MEDIA BROADCAST

3/21/2024

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Monitoring a national commercial/public DAB+ network

Media Broadcast

- Media Broadcast is part of the freenet Group
- Germany's largest service provider in the broadcast and media industry for more than 70 years
- Corporate headquarters in Cologne
- More than 600 employees across Germany
- More than 8.000 End-to-end connections for data transmission
- Market leader with over 700 transmitters in radio (DAB+) and TV (DVB-T2 HD) and markets the platform freenet TV
- Multiple ISO certifications

MEDIA BROADCAST

About Us

We create platforms for media.

The company designs, builds and operates multimedia transmission platforms for TV and radio based on state-of-the art transmitter, line and satellite networks.

Our focus is squarely on digital terrestrials.

Media Broadcast is the market leader in DAB+ and DVB-T2 HD and markets the freenet TV platform. Working with our DAB+ platform operator audio.digital NRW and our shareholding in the nationwide platform operator Antenne Deutschland, we are pushing the boundaries of terrestrial transmission.

We are the backbone of the media.

Moreover, the company connects broadcasters with its high-availability fiber-optic network and executes productions and broadcasts of live events for TV stations and companies.

We are pioneers in 5G.

5G is the new communication standard for industry and media companies. We were one of the first companies in Germany to put a 5G campus network into operation.

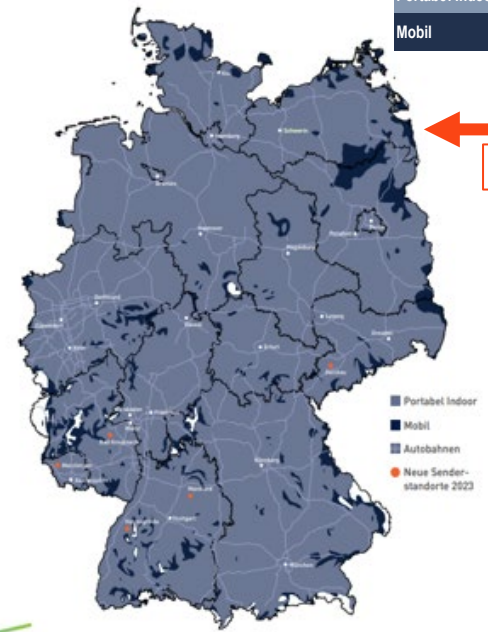
First national Mux coverages nearly complete Germany – Second national Mux focused on metropolitan areas

MEDIA BROADCAST

First national Mux 5C (SFN)

165 transmitters in 2023

1. Bmux	vers. Einwohner in Tsd.	in %	vers. Fläche in km²	in %	Autobah in km	in %
Portabel Indoor	> 75 Mio.	>91%	>337.000	>85%		
Mobil	> 81 Mio.	>98%	>419.000	>97%	ca. 12,84 Tkm	99%



+5 sites in 2024

Further roll-out planned

+9 sites in 2024

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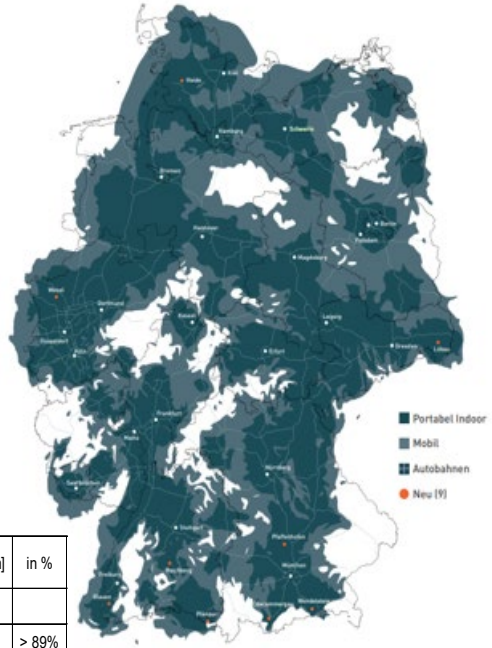
Second national Mux

