



bitcontrol® Video Streaming Server (bcVSS)

Part I / Installation guide



Version 3.2
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Release levels

Date	Version	Description	Author
01.06.2007	1.0	Document created	Winter
01.09.2007	1.1	Document - Update	Winter
31.03.2008	2.0	New: Layout, structure, further features (e.g. HTML help, configuration), license management	Winter
17.10.2008	3.0 (BETA)	New: Update to Eclipse/Rich Ajax Application (version 1.1) platform	Winter
20.02.2009	3.1	Adaption to BcVSS 3.1	Hösel
04.11.2009	3.1.7	Documentation update	Winter
April 2010	3.2	New: Axis Camera, Geutebrück GeViScope, etc.	Winter



Glossary

AJAX	Asynchronous JavaScript and XML
API	Application Programming Interface
bcmsdb	bitcontrol® Streaming Protocol (http – Subset)
Codec	Program part for coding and/or decoding
DCT	Diskrete Cosinus Transformation
DVB	Digital Video Broadcast (C – Cable, S – Satellite, T – Terrestrial)
DVD	Digital Versatile Disk
DXVA	DirectX® Video Acceleration – a DirectX® API, to use the hardware acceleration of the graphic chip for specific tasks, e.g. for DCT calculation
EPG	Electronic Program Guide
fps	Frames per second
HDTV	High Definition Television
HTML	Hypertext Markup Language
HTPC	Home Theater PC
IDCT	Inverse Discrete Cosinus Transformation
IP	Internet Protocol
JDK	Java Development Kit
JSP	Java Server Pages
MMX™	Multi Media Extension
MPEG	Motion Picture Expert Group
Multicast	Data transmission from one sender to a receiver group
OSD	On Screen Display
PES	Encapsulated packetised elementary video streams, which are packed into the HTTP protocol
px	Pixel
SDK	Software Development Kit



SSE	Streaming SIMD Extension
STB	Set Top Box – Device for the reception of digital TV (DVB-C/S/T)
Unicast	Data transmission from one sender to one receiver
URL	Uniform Resource Locator (common: Internet Adresse)
WMV	Windows Media® Video
XML	Extensible Markup Language



Chapter 1. Introduction

With help of the bitcontrol® Video Streaming Server (bcVSS) it is possible, to play back any video of various input sources or to make them available to other applications.

Possible usage scenarios are:

- Integration of video display in interfaces of third party applications,
- Supply of video streams for use by different display devices (e.g. PC monitor, large scale screens),
- Network streaming,
- Storage of video data for later analysis,
- ...

Additionally, the handling of bitcontrol® products (e.g. bitcontrol® Digital TV Link and bitcontrol® World Wide TV) on a system becomes much easier. All important and necessary configurations can be done at one central location, the bitcontrol® Video Streaming Server.

The following possibilities can be used as a source of the video stream:

Sources like

- Streaming output (Multicast/Unicast) of another bitcontrol® Digital TV Link
- Encoder devices (e.g. Bosch VIP X1, Traficon VIP-T)
- Encoder cards (with Kfir-Chip and others)
- Capture devices (e.g. webcams)
- Cameras (e.g. Axis)
- Geutebrück GeViScope
- BDA devices (e.g. TV sticks or PCI TV cards)
- SetTop Boxes (e.g. Dreambox, DBox2, ReelBox)

The bitcontrol® Digital TV Link handles different input formats depending on the video source:

- PES
- TS
- RTP/H.263
- RTSP/RTP MPEG-4
- bcmsdb (Unicast / Multicast)



- *.mpg File (m1v, m2v, m2p, mpa, mpeg, mp2)
- *.vob File
- *.ts File
- *.avi File (MPEG-4 part 2)
- *.mp4 (in part DivX)

The following output formats are supported:

- NV12 for DXVA 2.0
- RGB24
- RGB32
- RGB555
- RGB565
- UYVY
- YUY2
- YV1
- YUY2
- YV1
- YVYU

The bitcontrol® Digital TV Link is able to transmit an incoming TV stream as unicast, multiple-unicast and multicast stream back into the network. In this mode the filter works like a video server.

