modifications to the configuration, handling rights are determined through the use of two profiles:

- Supervisor

- Configurator

Supervisor Rights

Supervisors can use the ASI video client application software for monitoring purposes. However, they cannot modify the configuration on the K2 ASI client. In other words, Supervisors cannot add, scan, modify, remove inputs, outputs nor filter, change rate nor perform drag & drops. Supervisors can add, modify or remove elements in lists. They can also set or reset analysis parameters.

To set Supervisor rights (default profile), select **User mode** from the **Server** menu. The **Mode definition** dialog is displayed. Select **Supervisor** and click **OK** to validate. No password is necessary for the Supervisor mode.

Configurator Rights

Configurators can do anything: they have all rights.

To set Configurator rights, select **User mode** from the **Server** menu. Then, select **Configurator**, enter the password and validate.

By default, password is "k2admin". To change it, select **Password** from the **Options** menu. Enter the current password. Then, enter a new password and click **OK** to validate.

If the current password is erroneous, an error message is displayed. The new password is set when the current password is correct and the dialog has been validated.

K2 ASI Client Connection/Disconnection

Each remote ASI video application can be connected to one K2 ASI device at a time. However, several remote ASI video applications can connect to the same K2 ASI device.

Manual Connection

Remote ASI video application can run locally on the K2 ASI unit, or remotely from the Control Point PC.

So as to connect the remote ASI video application to a K2 ASI device, select the **Server | Local** menu or click the [icon] toolbar button.

To connect to a remote K2 ASI unit, select the **Server Connect** menu or click the [icon] toolbar button. Then select the name of the K2 ASI device or enter its IP address.

Select the name from the list or enter it from the keyboard. The K2 ASI device list can be updated by clicking the [icon] (browse) button.

Once you have chosen a K2 ASI Client unit, click **OK** to validate.

Automatic Connection

If the Automatic connection to last K2 ASI device is enabled in the **Options | Preferences** menu, when starting up, the remote ASI video application automatically connects to the K2 ASI unitit was last connected to.

For more details on the remote ASI video application user preferences, refer to the "Client Preferences" section.

Disconnecting from K2 ASI Client

To disconnect from K2 ASI device, select **Server | Disconnect** menu or click the [icon] toolbar button. The remote ASI video application will no longer be connected.

Loss of Connection

Whenever a network problem occurs or the link to the K2 ASI device is interrupted, the client detects the loss of connection and signals it through an alarm beep. The remote ASI application icon begins to flash, and a flashing "Connection lost" message appears in the toolbar.

Most menus are consequently disabled. The ASI video application automatically tries to reconnect. When the connection is (automatically) recovered, the "Connection lost" message disappears and all flashing stop. The ASI video application disconnects and automatically reconnects to the K2 ASI device.

Exiting the Application

To exit the application, simply close the ASI video application. Select **Exit** from the **Server** menu.

If the **Save windows position and size** option is set on the client (refer to the "Client Preferences" section), the position and size of windows will be the same the next time the application is started.

NOTE: Do not stop the Video Server or Browser Server applications on the K2 ASI device, except for reinstallation purpose.

Restarting remotely the K2 ASI device software

From the remote ASI video application, you can restart the K2 ASI device software by clicking the **Server** | **Restart server** menu item.

Shutting Down the System

You do not need to exit the applications before shutting down the server.

Select **Shut Down** from the Windows 2003 Server **Start** menu.

Chapter **3**

Graphical User Interface Overview

Topics in this section include:

Information Structure
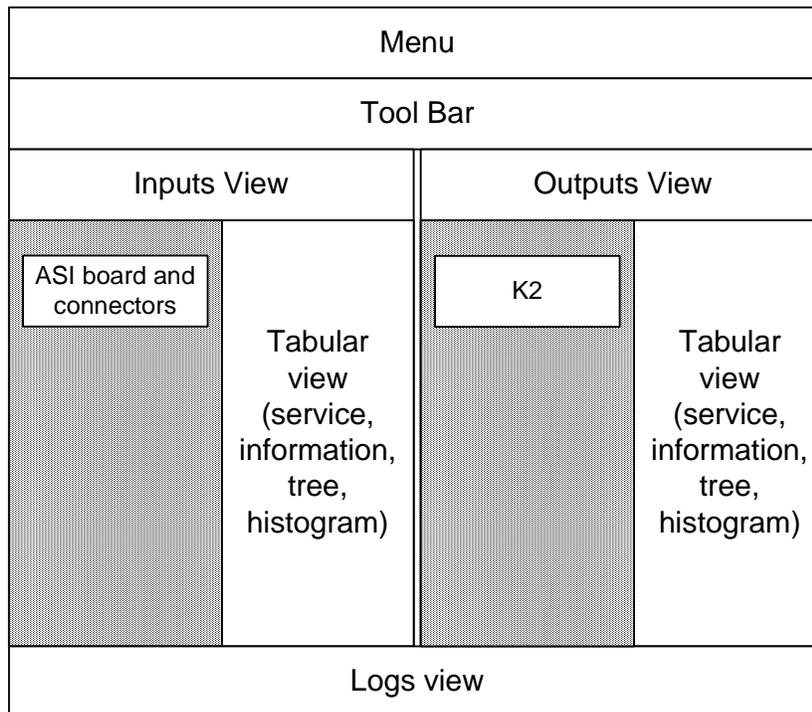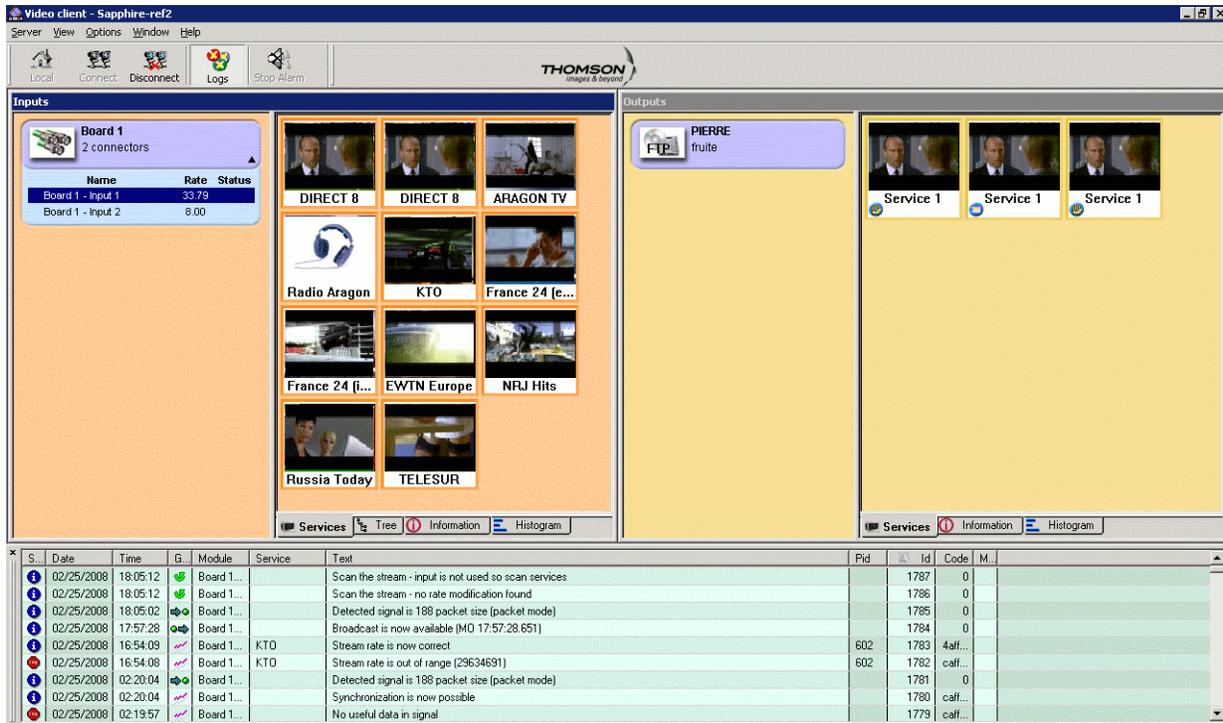
The Graphical User Interface is divided into three main views:

• The **Inputs** view

• The **Outputs** view

• The **Logs** view

The **Inputs** and **Outputs** views are both divided into two parts.

The information displayed in the second part (right side of the splitter) depends on what is currently selected in the left part and on which tab is selected.

