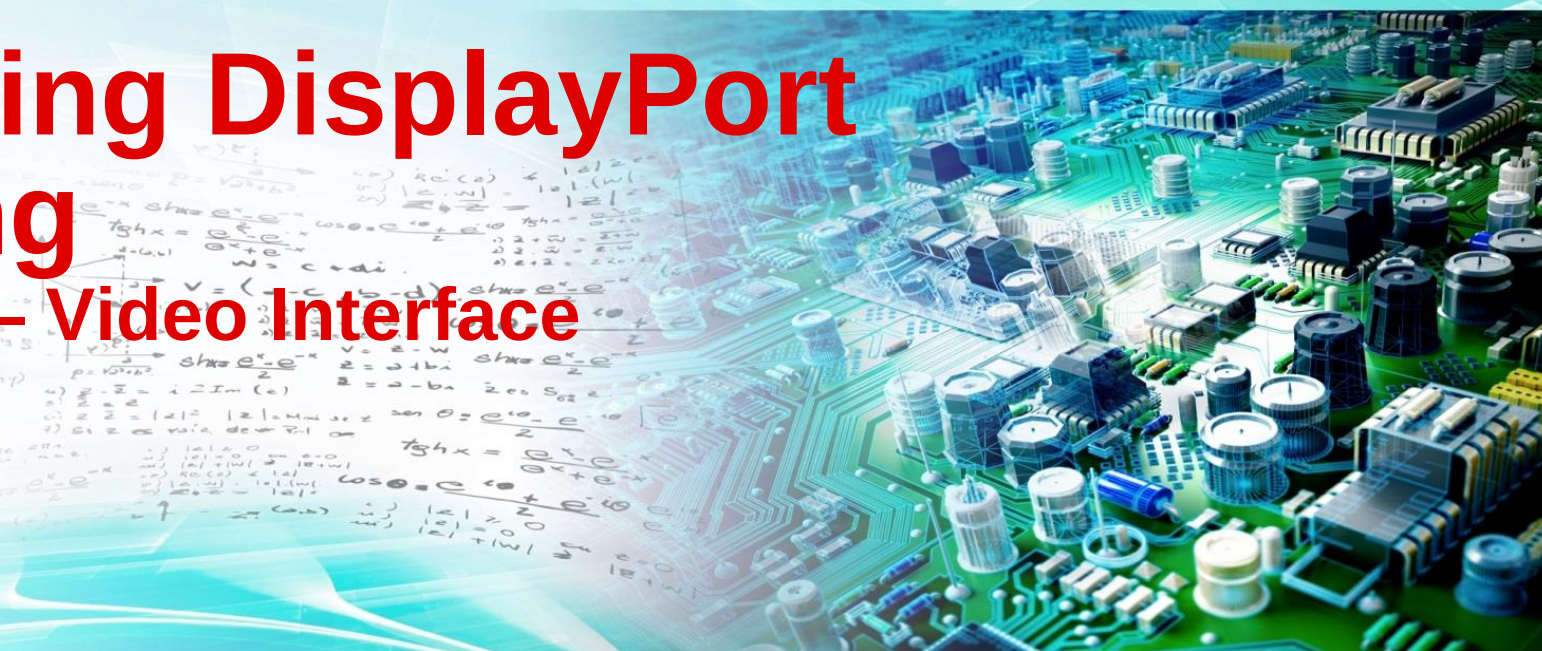
# Understanding DisplayPort Link Training

