

# AVT DAB Headend

## Quick Guide

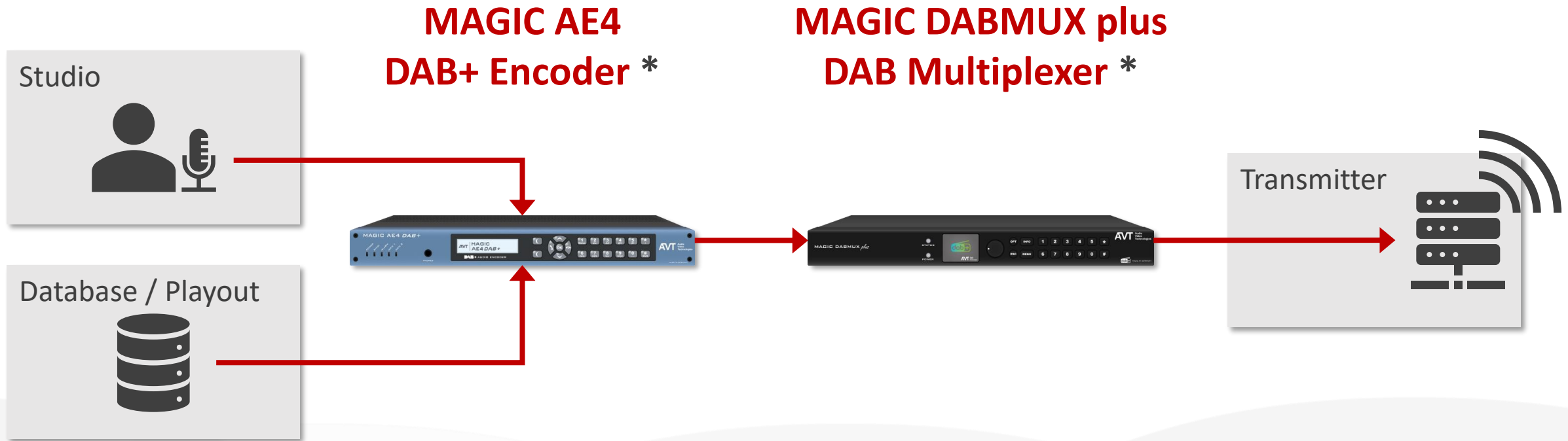
# Preamble



The following document is intended to help setting up a **DAB Headend** with **AVT components**

- The described system comprises at least of
  - 1 × AVT Audio Encoder **MAGIC AE4** or **MAGIC AE1 DAB+ Go** and
  - 1 × AVT Multiplexer **MAGIC DABMUX plus** or **MAGIC DABMUX Go**
- Setting up more complex scenarios (e.g. redundant solutions, ETI output, internal audio encoders, ...) could be derived from the following descriptions.

# System Components



\*) AVT MAGIC AE1 DAB+ Go encoder and AVT MAGIC DABMUX Go multiplexer could be used in a similar way.

# Basic IP Configuration



Before connecting the devices' Ethernet interfaces to your production network, their IP addresses must be configured.

# Basic IP Configuration: **MAGIC AE4 / AE1 DAB+ Go**

- Use *MENU* button on front display to set up IP addresses and netmask:
  - Navigate to SYSTEM SETTINGS → LAN INTERFACE
  - Adjust IP address, subnet mask and gateway parameters to your needs.
- Connect **MAGIC AE4/ MAGIC AE1 DAB+ Go** device to your production network

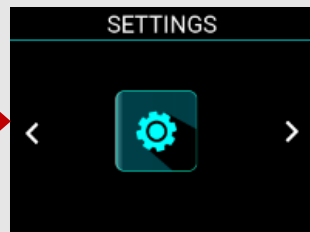


# Basic IP Configuration: **MAGIC DABMUX plus**

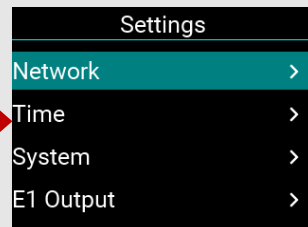
Press the  
**MENU**  
button

MENU

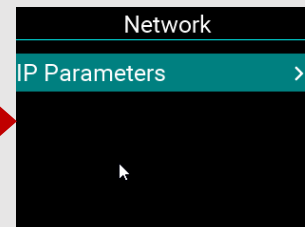
Use the rotary  
push button  
to navigate to  
*SETTINGS*