Inputs panel
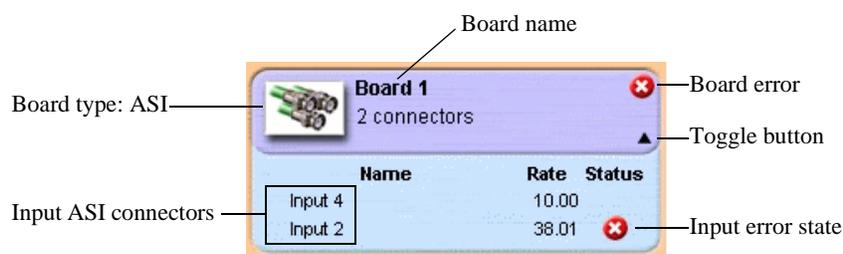
Outputs panel

Toolbars

The ASI video application features two toolbars:

• the main toolbar

• the connection status toolbar

Main Toolbar
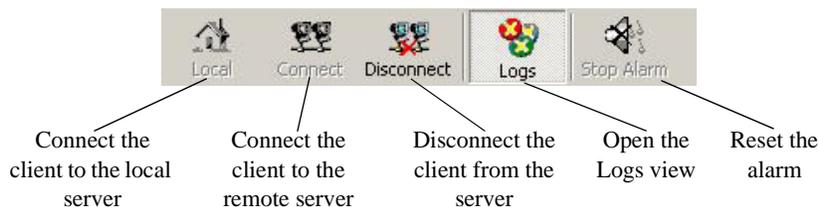
The toolbar display may vary according to the display mode defined through the **View | Toolbar** menu command.

Connection Status Toolbar

This toolbar, located on the bottom of the window, is used to inform you when the connection to the server has been lost. This toolbar cannot be hidden. When the connection is OK, nothing is displayed.

Connection lost

Menu Bar

The menu bar content may vary depending on whether you are connected to the K2 ASI device or not. Menus presented below are available when the connection to the K2 ASI device is effective.

Server Menu

- Disconnect: Disconnecting from the K2 ASI device

- Exit: Exiting the ASI video application

- Restart Server: Restarting the K2 ASI device

- User mode: Defining a User profile (e.g. connecting as Configurator or as Supervisor)

View Menu
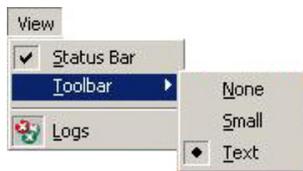
The **View** menu lets you show or hide the status bar at the bottom of the client screen, define the toolbar aspect or hide it, and show or hide the **Logs** view.

Option Menu

> Options
> Preferences...
> Serial control ...
> Password ...
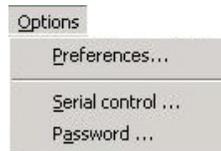
- Preferences: Setting the client preferences
- Serial control: Configuring the serial port to use with an automation system
- Password: Changing the current password to logon in Configurator mode

Window Menu

> Window
> Cascade
> Tile
> Tile Horizontally
> Tile Vertically
> Arrange Icons
> 1 Outputs
> ✓ 2 Inputs

Help Menu

> Help
> Help
> About ...
> Download Trace
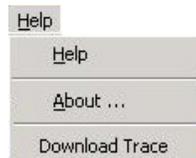
- Help: Reaching the User Manual in PDF format
- About: Displaying the **About** box offering contact, rights & versions information
- Download Trace: Getting the Trace file from the server

Status Bar

The status bar is divided into three fields:

- The first field contains a description of selected menus and buttons
- The second and third fields contain the client date and time when the client is not connected to a server, and the server date and time when the client is connected to a server

NOTE: It is recommended that the Control Point PC running the remote ASI video application has the same date and time than the K2 ASI Media Client device.

To show or hide the status bar, use the **View | Status** bar menu.

Contextual Menus

Some menu items are common to several menus. They are presented hereafter. Specific menu items will be presented in their corresponding sections.

- Disable/Enable video decoding: Disabling or enabling video decoding of thumbnails in the input Services view. This procedure is useful to decrease the CPU of the K2 ASI Client and when the control network has small bandwidth. It is recommended to always enable this option

- Current error state: When an error or warning is present on the input, this menu lets you get the current error state

- Acknowledge error: When some errors have disappeared but are have not been acknowledged yet (i.e. orange state), this menu lets you acknowledge them and to make the overlay disappear from the connector

- Display messages: Opening a window that contains a list of errors and messages concerning this connector (all services on this connector) in the error list

ASI Input Board Menu

Right-click the ASI board to reach the following contextual menu:
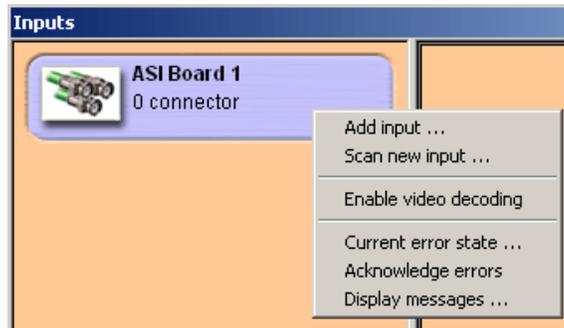
- Add input: Adding input connector. When adding a new input, if the maximum number of available inputs is reached, a message is displayed. The maximum number of inputs indicated in the **Rights** panel of the About box (refer to the "About Box" section)

- Scan new input: Scanning for new inputs that are not already listed. This procedure is useful when a connector with no signal is connected to a stream

Input ASI Connector Menu

Right-click an ASI input to reach the following contextual menu:
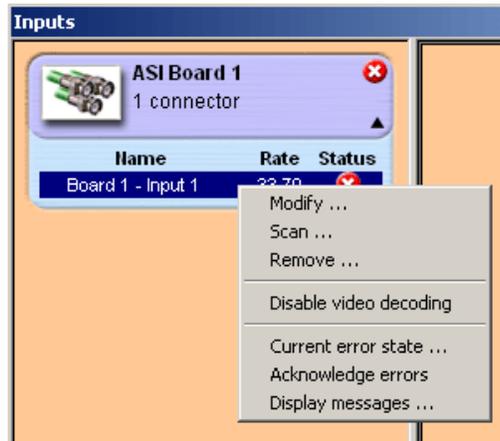
- Modify: Modifying the current input (i.e. name, rate, filtering, services on connector)

- Scan: Scanning the current input to detect new services or remove services that have disappeared from the input stream. This feature is disabled when at least one input service is used by an output

- Remove: Removing the selected input or output

Access Restriction to Menus

Grayed Menus when Connection is Lost

The following menus are not available and are grayed when the connection is lost:

- Add

- Modify

- Remove

- Scan

- Scan new input

- Disable/Enable video decoding

- Current error state

- Acknowledge errors

- Display messages

Grayed Menus for Supervisor Rights

The following menus are not available and grayed when you are a supervisor:

- Add

- Modify

- Remove

- Scan

• Scan new input

Symbols & Icons

Symbols, overlays and icons are used throughout the Graphical User Interface to provide at-a-glance health check of services and actions.

Symbols used in the **Input** and **Output** services views are:

Symbol	Meaning
	A red cross overlay is added to a graphical item when an alarm is active on this item or one of its sub-items. A red cross overlay is added to services when an alarm is active.
	An orange cross overlay is added to a graphical item when an alarm has been activated on this item or one of its sub-items. No alarm is active anymore but alarm acknowledgment has to be performed. An orange cross overlay is added to services when an alarm has been activated. No alarm is active anymore but alarm acknowledgment has to be performed.
	A red ring overlay is added to services when a record action is in progress.
	Symbol added to output services that are scheduled through a record list. If an event within the record list is on-air, the name of this event is displayed near the symbol. Click it to open the corresponding record list.
	Symbol added to the output services that are managed by a manual record action. Click it to open the corresponding manual record view.
	Symbol added to indicate that the service is scrambled.

Symbols used in record lists are:

Symbol	Meaning
	The Start at starting mode is represented by a clock icon. It is used for an event that shall begin at a given time, whatever event was recording before it. These starting mode events are made prominent to define key times in lists (e.g. live events beginning on time). If an event is already being recorded, it is stopped for the start at event to begin.
	The SCTE 35 starting mode is represented by a flag icon.
	The GPI starting mode is represented by a rising edge icon.
	The Manual starting mode is represented by a hand icon.
	Record icon: event present in record list. The event is the one that is defined (and recorded) in a record list.

