

IZT DAB Archive EDI/ETI Monitoring and Logging System

Überwachung Archiv	V- C					
	Konfiguration				C Q Suchen	**
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Warning		Warning	Augsburg - 9C / Recorder B	No sound (Subchannel Id: 0x00	Nürnberg - 10C	Encoding AAC Bitrate 72 kbit/s
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	Stand: 07.07.2017 10:01:28	Warning	Augsburg - 9C / Recorder A	No sound (Subchaniel Id: 0x00		PL (Protection Level) 3A
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						Dynamic Label: "DAB-Kanalwechsel vom 07.06. bis 30.8.
						Rol Problemen bitte Sendersochaar ooren
						Subchannel Id 0x0015

- Real-time monitoring of DAB ensembles and analysis of audio and data content
- Recording of the complete DAB multiplex including audio and data services
- Long-term archiving and indexing of all content
- Search and export functionality with optional download manager

The IZT DAB Archive is a comprehensive solution for quality control and long-term archiving of EDI/ETI streams. It consists of two components: The DAB Recorder records, analyses and archives a DAB ensemble while the Library Server provides a central interface between user and overall system to access monitoring information and recorded content.

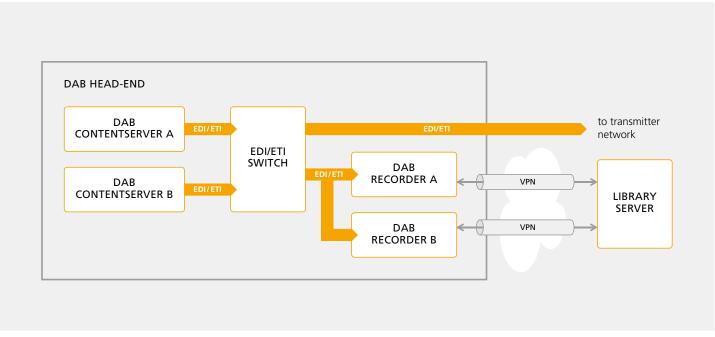


FIGURE 1: IZT DAB ARCHIVE IN A TYPICAL DAB HEAD-END

System Overview

Key Features

APPLICATION SCENARIO

When operating digital radio networks, logging of audio programs and data services is an important quality control component and can be mandatory due to regulation. Furthermore, detection and logging of technical issues can clarify responsibilities between content providers platform operators and regulatory bodies.

Figure 1 shows the integration of the IZT DAB Archive solution in a typical redundant DAB head-end.

SYSTEM COMPONENTS

DAB Recorder

The DAB Recorder handles recording, analysis and archiving of a DAB multiplex. Usually located at the operator's DAB head-end, the DAB Recorder records the EDI or ETI stream that is delivered to the transmitter network. In case of a redundant multiplexer setup, the output of the redundancy switch is used.

Monitoring information is permanently transferred to the Library Server whereas content is archived locally and only transferred to the Library Server on user request. For enhanced reliability, two DAB Recorders are used for redundant recording.

The DAB Recorder is installed on standard server hardware provided by IZT. Alternatively, installation as virtual machine is possible, making installations more compact if several DAB multiplexes are handled at the same location.

Library Server

The Library Server is the interface to the user. A graphical web interface provides access to monitoring data and EDI/ETI recordings. The Library Server can be installed at the operator's own premises or can be hosted in an external IT data center, e.g. as virtual server. When situated externally, the Library Server usually accesses the DAB Recorders via a VPN tunnel, in many cases using a connection with limited data rates.

RECORDING AND ANALYSIS

The DAB Recorder stores the incoming EDI/ETI stream in the internal storage and makes the recordings available for remote requests from the Library Server. The maximum duration of the archive depends on the available storage capacity.

The DAB Recorder decodes the DAB multiplex in real-time and checks and analyses the multiplex and its components. Index information about the DAB ensemble is transferred to the Library Server.

MONITORING

The system monitors the input signals for the following parameters:

- EDI/ETI signal present
- ETI error flag
- CRC errors in FIB and MSC

In addition, the system monitors the ensemble configuration including the subchannel structure. It is possible to check the labels, data types, bitrates and signalling. The audio programs are checked with regard to noise/silence.

The Library Server permanently monitors the library structure. Further, it logs and indexes the drop outs and warnings detected by the DAB Recorder. Users can be alerted about failures via SNMP (optional), E-Mail or SMS, while different severities can be configured for the notification of multiple users.

