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# Fraunhofer DAB ContentServer R8 Features, Editions & Product Lines

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Subject to change without notice.

For complete systems including hardware and extended customer support please contact our **OEM Partners** (addresses available on request).

**Fraunhofer Institute for Integrated Circuits IIS**

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## Feature List / Functionality Overview

The Fraunhofer DAB ContentServer™ R8 technology enables highly reliable professional broadcast systems for the DAB Digital Radio platform including DAB+ and DAB Classic (MPEG Layer II) (see www.worlddab.org).
It supports the content and signalling options DAB offers and all interfaces for a smooth integration into the broadcast chain. Due to its flexible configuration options, the ContentServer adjusts perfectly to the needs of smale-scale community stations all the way to large-scale and complex national networks, along with dedicated support for receiver testing and development with close to 100% test coverage.

The Fraunhofer DAB ContentServer R8 provides triple functionality:

- **DAB AudioServer**
  with multi-stream real-time DAB+ and DAB Classic audio encoding
- **DAB Multimedia DataServer**
  supporting all standardized as well as broadcaster specific data services; covering import, processing, encoding and broadcast of data services
- **DAB Ensemble/Service Multiplex Generator**
  managing the extensive DAB signalling capabilities, supporting STI-C input or output, generating the full digital DAB (Sub-)Multiplex and providing standard EDI/DCP output streams

### The One-box DAB Broadcast Solution

The system is typically located in the studio, at a play-out center or at the transmitter site – with full remote control for administration and data provision, enabling cloud-based operation. The remote web interface featuring Fraunhofer's in-place-editing technology for quick and convenient system configuration can be accessed through any modern web browser, including individual user login via LDAP.

Depending on the selected Product Line, the output signal of the Fraunhofer DAB ContentServer R8

carries the complete DAB Ensemble or Service Multiplex signal (FIC, MSC) in EDI/DCP format according to ETSI TS 102 693 (Encapsulation of DAB Interfaces) and ETSI TS 102 821 (Distribution and Communications Protocol). This DAB Ensemble Multiplex can be fed simultaneously to any number of DAB Modulators/transmitter sites (with timing support for SFN single frequency network operation), and monitoring stations.

The Fraunhofer DAB ContentServer R8is based on a highly reliable and secure operating system (Linux based), which remains invisible to the user.

### Fraunhofer DAB AudioServer

This system component provides real-time encoding of multiple audio streams in parallel:

- Live analog and/or digital input
- File sources (mp3, wav, playlist)
- AES67 Audio over IP (AoIP) input: incl. Livewire, Ravenna
- RTP-based audio stream input (e.g. as audio bridge end-point), with powerful packet loss concealment
- Icecast/SHOUTcast stream input
- Audio input stream monitoring, automatic stream config detection and remote listening through HTML5

- Backup Audio Source: auto-switch from missing live input to alternative source: live/uploaded audio content
- DAB Classic encoding: MPEG Audio Layer-II, 24 or 48 kHz, mono, stereo, joint stereo, dual channel
- DAB+ encoding: MPEG-4 HE-AAC v2, all sample rates, mono, stereo, parametric stereo, incl. 5.1 surround
- Full PAD support
- MPEG Surround option with optional automatic real-time stereo-to-5.1 upmix using SX Pro®

## Fraunhofer Multimedia DataServer

This component supports the import, collecting, merging, checking, conversion and encoding of data for all standardized DAB as well as broadcaster-specific individual data applications.

**DAB data applications:**
- DAB Dynamic Labels incl. DL+
- Journaline (advanced text app)
- Journaline Live Ticker Pages
- Journaline Recently Played Songs automatic listing from DL+
- Slideshow (incl. categorized/interactive SLS)
- EPG/SPI (Electronic Progr. Guide) incl. service logos
- TPEG Traffic Information
- TMC Traffic Message Channel
- MOT Broadcast Website
- Filecasting

**Open interfaces allow the transmission of any custom-tailored individual application at various protocol levels:**
- Transparent File Transmission TFT via MOT (with optional MOT Directory compression)
- IP Insertion (Internet Protocol tunnelling)
- TDC Transparent Data Channel
- MSC Data Groups
- Packet Mode subchannel
- Synchronous / asynchronous stream mode subchannel (incl. audio subchannel)
- FIC Data Insertion (FIDC, SI, CA)

