Centauri II Multichannel Audio Gateway Codec – a new generation conquers the Control-room.

MAYAH COMMUNICATIONS

New!

- 6ms Latency
- 5.1 / 7.1 Multichannel
- Front-panel Hot Keys
- Gateway Function
- Backup Function
- Twin/Quad Codec
- ASI

Most Audio-Codecs are specialists. The CENTAURI II simply enables you to do everything.

An unbeatable range of features makes the CENTAURI II simpler, safer and more cost-effective to use than any other codec.

The CENTAURI II is your universal Audio Codec for every imaginable project.

There are no networks that can stop a CENTAURI II, whether ISDN or Ethernet, X.21 or E1. There are no protocols that the CENTAURI II cannot understand. This codec can be simply and easily integrated into every imaginable IT infrastructure. And its more than 15 coding algorithms cover the entire range currently in general use. Including MPEG, AES Transparent and APT – simultaneously!
By other manufacturers this would still be a legitimate question but by MAYAH this has long been possible.

Combinations of its many and versatile features permit a wide range of applications; from Gateway, Backup Codec or Streaming-Server to Multichannel Codec.

Considering the extensive system support it is clear that the CENTAURI II is an audio codec for all situations. Whether for Broadcasting, for DVB-H or UMTS transmissions, to name but a few.

In light of so much technical sophistication, it's hardly surprising to learn that the CENTAURI II is also the first audio codec to offer professional 5.1/7.1 multichannel transmissions.

	Typical, Simple Audio Codec	Typical, Standard Audio Codec	Typical, Advanced Audio Codec	CENTAURI II
Algorithms	G.722, MPEG Layer 2	G.722, MPEG Layer 2, MPEG Layer 3, G.711	G.722, MPEG Layer 2, MPEG Layer 3, G.711, AAC, AAC LD, apt-X	G.722, MPEG Layer 2, MPEG Layer 3, G.711, AAC, AAC LD, aacPlus, apt-X/Eapt-X, HE AACv2, aacPlus parametric stereo, mp3Pro, J.41, J.57, AES transparent, Micda, ADPCM4SB, aacPlus, AAC 5.1, AAC HE 5.1/7.1, Eapt-X 7.1/5.1
Networks	1xISDN	1xISDN, X.21	2/3xISDN, X.21, E1	4x ISDN, 2x X.21/V.35, IP@2mbps, 2x Ethernet
Protocols	DSS1	DSS1, NI1	DSS1, NI1, YATE, G.703/G.704	RTP, RTCP, RTSP, NTP, FTP, TCP, UDP, SAP, SDP, DSS1, NI1, YATE, various RFCs
Detection	none	only itself	only itself and J.52	itself, J.52 and most others using FlashCast (J.52+)
Functions	none	none	Dual Codec	Gateway, Backup, Twin Codec, Dual Codec, Quad Codec, Point-to-Multipoint, StreamingServer, Multiple Stereo, Multichannel
Size	1 RU for mono encoder	1 RU for stereo encoder	2 RU for stereo codec	2 RU for 4x stereo codec
System Support	Reporting	Reporting, PRO Broadcast	PRO Broadcast, Reporting, Satellite	IpTV, DVB-H, DVB, STL, DMB, SNG, PRO Broadcast, UMTS, 3G, 3.5G, 4G, Reporting, Satellite

Why put up with anything less?
The unmatched range of features offered by the CENTAURI II satisfies the wishes of the most demanding users and leaves the competition a long way behind.

How does the Centauri II compare to other Codecs? It's beyond comparison.

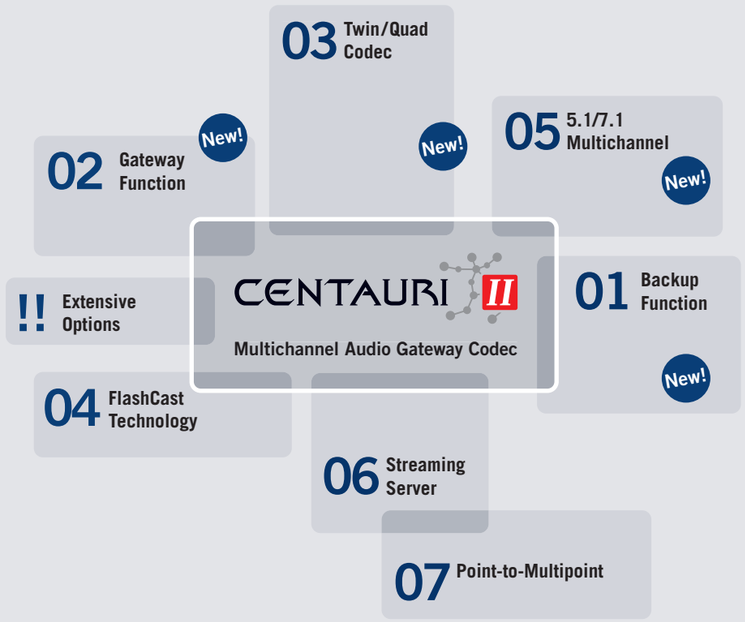
A unique range of features, simple operation and excellent security – just three of the things that make the new CENTAURI II so incomparable.

CENTAURI II – the next Generation.

Five years ago we introduced the worlds first IP Audio Codec – the CENTAURI I. It was a revolution, but that wasn't all. Its remarkable speed, coupled with previously unimaginable compatibility from its unique FlashCast technology quickly made him "everybody's darling".

The Broadcasting world has changed since then, with new technologies like DVB-H or UMTS presenting broadcasters with previously unimaginable possibilities and codec developers with whole new markets and challenges. Thanks to nearly a decade of experience with IP audio transmission and constant development, MAYAH remains the company the industry follows.

Now we would like to introduce a new generation of audio codecs so advanced that we could only call it: CENTAURI II.



Audio latency via IP: Just 6ms is the answer.

MPEG is known to offer high efficiency encoding while also introducing a noticable delay. This delay is highly dependant upon the MPEG implementation used. MAYAH was the first company to offer a single-CPU implementation optimized for low latency – e.g. MPEG Layer 2 at only 48 ms – thereby setting new standards in this area.

However the optimum in low latency is now achieved with linear and apt-X/Eapt-X encoding at 96kHz. In loop as well as via RTP/IP protocol, the MAYAH CENTAURI II achieves a latency of only 6ms in one direction, i.e. adding the encoding and decoding processes.

01 Backup:
- Main transmission via X.21 or IP and back-up via ISDN, or
- Main transmission via IP and monitoring another IP stream in case of main stream failure.

02 Gateway:
- Receive via ISDN and Stream to a Server, or
- Receive an IP stream with e.g. Layer 2 at 384 kbps stereo then re-encode or re-stream it with MPEG 4 HE AACv2, or
- Catch an IP HE AAC stream and send it via ISDN in L3 to another destination.

03 Twin/Quad Codec Technology
- Simultaneous transmission between Codec A and B as well as Codec A and C, with e.g. 128 kbps Layer 2 mono, or
- Simultanous Encoding/Decoding of 4 (Quad) stereo signals with MPEG 1/2 Layer 2/3 128kbps stereo/joint stereo.

04 FlashCast Technology:
- Detect a remote codec algorithm by sending test patterns and/or analyzing the bit stream. Flashcast recognises more than 90% of all encoded audio signals and can synchronize the connection with no operator needing to be involved.

05 Multichannel support:
- Transmission of 4x stereo with various algorithms via IP, e.g. Eapt-X, or
- Transmission of 5.1 multichannel or 7.1 multichannel via IP or ISDN with various algorithms, e.g. HE AAC.