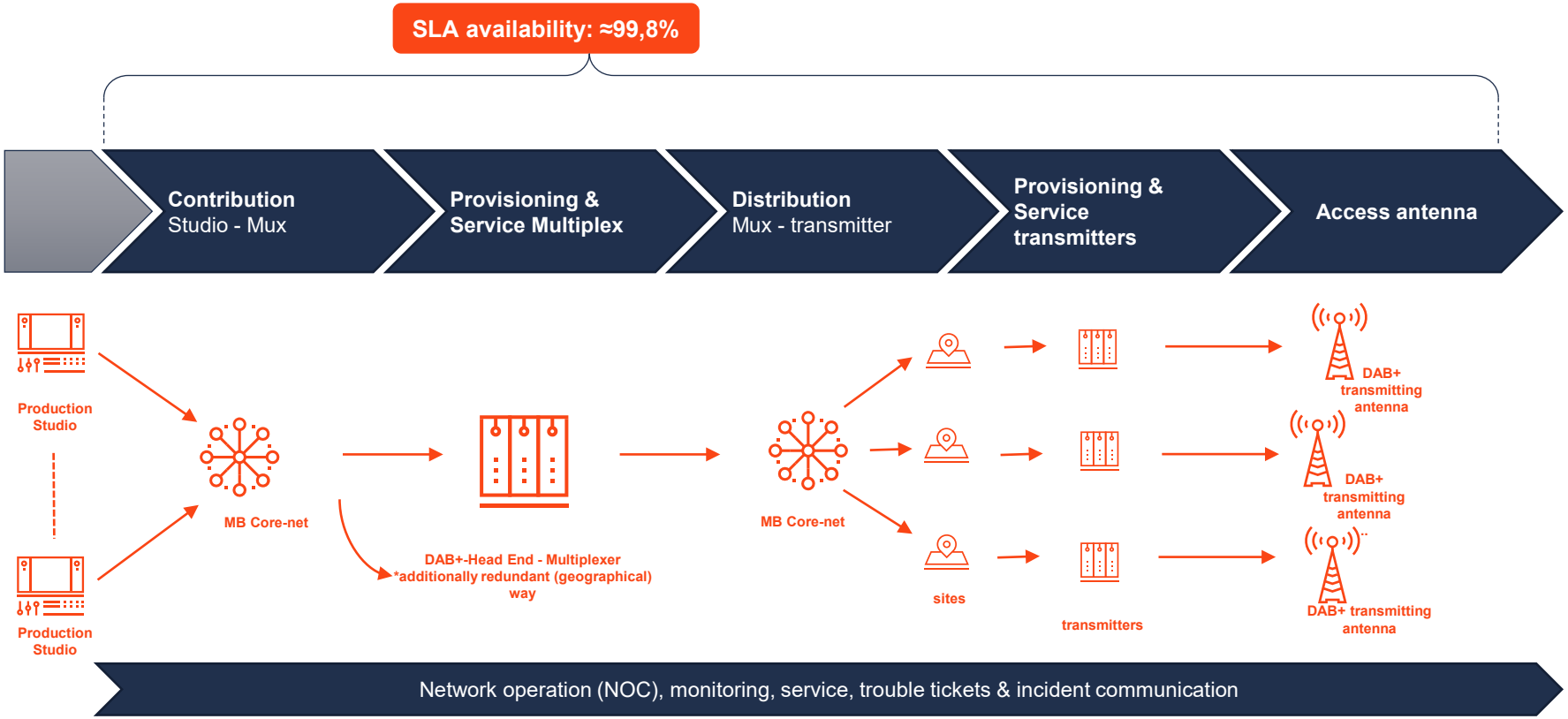
82 transmitters in 2023



2. Bmux	vers. Einwohner	in %	vers. Fläche [km²]	in %	Autobahn [km]	in %
Portabel Indoor	> 55 Mio.	> 67%	> 180.000,00	> 47%		
Mobil	> 72 Mio.	> 87%	> 314.000,00	> 78%	> 11 Tkm	> 89%

dab+

Service Level: Operational availability for DAB+ >99,99%



NOC - Application OSS

Facts & Figures

Line-up

- 1st level support
  - for troubleshooting and incidents in 3-shift-operations (24/7) in early-, late- night-shifts, >15 FTE
- 2nd level support
  - for incident analytics in 2-shift operations from 6:00 am to 11:00 pm, 16 FTE
- Service desk for fault hotlines in 2-shift operations from 7:00 am to 9:30 pm, 4 FTE
- Allocation of the monitoring in the single service areas such as core net/backbone and transmitters/antenna

