LP
Flow capacity use case

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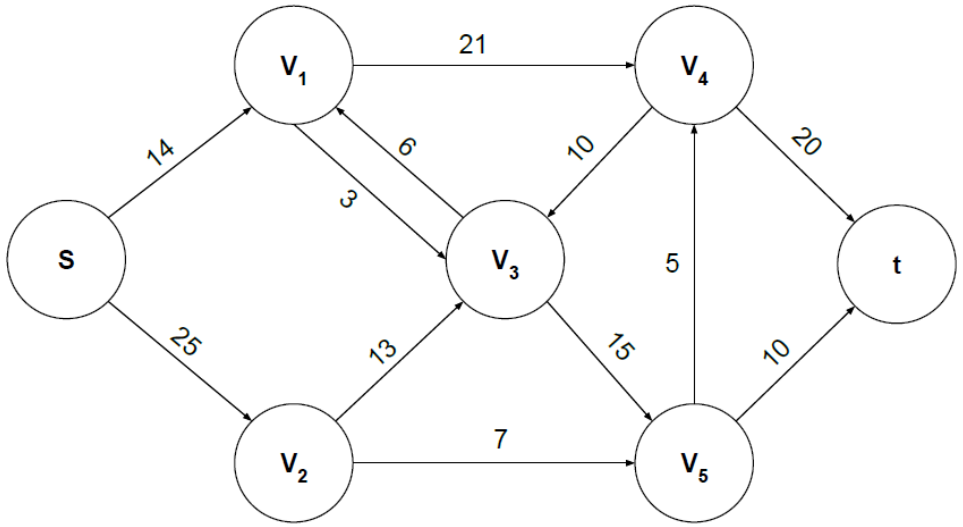
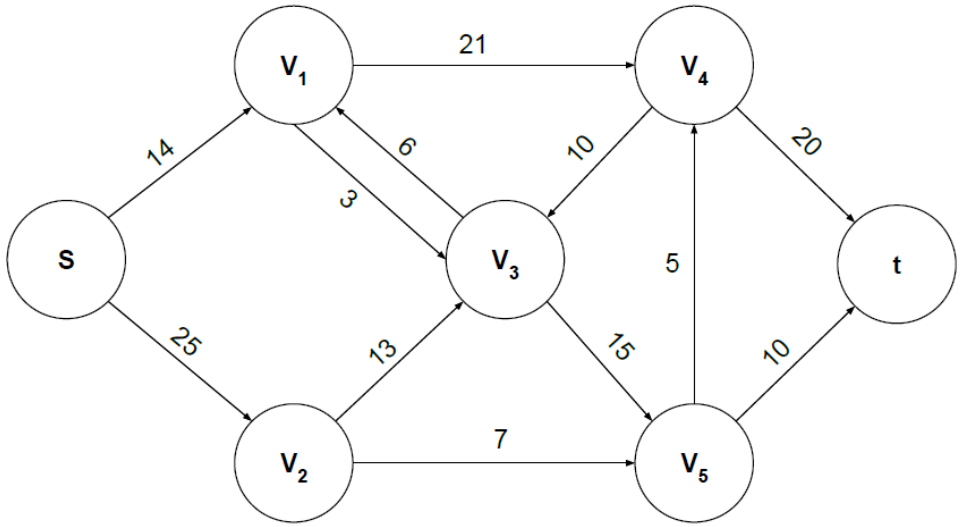
Problem description



- We have a DAG representing a network with 8 nodes: 1 source, 1 target, 6 vertex
- On each arrow there is the max capacity for that edge
- We want to maximize the flow of the network from the source to the target

LP



- c_{ij} -> Capacity from node i to j

  Example: $c_{1,3} = 3$

- x_{ij} -> Flow from node i to j

  Example: flow from node V_1 to V_3

  $0 \leq x_{1,3} \leq 3$

- Optimization goal: Max
- Two types of constraints:

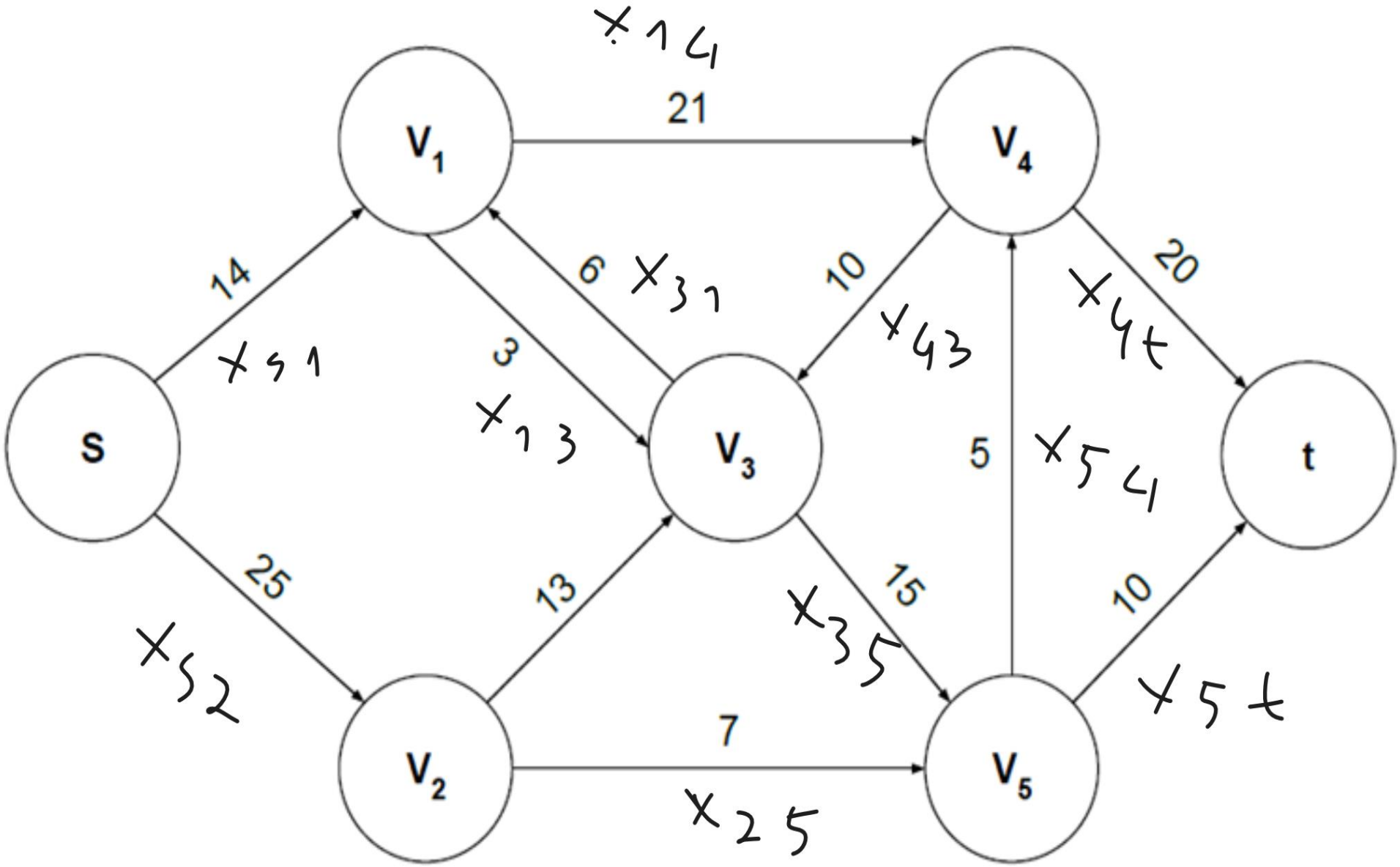
  - Capacity

    $0 \leq x_{ij} \leq c_{ij}$

  - Flow conservation

    ∀ node n ($n \neq S$ and $n \neq T$):

    ∑(flow into n) = ∑(flow out of n)


x14
V1
21
V4
14
x31
6
10
20
x41
x43
x44
x51
3
x13
S
V3
5
x54
t
25
13
x35
15
10
x52
x54
V2
7
V5
x25