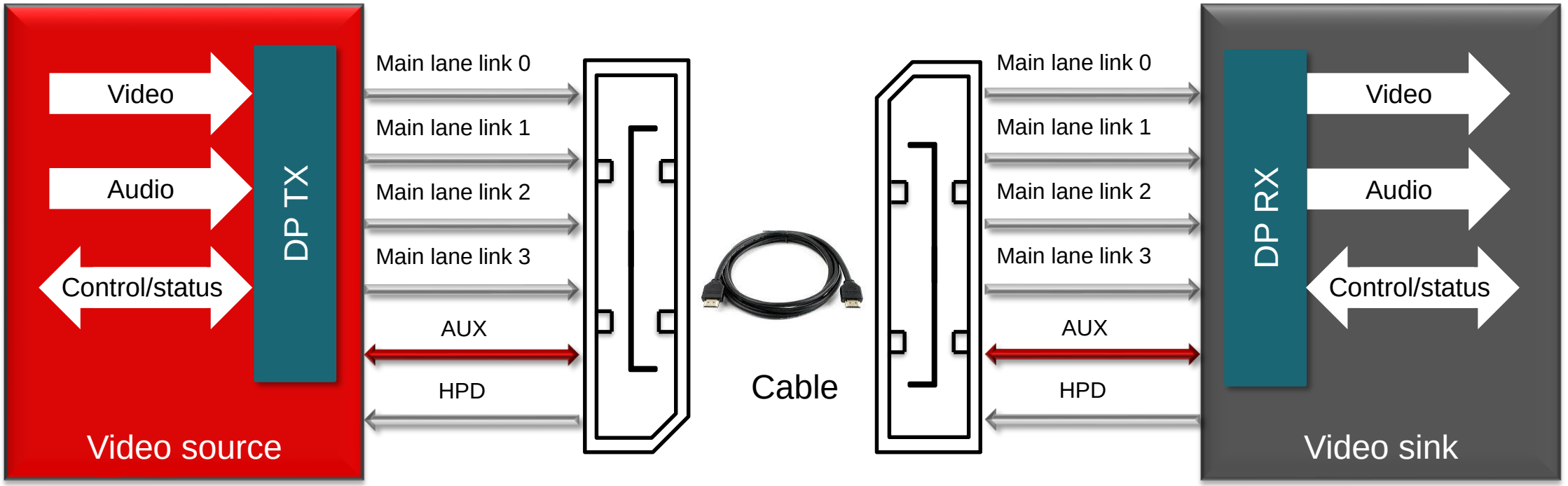
## TI Precision Labs – Video Interface



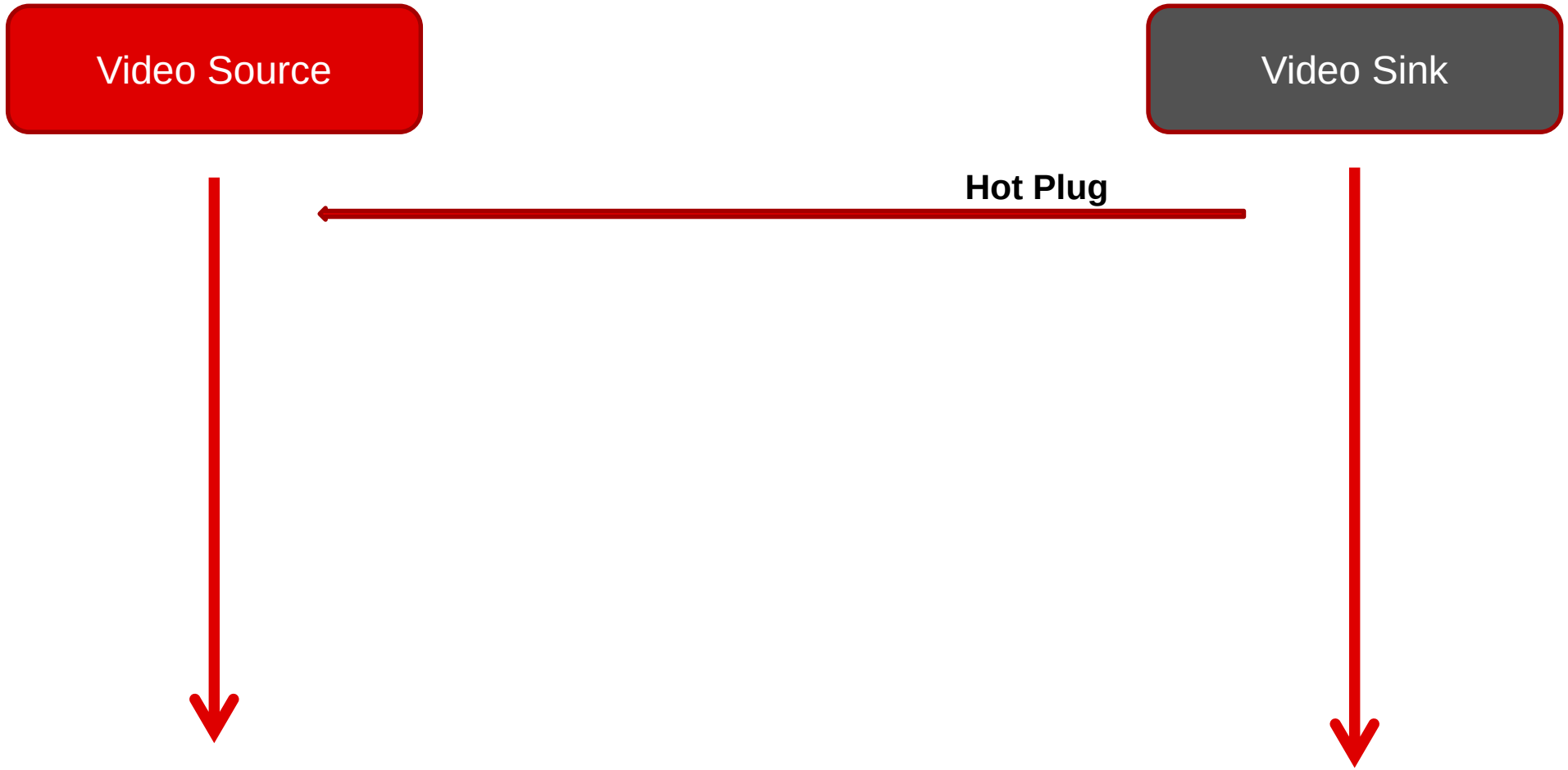
**Prepared by David Liu**

**Presented by Nicholaus Malone**

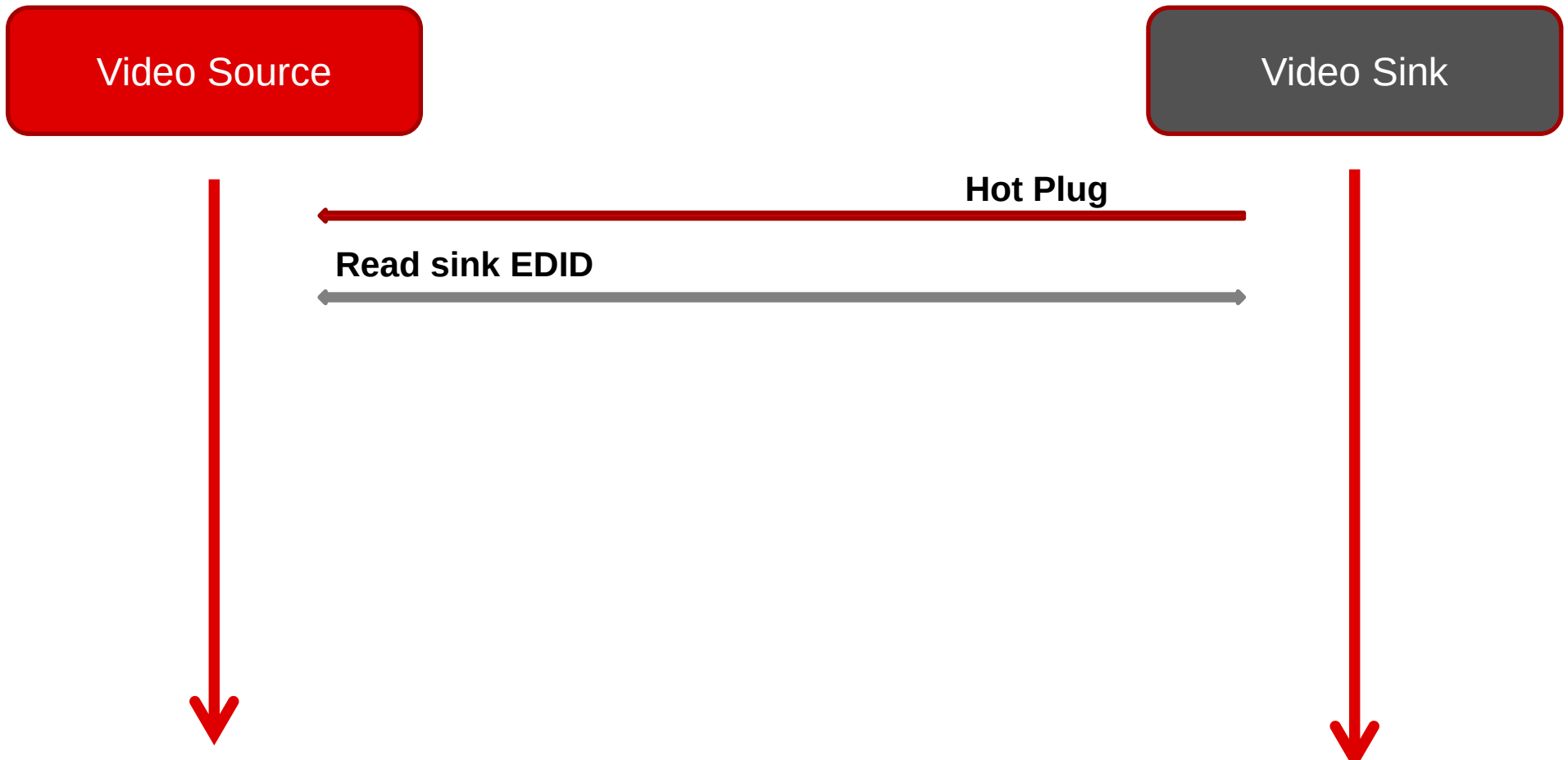
# DisplayPort™ signal interface



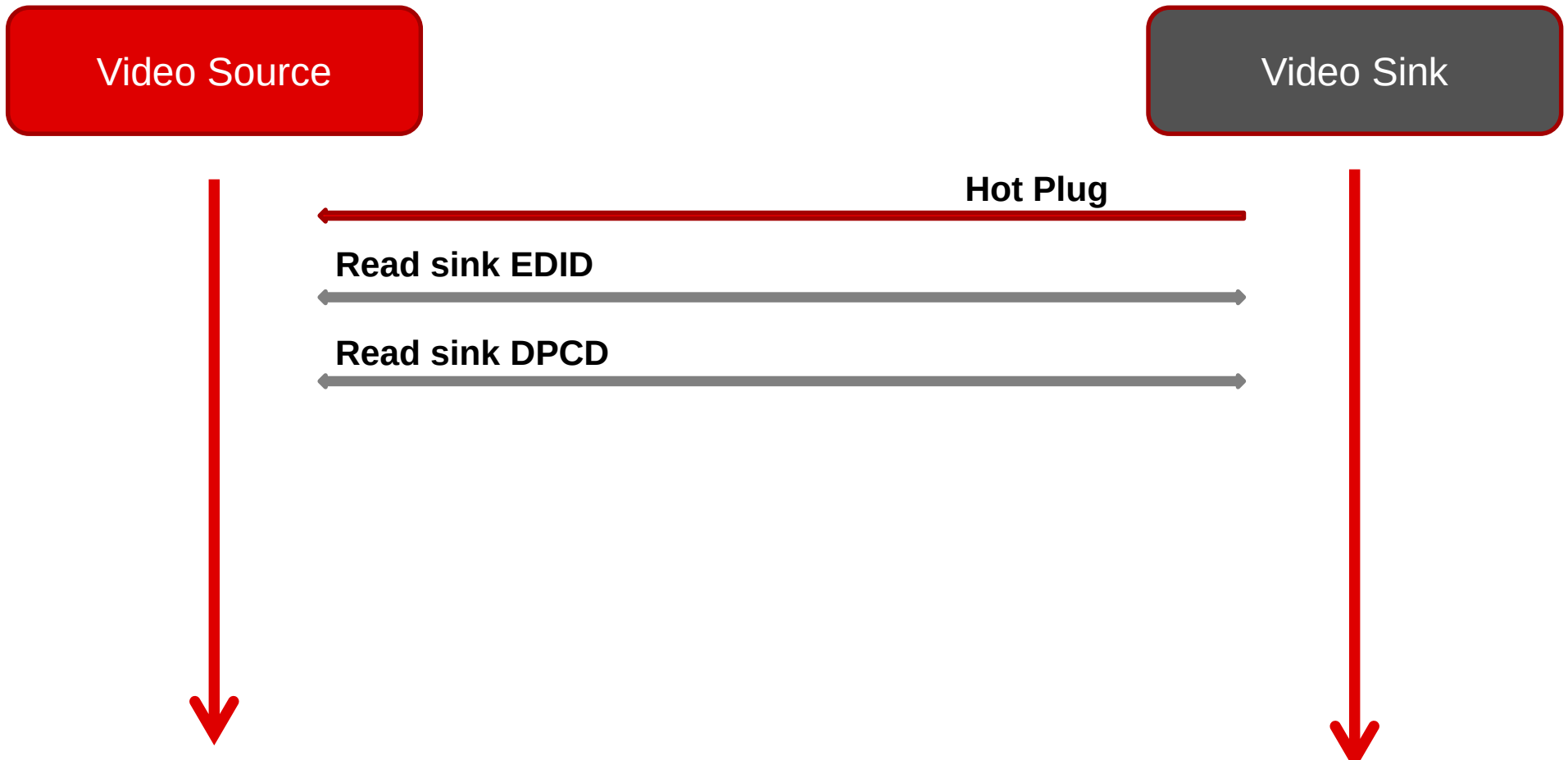