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imberg - 10C E	ransport Mechanism incoding	MSC - Stream mode - audio
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ugsburg - 9C		TTIV
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		N - OxD318 Country Id: D (Germany2) Local flag: O (whole e
		dersuchlauf durchführen." <u>mehr</u>
	ubchannel Id	0x0015
	ransport Mechanism	MSC - Stream mode - audio
	ncoding	AAC
	itrate 11 (Size)	80 kbit/s

FIGURE 2: ENSEMBLE MONITORING VIA THE WEB INTERFACE

USER INTERFACE

The user accesses the Library Server through a convenient web interface. The GUI provides access to all monitoring data and the archived EDI/ETI streams. The user can request downloading the archived content of a specific time and duration. It is possible to export the complete stream, specific subchannels or the audio content of a subchannel. The GUI also provides a filter to search for specific events such as ensemble reconfigurations.

In case of a download request, the Library Server fetches the data from the DAB Recorder and makes it available for the user. If the IP link to the DAB head-end has limited data transfer rates, the data can be fetched over a longer duration and is made available for fast download by the user.

ADD-ONS

Download Manager

The Windows application can access the EDI/ETI data and audio content from a client PC. It allows parallel download of several streams. Downloads can be interrupted and continued at a later point in time.

IZT DAB MultimediaPlayer

The IZT DAB MultimediaPlayer allows decoding of audio and data content from EDI streams or files. Hence, it can be used to view and listen to the live or archived content of the IZT DAB Archive.

The IZT DAB MultimediaPlayer is available as client PC software or can be integrated in the Library Server web GUI providing remote access including audio streaming using HTML5.

ETI Analyzer

The ETI Analyzer is a very powerful tool for file-based processing and detailed analysis of EDI or ETI files. The ETI Analyzer can be accessed using the Library Server's web GUI and presents the results on an HTML page. It allows to:

- Analyze multiplex and service components the EDI/ETI Analyser will point at erroneous or suspicious data in the DAB signalling and the broadcast data
- Extract and download subchannels and FIC from a DAB ensemble
- Download audio, PAD, and data on various protocol levels, that is Dynamic Label segments, data groups, packets and PAD subfields.

IZT DAB Multimedia Player		
	•	
Absolut relax Pop Music, Ensemble: DR Deutschland, Germany (DAB+)		
Deutschlandfunk / Deutschlandfunk Information, Ensemble: DR Deutschland, Germany (DAB Classic)		i• 👜 🤅
DKultur / DKultur Culture, Ensemble: DR Deutschland, Germany (DAB+)		i+ 👜 1
DRadio Daten / DRadio Daten Ensemble: Dil Deutschland, Germany		1
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Durnaline	Stationname DRadioWissen Audio Confourniae Cosis: MPTG-4 HE-AAC-11 (DAH+) Bran: 96-0 Altilub Audio Mode Sterrer (Configure) Announcements: Energinger, Aktri, Warning	
ENERGY Pop Music, Ensemble: DR Deutschland, Germany (DAB+)		6

FIGURE 3: IZT DAB MULTIMEDIA PLAYER

						MSC Overview	
	Ava	ilable	Capacity U	nits: 864 CU	s Assigned C	CUs: 840 CUs (97.2%)	
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	cu	cu	Subch.				
CU start	end	#	Subch.	Bitrate	Protection level	Description	Used by
0	95	96	1	128 kbps	UEP 3	Audio sub channel 1; Foreground sound (MPEG Audio Layer II)	Service 'Classic FM'
96	143	48	2	64 kbps	UEP 3	Audio sub channel 2; Foreground sound (MPEG Audio Layer II)	Service 'talkSPORT'
144	149	6	26	8 kbps	EEP 3-A	Packet Mode sub channel 26	Service 'Traffic Master'
150	161	12	35	16 kbps	EEP 3-A	Enhanced Packet Mode sub channel 35	Service 'INRIX UK TPEG'
162	219	58	5	80 kbps	UEP 3	Audio sub channel 5; Foreground sound (MPEG Audio Layer II)	Service 'Planet Rock'
220	267	48	7	64 kbps	UEP 3	Audio sub channel 7; Foreground sound (MPEG Audio Layer II)	Service 'UCB UK Christian'
268	325	58	9	80 kbps	UEP 3	Audio sub channel 9; Foreground sound (MPEG Audio Layer II)	Service 'BFBS Radio'
326	383	58	8	80 kbps	UEP 3	Audio sub channel 8; Foreground sound (MPEG Audio Layer II)	Service 'Smooth Radio UK'
384	431	48	6	64 kbps	UEP 3	Audio sub channel 6; Foreground sound (MPEG Audio Layer II)	Service 'PremierChristian'
432	489	58	13	80 kbps	UEP 3	Audio sub channel 13; Foreground sound (MPEG Audio Layer II)	Service 'TeamRock'
490	547	58	15	80 kbps	UEP 3	Audio sub channel 15; Foreground sound (MPEG Audio Layer II)	Service 'Smooth Radio 70s'
548	631	84	3	112 kbps	UEP 3	Audio sub channel 3; Foreground sound (MPEG Audio Layer II)	Service 'Absolute Radio'
632	679	48	14	64 kbps	UEP 3	Audio sub channel 14; Foreground sound (MPEG Audio Layer II)	Service 'Absolute R 80s'
680	727	48	12	64 kbps	UEP 3	Audio sub channel 12; Foreground sound (MPEG Audio Layer II)	Service 'Absolute Rad 90s'
728	775	48	11	64 kbps	UEP 3	Audio sub channel 11; Foreground sound (MPEG Audio Layer II)	Service 'Jazz FM'
776	781	6	25	8 kbps	EEP 3-A	Packet Mode sub channel 25	Service 'What's On'
782	839	58	10	80 kbps	UEP 3	Audio sub channel 10; Foreground sound (MPEG Audio Layer II)	Service 'KISS'
840	863	24				Unused CUs	