**Versatile data import interfaces and automation features allow for a smooth integration into production environments:**
- RSS/Atom import

- Customer-specific XML formats (option)
- Ftp, ftp-mirroring and http-mirroring (automatically scheduled or manually triggered)
- JSON-RPC and XML-RPC
- Web-interface for quick data editing using a standard web browser
- UECP, Funkhaustelegramm, Leitungsprotokoll and ZENON studio interfaces
- Socket interface for real-time data insertion (API + Win/Linux command line tools for data provision by clients)
- Protected connections for secure data import restricted to the predefined data sources: sftp/ftps, sftp/ftps-mirroring, https-mirroring
- Service logo import incl. RadioDNS
- Axia GPIO nodes (e.g. announcements)

**Support of chip-in Slideshow/Dynamic Labels:**
- Replacement of all SLS/DL in case of an emergency
- Replacement of SLS/ DL of individual services for emergency messages and/or advertisements

Incl. support for DAB Enhanced Packet Mode (FEC protection) and MOT 2.1.1 (Multimedia Object Transfer) for enhanced file and directory structure transmissions.

## DAB Ensemble Multiplex Generator

DAB signalling features are supported according to ETSI EN 300 401 (v 1.4.1 and v 2.1.1) including the DAB dynamic reconfiguration feature.

**General configuration options:**
- Standard (FIG1/x) and Extended (FIG2/x) DAB labels
- Label character encodings: EBU Latin based set, Unicode UCS-2, UTF-8 (i.e. support for all international characters); general and per-label definition
- Support of all regional profiles: All-Europe, Africa, Arabic (including translation to Arabic Presentation Forms-B), EBU Latin, Thai, etc.
- Unused MSC-CUs handling rules
- Support of Service Information (FIG0/20) signalling for part time services

- PAD Encoder flags for enhanced legacy-receiver compatibility
- DAB time signal format (short/long)
- STI-D/ETI subchannel extraction
- STI-C input or output option for autonomous and dynamic submultiplex management
- Extended STI-C: links one (redundant) Service multiplexer to multiple independent (redundant) Ensemble Multiplexers while maintaining full STI-C flexibility
- Resource management for Service Multiplexer input (CUs, FIC bitrate, DAB-IDs)
- Configuration of delay/ flags for individual modulators (MNSC)
- External remote audio encoders (including redundant setups) with full dynamic reconfiguration and PAD support

**Tunnelling of EDI and/or MuxEnc via SRT (Secure Reliable Transport) for input and/or outputMultiplex configuration options:**
- Ensemble ID, label (full/short), country, time zone
- Ensemble time zone (automatic daylight saving time adjustment)
- Alternative frequency signalling (AFS) for the Ensemble
- Alarm announcement and test alarm announcement signalling, same and other ensemble (OE)

**Service signalling options:**
- Primary / Secondary service components
- Multiple audio PAD components
- Service ID, country (audio/data)
- Service Label, Primary and Secondary Service Component DAB Label (full/short)
- Program type (standard/ complementary, static/ dynamic)
- Dynamic PTy signalling (e.g. UECP)
- Dynamic Active Linkage Set (LSN) signalling
- Signalling of (in-)active Linkage Sets
- Service Component ID
- Service Component Information SCI (mandatory for DAB v2)
- Service Component language (primary/secondary static/dynamic)
- Announcement Signalling (road traffic, transport, warning/service, news, area weather, event, special event, programme, sport, financial, proprietary IDs), same and other ensemble (OE)
- Dynamic Announcement support signalling (no reconfiguration is

needed if some announcements are temporarily not supported)
- Service AFS (alternative frequencies individual DAB service, service linking to DAB, DRM, AM, AMSS, FM, FM-RDS services)
- Full support of Emergency Warning System (EWS/ASA)

**Output Signal Management:**
- Extended broadcast info (Ensemble configuration, FIG layout)
- Live monitoring of the DAB Ensemble Multiplex Generator output signal through the web interface, as a receiver would decode and present the data (Dynamic Labels (incl. DL+), Journaline, Slideshow decoding incl. transmission statistics; audio streams via HTTP)
- Recording of the DAB Ensemble Multiplex Generator output signal (ETI/STI) and file-download through the web interface; the duration can be pre-defined
- Powerful and complete in-depth analysis of any EDI, RDI, STI, ETI file, including format conversion and subchannel extraction

**Efficient Small-Scale DAB:**
- Localized EDI Multiplex Output allows a single DAB ContentServer to generate multiple small-scale DAB multiplexes
- Each EDI output represents a fully valid EDI ensemble multiplex, while carrying an individual sub-set of DAB Services.