# DP connection sequence step 1



# DP connection sequence step 2



# DP connection sequence step 3



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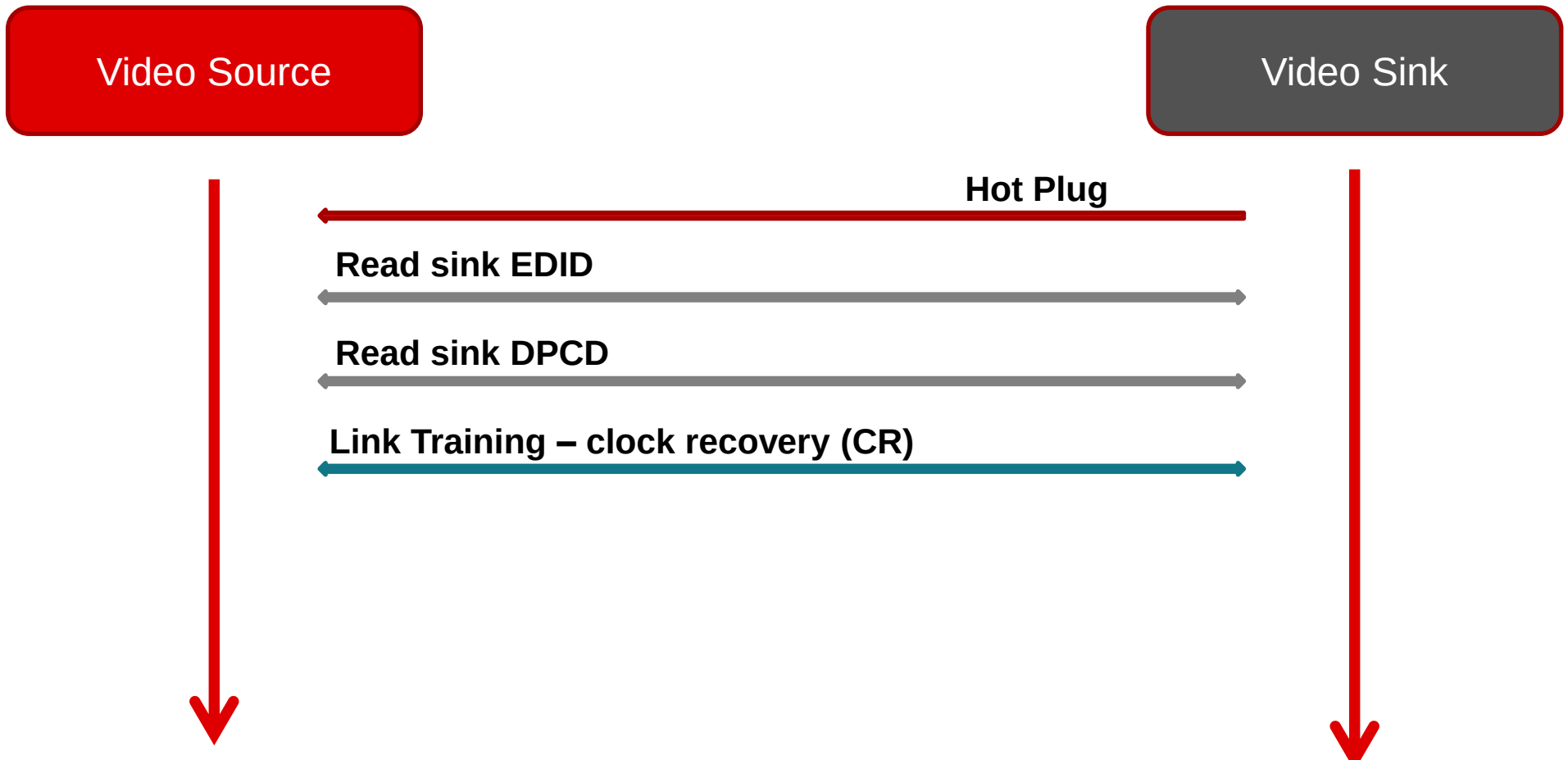
# DP connection sequence step 4