KPIs

- Call solutions (per month)
  - approx. 4.000
- Incidents (per month)
  - approx. 3.200
- Hotlines reachability
  - approx. > 97% (within 30 sec)
- Monitored components
  - approx. 26.800 (for about 400 customers)
- Monitored services
  - approx. 96.000
- Monitored sites
  - approx. 2.600

Staff qualifications

- Cisco CCNA/CCNP
- ITIL Foundation, Service Transition, Service Operation
- Health and safety measures
- Training and qualification to vendor specifications
- Ongoing training of internal processes

Consistent quality loops with providers and customers

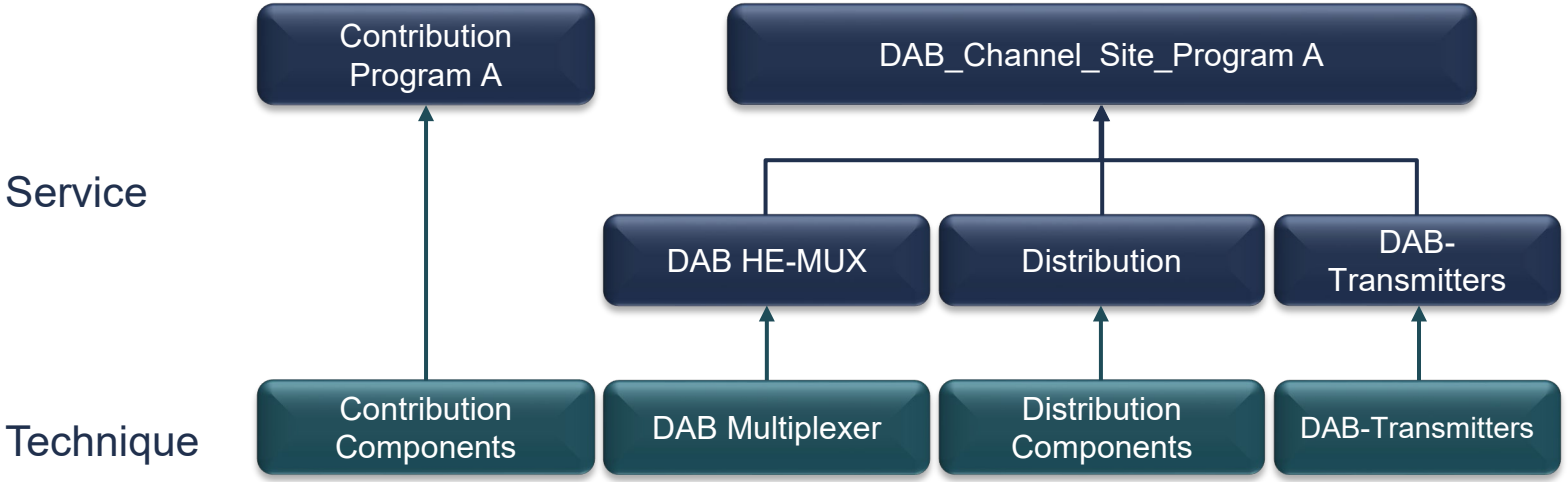
- Deutsche Telekom, Versatel, Deutschlandradio / NDR / SWR / MDR / WDR (…) / Absolut Group, ffh (…), Vodafone, et cetera…

Tasks

- Service oriented network management for (national) automated remote monitoring…
- …as for business-critical contribution & distribution lines (Disnet), regional networks, headends, Freenet TV, the entire terrestrial infrastructure (DAB+ and DVB-T2) as well as directional radio, FM etc.
- Reception, analysis and qualification of faults according to operational-/business and customer relevance
- Incident- and problem management according to defined guidelines (ITIL)
- Understanding of critical situations, starting promptly internal escalation- and communication ways
- Documentation of affected products and components in our TTS-system
- Draw-up „fault-clearence-orders“ to the service professionals and follow-up
- Ongoing communication with the customer (information flow – initial, intermediate, closing)
- Customer complaint management

