

6.1-51

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Semana 12

Problem Statement

Adding a new flow E with path $R1 \rightarrow R2 \rightarrow R6$ to the existing four flows in Figure 6-20. Determine how the max-min bandwidth allocation changes for all five flows.

Key Steps

1. **Identify shared links:** Flow E shares:
 - Link $R1 \rightarrow R2$ with flow A .
 - Link $R2 \rightarrow R6$ with flow B .
2. **Original allocations (assuming equal link capacities):**
 - Flow A : Full capacity of $R1 \rightarrow R2$.
 - Flow B : Full capacity of $R2 \rightarrow R6$.
 - Flows C and D : Unaffected by E .
3. **Recalculate fair shares:**
 - For $R1 \rightarrow R2$: 2 flows (A and E) \Rightarrow each gets $\frac{Capacity}{2}$.
 - For $R2 \rightarrow R6$: 2 flows (B and E) \Rightarrow each gets $\frac{Capacity}{2}$.
4. **New allocations:**
 - Flows A and B : Reduced to half their original bandwidth.
 - Flow E : Allocated $\frac{Capacity}{2}$ on both links.
 - Flows C and D : Remain unchanged.

Conclusion

The max-min bandwidth allocation changes as follows:

- Flows A and B are halved due to sharing links with E .
- Flow E receives equal shares on both shared links.

- Flows C and D retain their original allocations.

$$Final Allocation : A_{new} = \frac{A_{original}}{2}, B_{new} = \frac{B_{original}}{2}, E = \frac{Capacity}{2}, C \text{ and } D \text{ unchanged.}$$