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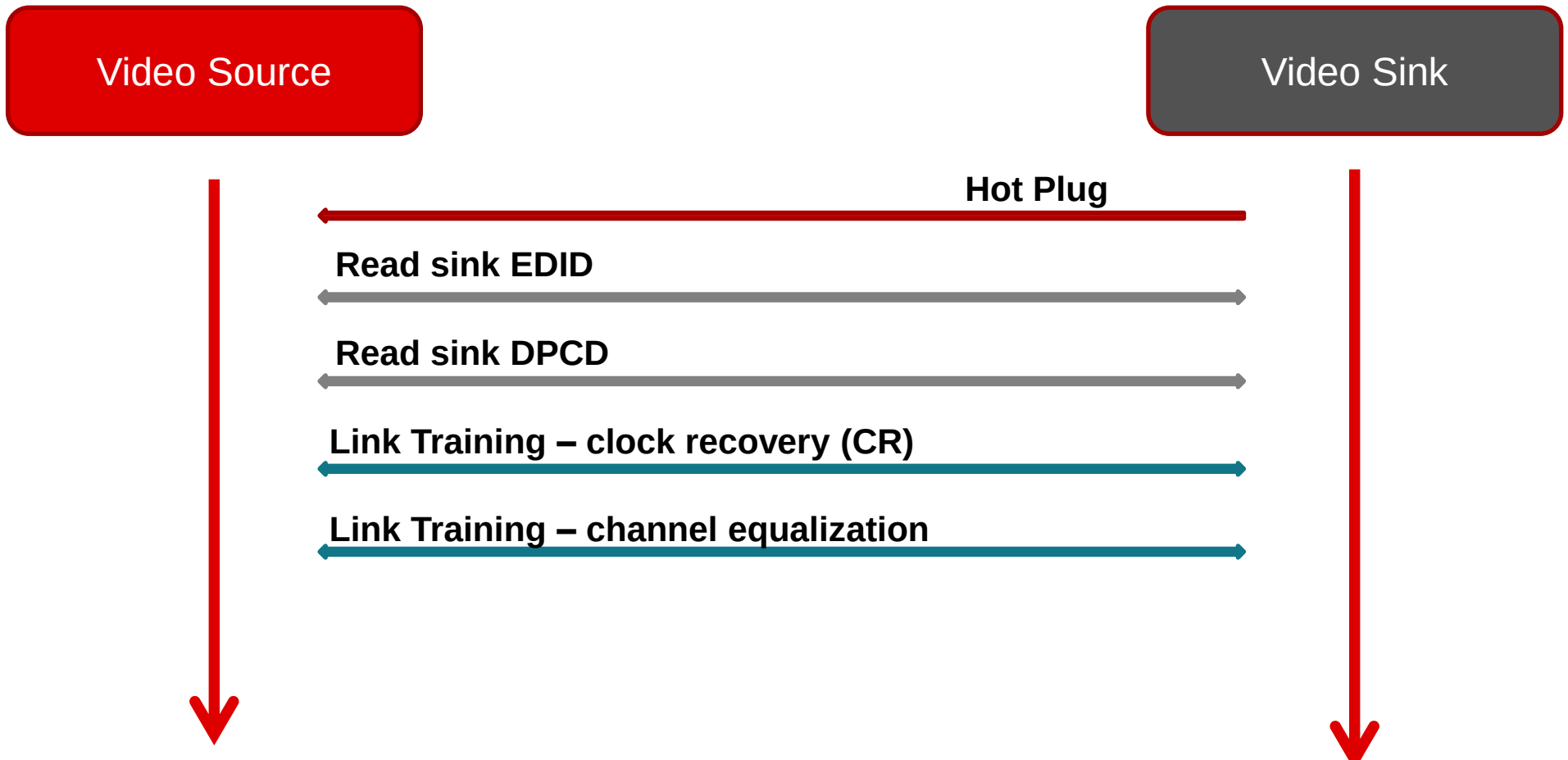
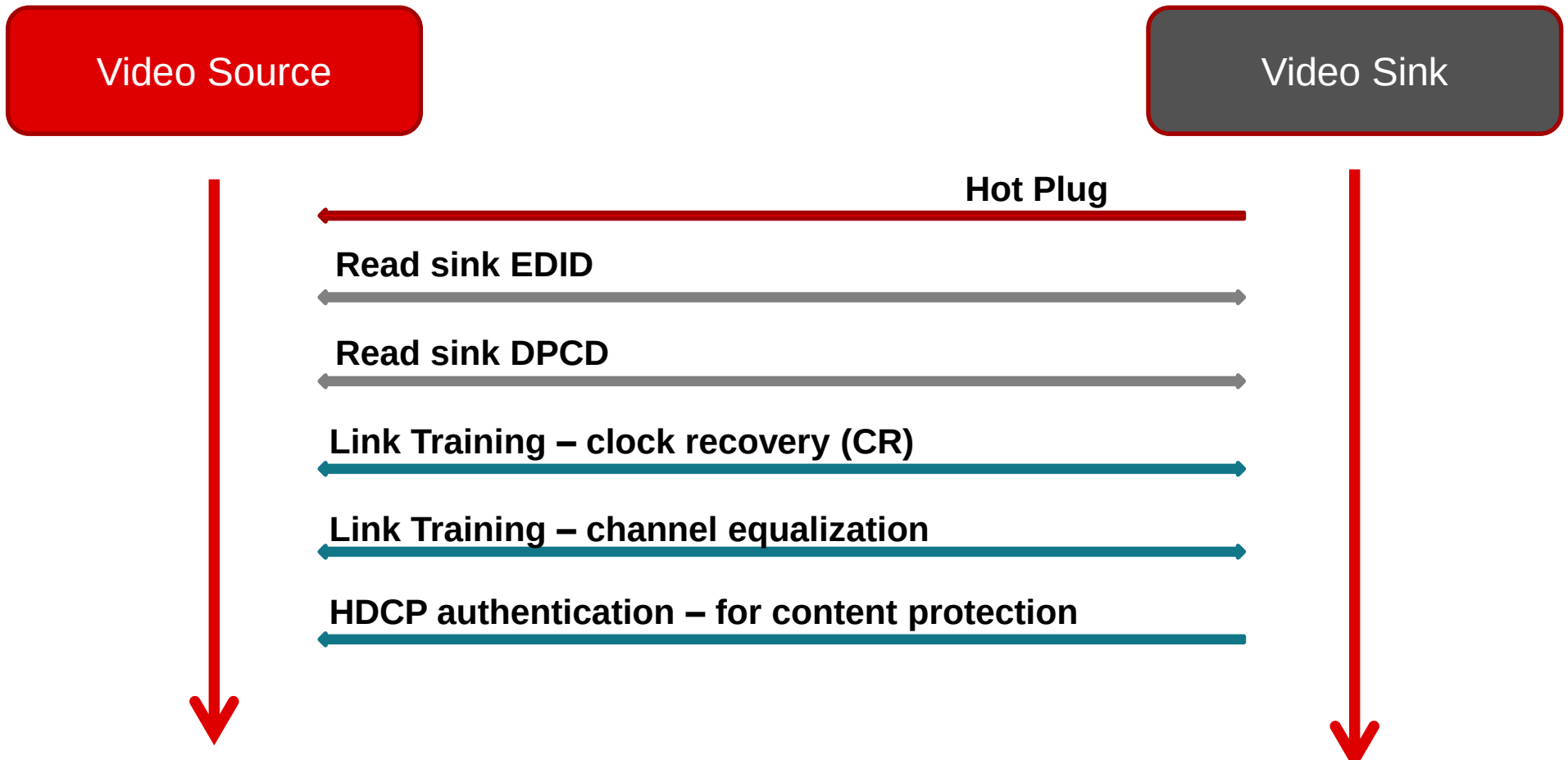
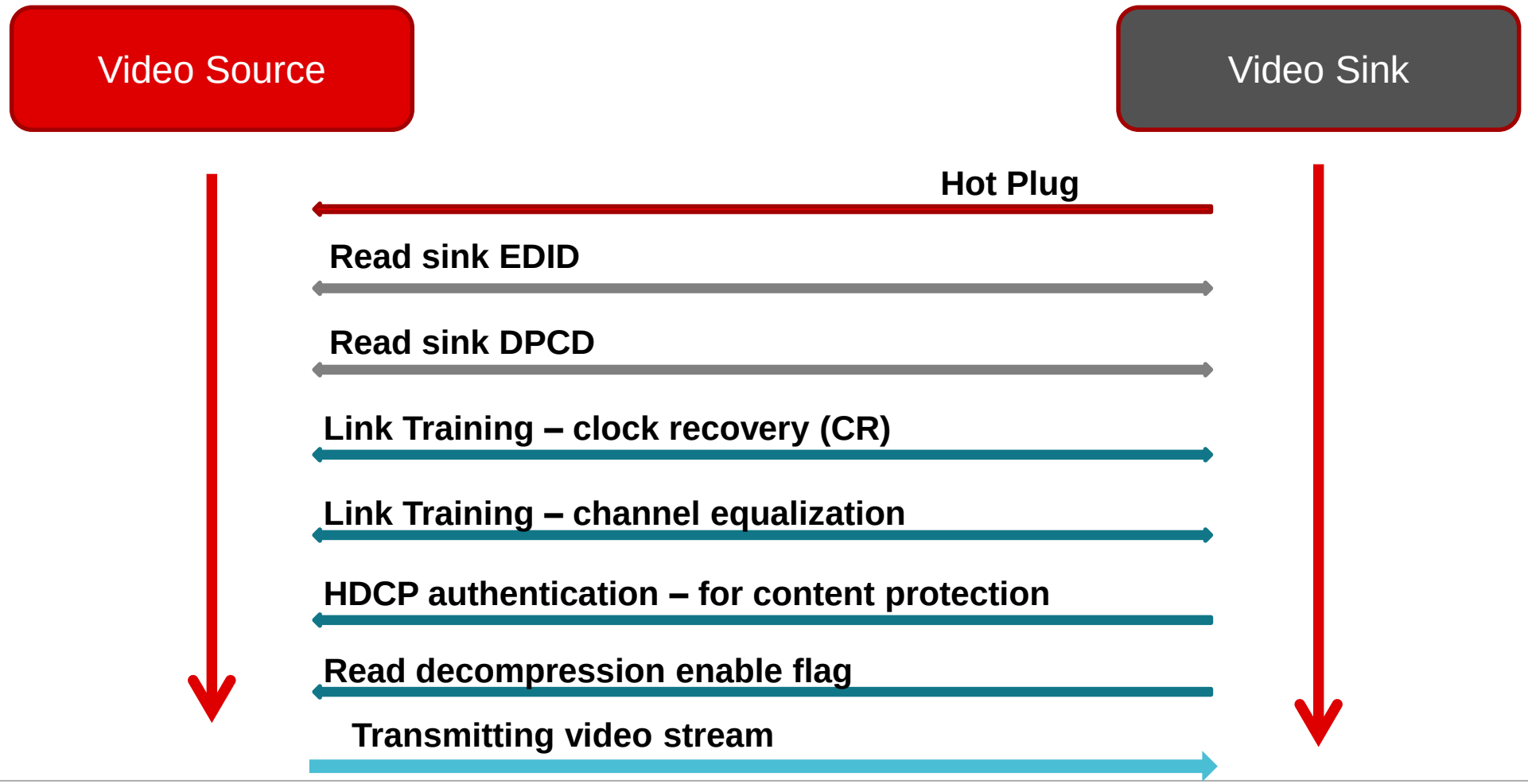
# DP connection sequence step 5



