

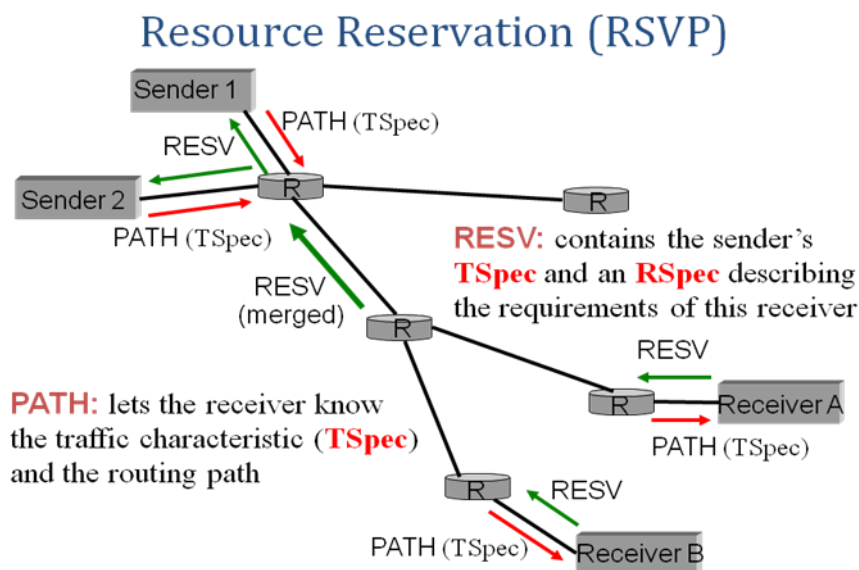
1. Briefly explain what RSVP does.

Ans: **RSVP provides receiver-initiated setup of resource reservations for multicast or unicast data flows with scaling and robustness.**

Consider the case of one sender and one receiver trying to get a reservation for the traffic flowing between them

-The receiver needs to know **what traffic** the sender is likely to send (to make an appropriate reservation)

-It needs to know **what path** the packets will follow (to establish a reservation **at each router on the path**)



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2. Give the main reason why the Integrated Services architecture did not take off.

Ans: **The main reason is that the Integrated Services architecture is not scalable.**

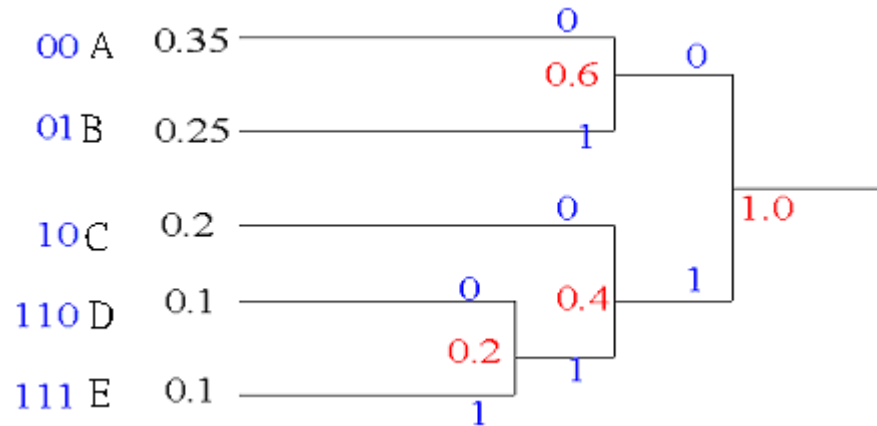
- Each of those reservations needs some amount of state
 - Stored in memory and refreshed periodically
- The router needs to **classify, police, and queue** each of those flows
 - Suppose that every flow on an OC-48 (2.5 Gbps) link represents a 64-Kbps audio stream
- $2.5 \times 10^9 / 64 \times 10^3 = 39,000$ flows

Maintaining per-flow state may be not practical

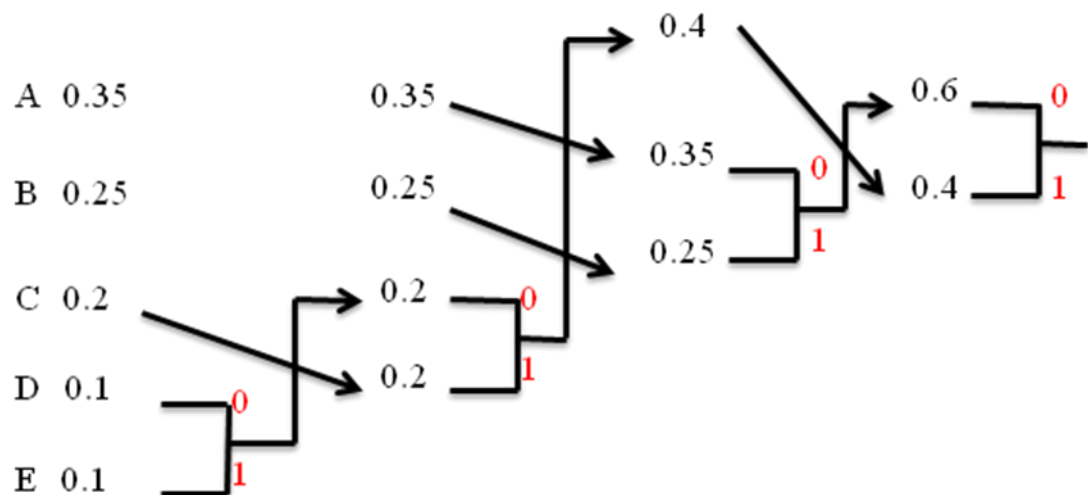
3. Find a binary (i.e. code symbols are 0,1) Huffman code for the following source alphabet { A B C D E } with probability {0.35, 0.25, 0.2, 0.1, 0.1}

Ans:

Solution1:



Solution2:



Therefore, A: 00

B:01

C:11

D:100

E:101

Remember that when we decide the codeword, we read the binary number backward (from right to left)!!

4. original data: 11011011010001

construction of dictionary:

1 10 11 0 110 100 01

dictionary index:

001 010 011 100 101 110 111

code: (000,1) (001,0) (001,1) (000,0) (011,0) (010,0) (100,1)

notice: 000 is null index

code is of the form: (dictionary index, appendix)