06 Streaming Server
- Streaming of up to 4 stereo signals with different encoding formats, e.g. 128 kbps Layer 3, 64 kbps MPEG 4 HE AAC, 384 kbps MPEG Layer 2 and 1.5 mbps linear audio.
- Streaming in unicast (> 1000 streams) and multicast.

07 Point-to-Multipoint:
- Distribution of Audio via ISDN to a maximum of 8 destinations with e.g. MPEG 4 HE AACv2 stereo, 64 kbps, or
- Distribution of Audio via ISDN to e.g. 4 destinations with MPEG 1 Layer 3 stereo, 128 kbps

In addition to the CENTAURI's extensive feature set there are other notable qualities which set him apart from other codecs. Flexible hardware extensions & upgrades and innummerable software plug-ins give the user complete freedom of choice to configure the CENTAURI II exactly according to his needs. In day-to-day use the CENTAURI II is an extremely user-friendly and robust device.

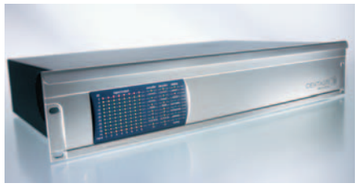
Exemplary ease of use

Design follows Function – the motto of the MAYAH developers. Consequently, the front panel shows only the most important and necessary Information: the Alarm, Over-load, Connect, Framed and Power lights. The front panel also shows the levels for all inputs and outputs. The user can see at a glance from the 8 channel, level LEDs if a signal is present or not.

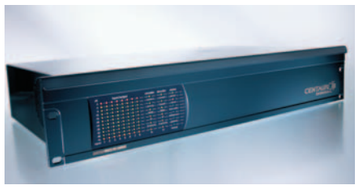
For increased feedback, the Navigation and control buttons have a precise pressure point that, together with the high resolution, 128 x 64 pixel, LCD-Display, give easy and positive confirmation of all operations.

Forward Error Correction FEC

MAYAH's FEC implementation follows RFC2733 by implementing a method that enables the recreation of lost RTP packets for MPEG-2 transport streams. In particular burst loss, which is often experienced in switched IP-networks can be recovered. By using FEC on IP streams, errors are greatly diminished by adding extra information to the transmitted data. Increasing the net rate by 5–30%.


CENTAURI® II 3000


CENTAURI® II 3001


CENTAURI® II 3300


CENTAURI® II 3301


CENTAURI® II 4001

Extremely stable Operating System

With regard to operational reliability, the CENTAURI II is at the forefront of todays IT equipment. The reason is its extremely reliable and robust Real-Time Operating System, which is also used worldwide by civil aviation authorities, by various Airforces and in Spaceflight applications. To date, no major failures are known.

Fewer devices – increased economy. It's simple really, to decide in favour of a CENTAURI II.

MAYAH COMMUNICATIONS

Instead of whole walls of switching cabinets, just one device. Instead of rising costs, an extremely economical allocation of audio signals.

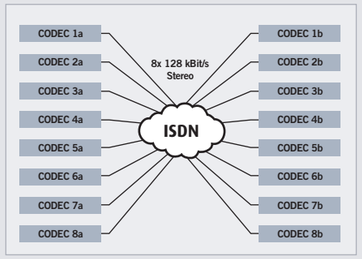
Buy 1, get "n" free!

The collapse of worldwide advertising revenues has hit Broadcasters particularly hard. With the consequence that cost pressure has intensified everywhere. MAYAHs declared aim therefore was to permanently reduce operating costs and improve capital expenditure.
With success; the multi-functional CENTAURI II replaces several conventional devices:

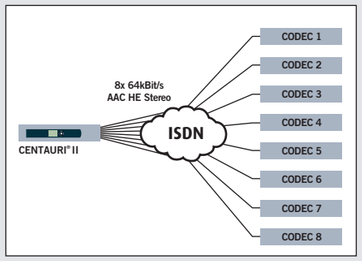
- Thank the large number of coding algorithms available, one codec meets all your needs.
- The Twin/Quad Codec Technology removes the need for a second codec in most applications and Quad replaces four conventional codecs.
- The multichannel features saves the acquisition of specialist equipment for 5.1 or 7.1 transmissions.
- The Backup feature replaces a complete and independent backup solution.
- The Gateway feature replaces additional devices for the input feeds in a LAN/WAN or for Transcoding.
- No additional devices for control data and contact closuresare necessary.

The cost advantage of Point-to-Multipoint

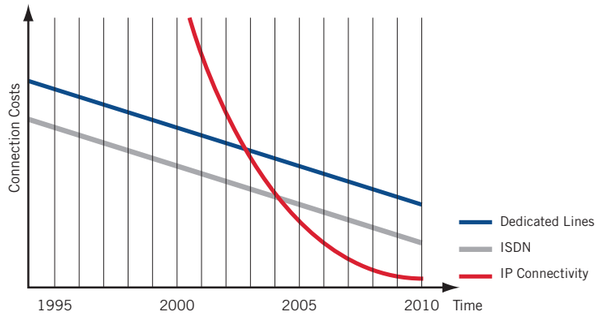
The expenditure for a CENTAURI is quickly recouped. Where previously a variety of different devices were necessary, today you just need a CENTAURI. Using MPEG 4 HE AACv2 stereo, with 64 kBit/s or lower, a CENTAURI II can send a stereo signal via ISDN to 8 different destinations. e.g. to send a programme to several transmitters or a sports report from the stadium to several Radio Stations simultaneously.



Conventional Solution



Optimum Solution with CENTAURI II



Cost advantages by using newer networks

Live transmissions in high quality stereo were previously everything but cheap. That has now changed completely; the new CENTAURI II now supports live transmissions via DSL, S-DSL and 3G/UMTS. In this way large cost reductions can be made:

First the ISDN connection at the Outside Broadcast location is no longer needed and the transmission itself can use the comparatively cost-effective UMTS or DSL flatrates. Further reductions can be attained using low bandwidth MPEG 4 HE AACv2 stereo with 64kbps and lower.

Cost advantages by streaming in various different formats simultaneously

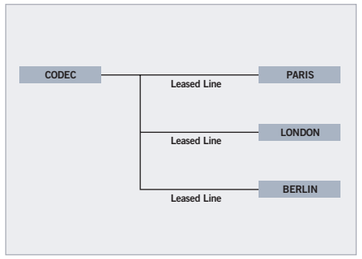
Contribution, distribution to transmitters, STLs or pre-listening – various broadcasting applications require differing formats. This is where CENTAURIs greatest strengths lie:

It can stream various formats at different bandwidths, simultaneously – e.g. linear audio, MPEG 4 HE AAC, 48 kbps, Layer 3 with 128 kbps and Layer 2 with 384 kbps.

Decreased redundancy thank FlashCast Technology

Many radio programmes doesn't automatically mean many codecs. In Quad mode the CENTAURI can transmit various stereo signals, simultaneously, as a stream and by a break in transmission switch over to a backup. And all that in just 2HU.

The days of switching cabinets full of codecs are numbered.