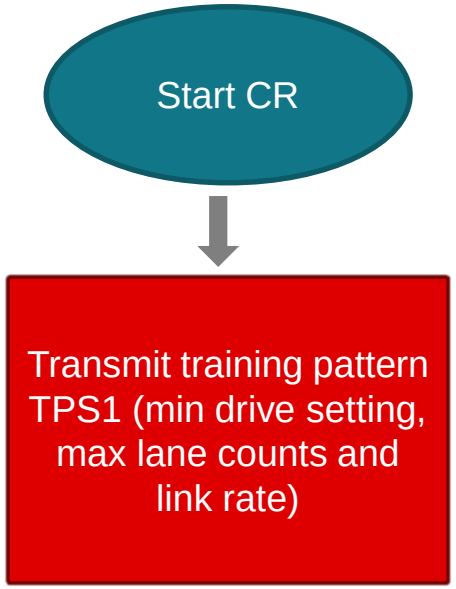
# DP connection sequence step 6



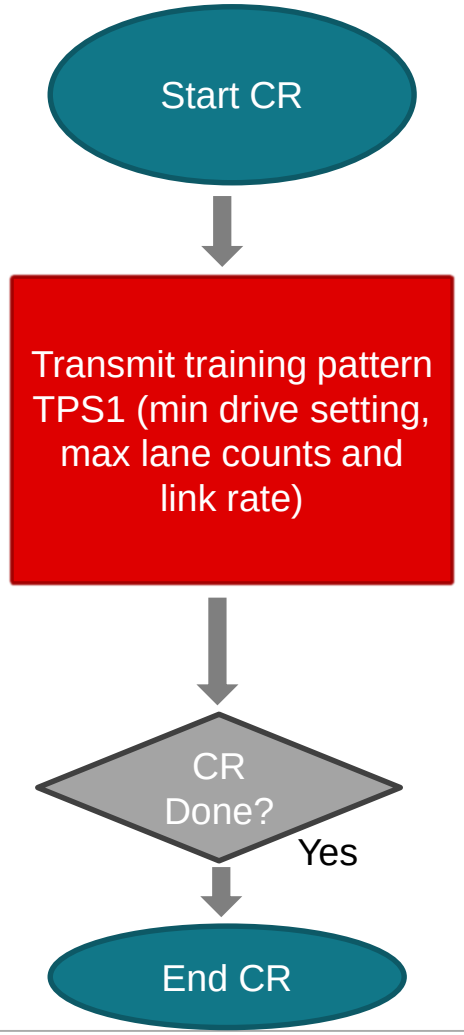
# DP connection sequence step 7



# Clock recovery sequence step 1



# Clock recovery sequence step 2



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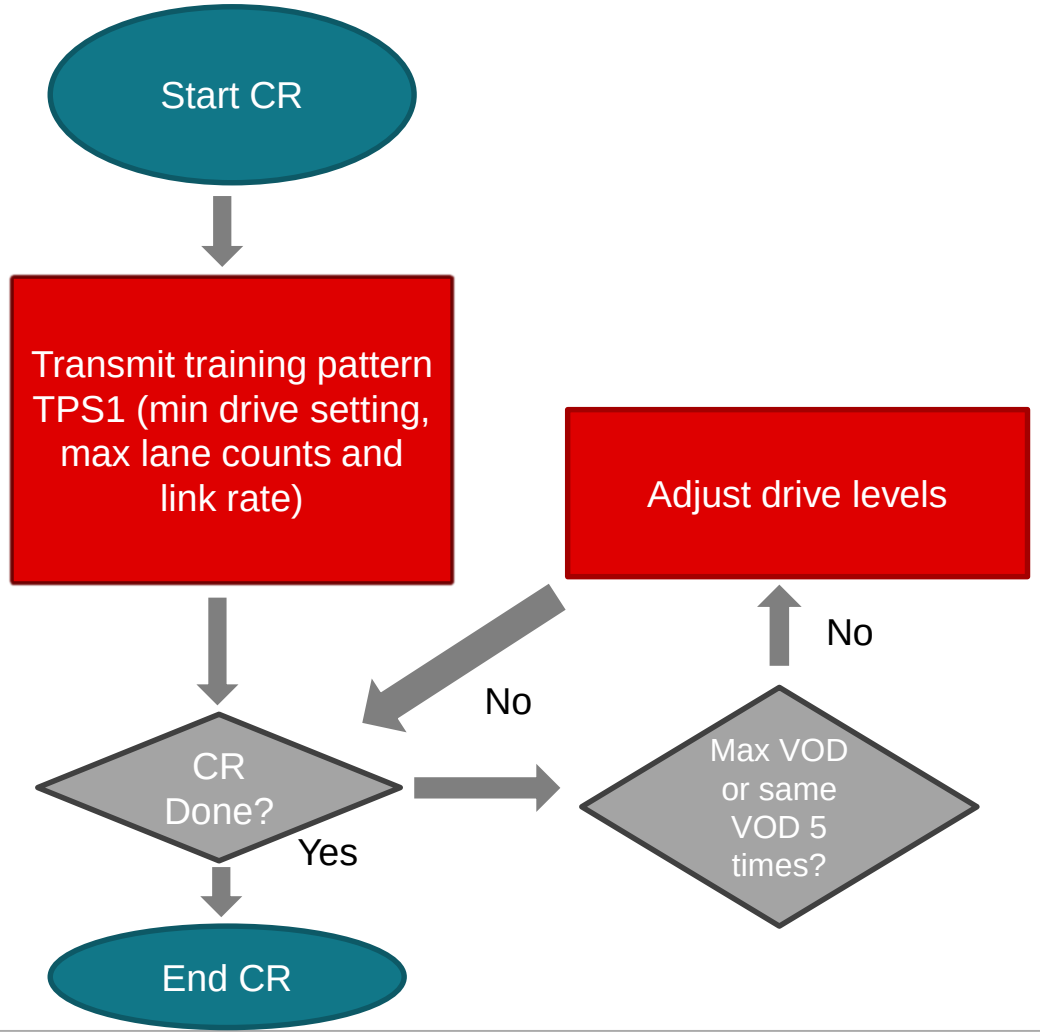
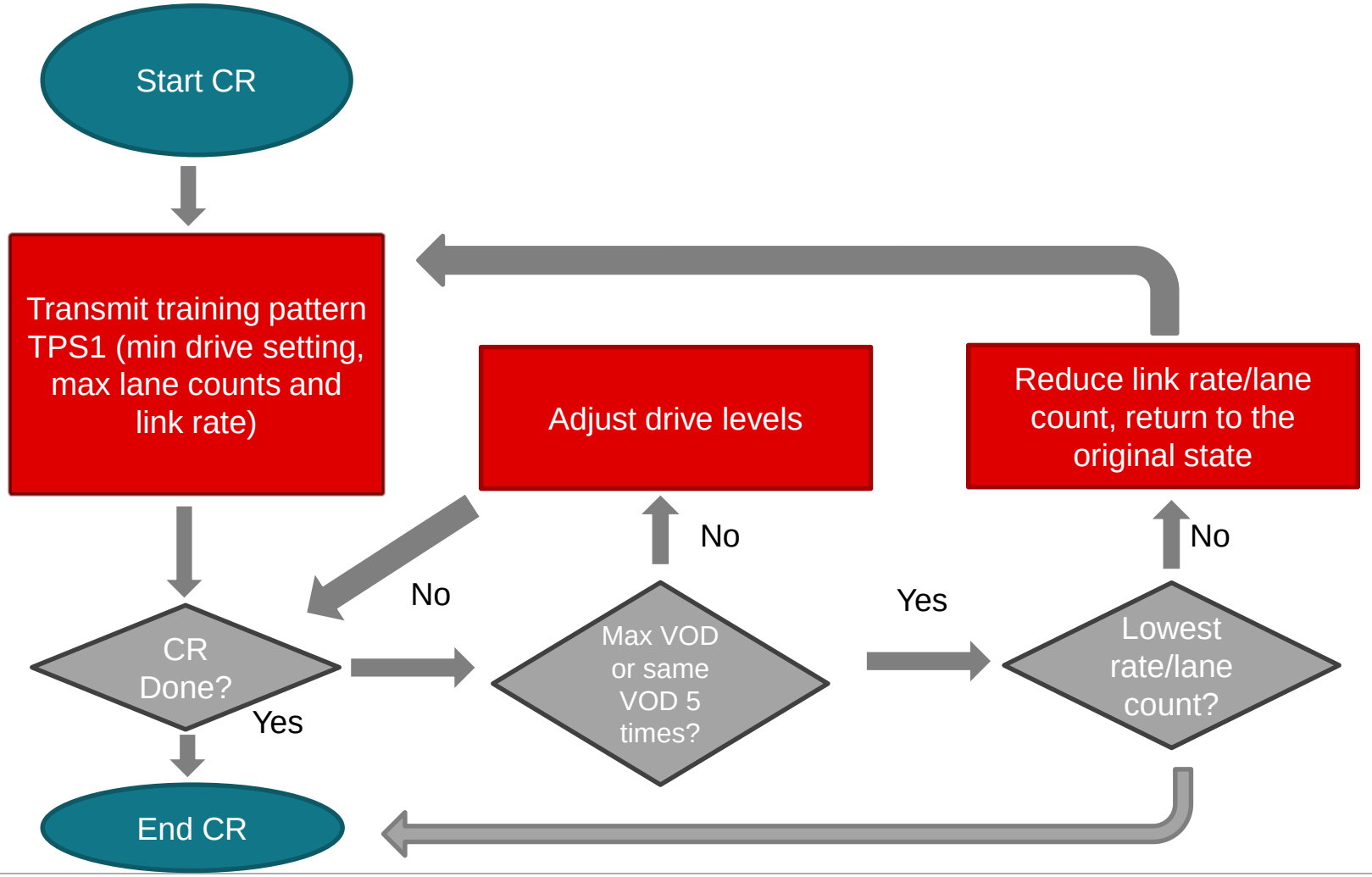
# Clock recovery sequence step 3