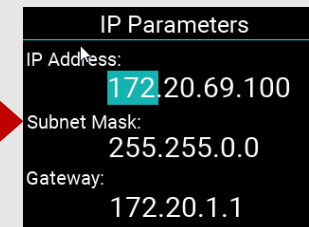
Select  
*Network*



Select  
*IP parameters*



Adjust the  
*IP Parameters*



**Reboot** the  
MAGIC DABMUX  
device

«Reboot»



# Basic IP Configuration: **MAGIC DABMUX Go**



As the MAGIC DABMUX Go devices does not feature a display the initial IP setup requires a management PC.

- Adjust IP settings of a notebook or management PC to the network **192.168.96.1/255.255.255.0**
- Use a direct ethernet connection or an ethernet switch to connect to **MAGIC DABMUX Go** on <http://192.168.96.102>
- Login as **admin** (default password **avtWH\_WP**)
- Navigate to *System* → *Settings* → *Network* and set up the desired IP address.
- Do not forget to **reboot** the device after IP parameter change!



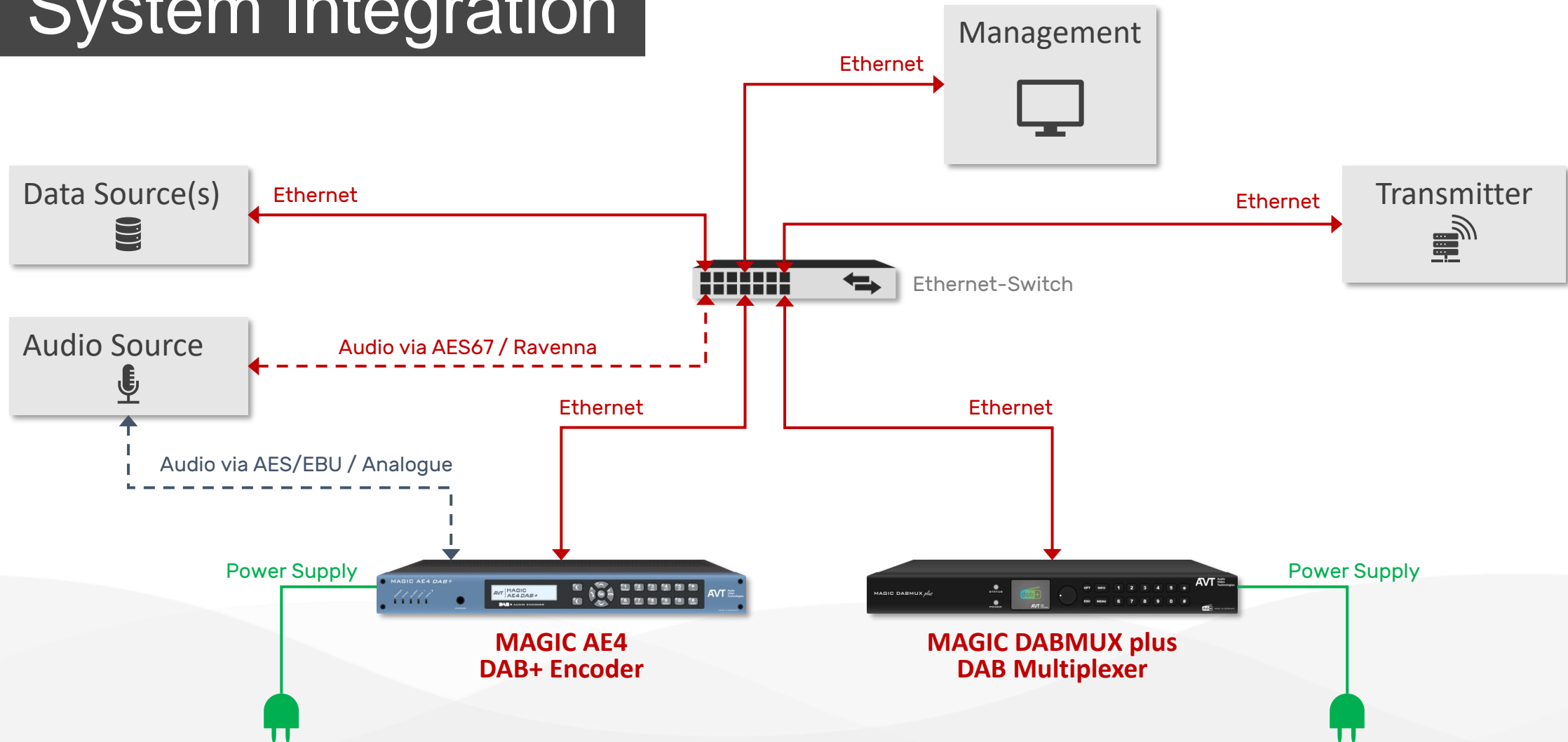
# Basic IP Configuration Completed



It is now safe to connect the devices to your production network.



# System Integration

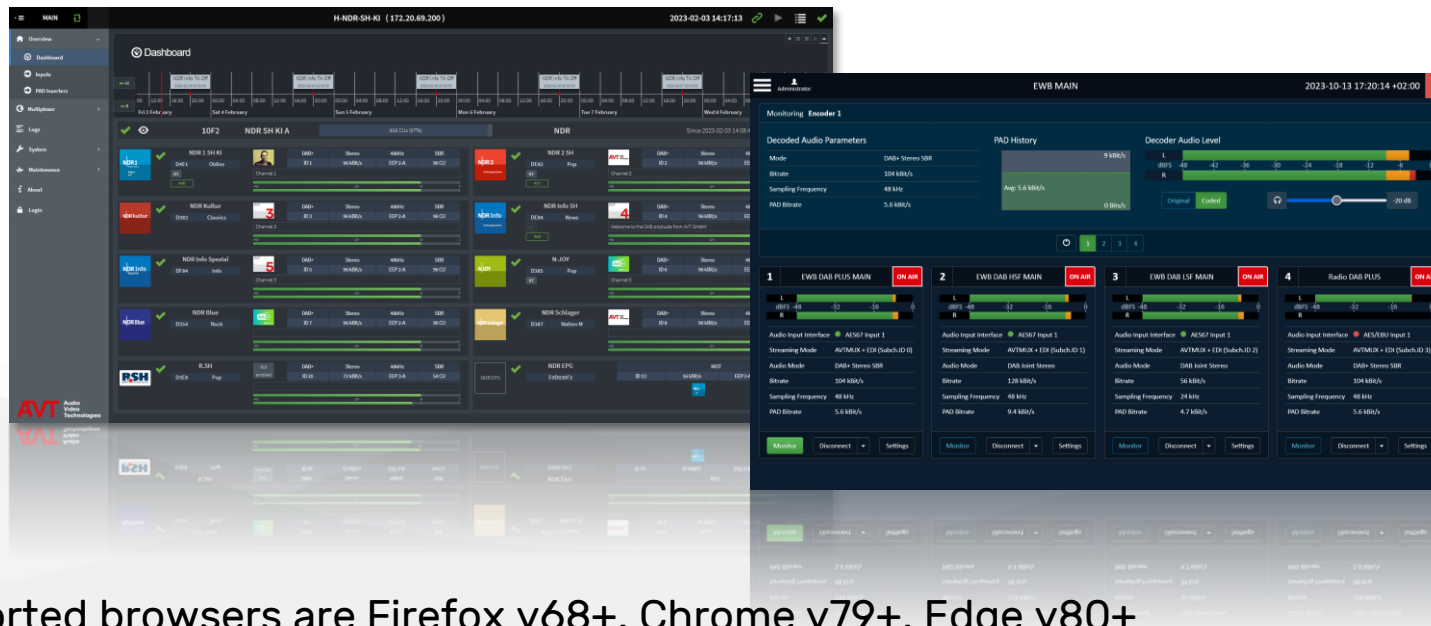


# System Configuration



Devices can be configured and monitored from their integrated web user interfaces.