Drag & Drop Facilities

The K2 ASI video application implements the drag and drop facility. It can be used from a live input (service or group of services or input itself) to an output drive in order to perform one of the following actions:

- Manual record

- Record list

- Automation control

Client Preferences

To reach the **Client Preferences** dialog, go to the **Options | Preferences** menu. Each client can have its own preferences, which will not necessarily be the same on other clients.
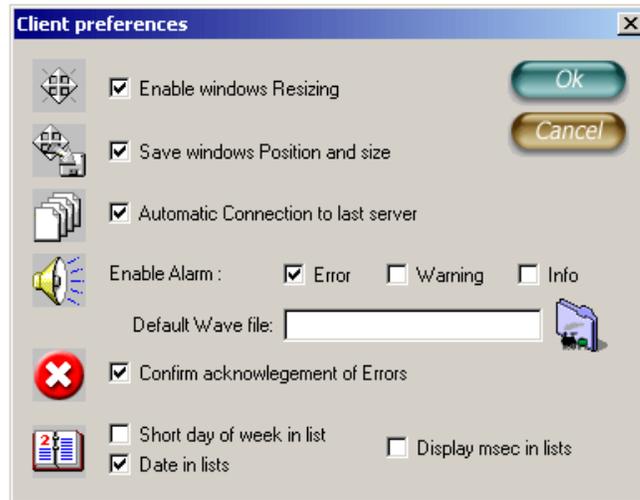
- Enable window resizing: this option enables the resizing of the **Inputs** and **Outputs** views

- Save windows Position and size: if enabled, any modification to the size and position of lists, Inputs/Outputs and application windows are kept as well as the modified position for manual views. When a new client session is opened, the positions and sizes are restored

- Automatic Connection to last server: if enabled and when the ASI video application is launched, the application connects to the same K2 ASI device as it last was last connected to

- Enable Alarm: if one of these options is set, the alarm rings each time a new error, warning or information appears in the message log list. Default alarm is a beep, however, a sound file can be selected instead (provided client machine is equipped with a sound card). Default Wav file field indicates the name of this wav file. Alarm sounds until it is acknowledged. It is recommended not to enable alarms

- Confirm acknowledgment of errors: Errors that are no longer present (orange color on the services and connectors) can be acknowledged through a right-click on services or connectors. When this contextual menu has been used, a list of current errors on services can be displayed or not, depending on the selected option

- Data format in lists: Date format can be chosen: the day can be set as a short name (first two letters for each day of the week) or a complete name; month and day can appear in the list dates. Date (month/day) can be added to the day column in lists

- Display msec in lists: if enabled, all time values are displayed in milliseconds

About Box

To reach the About box, go to the **Help | About** menu.

The About box contains three panels:

* The **Contacts** panel provides information on how to contact Thomson Grass Valley technical support

* The **Versions** panel contains all software versions and DLL versions used on the K2 ASI software suite

* The **Rights** panel indicates the limitations on the use of the K2 ASI Client, which depends on the content of the K2 ASI Client options purchased and software limitations

Chapter **4**

Inputs Management

This chapter includes the following topics:

- *"Input Scanning" on page 28*
- *"Adding/Modifying an ASI Input Connector" on page 29*
- *"Removing Inputs" on page 30*
- *"Monitoring the Incoming Programs" on page 31*

Input Scanning

The first thing to do before using the K2 is to plug the ASI inputs into the connectors and to add the services. If the input has MPEG 2 PSI/SI/PSIP tables, the video server detects and adds the services automatically. This process is known as input scanning.

All the new inputs can be scanned together - which is the case when the server is started up for the first time - or independently.

Scanning a New Input

The **Scan new input** feature is used to scan all inputs that are not already created and to add inputs with a stream present on them. Services for new inputs are added to the **Services** view.

To scan a new input:

1. Right-click an input board (not the input itself, but its board).

2. Select **Scan New Input**.

3. A confirmation is required. Click **OK** to validate.

4. Any new connector with a valid signal is added (default names are Input x). Already existing inputs are not affected nor scanned.

Scanning an Existing ASI Input

The **Scan input** feature is used on the input connector. It scans the input stream to determine (using its tables) the content of the stream and then modifies the services and rate to take account of new content.

NOTE: An input cannot be scanned while in use (i.e. when used for manual record or record event).

To scan an existing ASI input:

1. Right-click an ASI input.

2. Select **Scan**.

3. If an existing input is scanned and its services are found to have changed, they will be modified (new services will be added and services that do not exist anymore will be removed).

The rate will be updated if it is found to be different from the signal rate.

Adding a New ASI Input & Scanning its Content

To add a new ASI input and scan its content (without scanning other inputs):

1. Right-click the ASI board and select **Add Input**.

The **Board Connectors** dialog opens.
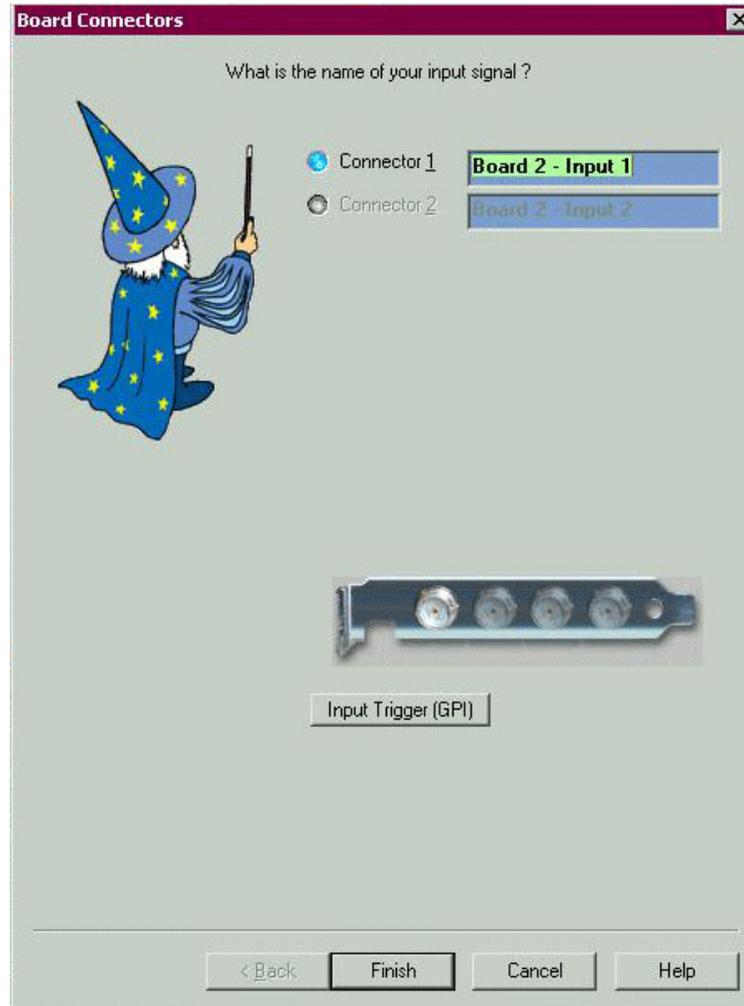
2. Select the relevant input.

3. Click **Finish**.

The new input is automatically added to the ASI board.

Adding/Modifying an ASI Input Connector

NOTE: If you do not have Configurator rights or if the connection is lost, the menu is unavailable.

To add a new input:

1. Right-click the ASI board and select **Add input**.

2. If at least one connector is available and you have Configurator rights, a dialog opens.

NOTE: If all inputs have already been created, a message is displayed. It is not possible to add a connector.

One trigger per board is available, only on connector 1.

3. Select the connector to be added.

   Connectors that are already created cannot be selected and are grayed. Default connector name is "Input x", where x is the connector's number. This name can be changed and will be displayed in the connector view, under the connector image.

   Underneath the list of connectors, there is a representation of the physical connectors on the ASI board. When a connector is selected in the top list of connectors, the one on the picture is lit up.

4. GPI events can be managed by the input. Click the **Input Trigger (GPI)** button to display the parameters,
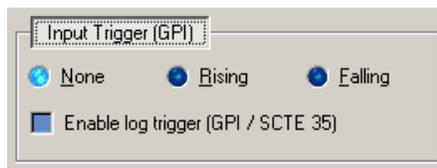
   Three kinds of input events are managed:

   • None: no GPI event is managed (default parameter),

   • Rising: rising edge events are managed,

   • Falling: falling edge events are managed.

   These events may be used to trigger record actions.

   Events can be logged in the **Logs** view if the **Enable log trigger** option is enabled. Before validating the addition, plug in the input on the given connector to make sure the signal is detected.

5. Click **Finish** to add the input connector and scan its services.

   If no signal is present, the **Scan Input** option (in the connector contextual menu) will have to be used when the signal is plugged in. This view can be accessed when using the connector contextual menu or the **Modify** feature from the service contextual menu. The connector cannot be changed but its name can be set.

Removing Inputs

To remove an input:

1. Select the input you wish to remove from the **Inputs** view.

2. Right-click it and select **Remove**.

3. A confirmation is requested: click **Yes**.

4. If the input is currently used by an output or a record, a message is displayed to indicate that the input cannot be deleted.

5. If the input you wish to remove is not currently used by a record or an output, click **OK** to validate.

The input content is removed.

Monitoring the Incoming Programs

Once an input has been scanned, its content is added to the **Services** view. This section contains a full description of the monitoring views.

Services View

To reach the **Services** view, first select an input or output item (i.e. board or connector) and then click the **Services** tab. The displayed content depends on the selected item type.

The video client application performs the global supervision of all incoming streams and all output streams. It displays the logo channel or the decoded picture for each service and indicates the program status.

By default, the video is decoded by sampling (refresh period depends on the number of services that are managed by the server) when the video service is not scrambled. The other services are represented by a specific logo.