# Clock recovery sequence step 4



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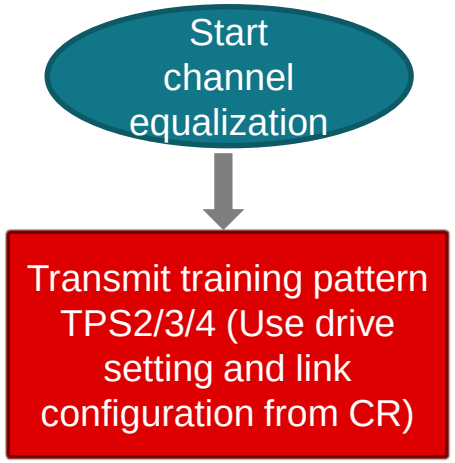
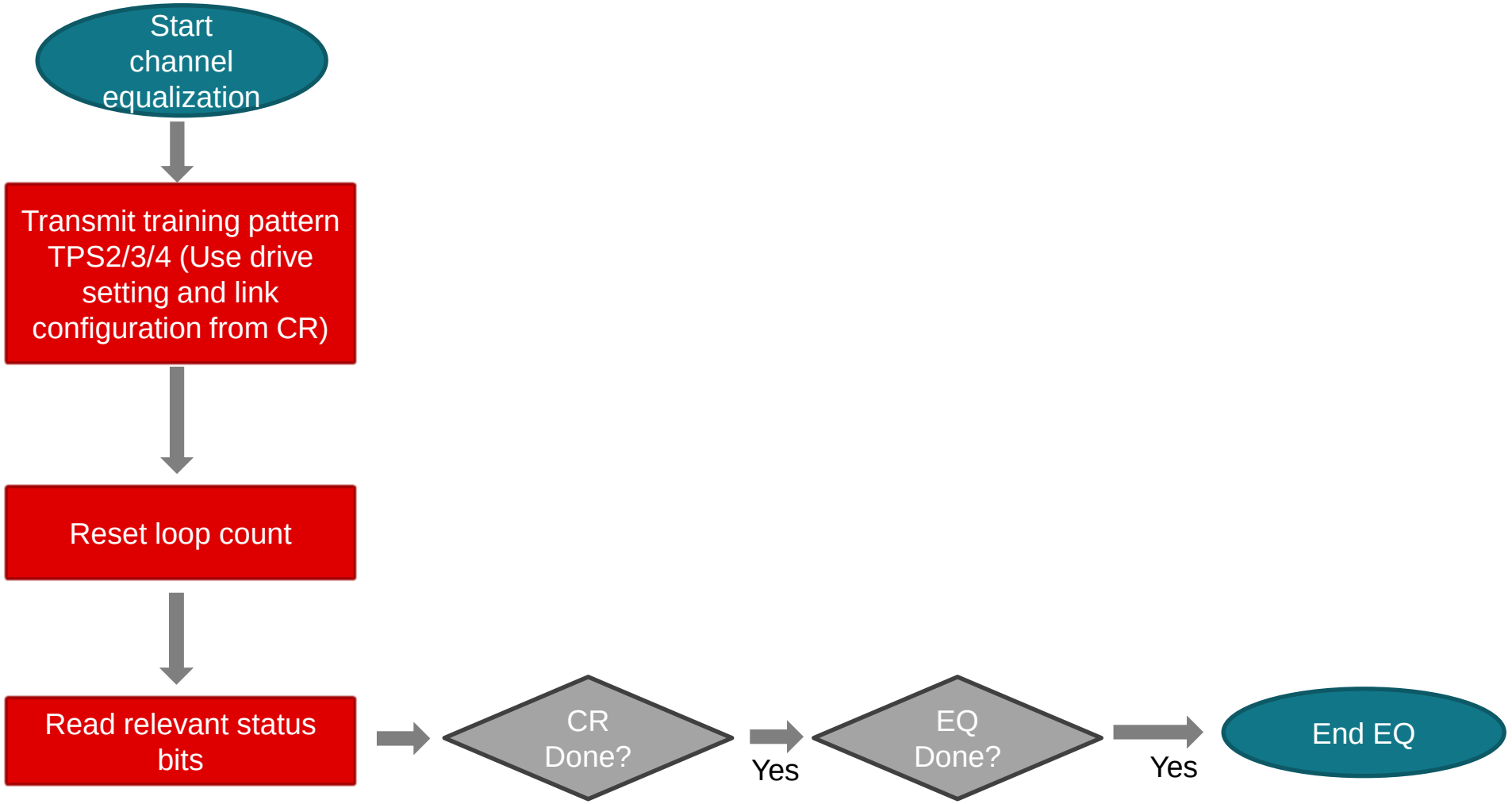
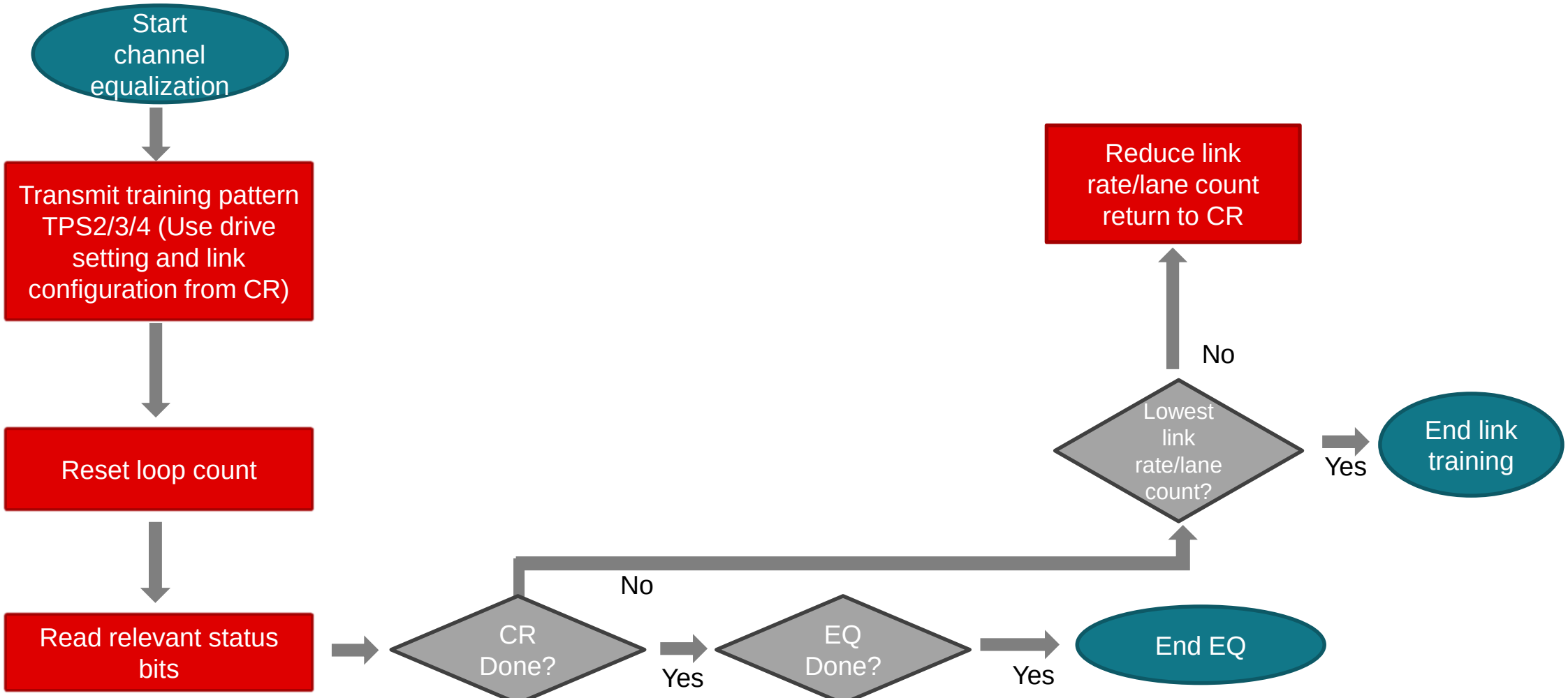
# Channel equalization sequence step 1