Furthermore it is possible, to record the received MPEG videos as MPEG file directly on hard disk. The recorded file can be played back afterwards with Windows Media® Player or edited with a video editing program.

The camera recordings are storable in a ring buffer. Then they are available for a time period. This kind of archiving is a functionality of bitcontrol® Archiver (bcVideoArx). Video length and storage duration are configurable by this tool.

The user can read back the recorded video files via ftp out of the ring buffer.

On the client PC run also the bitcontrol® multimedia products bcDTVLink and bcMPEGDec (bitcontrol® MPEG Decoder). So it is possible to play back the video files via video player (e.g. Windows Media® Player) there.

The bitcontrol® Digital TV Link filter can be used in combination with

- bitcontrol® Quad Recorder,

- bitcontrol® World Wide TV,
- bitcontrol® Video Streaming Server,
- Windows Media® Player version 6, 9, 10 and higher
- or other multimedia players (if they are able to load DirectShow® filters).

The bitcontrol® Video Streaming Server can also be used in combination with other source devices, but in these cases the correct working is not guaranteed. Errors are possible.

Because of the perfect combination with the other bitcontrol® products (bitcontrol® Digital TV Link and bitcontrol® MPEG Decoder) the bitcontrol® Video Streaming Servers is characterized by high robustness in matters of errors (e.g. temporary signal intermission or bit errors) and good quality in matters of color brilliance as well as in matters of correct color reproduction. These properties are advantages for the use of the bitcontrol® Video Streaming Server at private PCs or in commercial / industrial products.

The bitcontrol® Video Streaming Server is a completely web based product. That's why a web browser (e.g. the Microsoft® Internet Explorer or Firefox) is needed to display the user interface. The bcVSS uses AJAX to display the user interface and for server communication. Therefore JavaScript and the play back of ActiveX components have to be allowed. (More information about hardware and software requirements can be found in the bcVSS documentation "Installation".)

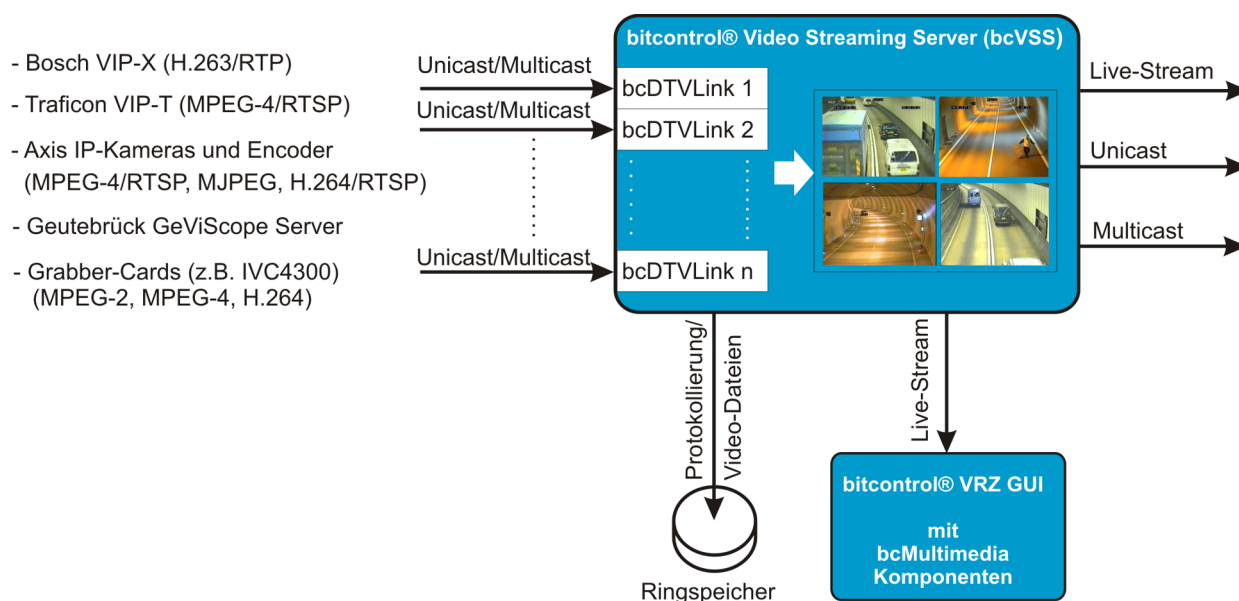


Figure 1.1. bitcontrol® Video Streaming Server overview



Chapter 2. bcVSS requirements

This chapter contains the hardware and software requirements for bcVSS.