## Advanced System Features

**Redundancy Group Feature:**
- Connects two or more ContentServers to one Redundancy Group
- Full failover – each group member independently generates frame-synchronous and co-timed EDI
- Group-wide synchronized dynamic reconfigurations
- Single user interface – automatic internal replication of broadcast configurations, schedules, and uploaded broadcast content
- Mutual system health and availability checks among members
- Audio Cross-Redundancy: the encoded audio stream from another Redundancy Group member replaces a failing/missing audio source including Smart Silence Detection

**EDI (DCP) Switch:**
- Ensures that the best available EDI output stream (i.e. with fewest errors such as audio silence) from the members of a Redundancy Group is forwarded to downstream devices
- Multi-EDI mode: each member of a Redundancy Group independently sends the identical (best available) EDI version to downstream devices
- Single-EDI mode: only one member of the Redundancy Group sends the best available EDI stream to all downstream devices

**EWFplus –**
**Emergency Warning Functionality:**
- Full support of EWFplus for immediate mass-notification of listeners via DAB in cases of pending disasters: emergency audio programme via DAB+/DAB Classic, Journaline for detailed multilingual text instructions and geo-region definition, EWS/ASA Alerts (incl. OE Alerts)

**Automatic broadcast configuration scheduling:**
- Global broadcast calendar
- Multiple weekly calendars
- Manual, SNMP triggered, URL triggered, JSON/XML-RPC triggered or pre-scheduled broadcast activation / reconfiguration

**Sound system configuration:**
- Live audio source peak level and loudness (LUFS) monitoring
- Live audio playback via web browser
- Audio source amplification
- Audio loudness normalization (to configured target LUFS level) within and across audio services, based on Fraunhofer Sonamic technology
- Continuous and configurable clipping and silence detection for all audio input signals
- Audio level limiter
- Opt'l mp3 normalization on import

**Powerful security features:**
- Professional firewall to separate the potentially public content contribution from the protected system administration and DAB Ensemble Multiplex distribution to DAB Modulators/transmitters
- Secure connections for system administration and data contribution access

**Continuous system self-monitoring & status reports:**
- System status signalling via e-mail report system, local console and SNMP (for all system components, and for dynamic broadcast content)
- Detailed system status information via HTML web interface
- Web interface access to detailed log files for inspection and download
- Interactive Graphic System Status visualizes the status of all system components with direct links to relevant documentation, logging and editor pages; with multi-system option to monitor multiple ContentServers
- System configuration backup and restore mechanism (remote / local)

**Contribution Network Monitoring:**
- Short- and long-term statistics of incoming and outgoing data streams; covering EDI based in- and output (STI, ETI) & external audio encoders
- Validity checks and comparisons for redundant input/output streams
- EDI reports allow EDI targets to inform EDI sources (ensemble or service multiplexer) about quality of contribution network

## Infrastructure and Setup

The Fraunhofer DAB ContentServer is typically deployed as a highly reliable and redundant 24/7 server hardware system, or in virtualized/cloud-based environments.

Administration, system configuration and data provision are based on Ethernet network connections for a **completely remote operation**. A detailed user management (incl. LDAP integration) is provided to control system access and data contribution sources. System software updates can be triggered remotely through the web interface.

The compact graphical **Overview of the current On-Air Multiplex** includes live content previews and source status information.

The strong firewall functionality guards access to the system. The Professional Firewall option enables the configuration of multiple network cards, VLAN, multi-homing, and port bonding.

In addition, a local console display is supported to locally activate configurations, to monitor the system status and to setup the basic hardware parameters (such as network settings).

Link redundancy: each EDI or MuxEnc based input stream can be received through multiple network ports simultaneously to enable contribution over independent network connections.

If the EDI/DCP output signal of the DAB ContentServer shall be fed simultaneously to a virtually unlimited number of DAB Modulators/transmitters operating in SFN mode (single frequency networking), the system must be time-synchronized. Supported synchronization methods are direct GPS receiver input via serial line (see list of supported models), NTP access (network time protocol) and PTP (precision time protocol) via IP network.