You can change the specific logos by selecting a bitmap file corresponding to the channel logo. Bitmap files are stored on the video server.

Logo	Service type
	Audio services
	Data services
	Video services

Services Menu

The **Services** menu is the same for the **Inputs** and **Outputs** panels.

To reach the **Services** menu, right-click on a service from the **Services** view.
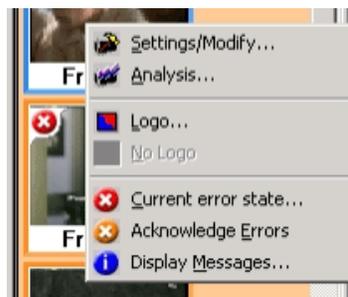
Menu item	Function
Settings/Modify	For current service, remapping this service PID configuration and changing the name and program number of output service.
Analysis	Reaching analysis settings for current service.
Logo	Selecting the service logo to replace default picture.
No Logo	Deleting service logo and replacing it with default service (i.e. TV, data or radio). This item is grayed if no logo is present on the service.
Current error state	When an error or warning is present on the service, this menu lets you get the current error state.
Acknowledge Errors	When some errors have disappeared but are have not been acknowledged yet (i.e. orange state), this menu lets you acknowledge them and make the overlay disappear from the service.
Display Messages	Opening a window that contains a list of errors and messages concerning this service in the error list.

Grayed Menus when Connection is Lost

The following menus are not available and are grayed when the connection is lost:

- Modify input

- Scan input

- Settings/Modify

- Analysis

- Logo

- No logo

Grayed Menus for Supervisor Rights

The following menus are not available and are grayed when you are a supervisor:

- Modify input

- Scan input

- Settings/Modify (can be reached but in read-only mode)

Input Services View

The input **Services** view provides an immediate "health check" of input services through the display of overlays. For further details, see the "Symbols & Icons" section.

Output Services View

The **Services** view is the same for the **Inputs** and **Outputs** panels. Refer to the "Input Services View" section.

In case of synchronization loss, no data or no signal is detected over the input, and the **Services** view is cleared. The cause for this can be:

- No signal: the server does not detect any signal on the input. The wire is disconnected or signal is no longer present

- No data: the stream only contains empty packets. No more useful data is present

- No synchro: no synchronization byte (0x47) detected at the beginning of each packet (every 188 or 204 bytes)

Tree View

This view gives all MPEG-2-DVB or ATSC parameters for the incoming stream or output stream.

Tree View Availability

The **Tree** view is available for each ASI input.

Reaching the Tree View

To reach the **Tree** view, select an input and then click the **Tree** tab.
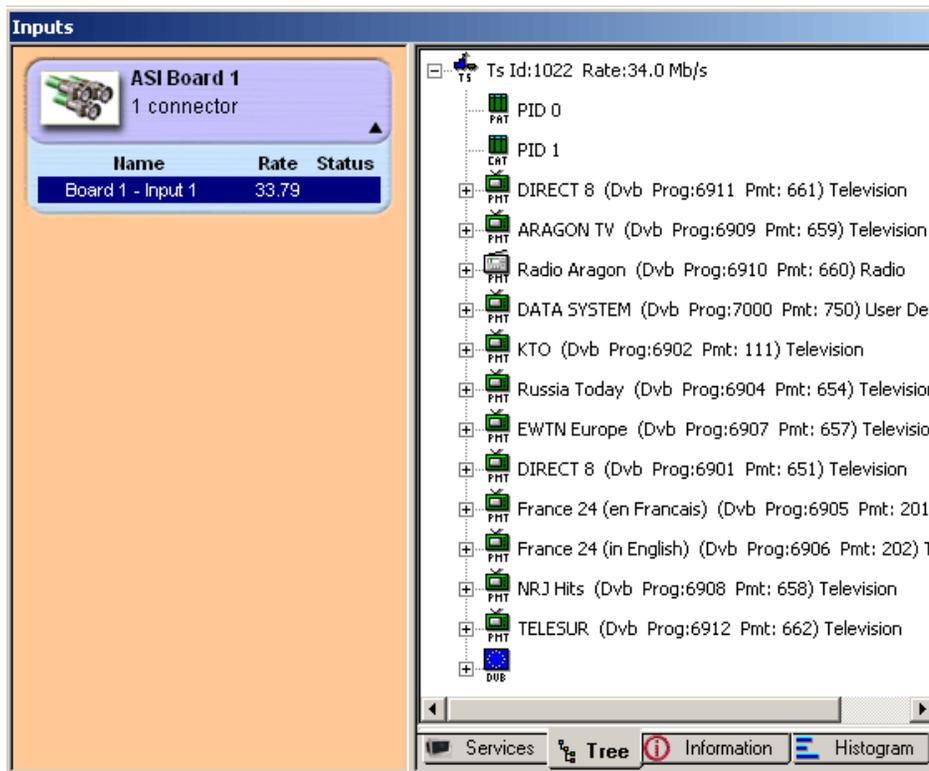
Information View

ASI Board Information View

To reach the ASI board **Information** view, select the ASI board and click the **Information** tab.

The ASI board **Information** view displays the connector. When used, its name is displayed. When unused, the "Not used" label is displayed.

Connector Information View

To reach this view, select a connector and click the **Information** tab.

This view gives information on the selected board, connector or service. Information provided vary according to the element type you have selected.

The **first item** provides an information summary on the connector:

* card number

* connector number

* input/output rate

* demux rate

* filtered PID

The **second item** provides information on actions on the input. Sub item is:

* Recording: lists the record list with the number of events and the manual record with free space, filename, length and status if recording

Histogram View

The **Histogram** view gives the current rate for each service of the selected input/ output. The current rate is indicated to the left of the histogram. The maximum rate is indicated to the right of the histogram. The maximum rate of a service is the maximum rate of the service since the video server was started and the service found (computed rate).

The **Histogram** view is available for the following items:

• ASI input

• Record action (manual record or record list)

To reach the **Histogram** view, select one item, then click the **Histogram** tab

Performing Analyses

A number of analyses can be performed for each incoming stream and output services independently. Analysis results are logged to the **Logs** view.

If an analysis error is raised on a service, an overlay is displayed over the decoded picture or logo. See the "Symbols & Icons" section for further details on the symbols and color codes used.

Analysis label	Detail
Table coherence	Consistency in the MPEG-2, DVB or ATSC tables (e.g. PMT declared in PAT but not present). This analysis is performed on a stream (i.e. for all the services of the stream). If this parameter is modified for one service, the modification is applied to all other services in the stream.
PID presence	Presence of listed PIDs is checked. If one PID is not detected during 1 second, an alarm is set.
Video decoding	When enabled, video is decoded periodically provided the service is not scrambled. The refresh period depends on the number of services that are managed by the video server.
Picture freeze	If a picture does not vary (i.e. is frozen) for more than a user-defined duration, an alarm is set. This parameter is only available if video decoding is set. If a null value is set, no test is performed.
MPEG transport flags	Presence of MPEG transport flag is checked in the stream. These flags are TEI (Transport Error Indicator), CC (Continuity Counter) and DI (Discontinuity Indicator).
Service rate	If the sum of the component rates differs too greatly from the analysis rate (i.e. tolerance to given bit/s), an alarm is set.
Transport stream rate	If the rate computed from the PCR differs too much from the analysis rate (i.e. tolerance to 100 Kbit/s), an alarm is set. This analysis is only performed if the Table Coherence is checked. This parameter is the same for all services of a single stream.

Each analysis can be enabled or disabled. By default, all analyses are performed, except the Service rate analysis and the Picture freeze analysis.

Analysis parameters can be set for each service by opening the corresponding contextual menu: right-click the service thumbnail and select **Analysis**.
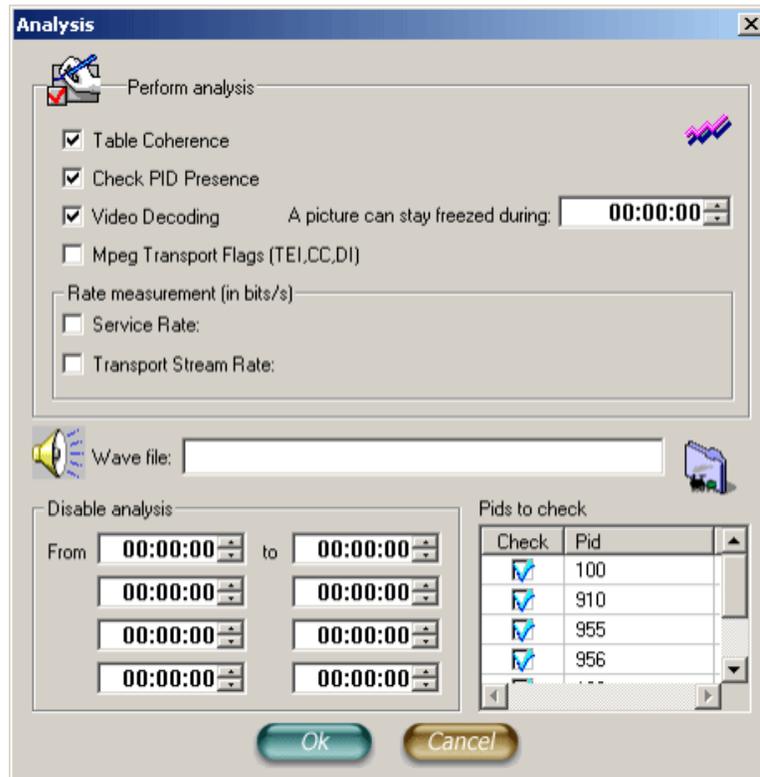
- Wave file: default sound played for an alarm is the buzzer. You can associate a particular WAV file to each service

- Disable analysis: you can disable the analysis for different time slots

- PID to check: only PIDs checked in this list will be used in the analysis. By default, all the PIDs of the service are checked

Chapter **5**

Recording

This chapter includes the following topics:

Performing a Manual Record

K2 allows crash-recording any of the programs available in input.