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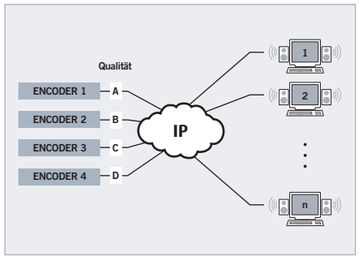

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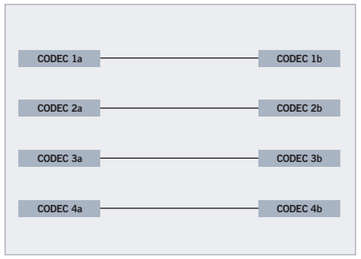

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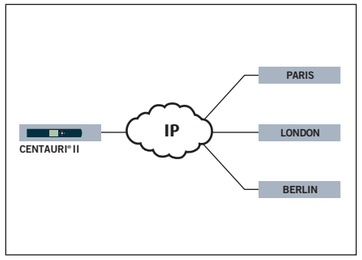
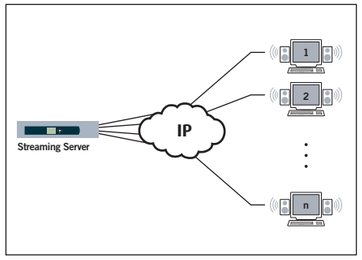
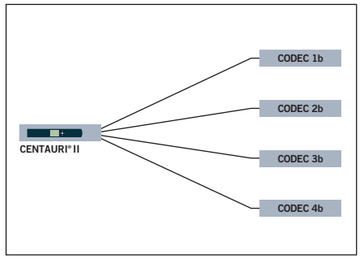


Optimum Solution with CENTAURI II

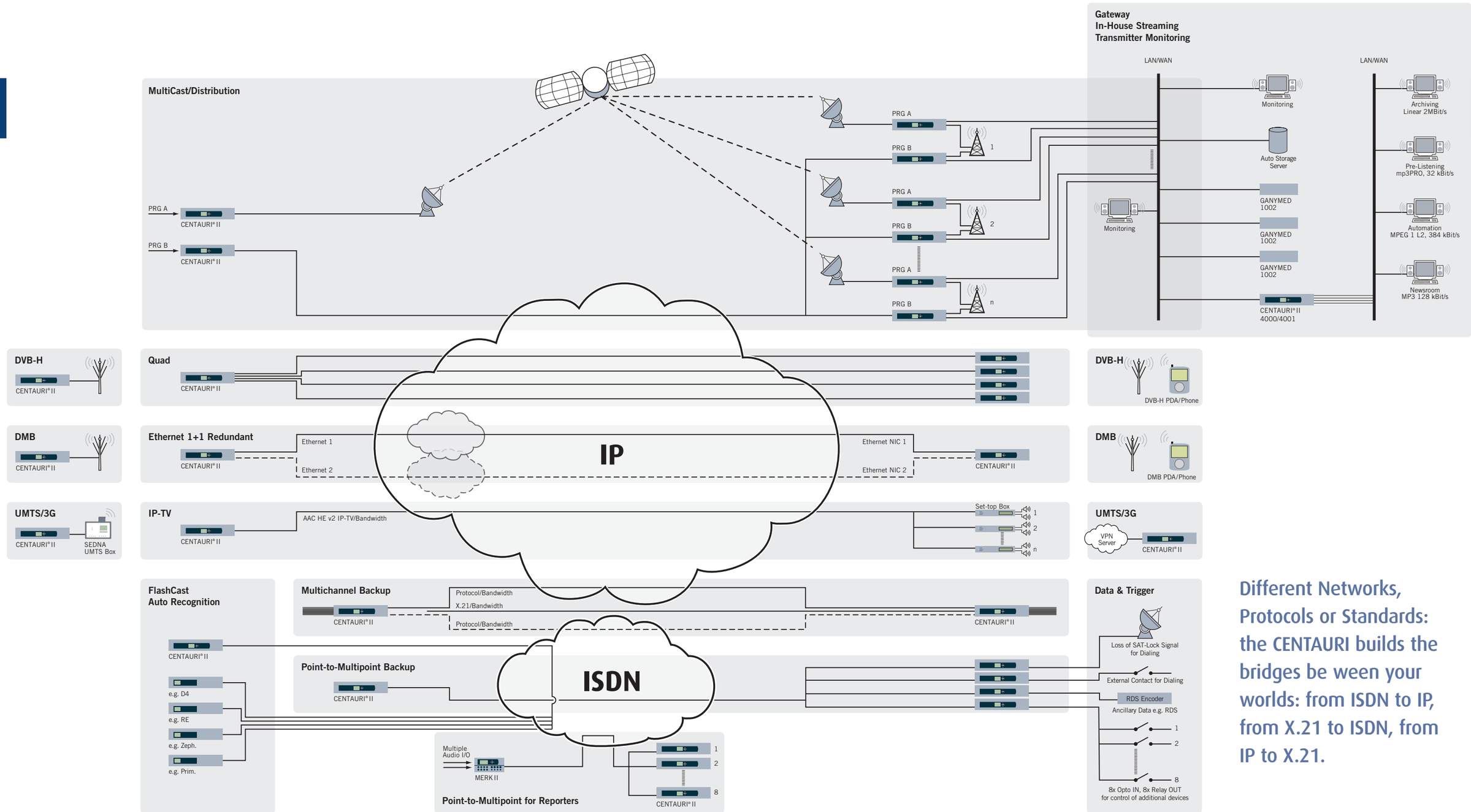


Optimum Solution with CENTAURI II



Optimum Solution with CENTAURI II

Radio, TV, Cellphone, Internet – the boundaries are disappearing. And the CENTAURI II is at the center.



Different Networks, Protocols or Standards: the CENTAURI builds the bridges be ween your worlds: from ISDN to IP, from X.21 to ISDN, from IP to X.21.

Multi-Codec plus FlashCast Technology: Simply and safely connecting worlds.

Just imagine, you could send your audio data in an instant from ISDN to IP or from X.21 to ISDN. You could communicate and send data to any given codec. And you could be content that a line break would hardly be noticed ...

Four stereo codecs under one roof

The CENTAURI II is the first audio codec with true Multi-Codec Technology. Behind the front panel four stereo encoders/-decoders work in parallel, independently from one another; depending upon the application, either in Twin or Quad mode.

In Twin mode the CENTAURI II operates just like two separate bi-directional codecs. The advantage is immediately obvious: you save the purchase of a second codec.

In addition there are other, equally fascinating Twin mode applications.

01 Twin Mode Application: Backup

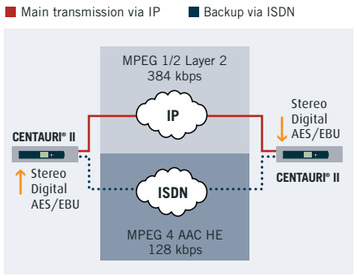
In the case of a broken line connection, the CENTAURI II automatically switches to a predetermined replacement network. e.g. from IP to ISDN. The first codec however continues to monitored the IP connection.

As soon as the line failure is repaired, the main connection is automatically reinstated.

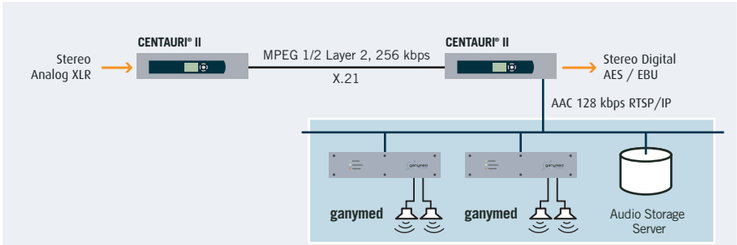
02 Twin Mode Application: Gateway

As a Gateway Codec the CENTAURI II serves two networks simultaneously. While one Codec is bi-directionally connected via ISDN for a high quality signal, the other streams the incoming stereo signal over a LAN/WAN to Workstations, Set-top boxes or ganymed 1002 Decoders. Alternatively, the stream can also be saved for archiving purposes.

Both Backup and Gateway functions support all available network interfaces: X.21, Ethernet and ISDN.



01_Backup Application



02_Gateway Application

Field proven: FlashCast

A very popular feature, used to great effect in the CENTAURI I: the MAYAH developed FlashCast Technology.