2.1. Hardware requirements

The software was developed to be used on PCs running the MS Windows® operating system. It is executable on Intel® Pentium®, Pentium® II, Pentium® III, Pentium® 4 and AMD K6/3 plus other AMD processors. bitcontrol® multimedia products are also optimised for multi-core processors with multi-threading and use the capability of Core 2 Duo completely.

Up to bitcontrol® MPEG Decoder version 2.0 (status june 2006), DirectX® Video Acceleration (DXVA) is supported for various graphic chip sets: ATI, NVIDIA, Intel. The DXVA option discharges the CPU during video decoding. So a standard PC needs less CPU power for that process. (HDTV 1080i, for example, can be decoded with a Celeron CPU under 1 GHz.) In addition to DXVA 1.0 under Windows® XP, DXVA 2.0 for Windows Vista 32/64 is available up to bitcontrol® MPEG Decoder version 3.0, too.

Note

If the MPEG data source operates at high bit rates and the processor is set to slow clock frequencies, the software may not be able to receive the MPEG data in real-time completely. In this case the video no longer runs smoothly and may contain artifacts. Individual frames will be discarded.

2.1.1. CPU and ethernet

Special care has to be taken when configuring the network. DVB streams are typically transmitted at 2,5 Mbit/s (DVB-T), 3,5 Mbit/s (DVB-C/S), 9 Mbit/s (DVB-S) and up to 19 Mbit/s for HDTV. In a 10BaseT network, these bandwidths are hardly available and not at all in case of HDTV. We therefore recommend a 100 Mbit/s network.

If the "Multicast Retransmitter" option of the bitcontrol® Digital TV Link is used, it is important to make sure, that the active network components (switches) support multicast mode on every port. Otherwise, the network traffic caused by the broadcast transmissions would put unnecessary load on the network. It is also safer to configure the ethernet ports for half-duplex mode. Full-duplex operation and auto-mode should be reserved for network specialists.

2.1.2. Hardware requirements of the device producers

Other hardware requirements depend on the used devices (e.g. encoder cards). For this, please take notice of the hardware requirement information of the respective device producer. You can find some on the product package, in the product documentation or on the homepage of the device producer.

2.2. Software requirements

In this documentation part, the necessary software components and their sources of supply are described.



2.2.1. Microsoft® components

DirectX®

For bitcontrol® Digital TV Link, an installed Microsoft® DirectX® is required. Please install the respective latest version of the DirectX® package from the Microsoft® homepage <http://www.microsoft.com/downloads>.

Use the programm „dxdiag.exe“ (Windows® XP) to figure out the current installed DirectX® version.

Windows Media® Encoder

To transcode recorded videos into the Microsoft Windows Media® format, the Windows Media® Encoder is required. If it isn't available on your system, you should download the installation file from the download area of Microsoft (<http://www.microsoft.com>), execute it and install the software.

2.2.2. Free components

To use the bitcontrol® Video Streaming Server, the following free available software components are required, too:

- Java Runtime Environment (JRE) up to version 1.6.x

The sources of supply and the installation of the software are described in the respective documentation parts (Section 3.1, “Third-Party components - Java” [9]).

2.2.3. Software components of the used devices

Other software requirements (e.g. drivers) depend on the used devices (e.g. encoder card). For this, please take notice of the software requirement information of the respective device producer. You can find some on the product package, in the product documentation or on the homepage of the device producer.

Please assure that the used devices work correct. Therefor please follow the instructions of the device producer.