To create the record action:

1. Drag a program from the ASI input area and drop it in the K2 ASI output drive.

2. Define the output action in the displayed dialog. Select **Manual record**.
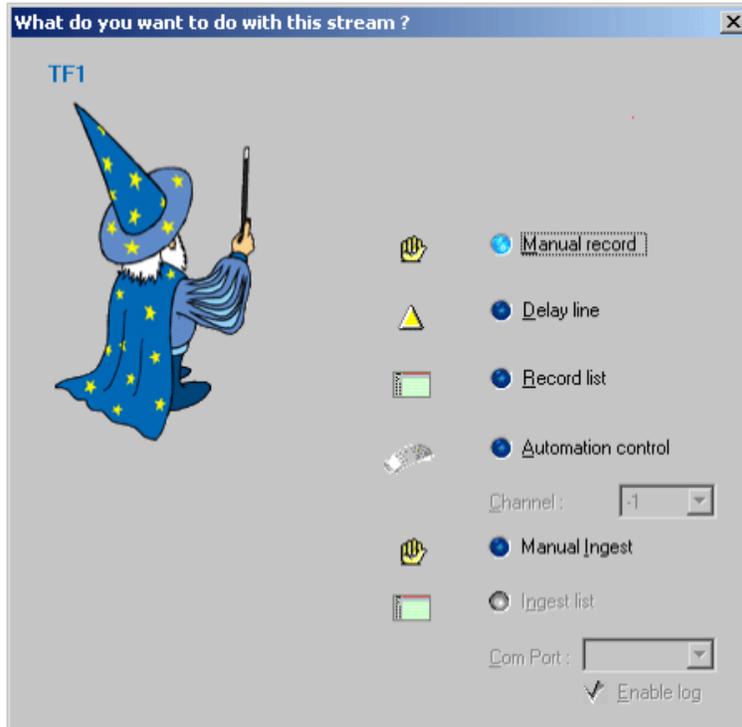
3. Click **Next** to continue.

   The **Advanced Settings** dialog opens.
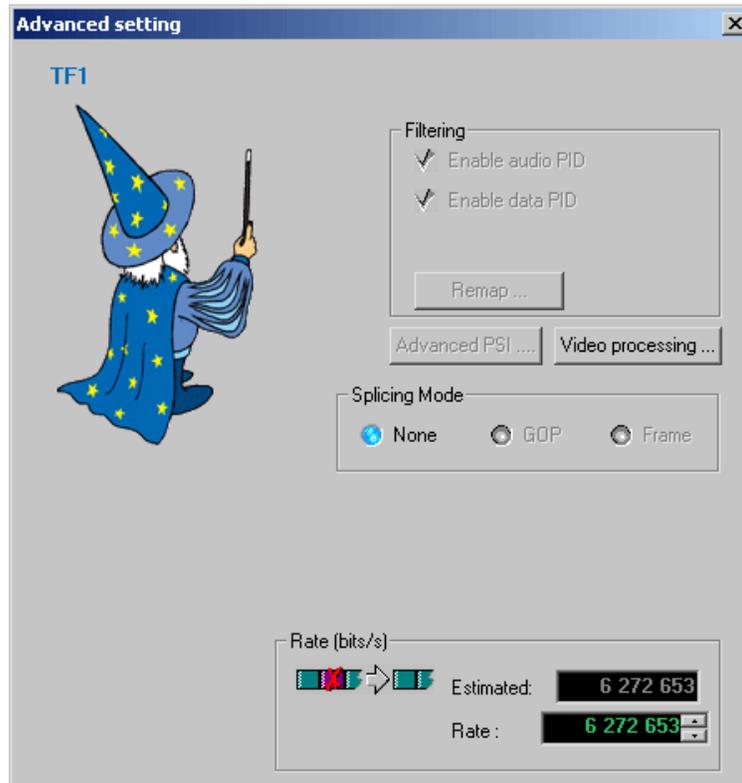
NOTE: The Enable audio PID option is enabled if at least one audio PID is selected. The Enable data PID option is enabled if at least one data PID is selected. To view the selected PIDs, click Remap.

> An estimated total rate for the selected services is displayed. This rate is actually the sum of the maximum rate of each service at the time of output creation. The maximum rate of each service is calculated by the video server. An offset is added to prevent overflow.

4. Define the recording rate and click **Finish**.

> The Manual record is created and an item is added under the selected output drive.
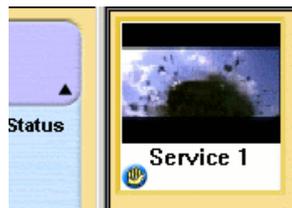
> Recorded services are displayed in the output **Services** view. An overlay indicating manual recording is added to the bottom left corner of the service.

> If several services have been selected, each service is displayed in the **Services** view. In this case, of course, all services are recorded.

5. Click the hand icon in the bottom-left corner of the manual record overlay.

   The **Manual record** dialog opens.
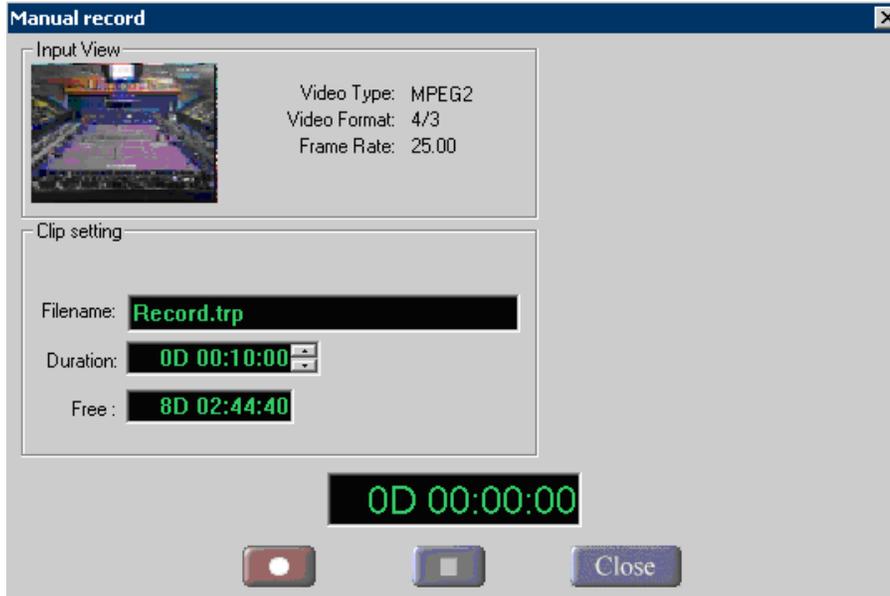
6. Fill in the **Directory**, **Filename** and **Duration** fields; then the free space on disk is indicated in the following format: day, hour, minute, seconds.

   When you are done with your settings, click the [●] button to start recording.

   While recording, the thumbnail (provided it is not scrambled) is continually updated. A progress bar is displayed.

   It provides information on the current position in the file.
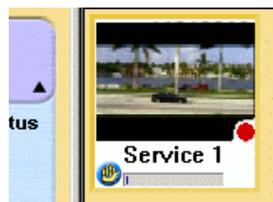
Creating a Record List

To create a record list:

1. Drag a program from the ASI input area and drop it in the K2 ASI output drive.

   A dialog opens.

2. To create the record list, select **Record list** and click **Next**.

   The **Advanced Setting** dialog is displayed.

3. Set the record rate and click **Next**.

The **Setup the record list parameters** dialog is displayed.

4. Set the record list parameters.

   The drive is set and cannot be modified. It is the drive onto which the selected services have been dropped for the record. The directory, however, can be modified. Click the [ ] button and select a directory on the current drive.

   • Select the Dated mode: events are deleted from the record list once they have been recorded.