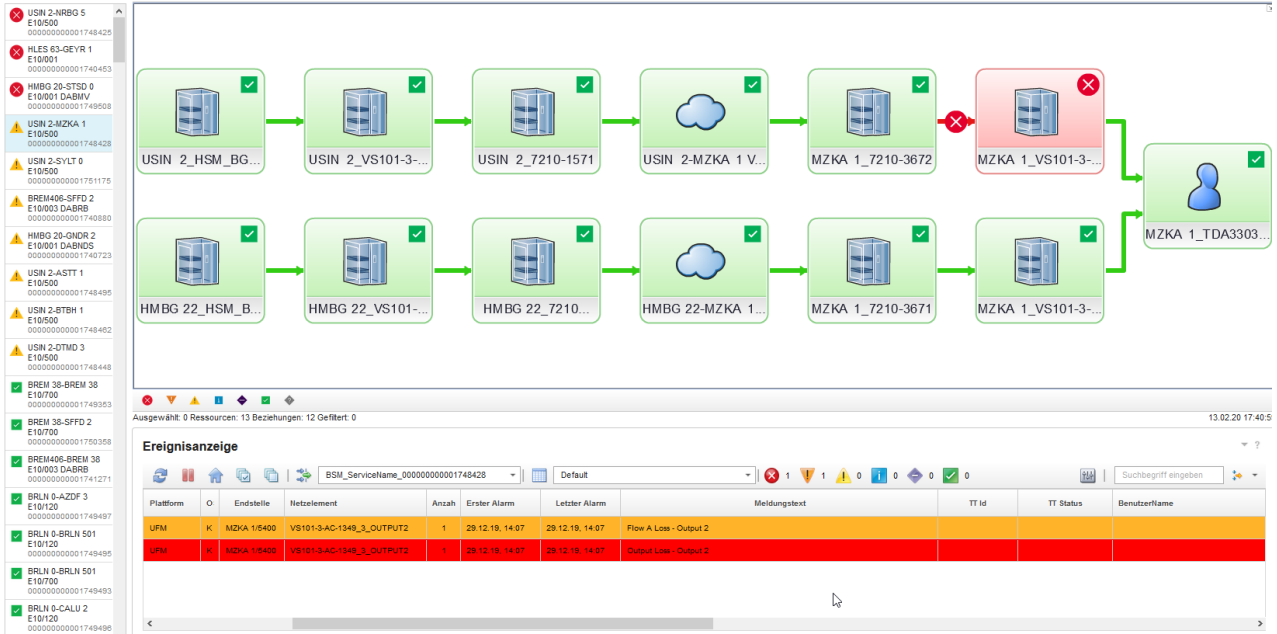
DAB Service Model

- ➔Service Model for the evaluation of the service status
- ➔Service Model provides information/overview of all relevant components of the production line including their respective critical elements as well as complete documentation
- ➔That means: Monitoring of contribution, head-end, distribution and transmitter/antenna of every single program for every single site