2.2.4. User-specific software

If the video files should be edited anyhow after recording (e.g. burn on CD/DVD or video editing), a respective third-party software will be necessary.

2.2.5. bitcontrol® components

The bitcontrol® Video Streaming Server needs additionally these applications:

- bitcontrol® Digital TV Link



- (optional) bitcontrol® Video Decoder (former bitcontrol® MPEG Decoder)

If video streams should be stored, you will need furthermore bitcontrol® Archiver. The mentioned components can be downloaded from the following website:

http://www.bitcontrol.com/download/download_de.shtml.

Alternatively you can use the installation files of this CD.

The installation processes of the bitcontrol® software components are described the respective documentations.

Note

You will need as much bitcontrol® Video Decoder licenses as video files should be shown.

The number of bitcontrol® Digital TV Link licenses depend on the number of connected DTVLink instances, which should be handled. Every instance needs its own software license.

Furthermore you will need special licenses for various bcDTVLink plug-in (e.g. Bosch Vip X, Traficon Vip T, Geutebrück GeViScope, ...).

More information about licensing bitcontrol® software, you can find in Chapter 4, *Licensing* [14].

2.2.6. Browser details

At the moment, the latest versions of Microsoft® Internet Explorer (up to version 7.0) and Mozilla Firefox are supported to display the user interface in browser. If other browsers are used, adverse effects in terms of functionality are possible. Therefore the use of the mentioned browsers is recommended.

Chapter 3. Software component installation

3.1. Third-Party components - Java

For application display and server communication, Java especially a Java Runtime Kit (JRK) up to version 1.6.x is required on your system. But you can also use the Java Development Kit (JDK) up to version 1.6.x.

Download the off-line Windows installation of JRE (Java™ Platform, Standard Edition 6u10 RC 2 Releases / Windows Platform / Offline Installation) from the following website :

<http://java.sun.com/javase/downloads/ea/6u10/6u10rcDownload.jsp#6u10JREs>

Note

The JRE is freeware. It means, the download and the use of the software is free of charge.

After download execute the Java installer and follow the installation steps (standard installation).

3.2. bitcontrol® components

After you have installed the Third-Party components and if necessary the device drivers, you can go on with the installation of the bitcontrol® software components.

3.2.1. Installation and uninstall process of bitcontrol® Video Streaming Server

Installation

If it is the first bcVSS installation on the system, the window shown in Figure 3.2, "Start window of bcVSS installation" [10] appears after the double-click on the bitcontrol® Video Streaming Server installation file.

Otherwise a note (see Figure 3.1, "Hinweis auf bereits installierte bcVSS-Version [9] about an existing bcVSS opens.

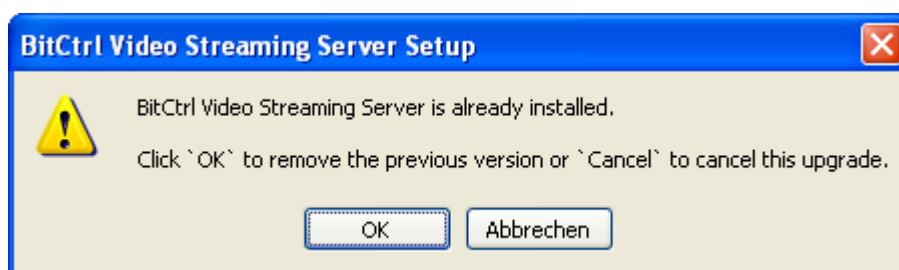


Figure 3.1. Hinweis auf bereits installierte bcVSS-Version

If the old version of bcVSS should be deleted from the system, the button "Yes" should be used. The uninstall routine (see Section 3.2.1, "Uninstall process"[12]) starts then. If the button "Abort" is used, the install routine doesn't start.