Calling or dialled codecs are automatically recognised by analysis of the coding format and defined. It is unimportant whether the other codec is a CDQPRIMA, RoadRunner, Zephyr, OptiCodec or MusicTaxi. As long as the CENTAURI II recognises the proprietary algorithm and inverse multiplexing of the other audio codec, it can automatically receive a mono or stereo signal, even with multiple B channels.

Impressive is also the extremely short synchronisation time. A CENTAURI II can often synchronise quicker than two identical codecs can with each other.

Where previously several codecs were needed, today one CENTAURI II can do the same job. Thank FlashCast, MAYAHs CENTAURI is already replacing multiple codecs in the worlds switching rooms.

Centauri II is compatible with:

- Dialog4 VP, VP-Pro, Slimline with G.711, G.722, L2, L3 at up to 64 and/or 128 kBit/s
- Telos Zephyr with G.711, G.722, L2, L3 at up to 64 and/or 128 kBit
- CCS CDQPRIMA, RoadRunner, CDQ1000 with G.722, L2, L3 at up to 384 kBit/s
- AEQ and Glennsound with G.711, G.722, L2 at up to 64 and/or 128 kBit/s
- AVT (formerly PKI) 7kHz Telefon and MAGIC
- RE 660/661 Audio and Anc. Data
- **and many more**

The compatibility is restricted to algorithms, bit-rates, sampling rates, inverse multiplexing algorithms and audio codecs already recognised by the Centauri II.
Specific software and/or firmware versions can adversely affect compatibility.

Maximum listening pleasure at minimal cost: thanks to the new Multichannel coding.

The times are gone, when Multichannel transmissions were an expensive taste for a small, select group. For a surround sound transmission with the CENTAURI II 3301/3300 you need neither expensive leased lines nor satellite capacity.

The only pprofessional codec for 5.1 Broadcast applications

The CENTAURI II 3300/3301 is the first audio codec that supports multichannel streaming in various coding formats. The transmission of linear 5.1 surround sound and a stereo mix or an additional commentary channel requires more than 6 Mbit/s. This costs a huge amount of bandwidth, that is to say, money. You can however now save both.

Because the CENTAURI II 3301/3300 transmits 5.1 surround sound using:

- Enhanced apt-X at 1.2 – 1.6 MBit/s
- MPEG 4 HE AAC at 320 kBit/s
- MPEG 4 HE AAC at 128 kBit/s

And of course linear audio as well, at high Bitrates.

Advantage: you use the available infrastructure

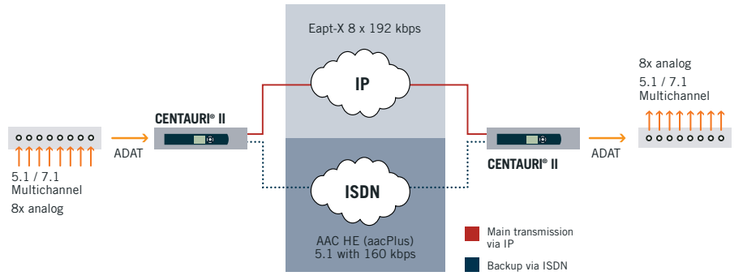
For the transmission use your existing infrastructure. e.g. your company network or S-DSL connection with QoS (Quality of Service) / VPNs.

A further advantage: Because the CENTAURI II 3301/3300 is a modern, Multichannel, IP Audio Codec, the transfer rate adapts to the available network capacity. This is made possible by automatically changing the algorithms and bitrate. CENTAURI II is the first 5.1 Audio Codec with an adaptive Coding system.

Suitable for 5.1 / 7.1 transmissions:

- MPEG 4 HE AACv2
- MPEG 4 AAC
- APT-X algorithms
- linear audio

The CENTAURI II uses an ADAT audio interface with a maximum of 8 audio channels and an additional 19“, 1HU Breakout Box, with 8 analog XLR inputs and outputs as well as 4x XLR, AES/EBU stereo inputs and outputs.



Mehrkanal-Übertragung

An important application for multichannel transmissions is the exchange of high quality Content (Contribution). The preferred formats are apt-X and Enhanced apt-X over IP or E1 networks with 1 – 6 mbps. For lower quality requirements, e.g. prelistening, the lower bandwidths of ISDN are sufficient with e.g. MPEG 4 HE AAC coding.

Limitless streaming. In every available quality. For any number of receivers.

CENTAURI II supports all the various Streaming Standards and Protocols and can supply audio streams in any desired quality to almost every type of hardware and software.

Streaming in all variations

The CENTAURI II 3001/3000 supports the distribution of audio signals via ISDN and streaming. What's the difference? By distribution over ISDN using the 4 available BRIs and the high quality coding of MPEG 4 HE AAC you can reach a maximum of 8 targets in top quality. With Multicast Streaming (Point-to-Multipoint) you can reach an unlimited number of receivers.

Whether Set-top boxes, PDAs, ganymed 1002s or standard Software Players like Windows Media Player, Winamp und Real Player.

The CENTAURI II 4001/4000 comes with built-in StreamingServer functions, with which you can distribute many thousands of Unicast Streams.

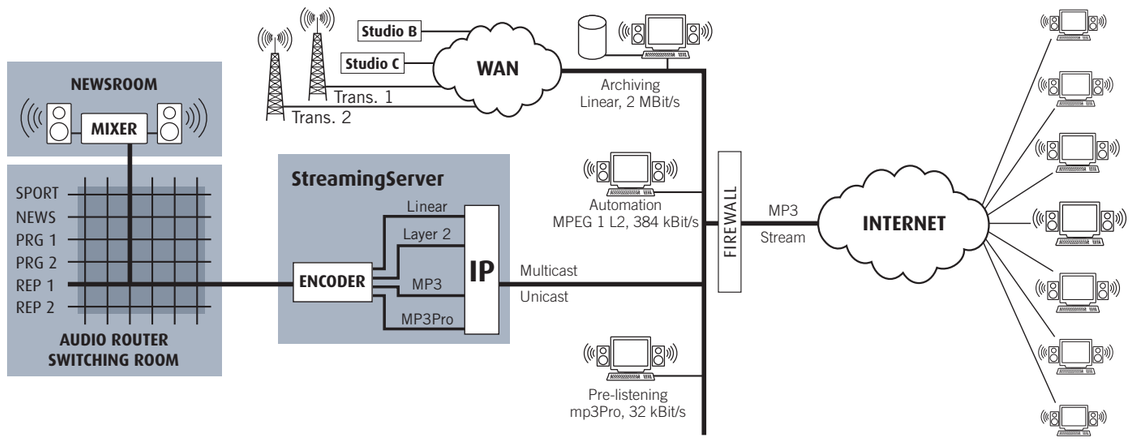
Typical areas of application

- Parallel Streaming of a stereo signal in four different qualities
- Parallel Streaming of four different stereo signals, each with a different coding format
- 4x stereo send and receive
- Multicast Streaming: Streaming to any number of receivers

Finally, real Inhouse streaming

Inhouse Streaming today is generally implemented with a detour through an audio router. That means, the contributions are individually routed through a audio crossbar within the broadcasting house. The disadvantage: you don't have access to every audio source from every workstation.

With Inhouse Streaming from CENTAURI II every employee can listen in on every contribution. To achieve this, the classic distribution of incoming programmes through the crossbar is extended by connecting the output with the input of the CENTAURI II. The routed programme is now available everywhere on the LAN or WAN. Alternatively the audio crossbar can be sidestepped and the signals routed into the network with various bandwidths.