   • Input delay parameter: used to start a recording action earlier than the requested start time. The **Input delay** option lets you anticipate the recording action.
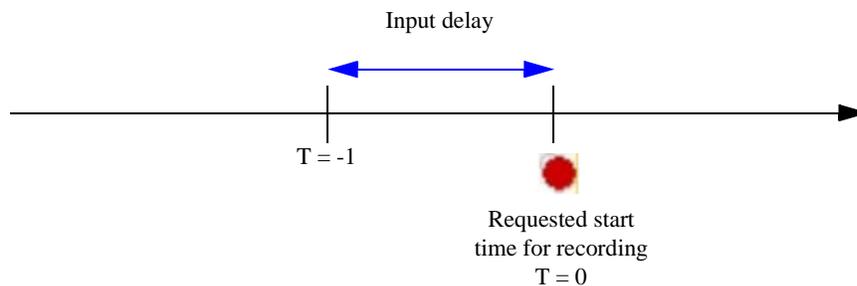
5. The record list is created and the corresponding item is added under the selected output drive.

   The recorded services are displayed in the output **Services** view. An overlay indicating that service is in the record list is added to the bottom left corner of the service.

6. Click the record list icon in the bottom-left corner of the overlay.

The **Record List** view is displayed. It is empty.
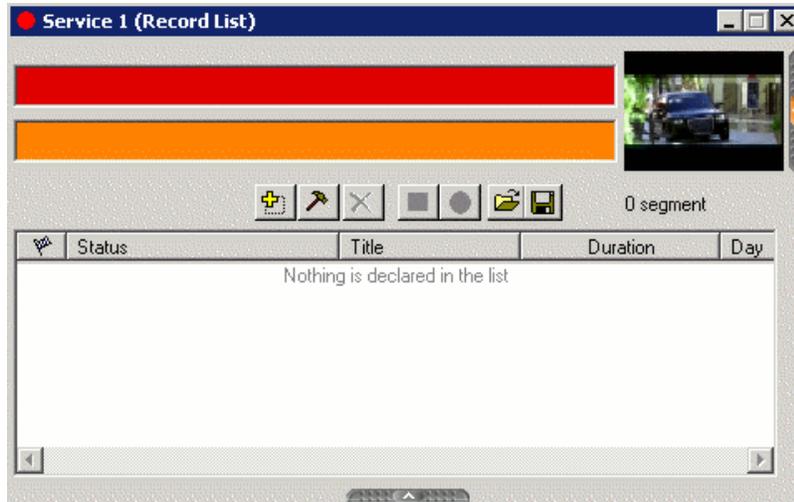
The name of the selected service corresponds to the title of the **Record list** view. In our example, the service name is Service 1 and so is the record list's. When several services are selected, the title is MPTS.

The top two lines describe the current recording event (red line), when present, and the next event to be recorded (orange line). The record list is displayed in minimized mode.

Use the toggle buttons to maximize it vertically and horizontally.

NOTE: The thumbnail is the one corresponding to the selected service that is used to display the list.

Record List Views

Reaching the Lists

To reach the **Lists** view, there must be at least one record list created.

Weekly record list means that the event is defined not only for this week but also for all the subsequent weeks. Event will be recorded this week; the week after, it will be destroyed to be recorded again.

To reach the **Lists** view, click the 🔵 button located under the services or double-click on the record list in the ASI boards and connectors output view. If the view is already open, it pops to the front of the screen.

The top two lines describe the event that is currently being recorded (red line) and the next event to be recorded (orange line). The status of each event is indicated to the left of each line. Each line has a decreasing counter indicating the time left for the event to record (red line) or the time remaining before it begins (orange line) when no event is recording.

Customizing List Display

The size and position of the lists can be modified and saved if the corresponding **Options | Preferences** options are selected. The views will then open at the same position each time you reach them. Each column can be dragged and dropped and resized. All modifications are saved when the view is closed.

Toolbar Buttons & Information Elements

Button	Corresponding action
	Modifying the selected fragment.
	Inserting a new fragment (record list).
	Deleting the selection.
	Stopping the current event.
	Starting the selected event.
	Loading a list.
	Saving the current list.

List Fields

For further details, see the "Symbols & Icons" section.

Fields in the list are the following:

Field	Possible value
Starting mode	The Start at starting mode is represented by a clock icon () in the first column.
	The SCTE 35 starting mode is represented by a flag icon () in the first column.
	The GPI starting mode is represented by a rising edge icon ( ) in the first column.
	The Manual starting mode is represented by a hand icon () in the first column.
Title	Event name.

Field	Possible value
Status	RECORDING ERROR: indicates that the on-air event cannot be recorded because of an error. The top line flashes. The reason for this could be that the file is absent on disks, the live input is corrupted or equipment is out of order. An error is consequently logged in the Logs view.
	RECORDING: indicates that the event is being recorded.
	RECORDED: the event is present on the disks.
	NOT PRESENT: the event is not yet present on the disks (not recorded).
	NOT DEFINED: transitory state after the record during which the event is mounted. It is followed either by a RECORDER or a NOT DEFINED state.
Duration, Day, Begin, End	These fields define the beginning, the duration and the end time of the event.
Name	Name of the event (freely definable - informal field only).
Type	Record (icon): present in a record list.

Inserting an Event into a Record List

NOTE: A record list can be loaded from a file. The events are added. The record list can also be saved to a file.

To insert an event into the record list:

1. Select the output **Services** view.

2. Click the record list overlay on the thumbnail.

   The **Record list** view opens.

   Let us suppose that you wish to insert an event called "Dancing" on Thursday, at 11:30, for a 10-minute duration. The current list already has two events. The first event is named "what's on". It starts on Thursday at 11:00 AM and lasts 15 minutes. The second event is named "sport TV". It starts at 12:00 AM and lasts 10 minutes.

   • If the list is empty (e.g. if you have just created it), skip this step and go directly to step 3.

   • If the list already contains at least one event, click in the list to select the time at which you wish to insert the "Dancing" event. Event will be inserted after the selected one. In this case, you have to insert it after the "what's on" event, because the previous event ends at 11:15 AM and "sport TV" begins at 12:00 AM.
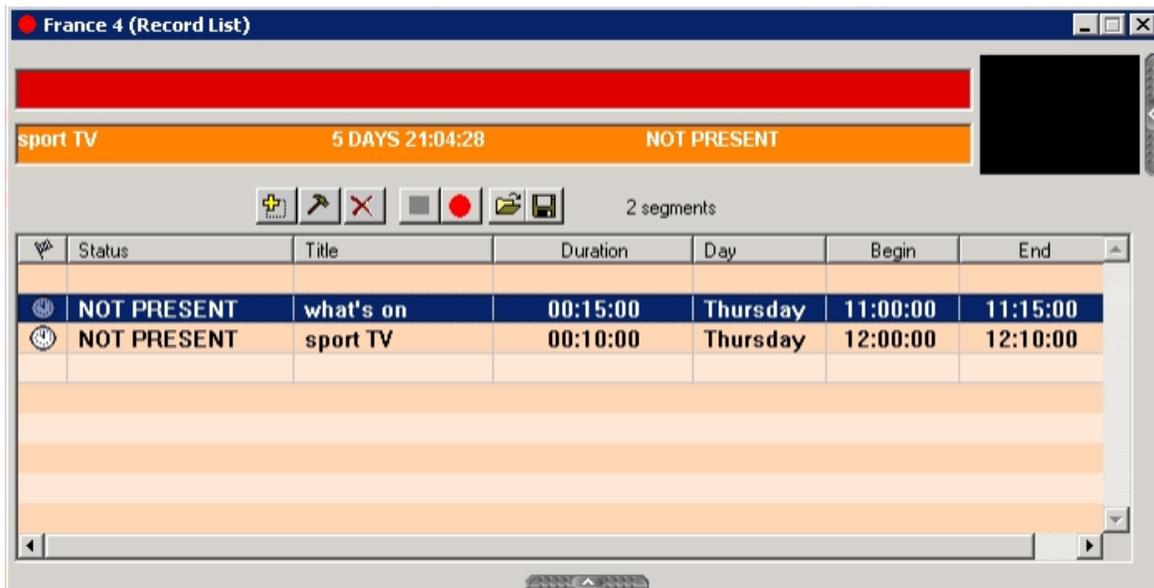
3. Click the [+] toolbar button.

   The **Segment setting** dialog is displayed.

4. Enter the name, begin time and duration of the event. Either use the arrow buttons or type the values directly from your keyboard. The **Start at** option is already enabled. Click **OK** to validate.

The "Dancing" event is inserted at 11:30 AM, after the selected event.

You can save record lists to file or load them from file, using the corresponding toolbar buttons. When loading a record list, first select the time at which you want to insert it, as you did when creating an event (i.e. list will be inserted after selected event).

Modifying an Event

Select an event and click **Modify** (you can double-click in the list as well): the **Segment Setting** dialog opens. If the selected event is not a valid event, using the **Modify** button equals to using the **Insert** one.

It is not possible to modify the name of the event.

When modifying an event that is currently being recorded, some parameters cannot be modified.