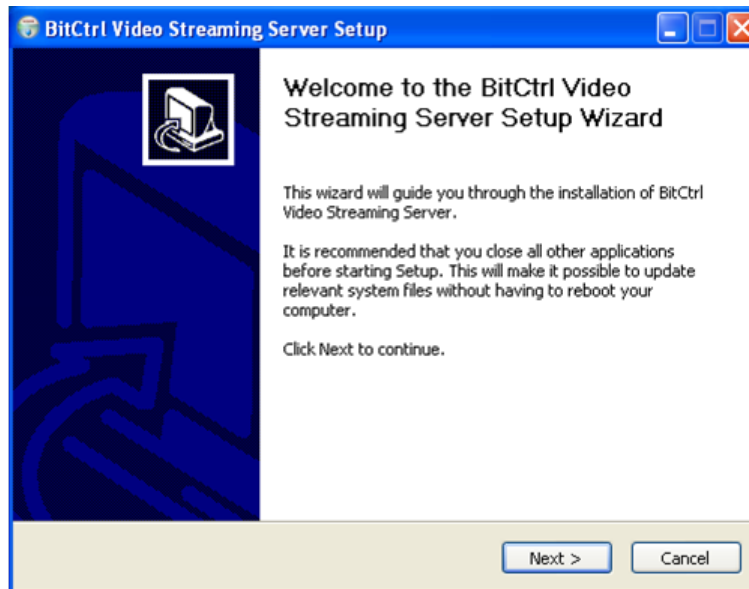


Figure 3.2. Start window of bcVSS installation

Push the button "Next" and you will reach the license agreements (Figure 3.3, "License agreements" [10]).

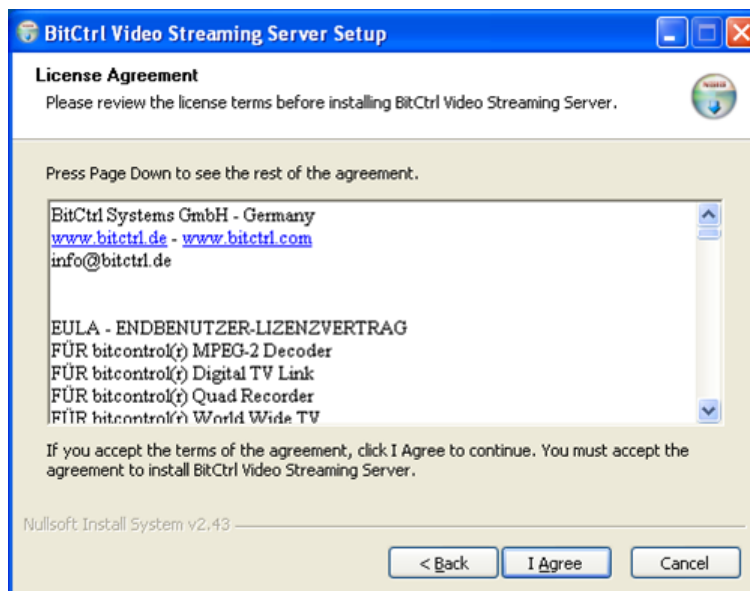


Figure 3.3. License agreements

Read the license agreements very carefully. If you have any questions, please contact info@bitctrl.de.



If you agree with the license agreements, mark the option field „I Agree“, click the button „Next“ and the next installation window opens.

If you don't agree with the license agreements, mark the option field „I don't agree“ and click the button „Next“. The installation will abort immediately.

The destination folder will be selected in the next window (Figure 3.4, “bcVSS destination folder” [11]).