24 hours a day, demanding audio transmissions. Whichever format. Whichever Network.

The CENTAURI II supports all common coding formats and protocols and guarantees comprehensive accessibility and security in 24 hour service.

Unique diversity of coding algorithms

Most Audio Codecs cover only very specific applications. While one is used and optimised for traditional transmissions via J.41, apt-X and J.57, another is optimised for MPEG Layer 2, 3 and G.722. Further codecs are then used for Low Delay formats. The switching room is already starting to look rather full.

Thanks to CENTAURI II, in the future you can do all this with just one machine. From G.711 to Layer 2, from G.722 and Layer 3 up to AAC, MPEG 4 HE AAC, apt-X/Eapt-X and AES Transparent. And, with bitrates from 8 kBit/s up to 12 Mbit/s, with the new CENTAURI II everything is possible. Even bi-directional 5.1 connections plus a Stereo Downmix and a commentary channel are simplicity itself.

This wide variety of Broadcast formats are also used by other manufacturers, e.g. APT. The Codec models WorldNet Chicago and WorldNet Tokyo use the CENTAURI Technology under licence.

Technically always a step ahead

For very low bitrates, MPEG 4 HE AAC has quickly established itself as the standard. In 2001, MAYAH was the first manufacturer to introduce this new coding system in its product range.

Session Initiation Protocol SIP

SIP is the alternative to H.323 for initiating and signaling calls, localisation of users and registration. MAYAH's implementation follows the current RFCs in integrating RTP, RTSP, SDP & SAP into SIP.

The first universal Gateway Audio Codec with 4x AES Transparent

The transparent transmission of up to 4x AES/EBU each with 3.072 Mbit/s ensures the highest possible audio quality. Transparent means the simultaneous transmission of the 24-Bit audio signals and 8-Bit additional signals. This is particularly suitable for the transmission of a Dolby-E or DTS signal. MAYAH combines in the CENTAURI II features from MPEG and APT codecs with the advantages of the AES/EBU transparent transmission.

Streaming in all Broadcast formats

The CENTAURI II 4001/4000 streams not just one format at various bit-rates in mono or stereo, but also different formats simultaneously. This lowers costs while increasing accessibility.

The following formats are supported:

- MPEG Layer 2
- MPEG Layer 3
- linear
- MPEG 2 and 4 AAC / AAC LD
- Standard apt-X und Enhanced apt-X
- mp3PRO
- MPEG 4 HE AAC
- ADPCM4SB / Micda
- MPEG 4 HE AACv2
- G.711/G.722
- J.41/J.57

Every important IP Streaming protocol is already built-in

The CENTAURI II contains almost all major IP Streaming protocols and compatibility with a broad range of receivers.

The supported formats are:

Media protocols

- ISMA, Industry Streaming Media Alliance Protocol
- RTP, Real-Time Transfer Protocol, RFC3550, RFC3551
- RTCP, RTP Control Protocol, RFC3550
- UDP, User Datagram-Protocol, RFC768
- TCP, Transmission Control Protocol, RFC793
- MPEG TS, Transport stream

Session protocols

- SIP Session Initiation Protocol RFC3261
- SDP, Session Description Protocol, RFC2327
- SAP, Session Announcement Protocol, RFC2974

Management, time, file operations, error protection

- FTP
- NTP
- SNMP
- FEC Forward Error Correction RFC2733

Communication is the CENTAURI IIs birthright. Thanks to multiple hard- and software interfaces.

An audio codec, which contains every interface known to man, just doesn't exist. But it's a good reason to keep working at it. And we're getting close.

Connections

Extensive Connections

CENTAURI II offers a wide range of interfaces to audio & data devices and sources.

For audio there are inputs and outputs in professional format stereo analog as XLR as well as AES/EBU with In, Out and Decoder Sync In as DB9. For 5.1/7.1 multichannel applications there are ADAT optical I/O for connecting mixing consoles and other ADAT devices or for connecting the MAYAH breakout box to 8x analog symmetrical I/O or 4x AES/EBU I/O.

ASI IN and OUT

ASI interfaces enables CENTAURI to work in DVB environments. According to DVB A010 rev1 and EN50083-9, the output interface with two ASI ports in BNC, provides a variable payload datarate of 0–214 MBit/s for an MPEG-2 Transport Stream (MPEG TS) within the 270Mbit/s physical ASI link data rate.

Dual Ethernet

There are two 10/100 electrical Ethernet ports available which connect the codec with IP-networks for audio-via-IP and remote control. The interfaces can be dual electrical or electrical/optical, this is particularly useful for applications transporting audio and allows audio and control to be managed via separate logical networks, e.g. SNMP. An alternative use with Dual Ethernet is for fully redundant audio streaming.

ISDN & Dedicated Lines

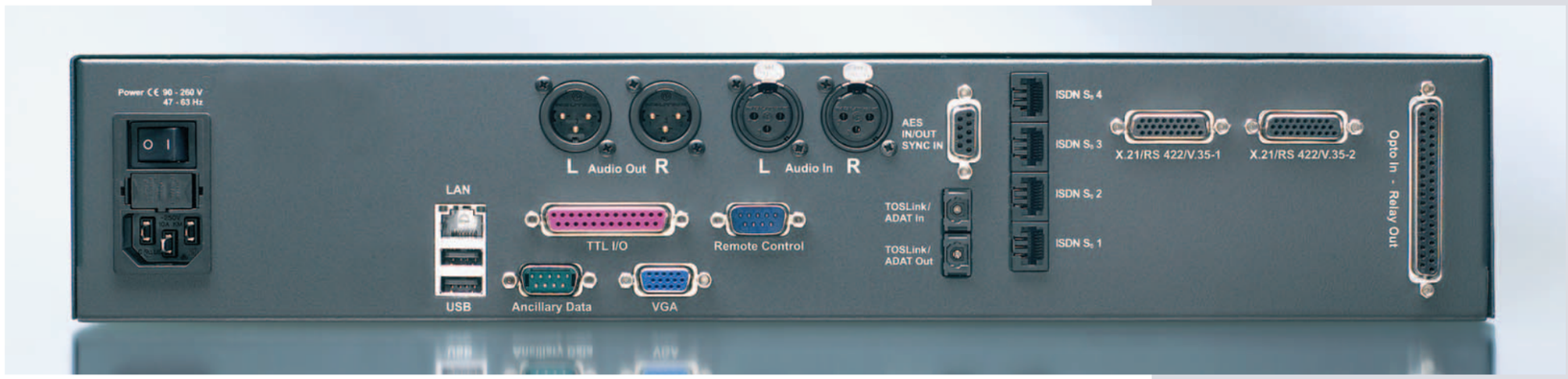
Depending upon its current application, CENTAURI II can be equipped with either 2 or 4 ISDN BRIs. Supporting a variety of international D-channel protocols, the CENTAURI II can be used in any ISDN network around the globe.

For dedicated lines CENTAURI II supports a dual X.21/V35 interface.

ASI IN & OUT

Dual Ethernet


Redundant Power Supply options (here AC and DC)



Rear panel interfaces

Management

Redundant Power Supply

A redundant, hot swapable power supply is optionably available in the combinations AC/AC, AC/DC and DC/DC to meet the broadcasters and telcos requirements for a fully redundant power supply system.

AC wide range module: 90-260 VAC, 47-63 Hz. – DC module: 36-72 VDC – UL/CUL (UL60950 3rd.) – TÜV (EN60950) – CB (EN60950) – CE

Flexibility

If additional data needs to be transported with the audio, the RS232 port can input/output ancillary, asynchronous data while the contact closure facility supports 8x opto INs and 8x relay OUTs for the control of remote devices.