Interfaces of the ContentServer within the broadcast chain:
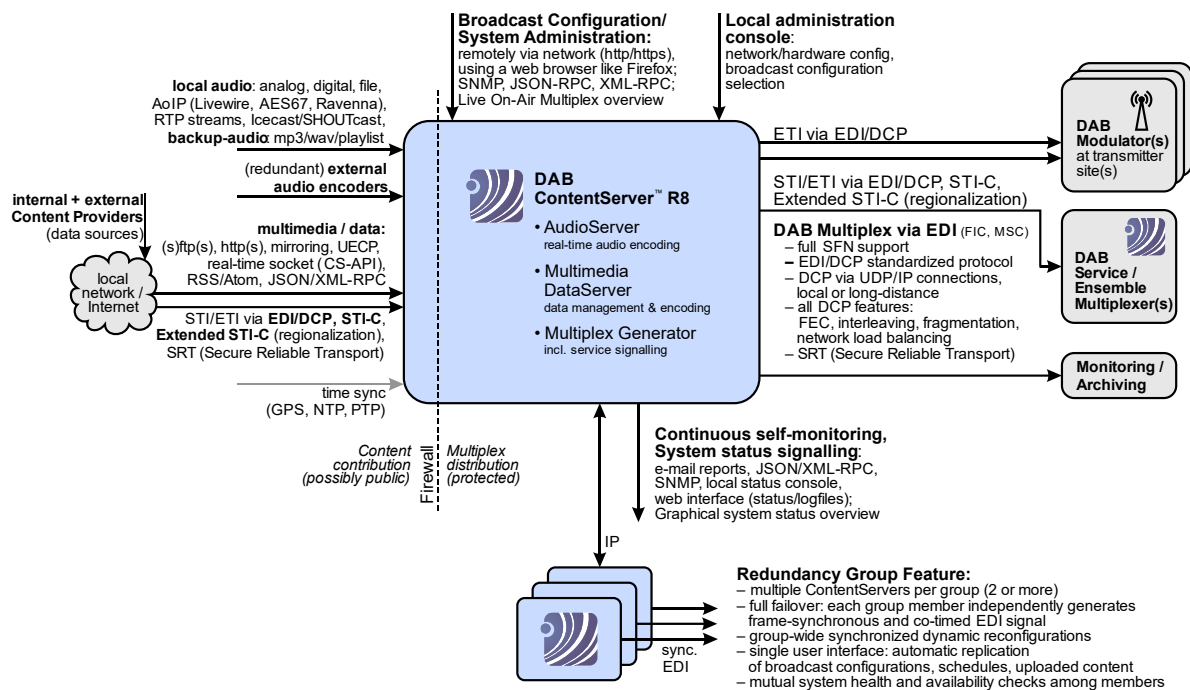
# Product Lines

To complement individual needs and infrastructure requirements,
the Fraunhofer DAB ContentServer is available in various configurations to allow for a most flexible combination and individual setup of the broadcast chain.

A DAB ContentServer can either be operated as a **DAB Ensemble Multiplexer** or as a
**DAB Service Multiplexer** (each option with or without integrated audio and data encoders).