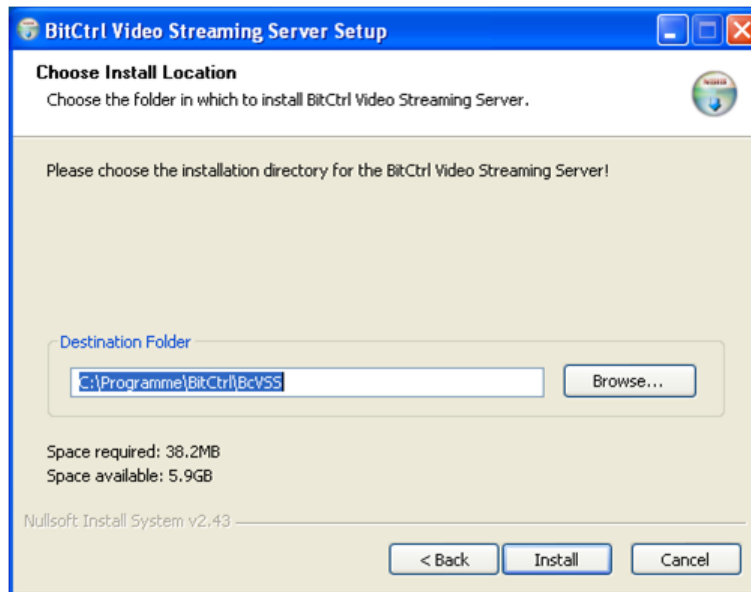


Figure 3.4. bcVSS destination folder

The next step initiates the installation.

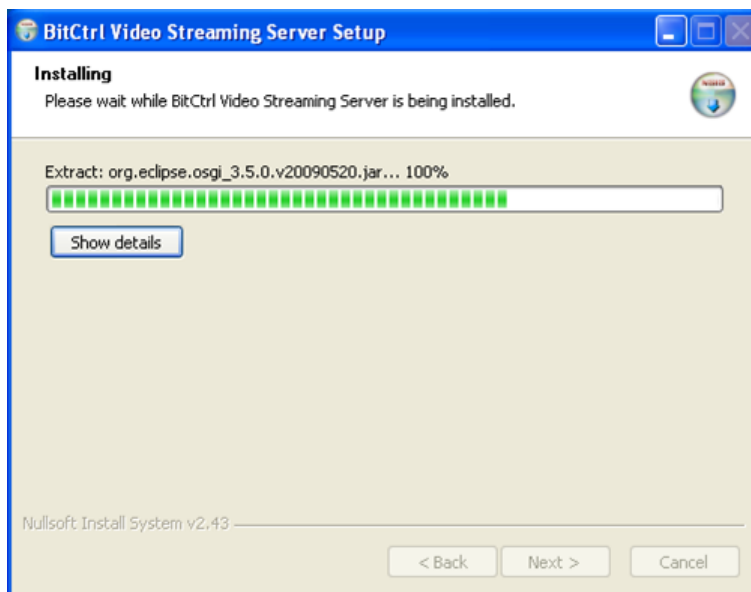



Figure 3.5. Installation progress



After the successful bcVSS installation two icons are visible on desktop: Via the icon  bcVSS



will be started. Via a click on the  a console opens, in which all running processes are visible. The console is for controlling purposes.

Uninstall process

The bitcontrol® Video Streaming Server has its own uninstaller. It can be opened via Windows® start menu **bitcontrol / bcVSS / Uninstall** . Then it starts the uninstall routine (see Figure 3.6, “Uninstall routine” [12]).