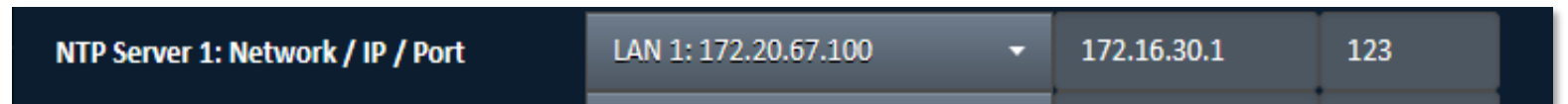
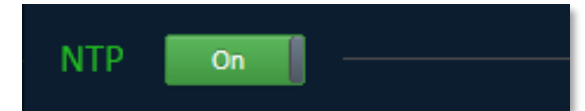
To access, navigate with your web browser\* to <http://<IP-Address-of-Device>>



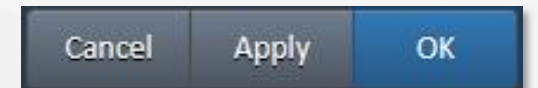
\*) Currently supported browsers are Firefox v68+, Chrome v79+, Edge v80+

# Audio Encoder Time Configuration

- Navigate to web interface of **MAGIC AE1 DAB+ Go** or **MAGIC AE4**
- Open *Time* Settings
  - Set *NTP* to **On**
  - Enter IP address of reliable *NTP Server 1*

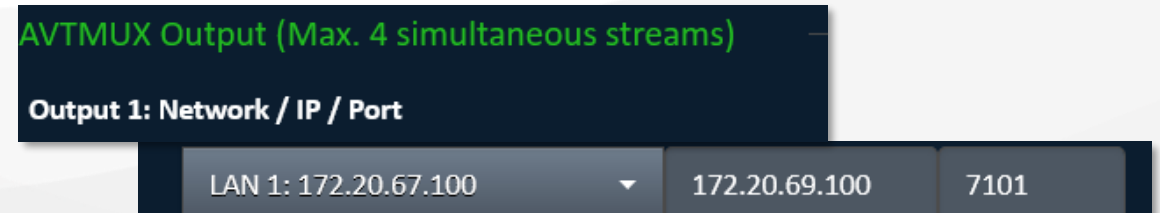
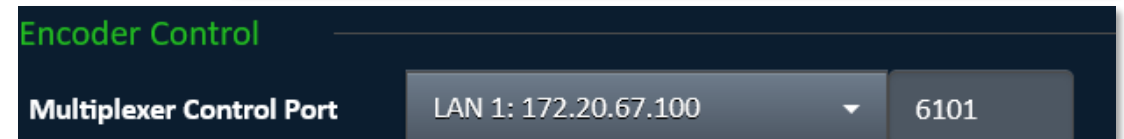
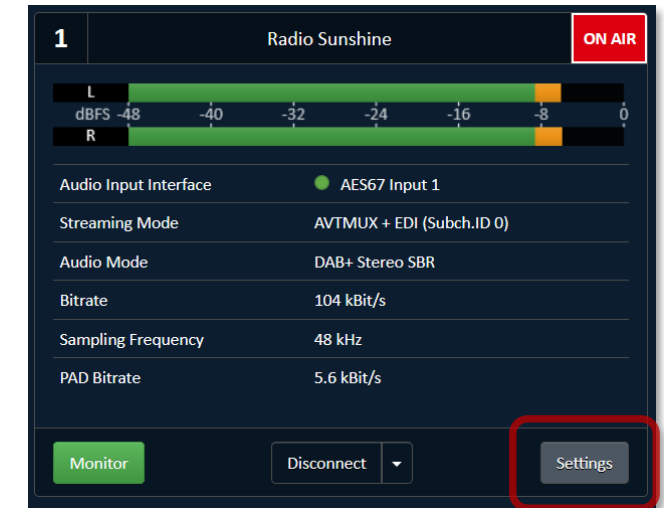


- Save configuration with *Apply* or *OK*.