Services in the NOC / UFM

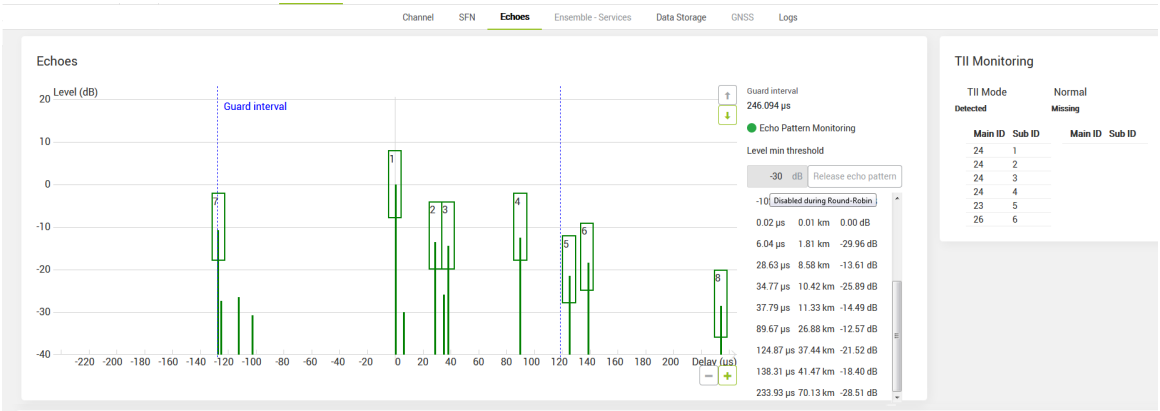
Every single component in the production process is displayed – including redundant components



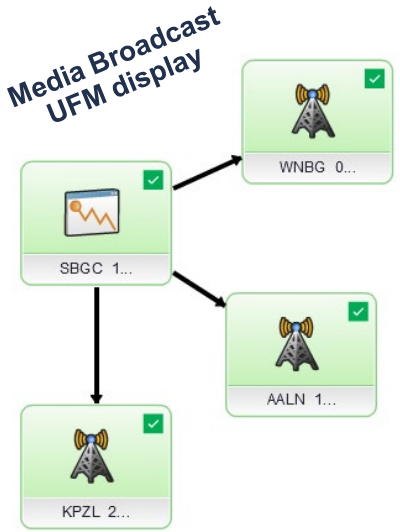
Component	Monitoring-parameter
Encoder/Decoder	Input Signal
Encoder/Decoder	Network Port: link up/down
Router/Switch	Network Port: link up/down
DAB HE-Multiplexer	Input Signal Program
DAB HE-Multiplexer	Output Signal Multiplex
Redundancy Switches	Input Signal
Redundancy Switches	Switch Setting
DAB-Transmitter	Input Signal
DAB-Transmitter	Broadcast Signal Status

Monitoring synchronisation and signal quality with monitoring receivers in the coverage area

Each transmitter is monitored.
Any deviation from the set value is signalled.



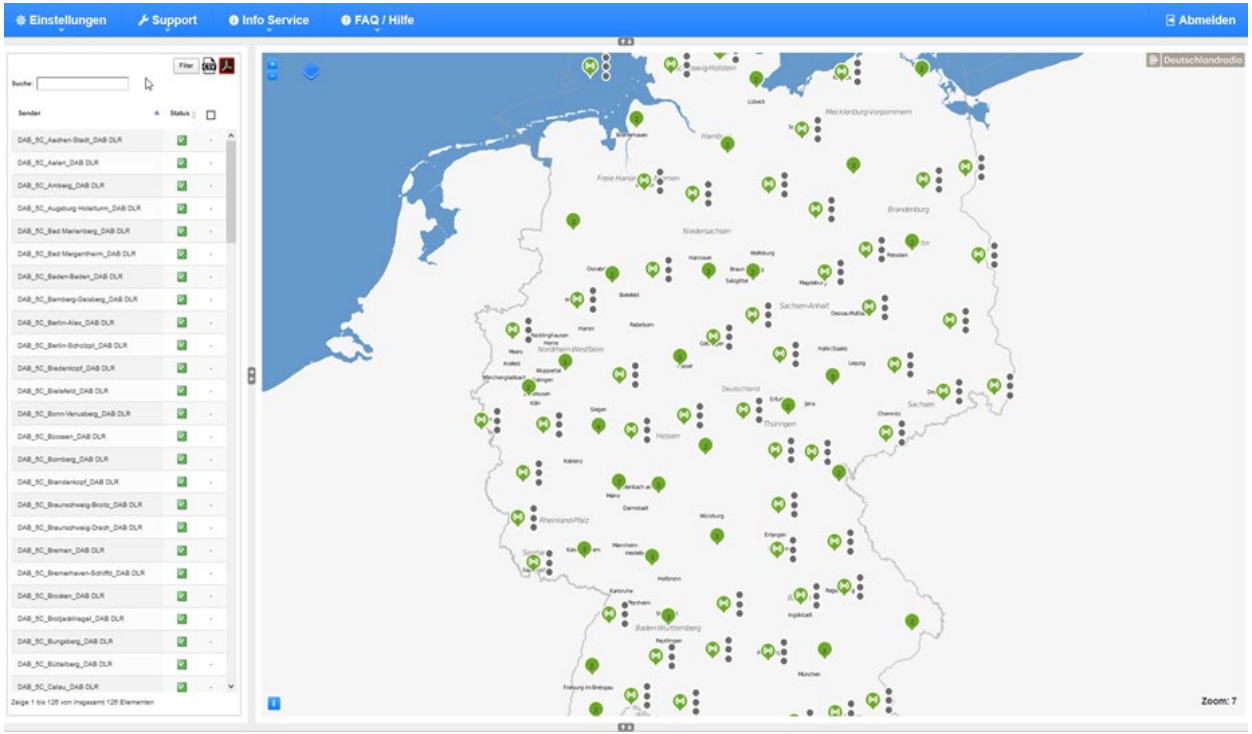
Example of live reception of 8 DAB transmitters (timing and signal level)