- **Fraunhofer DAB ContentServer R8 – Ensemble Multiplexer**

Combines audio encoding, multimedia and data service management with a DAB Ensemble Multiplex generator to a **full single-server DAB head-end solution**. The output format is a complete DAB ensemble multiplex signal (ETI) via standard EDI/DCP interface for direct delivery to DAB modulators.
Optionally DAB subchannels can be extracted from ETI or STI-D input streams provided via EDI.
Optionally STI-C is available as an input option to accept autonomously generated DAB sub-multiplex signals from DAB Service Multiplexers.
Multiple Ensemble Multiplexers can operate as a Redundancy Group, i.e. offering a single configuration and data upload interface, while generating frame-synchronous EDI output signals with enhanced status signaling for instant switching by the EDI/ETI converter or DAB Modulator – keeping a continuously modulated signal on-air.
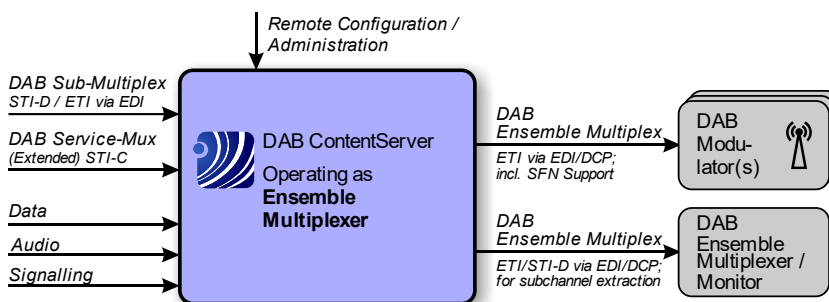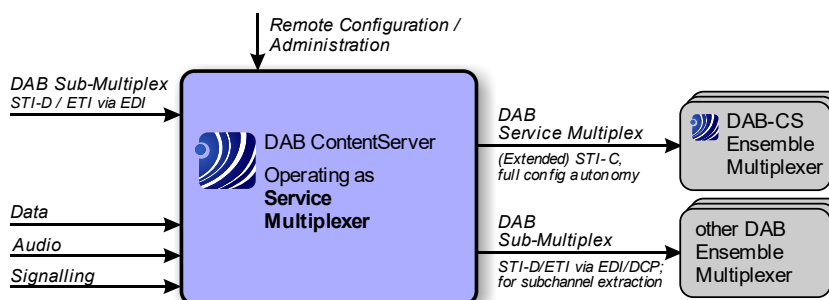


- **Fraunhofer DAB ContentServer R8 – Service Multiplexer**

Combines audio encoding, multimedia and data service management with a DAB Service Multiplex generator. The output format is a DAB sub-multiplex signal (ETI or STI-D) via standard EDI/DCP interface for direct delivery to a DAB Ensemble Multiplexers.
STI-C output allows for autonomous configuration and dynamic reconfiguration of the full service multiplex signal within the limits defined by the Ensemble Multiplexer.
Multiple Service Multiplexers can operate as a Redundancy Group and feed their output signal (including STI-C support) to a set of Ensemble Multiplexers (operating as a Redundancy Group themselves).

## Editions

The Fraunhofer DAB ContentServer R8 in the form of multiple Editions:
Basic and Professional for regular broadcasting,
and Developer for receiver and broadcast equipment development and testing.

All Editions share all basic DAB functionalities, but each Edition provides a different level of enhanced system functionality as a starting point to accomplish typical user scenarios.

All editions can easily be extended with additional features at any time after the initial purchase.

- **Basic Edition**
  A starter kit for smaller broadcasters with the option of future extension to satisfy new requirements.

- **Professional Edition**
  Extends the Standard Edition by adding professional redundancy options, broadcast automation features, interfacing into a broadcaster's content management systems, and the full range of broadcaster-specific data transmissions as well as standardized multimedia applications.

- **Developer Edition**
  In addition, the Developer Edition provides support for the quick and efficient development and testing of DAB receivers and broadcast equipment. Based on the **Ensemble Multiplexer product line,** it makes the complete functionality of the DAB system with regards to signalling and transmittable content available for laboratory use (including dynamic reconfigurations), enabling a close to 100% test coverage. A full broadcast chain with RF output can be setup easily in combination with a DAB Modulator.