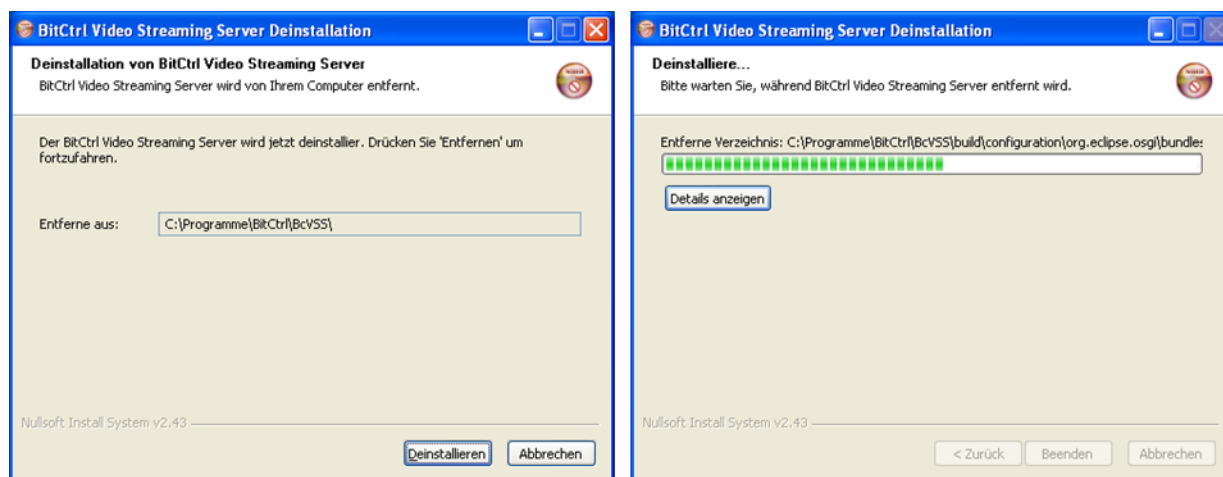


Figure 3.6. Uninstall routine

The bcVSS can also be uninstalled via the regular way using Control Panel / Add or remove software.

3.2.2. Further bitcontrol® components

1. for optimal video playback: bitcontrol® Video Decoder (former bitcontrol® MPEG Decoder / bcVideoDec version 3.0)
2. for archiving video files: bitcontrol® Archiver / bcVideoArx

Download the respective installation file from the download area of <http://www.bitcontrol.com> or use the delivered software versions.

Note

The provided software versions of bitcontrol® MPEG Decoder and bitcontrol® Digital TV Link on <http://www.bitcontrol.com> are Demo versions with limited duration of validity. The full versions of the programs require the respective licenses, which can be bought in the BitCtrl Online-Shop.



Execute the installation file of the respective bitcontrol® multimedia components and follow the steps in the installation wizard. You will find more information about the different bitcontrol® multimedia components in the respective installations manuals.

Note

During bitcontrol® Digital TV Link installation it is enough to install just the plug-ins which are necessary for the desired bcVSS functionalities.

Chapter 4. Licensing

After installation the bitcontrol® Video Streaming Server runs in a demo mode. In this mode, the operating time respectively the functions are limited.

The user can purchase full version licenses for all bitcontrol® components from BitCtrl Systems GmbH. This licenses are not time and function limited.

Then the license file has to be unzipped. With help of the bitcontrol® License Manager the license can be integrated in the following way:

Start the bitcontrol® License Manager. A window opens where you can see all licenses of bitcontrol® products which are already installed (example see Figure 4.1, "Start window of License Manager" [14]).

Note

In addition to the bitcontrol® Video Streaming Server license at least one bitcontrol® Digital TV Link license (plus optional one bitcontrol® Video Decoder license) are necessary. The number of bitcontrol® Digital TV Link licences depend on the number of video streams, which should be handled. One license per video stream is required.

The sequence of license file installation is not important, but it is significant that all licenses are installed.

All bitcontrol® component licenses can be installed in the described way.

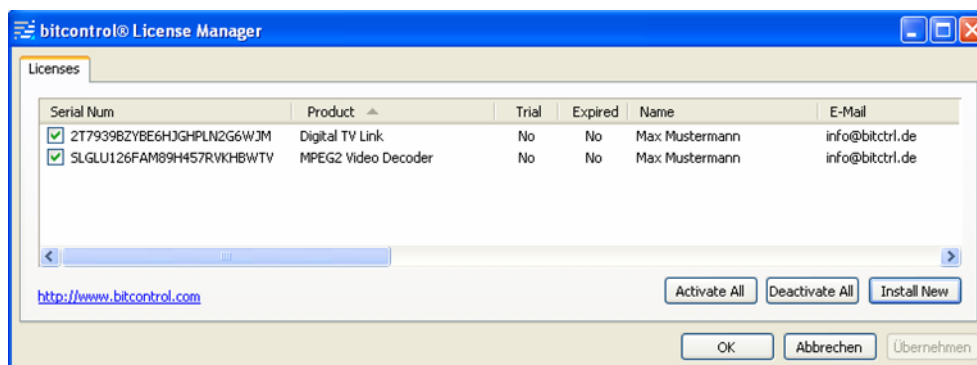


Figure 4.1. Start window of License Manager

The license of bitcontrol® Video Streaming Server will be added by using the button „Install New“. Therefore you have to select the path to the license file named „*.lic“ and to open it. (Figure 4.2, "Open license file" [15]).