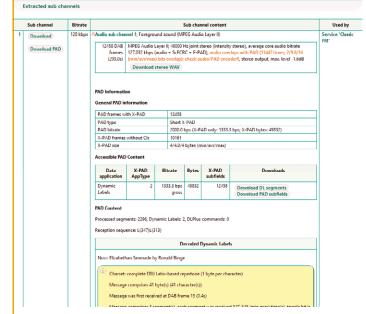
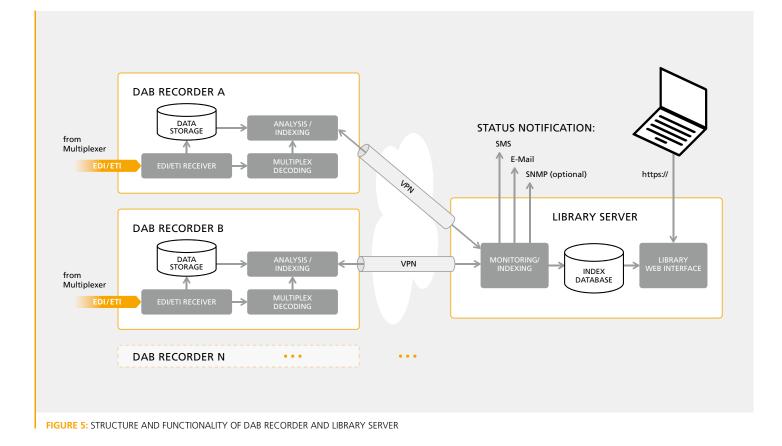