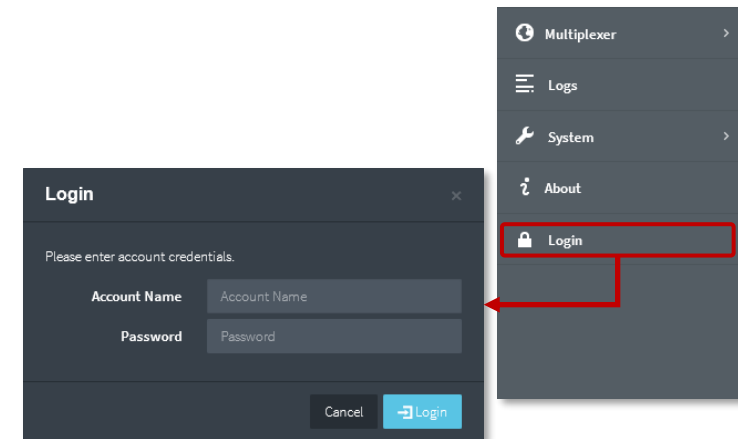
# Audio Encoder Configuration

- Navigate to web interface of **MAGIC AE1 DAB+ Go** or **MAGIC AE4**
- Open Encoder Settings
  - Open *Audio* tab and set:
    - **Streaming Mode** to **AVTMUX**
    - **Multiplexer Control Port:**  
**Any suitable port**  
(recommended port range 6000-6999)
  - Open *Output* tab and set:
    - **Output 1: Network / IP / Port:**  
IP address of the DABMUX device;  
**Any suitable port** on the DABMUX  
(recommended port range 7000-7999)



# Multiplexer Web Interface

- Navigate to web interface of **MAGIC DABMUX** device.
- Basic information is visible for all users.
- Configuration changes require a log-in as *admin* user.

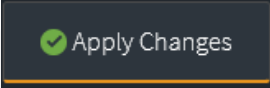


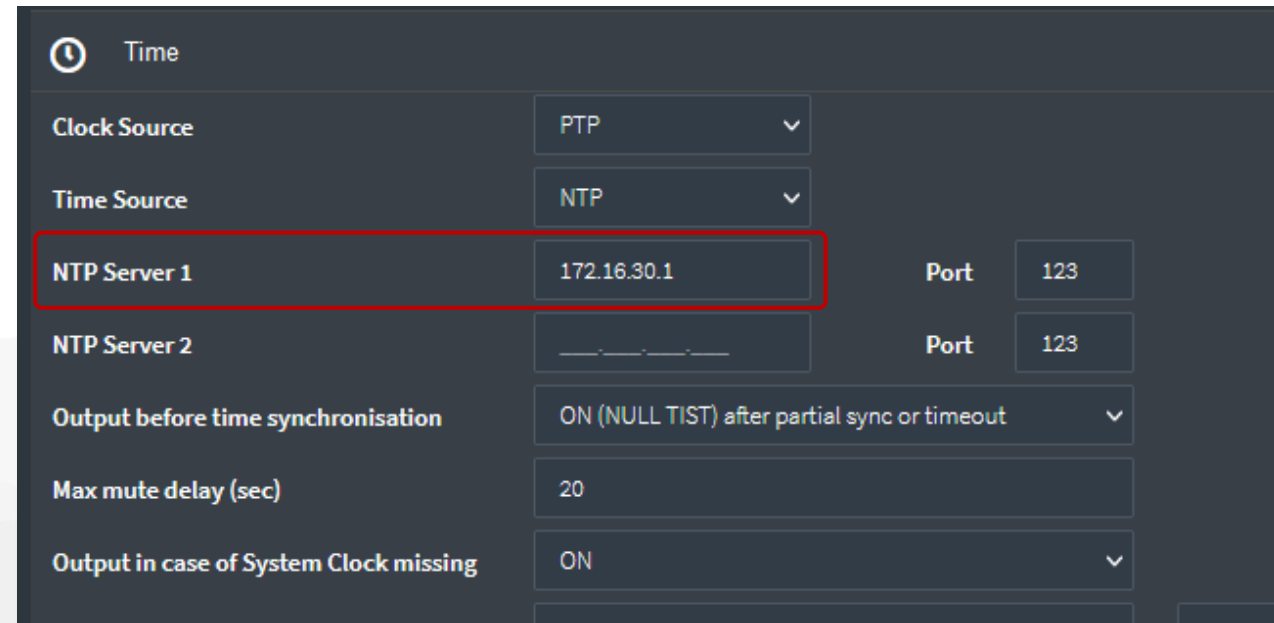
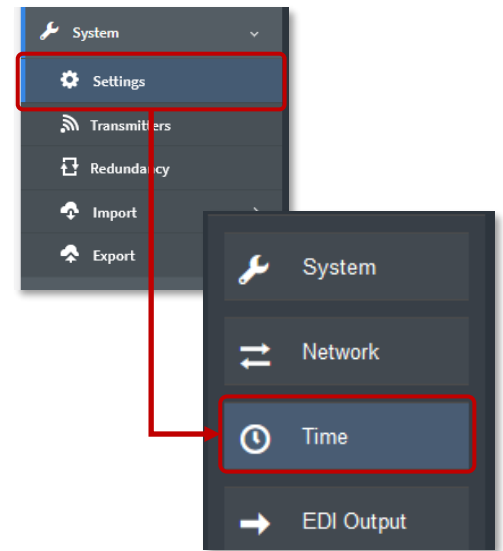
It is highly recommended to change the default passwords before going into productive operation!