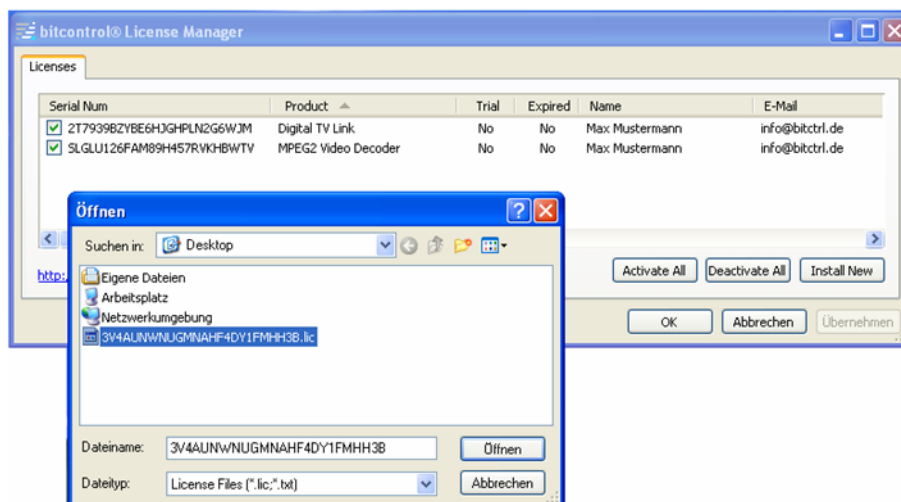


Figure 4.2. Open license file

Now the license of bitcontrol® component (in this example of bitcontrol® Video Streaming Server) appears in the administration window. The installation was successful. (Figure 4.3, "License installation successful" [15]).

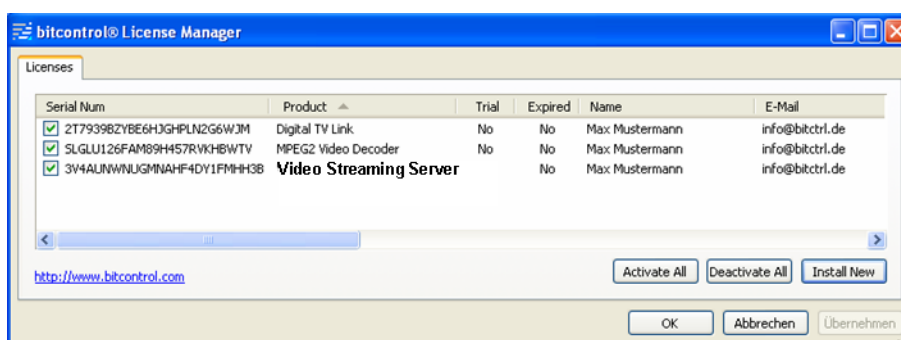


Figure 4.3. License installation successful

Alternatively the license file can be added by using drag and drop.

By selecting a checkbox in front of a license file, a license can be activated or deactivated.

Note

If a 64bit version of Windows Vista respectively Windows 7 is used, the described procedure should be done additionally with the bitcontrol® license manager for 64bit.

Note

For the plug-ins "Traficon Vip-T", "Bosch Vip X", "Axis Devices", "Geutebrück GeViScope" and "RTSP Server" you will need further licenses.



4.1. Licensing under Windows Vista and Windows 7

Note

The following licensing method should be preferred under Windows Vista and Windows 7.

Open the directory **C:\Programm Files\Common Files\BitCtrl\Licenses** in the Windows file system. It contains all installed bitcontrol® licenses. Copy the bitcontrol® license in this directory.

If a 64bit version of Windows Vista respectively Windows 7 is used, it will be necessary to copy the bitcontrol® license additionally in the directory **C:\Programm Files(x86)\Common Files\BitCtrl\Licenses**.

Note

To do any action (like delete or copy) in the mentioned directory "Common Files Directory" of Windows Vista bzw. Windows 7 you must have administrator rights!