Deleting an Event from the List

Select one or more events to be deleted and click the **Delete** button.

This action is not possible if the event is being recorded.

Stopping an Event

Select the event that is being recorded and click the **Stop** button. The event is stopped as soon as possible.

Recording an Event Immediately

Select an event in the list and click the **Record** button. The event that was currently being recorded is stopped as soon as possible and the recording of the selected event is launched.

Saving/Printing a List

Lists can be saved on the client disk. The default extension is list. The saved file must not be edited (binary format).

Contextual menu gives access to the **Print** function to print out lists.

Loading a List

A list can be loaded from the client disk. This list will be inserted into the current list.

To do so, select the insertion point (i.e. the event in the list) and select the file list. The list is inserted at the insertion point, in append mode.

Defining an Event

When inserting, modifying or pasting an Event, the following panels are displayed:
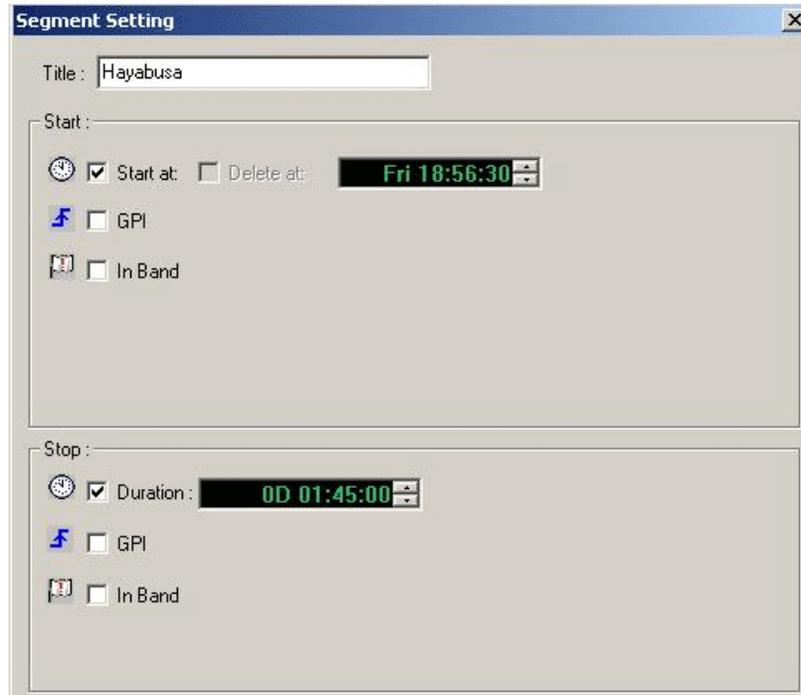
Starting mode: to create a start at (start at given time), delete at (delete at given time), manual, GPI (manual trigger) and/or In Band (Cue Tone). Several Start triggers can be used for the same event.

Stopping mode: to create a Duration (stop when duration is elapsed), GPI (manual trigger) and/or In Band (Cue Tone). Several Stop triggers can be used for the same event.

The begin time shall be set between previous "start at" in the list and next one. The begin time of the event cannot be selected as a time after the stored file life (i.e. the beginning of the recorded event plus the "Keep file during" time set in the record list definition).

The duration is the total duration of the event to be recorded. Null duration is allowed only if it is another stop trigger.
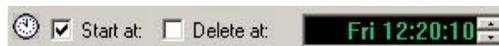
The *Start at* starting mode shows the begin time. Day of week, hour, minute and second may be selected.
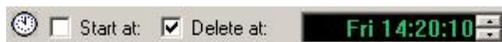
The *Delete at* starting mode shows the delete time (only with Dated list and GPI or/
and In Band start trigger). Day of week, hour, minute and second may be selected.
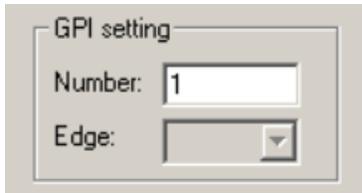
GPI: starting or stopping mode that allows, when GPI mode is activated, to trigger the
beginning and/or the end of the event manually.

Input trigger shall be shown:

• Number: number of the input trigger connector used. Start and stop GPI are totally
  independent (i.e. an event can be associated with a number for its start mode and
  another one for its stop mode)

• Edge: edge kind (i.e. rising or falling) for a number superior to 5, optional card is
  required
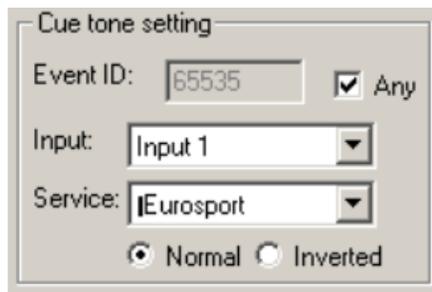
In Band: starting or stopping mode that allows, provided the In Band mode is
activated, to trigger the beginning and/or the end of the event through an in-band
signal.

The In Band signal shall be shown:

• Input: choose from the list the number of the input ASI connector that contains the
  In Band signal

• Service: choose from the list the service name that contains the In Band signal

• Event ID: an event can be associated with any event (event begins/stops when a
  Cue Tone event is received) or with a specific event ID (event begins/stops when
  the specific event ID is received). Start and stop In Band are totally independent
  (an event can be associated with a specific event ID for his start mode and an other
  for his stop mode)

Normal/Inverted: there is a specific Cue Tone to start an event and another to stop it.
If Normal is enabled, the event begins when the specific start Cue Tone is received
and stops when the specific stop Cue Tone is received. If Inverted is enabled, the
event begins with the specific stop Cue Tone and stops with the specific start Cue
Tone.

Chapter **6**

Automation System

This chapter includes the following topics:

- *"Connecting the Automation System" on page 52*
- *"Creating a Record List from the K2 ASI Client" on page 53*
- *"Configuring a K2 ASI client device from the Automation System" on page 54*

Connecting the Automation System

Record lists can be managed using an automation system. The automation system is connected to the video server through RS 422 serial links. When the automation system is connected to the video server, the serial port has to be configured on the video server.

To open the connection with the automation system:

1. Select the **Options | Serial port** menu.

   The Automation control settings dialog opens.
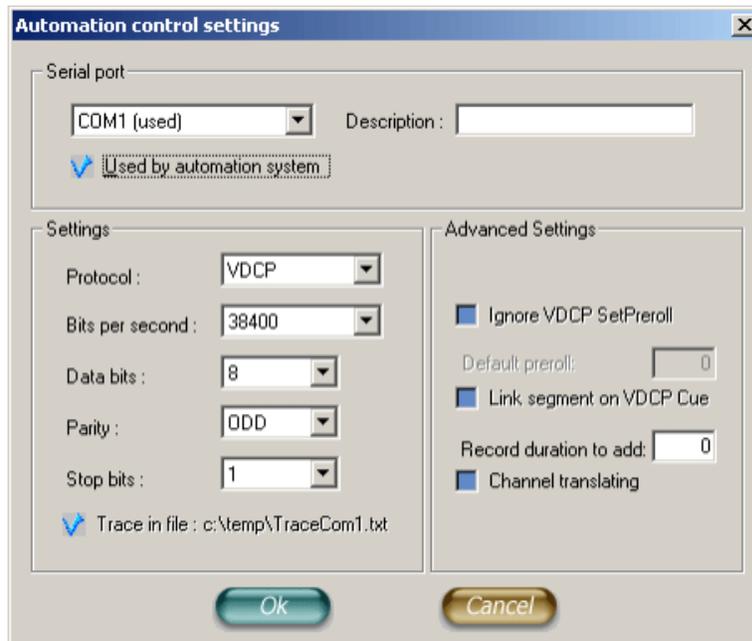
2. The drop-down list contains the list of all available serial ports. Select the serial port to be used.

   COM1 and COM2 are RS 232 ports. COM3, 4, 5 and 6 are RS 422 ports.

3. Enable the **Used by automation system** option.

   The **Settings** and **Advanced Settings** areas are now available.

4. Define the parameters in the **Settings** area to configure the serial port.

5. Click **OK** when you are done with the settings.

A message is added to the **Logs** view when the serial port is correctly opened (otherwise, an error message is added).

The word "used" is added at the end of the serial port name in the drop-down list of serial ports.