- Default *admin* password:

**avtWH\_WP**



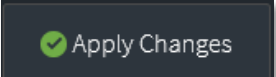
# Multiplexer Time Configuration

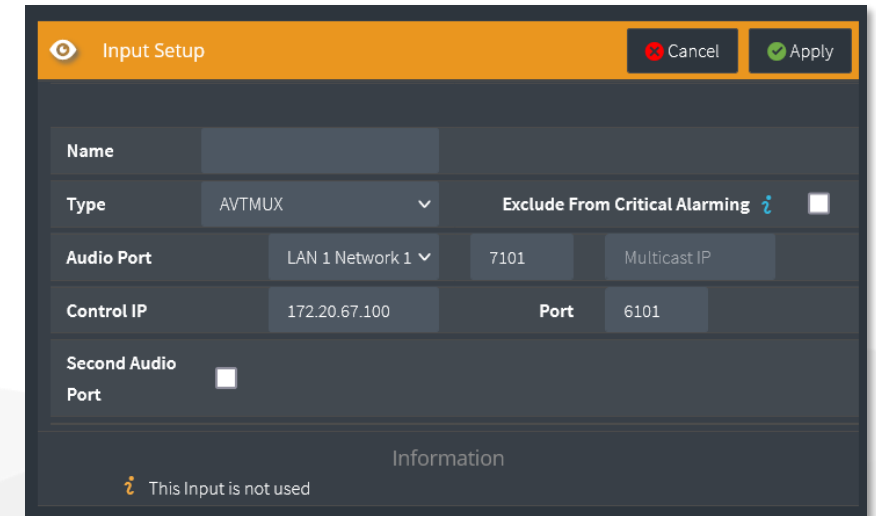
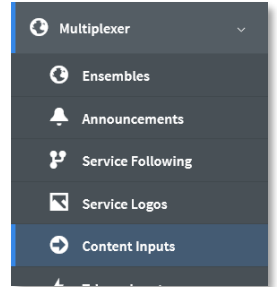
- Go to **Multiplexer** → **System** → **Settings** → **Time**
- Chose **NTP** as *Time Source*
- Enter IP address of reliable NTP server for *NTP SERVER 1*.
- If available, also enter *NTP SERVER 2*.
- Press  to save configuration.

A screenshot of the 'Time' configuration screen. The 'Clock Source' is set to 'PTP' and the 'Time Source' is set to 'NTP'. The 'NTP Server 1' field contains the IP address '172.16.30.1' and is highlighted with a red box. The 'Port' for NTP Server 1 is '123'. The 'NTP Server 2' field is empty. The 'Output before time synchronisation' is set to 'ON (NULL TIST) after partial sync or timeout'. The 'Max mute delay (sec)' is '20'. The 'Output in case of System Clock missing' is set to 'ON'.

Field	Value	Port
Clock Source	PTP	
Time Source	NTP	
NTP Server 1	172.16.30.1	123
NTP Server 2		123
Output before time synchronisation	ON (NULL TIST) after partial sync or timeout	
Max mute delay (sec)	20	
Output in case of System Clock missing	ON	

# Multiplexer Input Configuration

- Go to **Multiplexer** → **Content Inputs**
  - Press 
  - **Name:** *Internal label to identify input*
  - **Type:** **AVTMUX**
  - **Audio Port:** **Configured port** of the AE4 (recommended port range 7000-7999)
  - **Control IP:** IP address of the audio encoder
  - **Port:** Control port
  - Press  and  on top.