Example of a network with 3 transmitters and a monitoring receiver (edge probes)

-> Frequency faults (SFN) are detected and signalise immediately

The „Netzwerkmonitor“



Customers can check the status of each single site in terms of:

- Contribution
- Head-End (Multiplexer)
- Distribution
- Transmitter

…green „everything is fine“, red means „no signal“

contact:

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Lets stay connected

media-broadcast.com

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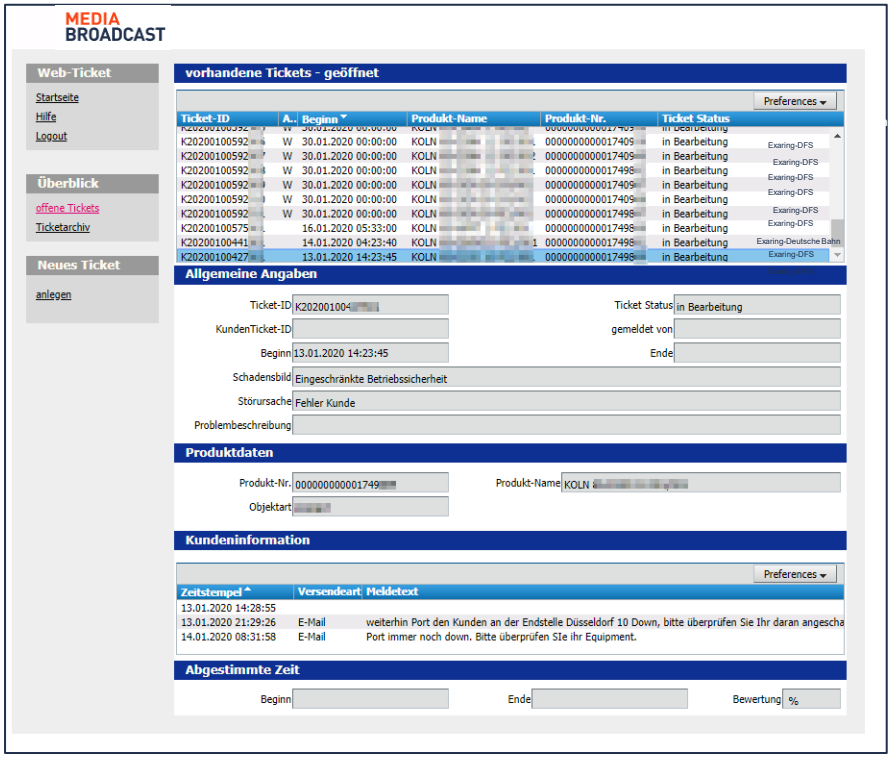
BACKUP
DAB+ Service Monitoring

Web ticket



Ticket creation & investigation (TTS)

- Client structure:
  A single ticket can be created/filtered for each customer/sub-customer.

Fully automated TTS

- For each incident/fault, a ticket is automatically created and delivered to the affected customer

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