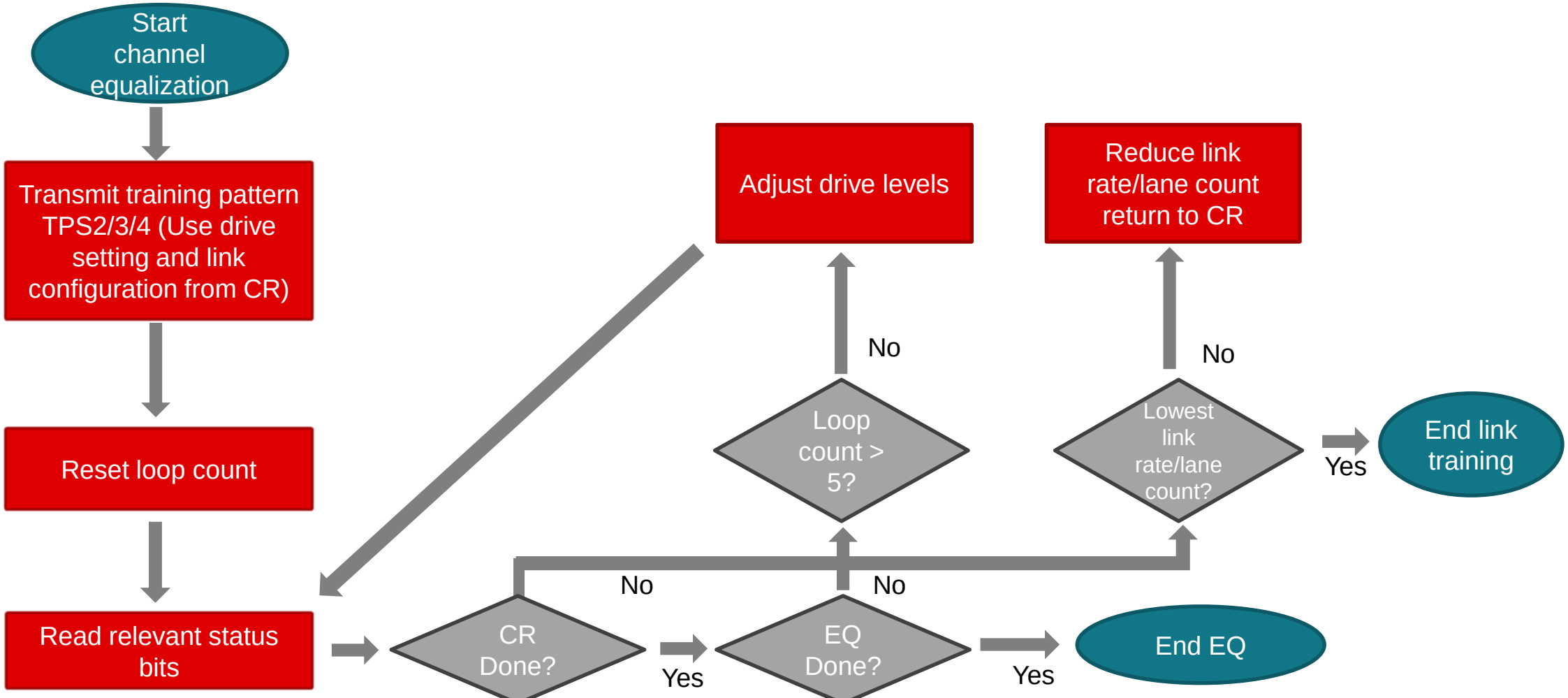
# Channel equalization sequence step 2



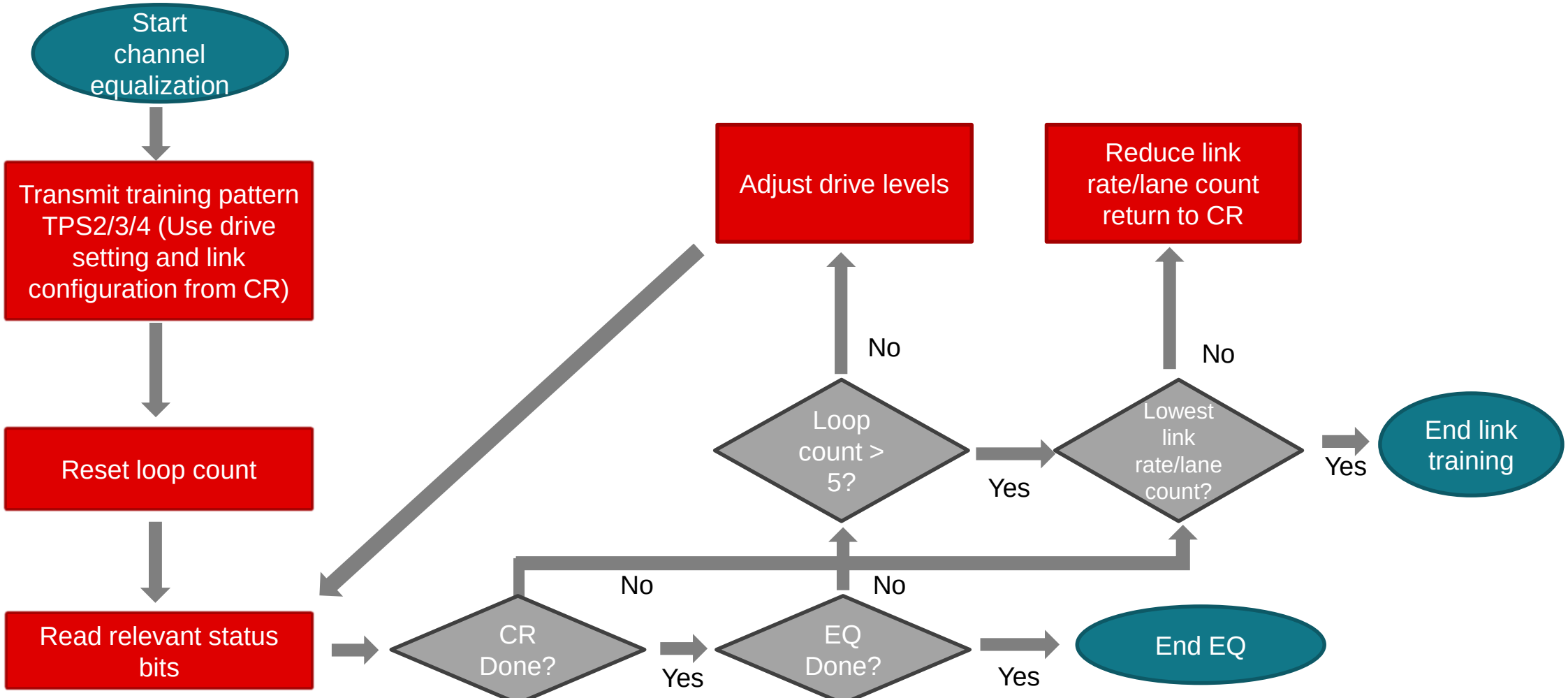
# Channel equalization sequence step 3



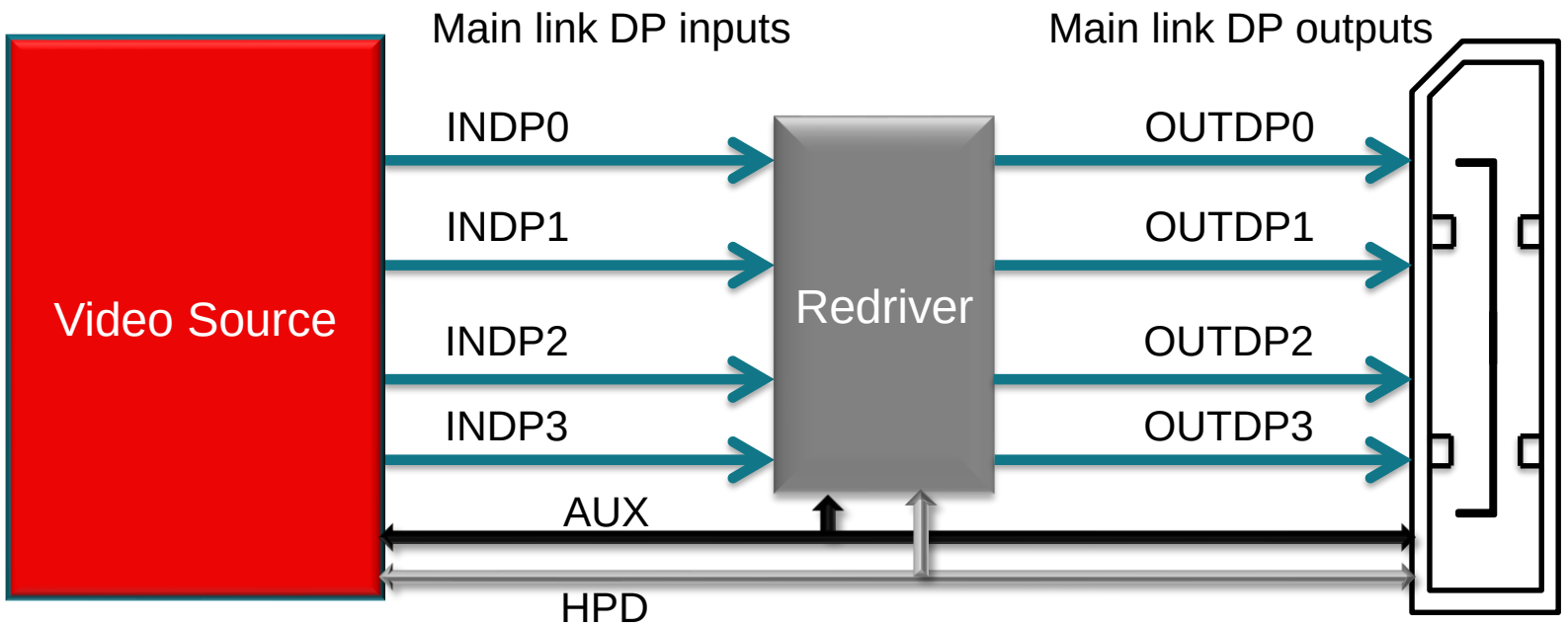
# Channel equalization sequence step 4



# Channel equalization sequence step 5

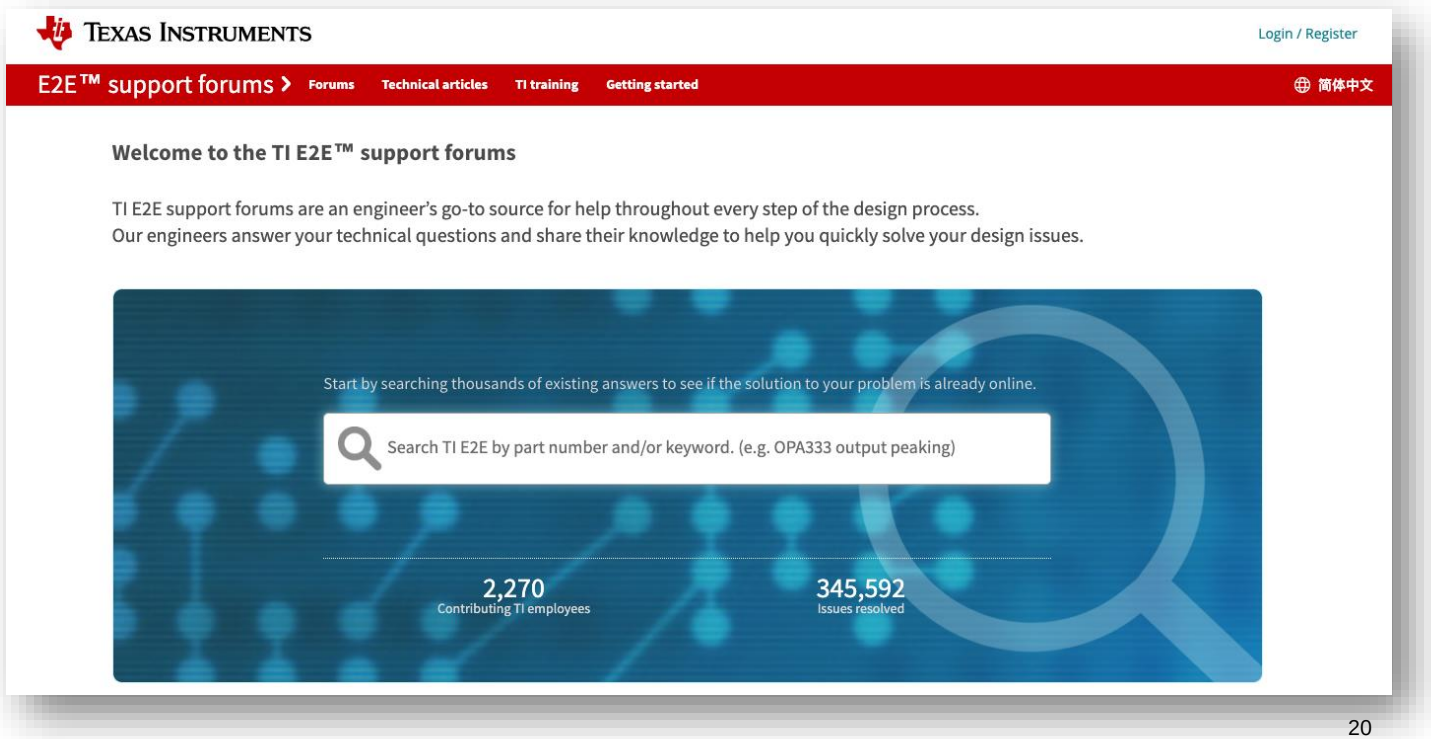


# Use channel equalization to tune the redrive equalizer



# Thank you

- TI Precision Labs - What is DisplayPort
- TI Precision Labs - What is a signal conditioner
- TI Precision Labs - What is the difference between linear and limited-redriver



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# Short quiz

True or false: The DisplayPort main link is used to communicate the DP control and status information.



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# Short quiz

True or false: The DisplayPort main link is used to communicate the DP control and status information.

**False.** The DP control and status information is communicated using the AUX interface.

# Short quiz

True or false: DP link training consists clock recovery and channel equalization sequence.



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# Short quiz

True or false: DP link training consists clock recovery and channel equalization sequence.

**True.** The link training consists clock recovery and channel equalization sequence. The clock recovery will be completed first and then the channel equalization sequence will start.

# Short quiz

True or false: TPS1 pattern is transmitted during the channel equalization sequence.



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# Short quiz

True or false: TPS1 pattern is transmitted during the channel equalization sequence.

**False.** TPS2, 3, or 4 pattern is transmitted during the channel equalization sequence.

# Short quiz

True or false: A redriver or retimer does not help with the DP main link signal integrity.



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# Short quiz

True or false: A redriver or retimer does not help with the DP main link signal integrity.

**False.** A redriver or retimer does help to improve the main link signal integrity.