| | Edition (option package) | | |
|---|---|---|---|
| Product Line | Ensemble Multiplexer **or** Service Multiplexer | | |
| **Available options** | **Basic** | **Professional** | **Developer** |
| | | | |
| **General System Features** | | | |
| Firewall Basic | ✓ | ✗ | ✗ |
| Firewall Professional (configuration of multiple network cards, VLAN, multi-homing, network port bonding) | – | ✓ | ✗ |
| Support for serial devices (GPS receiver, etc.) | ✓ | ✓ | – |
| Automatic leap second handling | ✓ | ✓ | ✓ |
| Graphical On-Air Multiplex Overview with live content previews and source status | – | ✓ | ✗ |
| Graphical system status overview | – | ✓ | ✗ |
| Multi-system graphical status overview | – | ✓ | ✗ |
| System checks (continuous self-monitoring) | ✓ | ✓ | ✗ |
| System config backup (at console) | ✓ | ✓ | ✓ |
| System configuration remote up-/download | ✓ | ✓ | ✗ |
| E-mail reports (admin & Content Providers) | ✓ | ✓ | ✗ |
| SNMP interface | ✓ | ✓ | ✗ |
| Security Summary (network config overview) | – | ✓ | ✗ |
| Remote System Update (via web GUI) | – | ✓ | – |
| Redundancy Group Feature | ✓ | ✓ | ✗ |
| Audio Cross-Redundancy (requires Redundancy Group) | – | ✓ | ✗ |
| EDI/RDI/ETI/STI Analyzer/Converter | – | – | ✓ |
| Enable support of Secure Reliable Transport (SRT) | – | ✓ | ✗ |
| | | | |
| **Data Input / Output Options** | | | |
| STI-C output option          [**Service Multiplexer** only] | ✓ | ✓ | ✗ |
| STI-C input option          [**Ensemble Multiplexer** only] | – | ✓ | ✗ |
| Extended STI-C (requires STI-C) | – | ✓ | ✗ |
| Number of EDI (ETI or STI-D) inputs (subch. extraction) | – | 2 | ✗ |
| DCP input/output monitoring (network analyzer) | – | ✓ | ✗ |
| EDI reports (quality of contribution network) | – | ✓ | ✗ |
| EDI Switch (requires Redundancy Group) | – | ✓ | ✗ |
| Localized EDI Multiplex Output | – | ✓ | ✗ |

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| | Edition (option package) | | |
|---|---|---|---|
| Product Line | Ensemble Multiplexer **or** Service Multiplexer | | |
| **Available options** | **Basic** | **Professional** | **Developer** |
| | | | |
| **Multiplex Configuration & Management** | | | |
| Unlimited simultaneous DAB Multiplexconfiguration definitions | ✓ | ✓ | ✓ |
| CAP (Common Alerting Protocol) import for EWFplus | – | ✓ | ✓ |
| EWS/ASA alert signalling support | – | ✓ | ✓ |
| Broadcast Scheduler (weekly/calendar) | – | ✓ | – |
| Announcement support (via UECP, Funkhaustelegramm, Leitungsprotokoll, HTML interface, opt. JSON/XML-RPC) | – | ✓ | ✓ |
| OE Announcement support (Other Ensemble) | – | ✓ | ✓ |
| Dynamic Announcement support signalling (via realtime interface, opt. JSON/XML-RPC) | – | ✓ | ✓ |
| AFS – Alternative Frequency Editor | – | ✓ | ✓ |
| Dynamic Active Linkage Set (LSN) signalling (via realtime interface, opt. JSON/XML-RPC) | – | ✓ | ✓ |
| Dynamic PTy signalling (via UECP, realtime interface, opt. JSON/XML-RPC) | – | ✓ | ✓ |
| Service Component Information (SCI) signalling | – | ✓ | ✓ |
| TII & Region Definitions Editor | – | ✓ | ✓ |
| Extended broadcast info (Ensemble configuration, FIG Layout) | – | ✓ | ✓ |
| Multiplexer output live monitoring (audio/subchannel HTTP streaming; Dynamic Label, Journaline, Slideshow decoding) | – | ✓ | ✓ |
| Multiplexer output ETI / STI recording | – | ✓ | ✓ |
| Support for external audio encoders (MuxEnc) | – | ✓ | – |
| | | | |
| **DAB AudioServer**[1] | | | |
| Audio input live analog and/or digital | –[2] | ✓ | ✗ |
| Audio-over-IP (AoIP) input: AES67, Livewire, Ravenna | –[2] | ✓ | ✗ |
| RTP based input (AAC, uncompressed); RTP monitoring | –[2] | ✓ | ✗ |
| Icecast/SHOUTcast audio input (mp2, mp3, AAC) | –[2] | ✓ | ✗ |
| Audio file source: mp3, wav, playlist | – | ✓ | ✓ |
| Backup/Standby Audio Source | – | ✓ | ✗ |
| Silence/clipping detection and configuration | ✓ | ✓ | – |
| Audio level limiter | – | ✓ | – |
| Audio Loudness Normalization (target LUFS level) | – | ✓ | – |
| Audio input signal amplification/ mp3 normalization | – | ✓ | – |
| DAB Classic encoders (Layer II) [max. 64] | – | – | – |
| DAB+ encoders [max. 64] | – | – | 1 |
| DAB+ Surround option incl. SX Pro (SX Pro enhances stereo signals on-the-fly to 5.1 surround) | ✓ | ✓ | ✓ |