FIGURE 4: ETI ANALYZER



Überwachung Archiv Konfiguration

Recorder

Übersicht Logging Ensemble

						-		
Bayern - 10D	München - 11C	Severity \diamond	Ensemble / Recorder	Issue 🗘	Last Update 🔶	First Occurence	Acknowledged	
4%	4%	Warning	München - 11C / Recorder B	No sound (Subchannel Id: 0x0009 - MKR-Kirchenradio)	06.07.2017 18:03:51	06.07.2017 18:03:30		
Ок	Warning	Warning	München - 11C / Recorder A	No sound (Subchannel Id: 0x0009 - MKR-Kirchenradio)	06.07.2017 18:03:51	06.07.2017 18:03:30		
Ok	Warning	Warning	München - 11C / Recorder A	No sound (Subchannel Id: 0x0003 - CRM)	06.07.2017 17:01:21	06.07.2017 17:01:00		
Ok	Warning	Warning	München - 11C / Recorder B	No sound (Subchannel Id: 0x0003 - CRM)	06.07.2017 17:01:21	06.07.2017 17:01:00		
Aktualisiert: 07.07.2017 10:01:05 Infos	Aktualisiert: 07.07.2017 10:01:20 Infos	High	München - 11C / Recorder A	MST CRC Error	06.07.2017 13:57:25	06.07.2017 13:57:25		
		High	München - 11C / Recorder A	MST CRC Error	06.07.2017 12:37:12	06.07.2017 12:37:09		
ngolstadt - 11A	Nürnberg - 10C	Warning	München - 11C / Recorder A	No sound (Subchannel Id: 0x0008 - RADIO MUENCHEN)	06.07.2017 12:32:12	06.07.2017 12:20:52		
3%	3%	Warning	München - 11C / Recorder B	No sound (Subchannel Id: 0x0008 - RADIO MUENCHEN)	06.07.2017 12:32:12	06.07.2017 12:20:52		
Warning 5%	Ok 376	Warning	München - 11C / Recorder B	No sound (Subchannel Id: 0x0008 - RADIO MUENCHEN)	06.07.2017 05:37:39	06.07.2017 05:36:32		
Warning	Ok	Warning	München - 11C / Recorder A	No sound (Subchannel Id: 0x0008 - RADIO MUENCHEN)	06.07.2017 05:37:39	06.07.2017 05:36:32		
Warning	Ok	Warning	Augsburg - 9C / Recorder B	No sound (Subchannel Id: 0x0007 - PURE FM)	06.07.2017 00:56:00	06.07.2017 00:55:46		
Aktualisiert: 07.07.2017 10:01:20 Infos	Aktualisiert: 07.07.2017 10:01:20 Infos	Warning	Ingolstadt - 11A / Recorder B	No sound (Subchannel Id: 0x000B - PURE FM)	06.07.2017 00:56:00	06.07.2017 00:55:46		,
		Warning	München - 11C / Recorder B	No sound (Subchannel Id: 0x000B - PURE FM)	06.07.2017 00:56:00	06.07.2017 00:55:46		
lugsburg - 9C		Warning	München - 11C / Recorder A	No sound (Subchannel Id: 0x000B - PURE FM)	06.07.2017 00:56:00	06.07.2017 00:55:46		
Warning 3%		Warning	Augsburg - 9C / Recorder A	No sound (Subchannel Id: 0x0007 - PURE FM)	06.07.2017 00:55:59	06.07.2017 00:55:46		
Warning		Warning	Ingolstadt - 11A / Recorder A	No sound (Subchannel Id: 0x000B - PURE FM)	06.07.2017 00:55:59	06.07.2017 00:55:44		4
Warning		Warning	Ingolstadt - 11A / Recorder B	No sound (Subchannel Id: 0x000B - PURE FM)	06.07.2017 00:50:49	06.07.2017 00:50:37		
warning		Warning	Augsburg - 9C / Recorder B	No sound (Subchannel Id: 0x0007 - PURE FM)	06.07.2017 00:50:49	06.07.2017 00:50:36		
Aktualisiert: 07.07.2017 10:01:25 Infos		Warning	München - 11C / Recorder B	No sound (Subchannel Id: 0x000B - PURE FM)	06.07.2017 00:50:49	06.07.2017 00:50:36		-
	Stand: 07.07.2017 10:01:28	Warning	Augsburg - 9C / Recorder A	No sound (Subchannel Id: 0x0007 - PURE FM)	06.07.2017 00:50:49	06.07.2017 00:50:36		

IZT DAB Archive EDI/ETI Monitoring and Logging System

Ordering Guide				
DAB Recorder Software	DAB Archive 100	DAB Recorder incl. DAB+ Module		
	DAB Archive 110	DAB Module (optional)		
	DAB Archive 111	EDI Module (optional)		
DAB Recorder Hardware	Server hardware or installation	n as virtual machine will be quoted according to customer needs.		
Library Server Software	DAB Archive 200	Library Server		
	DAB Archive 210	SNMP Component (optional)		
	DAB Archive 211	Download Manager (Windows PC application, optional)		
	DAB Archive 220	IZT DAB MultimediaPlayer Professional core license incl. Extension Package		
	DAB Archive 221	TPEG Pro option for IZT DAB MultimediaPlayer		
	DAB Archive 230	ETI Analyzer license		
Library Server Hardware	Server hardware or installation as virtual machine will be quoted according to customer needs. VPN infrastructure and hosting of the Library Server available optionally.			

IZT Service		
	DAB Archive Support	Annual support fee for one Library Server with up to 5 DAB Ensembles. Availability 9 am – 5 pm on business days
	DAB Archive Support +1	Annual support fee per additional DAB Ensemble
	Enhanced support services	available on request

The DAB Recorder and DAB Library Server software components are licensed from spiritec GbR.

The DAB MultimediaPlayer Technology is licensed from Fraunhofer IIS.

The EDI Analyzer is part of the Fraunhofer IIS ContentServer technology.

About IZT The Innovationszentrum fuer Telekommunikationstechnik GmbH IZT specializes in the most advanced digital signal processing and field programmable gate array (FPGA) designs in combination with high frequency and microwave technology.

The product portfolio includes equipment for signal generation, receivers for signal monitoring and recording, transmitters for digital broadcast, digital radio systems, and channel simulators. IZT offers powerful platforms and customized solutions for high signal bandwidth and real-time signal processing applications. The product and project business is managed from the principal office located in Erlangen/Germany. IZT distributes its products worldwide together with its international strategic partners. The IZT quality management system is ISO 9001:2000 certified.





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