Network: Calculation of the total route

How to determine the sum route for given IP networks:

Calculating a summary route for IP networks

This article shows step-by-step how to determine a sum route for the following networks:

- 10.10.168.0/23
- 10.10.170.0/23
- 10.10.172.0/23
- 10.10.174.0/24

The aim is to find a single route that covers all of the above networks.

Step 1: Conversion of addresses to binary form

In order to identify the common bits, the network addresses must be presented in binary format:

Network	Binary address (first 24 bits)
10.10.168.0/23	00001010.00001010.10101000.00000000
10.10.170.0/23	00001010.00001010.10101010.00000000
10.10.172.0/23	00001010.00001010.10101100.00000000
10.10.174.0/24	00001010.00001010.10101110.00000000

Step 2: Identification of common bits

Analysing the addresses above, we notice that the first 21 bits are common to all four networks.

Step 3: Determination of the sum route

Based on the shared bits, the best summary route covering all the given networks is:

10.10.168.0/21

This summary route covers the address range 10.10.168.0 to 10.10.175.255, which covers all the networks listed.

Step 4: Verifying the range

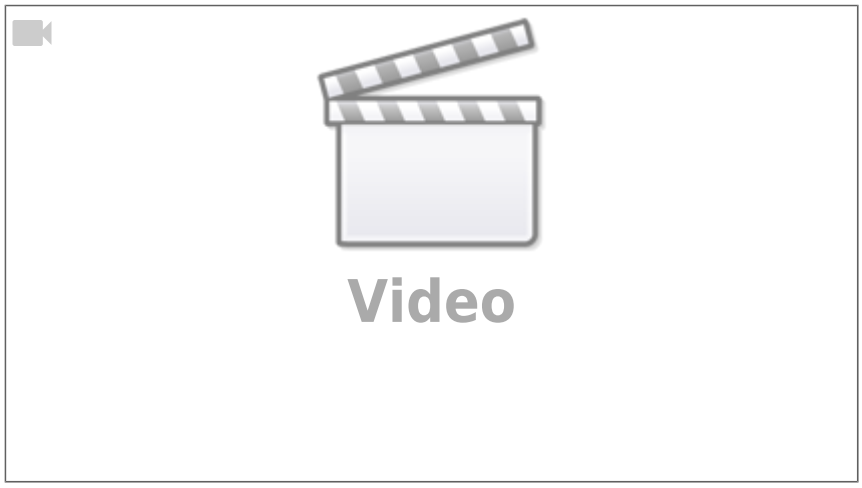
The route 10.10.168.0/21 covers the following subnets:

- 10.10.168.0/23
- 10.10.170.0/23
- 10.10.172.0/23
- 10.10.174.0/24

This allows us to confirm that the route 10.10.168.0/21 is the correct summary route for the specified networks.

Additional resources

If you want to better understand the route aggregation process, I recommend watching the video below:



This step-by-step video explains how to find a route summation, which may be helpful in exploring the topic further.