| | Edition (option package) | | |
|---|---|---|---|
| Product Line | Ensemble Multiplexer **or** Service Multiplexer | | |
| **Available options** | **Basic** | **Professional** | **Developer** |
| | | | |
| **Multimedia DataServer** | | | |
| *Data Application Types* | | | |
| Dynamic Labels | ✓ | ✓ | ✓ |
| DL+ support for Dynamic Labels | – | ✓ | ✓ |
| Journaline (incl. live ticker pages) | ✓ | ✓ | ✓ |
| Journaline recently played song listing (from DL+) | ✓ | ✓ | ✓ |
| MOT Slideshow (incl. categorized/interactive SLS) | ✓ | ✓ | ✓ |
| SPI / EPG – Electronic Programme Guide, Service Logos | – | ✓ | ✓ |
| MOT Broadcast Website/ Transparent File Transmission | – | ✓ | ✓ |
| Filecasting | – | ✓ | ✓ |
| TPEG Traffic Information | – | ✓ | ✓ |
| TMC – Traffic Message Channel | – | ✓ | ✓ |
| IP Insertion | – | ✓ | ✓ |
| TDC – raw data (broadcaster-specific data on various protocol level; incl. FIC signaling) | – | ✓ | ✓ |
| FIC Data Insertion (FIDC, SI, CA) | – | ✓ | ✓ |
| Support for multiple transmission priority classes | ✓ | ✓ | ✓ |
| *Data Import Methods* | | | |
| Import via HTML interface (web GUI) | ✓ | ✓ | ✓ |
| Import via file FTP upload | ✓ | ✓ | ✓ |
| Import from existing RSS/Atom sources (Journaline) | ✓ | ✓ | ✓ |
| Import from existing RSS/Atom sources (Dynamic Labels) | – | ✓ | – |
| Import via HTTP/FTP mirroring | – | ✓ | – |
| Import via JSON-RPC, XML-RPC | – | ✓ | – |
| Import via live socket connection (API) | – | ✓ | ✓ |
| Import from Funkhaustelegramm, UECP, Zenon, Leitungsprotokoll (Dynamic Labels + Journaline) | – | ✓ | – |
| Linkage set activation via UECP/GPIO | – | ✓ | – |
| Announcement triggers via UECP/GPIO | – | ✓ | – |
| Automatic Scheduled Mirroring option | – | ✓ | – |
| Secure data import connections | – | ✓ | ✖ |

(1) DAB AudioServer options are available when at least one (internal) audio encoder license is activated for the system
(2) The Basic Edition includes a single audio input type according to customer choice

![Fraunhofer logo]

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# Remarks

| Software Maintenance Options |
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Every ContentServer license listed above **includes 24 months of free SUS – Software Update Support**. After this period, the software maintenance can easily be continued on an annual basis.

If Software Update Support shall be enabled for a system that is not currently covered, please contact your OEM Partner for an individual quotation.

| Spare System License (Redundancy) |
| --- |

A spare system is a fully functional Fraunhofer DAB ContentServer standby system for backup purposes, typically operated as part of a Redundancy Group with a regular system. The spare system may be used to replace any standard system licensed to the same company. Depending on the backup philosophy of the company, one spare system may be sufficient to cover multiple standard systems.

The following license restrictions apply:
- Spare system licenses are not supported for the Developer Edition.
- The spare system must not be operated except as a replacement for a regularly licensed standard system. It must not be operated by another company than the one owning the standard system's license.
- The replaced standard system must be non-functional during the time of the replacement (e.g. hardware failure). It is not sufficient to just manually or temporarily switch off a standard system.
- The spare system must not be sold or lent to any third party.

| General Remarks |
| --- |

- The 'Editions' table only mentions those features that are different among the available Editions. The standard features shared between all Editions of the Fraunhofer DAB ContentServer are contained in the general product description above ('Feature List').

- All Editions can be installed on suitable server hardware. A list of required and recommended hardware components is available upon request.

- **All Editions can easily be extended by additional options (features).**

- **Special license restrictions apply to the Developer Edition**:
  - The system is licensed for development purposes only.
  - The system must not be used for regular or commercial broadcasts on air.
  - The system must not be sold or lent to any third party.

- **Customer training on the Fraunhofer DAB ContentServer**, on DAB(+) and Multimedia Services is available upon request.