Particularly interesting for studio environments is the Silent Codec Cooler with its ultra low noise cooling fan.

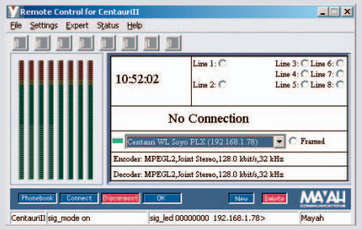
Management: manual or via network

CENTAURI II can be remotely controlled by any standard Internet Browser, regardless of Platform: whether PC, Mac or any other. Depending on the working environment, Telnet and SNMP are also possible with SNMP used to connect to more complex Management & Control Software. The Windows Remote Software can control the CENTAURI II over both the IP as well as the serial interface (RS232).

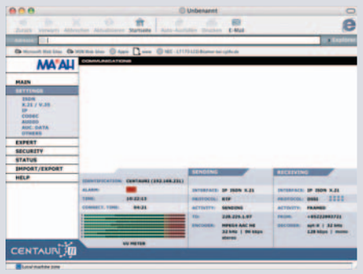
The models 3001, 3301 & 4001 have a front panel with Signal Level indicators, an LCD Display and a Keyboard. Using the front panel controls the operator can completely configure and control the device, and establish network connections.

There is also a wide range of third party products available:

- MC-NET, Arbor
- DataMiner, Skyline
- ISDN Commander, Telcondex
- Diamant, Dimetis
- Integration in HP OpenView



Windows Remote Software


Internet Browser


Front panel controls

The CENTAURI II is an Investment in the Future. And grows with your requirements.

Behind every CENTAURI II is a clear strategy: Expansion is always possible. You could, for example, start with a classic Audio Gateway Codec and upgrade it later to a Multichannel StreamingServer.

Upgrade Possibilities

All CENTAURI models are designed to be fully upgradable. CENTAURIs extensive standard features can be extended with software and hardware options which enabling a 3000/3001to grow into a 3300/3301 and/or 4000/4001.

The major plugIn options are:

CII-STR: 4 parallel encoding formats from one stereo signal source, e.g. analog or AES/EBU or 2 inputs of the optical ADAT interface. This signal can be encoded simultaneously in four different formats, e.g. linear audio for Post-Production, Layer 2 384 kBit/s for Automation Systems, Layer 3 96 kBit/s for Internet streaming and HE AAC 48 kbps for pre-listening.

CII-MCP: Multichannel 5.1/7.1 with AAC, HE AACv2, linear audio, apt-X/Eapt-X. The MPEG 4 standard requires 5.1 & 7.1 multichannel audio to be encoded in AAC or HE AACv2 at bit rates up to 320 kbps. In addition, apt-X/ Eapt-X and linear can be used for low delay, high quality encoding with typical bit rates of 1–6 Mbps.

CII-MCBI: Multichannel 5.1/7.1 with AAC, HE AAC, linear audio.

CII-MCBI: Multichannel 5.1/7.1 with apt-X/Eapt-X

CII-MST: 4 parallel stereo en/decoders, different stereo signal sources. Four stereo signal sources from the optical ADAT interface are individually and simultaneously encoded in the same or different formats, e.g. Eapt-X with 576kbps for Post-Production, Layer 2 256 kBit/s for Digital Radio, linear audio for archiving and HE AAC 48 kbps for pre-listening.

Standard Codec Features & Upgrades (by model)

CENTAURI 3000/1 • G.711/G.722/SRT • MPEG 1/2 Layer 2 and 3	• mp3Pro • MPEG 2/4 AAC • MPEG 4 HE • AACv2	• Linear Audio • J.41, J.57 • GATEWAY • BACKUP	• Point-to-Multipoint • TWIN Codec (Dual) • Asymmetrical En-/ Decoding	+ **Multi-channel** CII-MCP (CII-MCBI+ CII-MCBII)	+ **Streaming Server** CII-STR
CENTAURI 3300/1 • G.711/G.722/SRT • MPEG 1/2 Layer 2 and 3	• mp3Pro • MPEG 2/4 AAC • MPEG 4 HE • AACv2	• Linear Audio • J.41, J.57 • GATEWAY • BACKUP	• Point-to-Multipoint • Multichannel (5.1/7.1) • TWIN Codec (Dual)		+ **Streaming Server** CII-STR
CENTAURI 4000/1 • G.711/G.722/SRT • MPEG 1/2 Layer 2 and 3	• mp3Pro • MPEG 2/4 AAC • MPEG 4 HE • AACv2	• Linear Audio • J.41, J.57 • GATEWAY • BACKUP	• Point-to-Multipoint • Streaming Server • TWIN Codec (Dual)	• Asymmetrical En-/Decoding	+ **Multi-channel** CII-MCP (CII-MCBI+ CII-MCBII)

Standard Features (all models)

Protocols

IMUX Protocols • Flashcast • J.52	**IP Protocols** • UDP • RTP • RTCP	• RTSP • SAP, SDP • MPEG TS • ISMA 2.0	• TCP • NTP • FTP for files • SNMP management	**ISDN Protocols** • DSS1 • NI1 • Internat. Protocols

Audio In/Out

- 2x Analog XLR I/O
- AES/EBU IN, OUT , Sync In
- 8 Channel ADAT opt. I/O

Network Interfaces

- 10/100 Mbit/s Ethernet
- RS232 for Control
- RS232 for ancillary Data
- 4x TTL I/O

User Interfaces

- LCD, Keypad (**01 models)
- LED Level and Alarm
- Headphone Jack

Upgrades (by model)

CII-STR: 4 parallel encoding formats from one stereo source	**CII-MCP**: 5.1/7.1 Multichannel with AAC, HE AACv2, linear, apt-X/Eapt-X	**CII-MCBI**: 5.1/7.1 Multichannel with AAC, HE AAC, linear audio	**CII-MCBII**: 5.1/7.1 Multichannel with apt-X/Eapt-X	**CII-MST**: 4x parallel stereo en/decoders and stereo sources
CII-STR: 4 parallel encoding formats from one stereo source	**CII-MST**: 4x parallel stereo en/decoders and stereo sources			
CII-MCP: 5.1/7.1 Multichannel with AAC, HE AACv2, linear, apt-X/Eapt-X	**CII-MCBI**: 5.1/7.1 Multichannel with AAC, HE AAC, linear audio	**CII-MCBII**: 5.1/7.1 Multichannel with apt-X/Eapt-X	**CII-MST**: 4x parallel stereo en/decoders and stereo sources	

Plug-ins, Boards & Accessories (all models)

Plug-ins

CII-SW3 MPEG 4 AAC Low Delay	**CII-SW4** Standard apt-X & Enhanced apt-X	**CII-SW5** ADPCM4SB/Micda	**CII-SW6** AES/EBU Transparent	**ADATD/ADATA** ADAT Digital & Analog Interface

Boards & Accessories

CII-20 2x ISDN BRI Interface	**CII-40** 4x ISDN BRI Interface	**CII-02** 2x X.21/V.35 Interface	**CII-42** 4x ISDN BRI & 2x X.21/V.35	**CII-8CC** 8x Opto-IN / 8x Relays OUT Contact Closures
CII-ETH Additional Ethernet Interface	**CII-LN** Silent Cooler Studio Option	**CII-ACAC** Redundant, Hot Swappable Power Supply	**CII-ACDC** Redundant, Hot Swappable Power Supply	**CII-DCDC** Redundant, Hot Swappable Power Supply

CENTAURI® II 3000 / 01

CENTAURI® II 3300 / 01

CENTAURI® II 4001

In theory good. In practice even better: current case studies.

We don't want to have to persuade you. But convince you. Preferably with projects, whose stability and elegance have already proven themselves.