A screenshot of the 'Input Setup' dialog box. It has a title bar with an eye icon and 'Input Setup'. There are 'Cancel' and 'Apply' buttons in the top right. The dialog contains several fields: 'Name' (empty), 'Type' (set to 'AVTMUX'), 'Exclude From Critical Alarming' (checkbox), 'Audio Port' (set to 'LAN 1 Network 1'), '7101', and 'Multicast IP' (checkbox). Below these are 'Control IP' (set to '172.20.67.100') and 'Port' (set to '6101'). At the bottom, there is a 'Second Audio Port' checkbox and an 'Information' section with a message: 'This Input is not used'.

# DAB Ensemble and Service Parameter




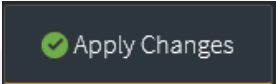
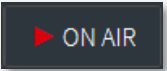
To define basic DAB Ensemble parameter please make sure to **contact your local regulator's office** first. Typically, the values for **Ensemble ID** and all used **Service ID** values are organized on national level.

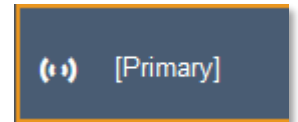
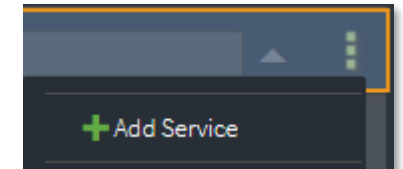
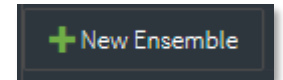
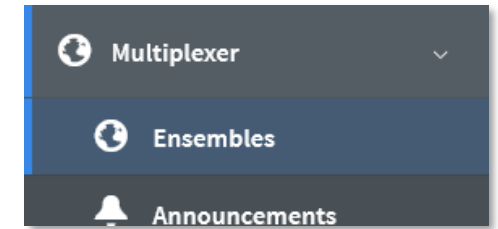


Using **invalid or duplicate Ensemble ID or Service ID** values might result in **technical disturbance**, unwanted receiver behaviour and even be a **public rights violation!**

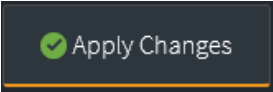


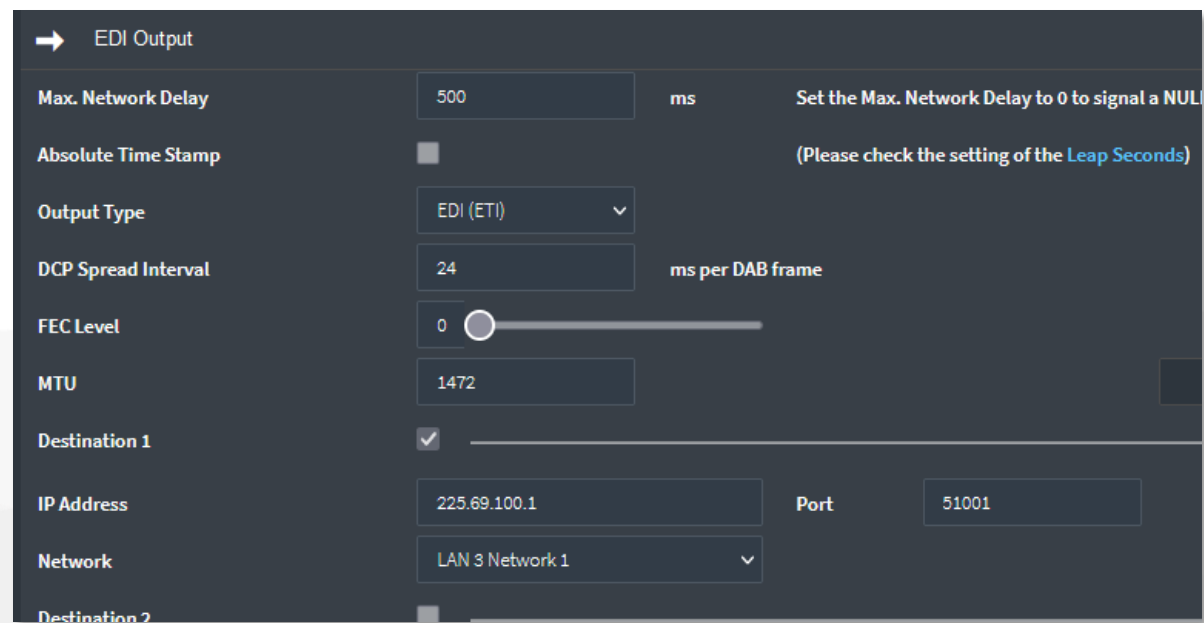
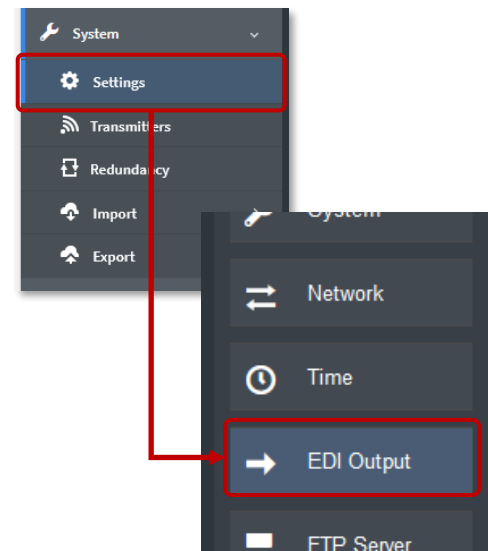
# Multiplexer Ensemble Configuration