Creating a Record List from the K2 ASI Client

To create a record list from the K2 ASI client:

1. Drop a service from an input to an output drive.

2. In the displayed dialog, check **Automation control**.
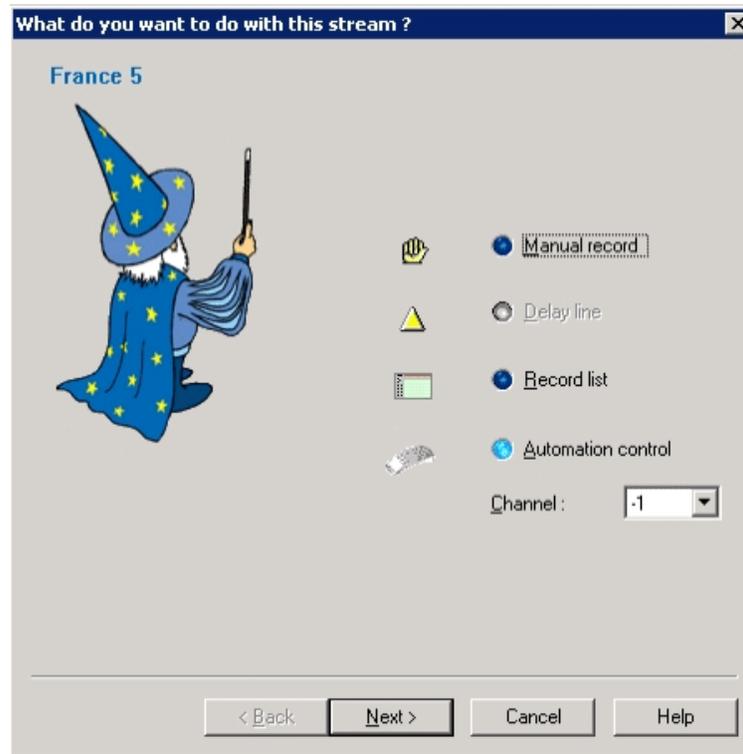
3. Select the channel (minus value for recording) you want to use, then click **Next**.

4. Validate the following dialogs (see the "Creating a Record List" section for further details).

   The record list is created. It is in read-only mode when editing from the video client. Events in the record list are managed by commands coming from the automation system.

NOTE: Channel X is not necessarily associated with the serial port X but is a virtual channel number set in the automation system.

Configuring a K2 ASI client device from the Automation System

From the Automation System, the K2 ASI Media Client should be declared as an Extended-ID video server.

Its general encoding parameters are:

- Cue Time: 5 seconds
- Disk precall: 1 second.

Chapter **7**

Message & Error Management

This chapter includes the following topics:

- *"Logs View" on page 56*
- *"Alarms" on page 57*
- *"Specific Messages view" on page 57*
- *"Current Error State" on page 57*
- *"Acknowledging Errors" on page 58*

Logs View

The **Logs** view provides the list of error, warning and information messages. You can show it or hide it via the **View | Logs** menu, or by clicking the [toolbar button] toolbar button.

NOTE: Messages can be sorted, filtered and identified in a user-friendly way. To sort messages, double-click on the desired column header (e.g. double-click the Time column header to sort the messages by date).

In this view, the following types of detected alarms are listed:

• System state

• Inconsistency within the record lists

• Synchronization analysis

• PCR validity

• PID presence

The following contextual menu can be reached from the **Logs** view:

Menu item	Function
Show all	Showing all messages, including masked messages. Masked messages are no longer masked.
Show not masked	Showing all messages that are not set as masked.
Mask	Masking selected elements in the list.
Mask all	Hiding all elements. To show not masked again, use the Show not masked contextual menu item.

Alarms

Each time a new error arises, an alarm can be heard (provided options for this have been selected, see the "Client Preferences" section). Information messages are indicated by blue icons. Error messages are red-colored. Warnings are orange-colored.

To stop alarms, use the ![Stop Alarm] toolbar button. All alarms will stop. Since alarms are client dependent, stopping an alarm on one client will not stop it on the others.

Specific Messages view

Messages relative to a particular service or connector can be directly reached to view the alarms concerning a selected service or connector. To do so, select a connector, an input or a service, and select **Display Messages** from the contextual menu.

All messages are available in a daily log file that is located on the server. Files can be found in the C:\Report\VideoServer folder.

Current Error State

To reach the current error state of an item (i.e. board, connector, service), right-click it and select **Current error state** from the menu.

Error state window is displayed. It lists current errors (in red) and errors to acknowledge (in orange). Listed errors are the following:

Listed Error	Meaning
Opening stream error	An input or output card connector cannot be used on the ASI card or a network destination is unreachable.
Reading stream error	Error while reading data.
Writing stream error	Error chile writing data.
Initializing stream error	Error while initializing input or output on ASI board.
Starting stream error	Error starting board, input or output.
Synchronize error	Synchronization error on the stream.
Table coherence error	The PSI table content is not correct.

Listed Error	Meaning
Input overflow error	System overloaded (CPU, disk access).
Demultiplexer overflow error	The demux rate is too low.
Communication error	Error while communicating with OpenMux® software.
PID presence error	An expected PID is not present.
Stream rate error	The stream rate is incorrect (using PCR - usually due to PCR errors).
Service rate error	The service rate is incorrect (by counting service packets).
Discontinuity error	Shifting in continuity counter.
Video freeze error	The video has not changed for a long time.

Acknowledging Errors

When an error is raised, it is automatically logged. However, when it disappears, it is not deleted from the list of errors.

To indicate that an error has occurred and is no longer present, the error state switches from red to orange. You should acknowledge it. This can be done for all connector errors through the **Acknowledge error** contextual menu or for each service, one by one, through the same menu.

To confirm the acknowledgement, click **OK**. Once they have been acknowledged, orange errors are removed from the list of errors.

Glossary

Ancillary Data

Digital data carried in the non-active video regions of a serial digital interface (SDI) stream as defined by SMPTE 291M.

ASI

Asynchonous Serial Interface.

Channel

A set of resources that together have the ability to record or play media.

Clip

Portion of recorded stream corresponding to a useful asset.

Compression Layer

The compression layer is the compressed elementary stream and associated metadata that describes the elementary stream. Usually this layer is organized into variable length packets with headers and payloads of data, in which case the bit stream is called a packetized elementary stream, or PES.

See the appropriate MPEG-2, DVB, or ATSC standards for more information.

See also "System Layer".

Configuration Manager

A tool in K2 Media Client that configures system settings.

Cue Tone

Also called trigger tones. Signal that is broadcast by the network feed and intercepted by the video switch. Cue tones notify the systems of breaks in programming during which events can be aired. Cue tones can be initiated by a tone from a network or by contact closure. There are two types of cue tones: start tones trigger an insertion to begin, and stop tones can stop an event that is being played.

Drop Frame

Drop frame is a timecode adjustment that applies to NTSC video only. Due to the framerate of NTSC, a system that normally outputs 30 frames per second must adjust timecode by subtracting two frames every minute except every tenth minute to achieve the effective framerate.

Drop Frame Timecode

Drop-frame time code yields precise running times, but frames are not all numbered sequentially. A frame number must be dropped periodically to keep the clock right. In non-drop time code, all frames are numbered sequentially, but the ending time code of a program does not accurately give the program's length.

Ethernet

A local area network used with some remote protocol applications; it operates over twisted wire and over coaxial cable.

Event

An event is defined as a video list element: it is recorded or played from one time during a certain period.

Fibre Channel

A general set of integrated standards developed by ANSI for flexible information transfer over multiple physical interface types.

GOP

Group Of Pictures: this represents the MPEG 2 group of pictures I, B and P. The beginning of a GOP is always an I picture.

GPI

General Purpose Interface. GPI triggers are physical connections between two pieces of equipment. Typically GPI triggers are based on a change of state on a monitored pin of the serial port. For instance you could create a GPI trigger that was operated by a port on a piece of broadcast equipment.

HD

High Definition video.

iSCSI

Internet SCSI (small computer storage interface) is a storage access protocol that can use a transport layer such as Gigabit Ethernet rather than be restricted to the short distances determined by computer hardware buses. K2 Media Servers use iSCSI for clients that need to deliver media assets with real-time performance. The tuning and optimizing done by Grass Valley permits the use of iSCSI to deliver unparalleled, high-throughput, and deterministic performance.

K2 Media Client

A Broadcast Enterprise Server that incorporates IT server platform and storage technologies.

Non Drop Frame Timecode

In non-drop time code, all frames are numbered sequentially, but the ending time code of a program does not accurately give the program's length. Drop-frame time code yields precise running times, but frames are not all numbered sequentially. A frame number must be dropped periodically to keep the clock right.

Protocol

A convention for data transmission that defines timing, control, format, and data transmission.

RS-422

A standard interface, 9-pin serial port connector used with some remote protocol applications; it supports multipoint connections.

SD

Standard Definition video.

SNMP

System and Network Management Protocol.

Status Bar

Displays status and error messages.

System Layer

The system layer is the transport stream with program data and associated metadata that describes the composition and organization of the transport stream. MPEG-2 system layer information includes synchronization bytes, PID numbers, scrambling information, and other indicators, including the start of the transport packet payload. Transport packets can be PES packet, a PSI table, or other private data. ATSC and DVB transport streams are MPEG-2 compatible because the required ATSC and DVB system layer data are MPEG-2 private data structures.

See the appropriate MPEG-2, DVB, or ATSC standards for more information.

Widescreen Mode

An aspect ratio of 16:9, as opposed to an aspect ratio of 4:3.

Glossary