Reduced Costs – Increased Flexibility and Quality: **UMTS/3GP Reporting**

Mobile data communications are evolving quickly because of Internet, Intranet, Laptops, PDAs and the increasing need of business applications. 3G UMTS will be the commercial convergence of conventional telephony with mobile and information technology.

The UMTS transport network is designed to deliver high speed, specific content to users at mobile and temporary locations. For professional broadcast reporting MAYAH combined the strength of UMTS with powerful encoding to achieve very low bit rates.

CENTAURI® Audio Codecs offer a wide range of audio formats via IP; e.g UMTS, a mobile paket service with up- and download and interconnectivity with VPN networks for increased security. Realtime audio streaming/reporting over the UMTS network requires algorithms capable of achieving the lowest possible bit rates in order to assure a continuous broadcast. CENTAURI® offers the newest version of MPEG 4 HE AAC with bit rates as low as 24, 32 or 48 kBit/s.
The extensive UMTS coverage already available in most industrialised nations means that high quality, mobile reporting is available in large parts of the world today.

WDR premieres UMTS (3G) realtime audio transmission

In preparation for the Pope´s visit to Cologne for the World Youth Day some special requirements needed to be met for the audio transmission. A live audio link was required from a ship on the Rhine to the WDR studios in the centre of Cologne from where they would be broadcast. As an alternative to satellite transmission, UMTS was considered and successfully tested. MAYAH CENTAURI® codecs were used for audio streaming at low bit rates via a Vodafone UMTS data card into a VPN network connected to another CENTAURI®, all bi-directional.

Economic advantages of UMTS (3G) reporting

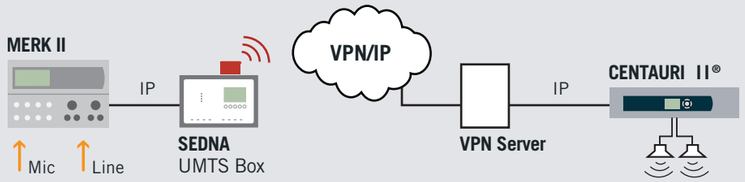
Reporting typically needs particular equipment and network or satellite connections. Both require fixed or temporary installations and incurr rental charges. Satellite needs specialised equipment such as a dish, modulator, etc. and provisions that adequate satellite capacity is available at a certain time. Terrestrial lines, such as ISDN need pre-ordering at the responsible Telcos.

UMTS (3G) has the advantage that the equipment is small, available and, due to the mass market factor, low priced. Further, UMTS (3G) is an inceasingly available service with extremely low fees for data services – even flat rates exist and make a lot of sense for realtime streaming.

Complex setup or plug-and-play?

MAYAH is offering its UMTS (3G) transmission solution as a plug-and-play package. It consists of two UMTS Connection Boxes, each carrying a PCMCIA UMTS Vodafone data card and the choice of MAYAH CENTAURI® I or IIs, MERK II or ganymed en/decoders.

UMTS/3GP Reporting



Main transmission via UMTS

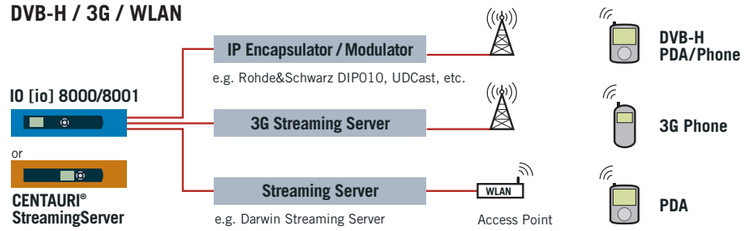
DVB-H reaching millions of mobiles and PDAs with audio-video content

DVB-H (Digital Video Broadcasting – Handheld) is the new digital broadcast standard for the transmission of content to handheld devices; developed by the DVB Project and recently published by ETSI (European Telecommunications Standards Institute).

DVB-H is based on the DVB-T standard for digital, terrestrial television but enhanced and adapted to the special requirements of pocket-size products, such as mobiles, PDAs, etc. It is expected to become a multi billion EUR business by 2010.

MAYAH's first presentation of DVB-H was at this years IFA in Berlin. At the IBC in Amsterdam MAYAH will be demonstrating "Mobile TV" using its new IO [io] 8001, with AVC/AAC Encoding, communicating with a server platform for mobile television and handsets/PDAs running AVC Players from Fraunhofer IIS and others. Thanks to our extensive product range we will also be demonstrating audio only via DVB-H, supporting stereo and multichannel audio. MAYAH equipment enables mobile operators to conduct DVB-H trials to test flexibility in bit rates and formats as well as the level of acceptance for Mobile TV and audio by consumers.

DVB-H / 3G / WLAN



ORF, Austrian Broadcasting uses **MAYAH's 5.1 multichannel codec solution** to transmit Carmen from Graz to Vienna

High Quality 5.1 Multichannel with CENTAURI® II 3300/3301

The new CENTAURI® II Audio Codecs offer multichannel audio en-/decoding, streaming and transmission in a wide range of audio formats. Multichannel audio transmission is a rapidly expanding market and the requirements vary greatly depending on the specific application. So far, two major applications have been addressed using the CENTAURI® II 3300/3301:

- Production quality for contribution and distribution using linear audio, apt-X or Enhanced apt-X in IP and/or E1 networks with bit rates between 1 and 6 mbps.
- monitoring/pre-listening applications using AAC or MPEG 4 HE AAC) in IP and/or ISDN networks with bit rates as low as 160 kbps.

This flexible concept allows CENTAURI® to be used in various environments and in combination with Dolby E or Dolby AC-3 technology.

Existing CENTAURI® I or II 3000/3001s can be easily upgraded to multichannel capability with the appropriate multichannel audio I/O. Both digital and analog versions are available.

Carmen opera in 5.1 live from Graz to Vienna

In June 2005, ORF transmitted the opera Carmen from the Franz-Liszt hall in Graz to the ORF Broadcasting Center in Vienna for the first time using multichannel 5.1 audio. The successful transmission continued via satellite on ORF 1 (÷1) to the listeners. The 6 discrete audio channels were connected directly, via AES/EBU, between the digital mixing console and the MAYAH multichannel equipment; an AES/ADAT optical converter and the multichannel audio codec CENTAURI® II 3301for realtime encoding and streaming. For the desired high quality, Enhanced apt-X was used with a total bit rate of 1152 kbps net. The IP signal was connected to the ATM-network of ORF (L-NET) and the audio was then decoded with another CENTAURI® II 3301 at ORF's Broadcasting Center in Vienna. The multichannel audio signal was then turned into DolbyE (5.1) and then encoded in AC-3 in order to be inserted into the multiplexer for the satellite uplink. This modern and efficient way of multichannel transmission allows ORF to use cost-effective IP connections for transmission and to avoid using additional encoders. ORF considers it particularly advantageous to use CENTAURI® 3301 bi-directionally, thus obtaining a monitoring signal of the final broadcast audio. This shortens any activity in case of transmission problems and simplifies the control of the start and end of the broadcasted multichannel program.

An identical configuration is used to transmit the "Salzburger Festspiele" to Vienna in 5.1 technique with CENTAURI®.

Economic efficiency; Bi-directional 5.1 via IP

Until now, multichannel audio transmissions were very cost intensive because of equipment and line capacities. With CENTAURI® 3300/3301 this has changed; the equipment is a standard MAYAH product with multichannel I/O. The required bit rates depend on the application and can be as low as 160 kbps with MPEG 4 HE AAC or up to 6 mbps with linear audio. As the best compromise, Eapt-X with bitrates between 1 and 2 mbps is recommended. Connectivity via both IP and ISDN is possible and access to such networks is today standard .