- Navigate to **Multiplexer** → **Ensembles**
- Create a new ensemble configuration:
  - Configure general ensemble parameters.
  - Use the three dots and select to add a new service
  - Configure general service parameters.
  - Select the **[Primary]** Component:
    - Adjust subchannel and audio parameters.
    - **Main Input** allows you to select previously created audio input source.
- Use  and  to store the ensemble configuration.
- The  button enables the output of the ensemble.



# Multiplexer Output Configuration

- Go to **Multiplexer** → **System** → **Settings** → **EDI Output**
- Enable **Destination 1**
  - Set destination IP address and port
  - Recommended port range 50000 - 60000
- Save configuration with 

A screenshot of the 'EDI Output' configuration window. It contains several settings: 'Max. Network Delay' set to 500 ms; 'Absolute Time Stamp' with a checkbox; 'Output Type' set to 'EDI (ETI)'; 'DCP Spread Interval' set to 24 ms per DAB frame; 'FEC Level' set to 0 on a slider; 'MTU' set to 1472; 'Destination 1' checked; 'IP Address' set to 225.69.100.1; 'Port' set to 51001; and 'Network' set to 'LAN 3 Network 1'. There is also a 'Destination 2' section at the bottom which is currently disabled.

→ EDI Output

Max. Network Delay: 500 ms. Set the Max. Network Delay to 0 to signal a NULL frame.

Absolute Time Stamp: ☐ (Please check the setting of the Leap Seconds)

Output Type: EDI (ETI)

DCP Spread Interval: 24 ms per DAB frame

FEC Level: 0

MTU: 1472

Destination 1: ☒

IP Address: 225.69.100.1 Port: 51001

Network: LAN 3 Network 1

Destination 2: ☐

# Remarks for more complex setup scenarios

- To set up **redundant components** additional conditions may apply. Please make sure to feel confident about your configuration before using it in productive scenarios.
- All devices can be configured to be **password protected**. Please use this feature to avoid malicious access and accidental configuration changes.
- If you decided to use the **MAGIC DABMUX Encoder Edition**, please be aware that login mechanisms and look-and-feel are derived from the MAGIC DABMUX devices instead of MAGIC AE1Go / MAGIC AE4.



Support Hotline  
+49 911 5271 110



Support-Portal  
avt-nbg.zammad.com



Support E-Mail  
support@avt-nbg.de

# Support

- Device manuals, additional information and downloads can be found on the **AVT website** (<https://www.avt-nbg.de>)
- AVT offers **DAB Training** workshops that are customized to your needs. Whether you need to learn about DAB basics, best operational practices or detailed guidelines how to make most of your equipment, we will adopt accordingly.
- For any support business, please **contact us** via E-Mail, Ticket-System and/or telephone.