Complex setup or plug and play?

The experience of ORF for their concert transmissions between Graz and Vienna demonstrates the simplicity of the MAYAH solution, simply needing multichannel audio connections and access to a network with the required capacity. Since their initial success, ORF have been using the system for further events, including some mobile installations; another example of its plug-and-play simplicity.

Mayah Communications. Innovation is our Motor. To improve Audio Technology our Goal.

In the past, there were no compatible Audio Codecs. Reason enough to develop the first multi-compatible Audio Codec. In the past, Audio Codecs needed expensive, dedicated lines. Reason enough for us to develop the first IP-Audio-Codec.

Our Objectives

MAYAH® Communications' main objective is the development and distribution of innovative, hiqh quality solutions for audio and audio/video communications in broadcast and corporate networks. With particular importance given to conforming with international standardized formats, such as MPEG 4 for applications in DVB-H, UMTS, SNG, ipTV, reporting, distribution and contribution. Our audio codec family CENTAURI® is the standard audio codec in the broadcast industry, whether for ISDN, dedicated line or IP environments.

Client driven Development

We place great importance on continuously adapting to our customers needs. As a core development company it is important for us to regularly touch base with clients, in particular those planning their own networks and operating equipment. All MAYAH audio and audio/video codecs are the result of such co-operation.

The Founders

Our founders Joerg Rimkus and Detlef Wiese are well known motors in the broadcast and telecommunications industry. Their backgrounds cover algorithm development, system design and production which have resulted in a variety of patents and successful products.

In recent years we have expanded our operations in the Internet, Corporate and Conventional Broadcasting markets with a variety of audio and audio-video encoders / decoders which can be adapted and customized for sales, OEM and licensing.

Our Location

MAYAH is located in a modern office park just a few minutes drive from Munich Airport and a short distance from our Radio and TV customers in the media metropole Munich.

Milestones

1997 Founded in Munich by Joerg Rimkus and Detlef Wiese

1998 **SendIt**: Worlds first Software Audio Codec for live applications

1999 **EditPro**: Worlds first mp3-Editor

2000 **CENTAURI®**: Worlds first IP/ISDN Audio Codec

2001 **CENTAURI®** 24 Channel Program Concentrator for Olympic Games in Athens

2002 **CENTAURI® StreamingServer** – more than 14 audio codec algorithms supported

Flashman launched; Digital MPEG/Linear Audio Recorder OEM Agreement with APT

2003 **ganymed** 1102 IP only Codec

DRM2010: Unique 2nd generation Digital Radio Mondiale Receiver

2004 **MERK II**: Portable Audio Codec/Mixer for Events/Reporting

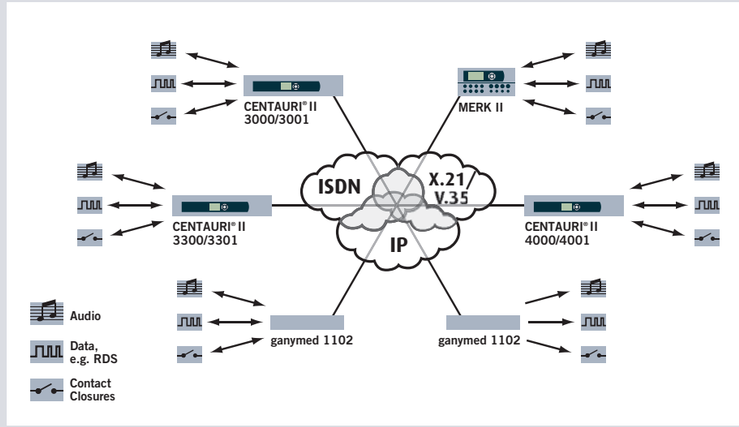
2005 **CENTAURI® II** 2nd generation for Gateway, Backup, ..., any codec application

IO [io] Audio Video Codec with AVC for DVB-H, ipTV, SNG

ganymed 1002 IP Audio Decoder for Broadcast and PoS applications

UMTS/3G with MERK II and CENTAURI® II

5.1/7.1 Multichannel CENTAURI® II



Interoperability of MAYAH Codecs

The number of MAYAH audio codec products has grown to a mature range of solutions for various applications.

The interoperability includes audio coding formats for mono, stereo and multichannel, data transmission, e.g. for RDS, as well as contact closure Information.

The differences between the products enhance their suitability for specific applications without limiting interoperability. Except for certain small differences in terms of network interface support, protocols, audio algorithms, etc., there is a rich set of common formats and functions which support combinations such as:

MERK II → CENTAURI® II and ganymed

CENTAURI® II → ganymed and MERK II

ganymed → CENTAURI® II and MERK II

The MAYAH world is a flexible one

Through our 100% support of open, international standards and a model range with an unsurpassed depth of common features MAYAH is able to provide elegant, flexible solutions for even the most complex transmission problems. And thanks to our enlightened upgrade policy, your network can continue to grow and develop in the years to come.


CENTAURI® family


IO [io] Audio Video Codec


Flashman


ganymed


MERK II


SEDNA UMTS Connect Box

Technical Data
CENTAURI II Multichannel Audio Gateway
Codecs – always the right solution

CENTAURI® II	3000/3001	3300/3301	4000/4001
Algorithms			
G.711/G.722/SRT	■	■	■
MPEG 1/2 Layer 2 and 3, mp3Pro	■	■	■
MPEG 2/4 AAC	■	■	■
MPEG 4 HE AACv2	■	■	■
Linear Audio, J.41, J.57	■	■	■
Standard / Enhanced apt-X	■	■	■
AAC Low Delay	■	■	■
ADPCM4SB/Micda	■	■	■
AES/EBU Transparent	■	■	■
IMUX Protocols			
Flashcast (D4, CCS, etc.)	■	■	■
J.52	■	■	■
IP Protocols			
UDP, RTP, RTCP, RTSP, SAP, SDP, ISMA 2.0, TCP, MPEG TS, NTP	■	■	■
FTP for file, NTP for time operations	■	■	■
SNMP for management, FEC Forward Error Correction	■	■	■
ISDN Protocols			
DSS1, NI1, International Protocol	■	■	■
Audio I/O			
2 x Analog XLR I/O	■	■	■
AES/EBU In, Out, Sync In	■	■	■
8 Channel ADAT opt. I/O	■	■	■
User Interface			
LCD, Keypad	3001	3301	4001
LED Level and Alarm, Headphone	■	■	■
Network / Data Interfaces			
2 or 4 ISDN BRI	■	■	■
2 X.21/V.35	■	■	■
10/100 Mbit/s Ethernet	■	■	■
2nd Ethernet Interface	■	■	■
8 Opto In / Relais Out	■	■	■
RS232 for Control, RS232 for anc. Data, 4 TTL I/O	■	■	■
Main Operations			
Gateway	■	■	■
Backup	■	■	■
Point-to-Multipoint	■	■	■
Multichannel (5.1/7.1)	■	■	■
Multiple (4) Stereo (Quad)	■	■	■
Streaming Server	■	■	■
Twin Codec (Dual)	■	■	■
Asymmetrical En-/Decoding	■	■	■

UL/CUL (UL60950 3rd.)
TÜV (EN60950)
CB (EN60950)
CE

■ **Standard** ■ **Optional**

Layer 2 licensed from Audio MPEG, Coding Technologies
Layer 3/mp3Pro licensed from Thomson/Fraunhofer Institute
ADPCM4SB licensed from France Telekom
Apt-X licensed from APT
AAC / AAC HE licensed from VIA, Coding Technologies

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