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Postprint

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Towards Efficient Algorithms for Constraint Satisfaction Problems

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Towards Efficient Algorithms for Constraint Satisfaction Problems

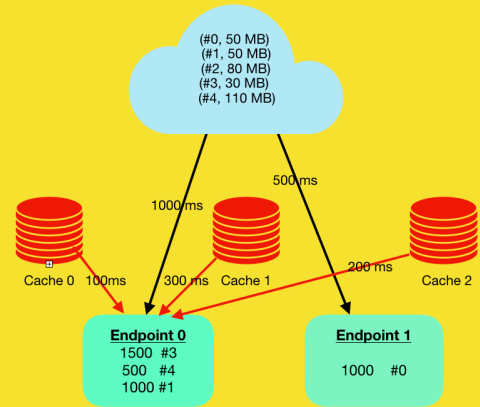
Huu-Phuc Vo, Uppsala University, Sweden



MiniZinc

A Constraint-Based Modelling Language for Satisfaction and Optimisation Problems With Independent Solving Technologies Which Supports for Diverse Technologies [Nethercote Et. Al, CP 2007]

Example

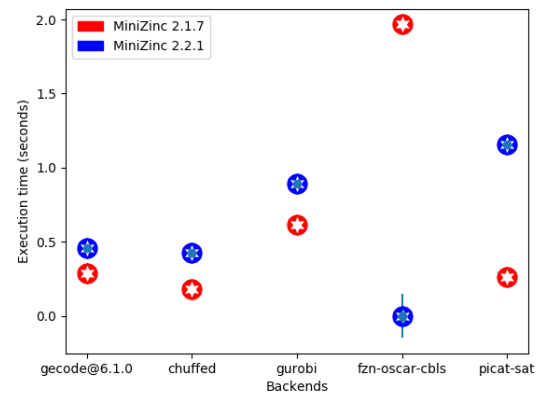


Models

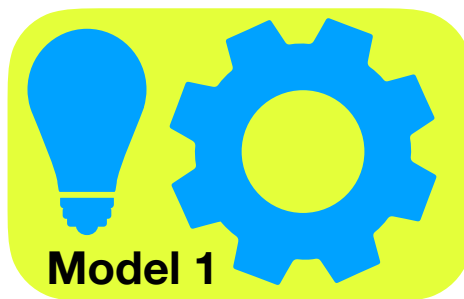
Model 1. Manually implement constraints: Add constraints to perform the requested video allocations, and the capacity of each cache servers.

Model 2. Use global constraint: Use `bin_packing_load(load, bin, w)` constraint to allocate the requested videos in cache servers connecting to clients

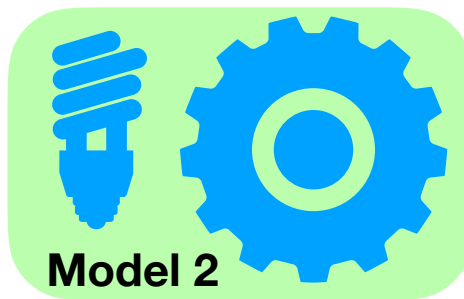
Experiments



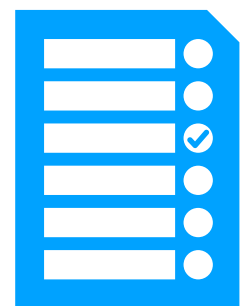
```
1 V = 5;
2 E = 2;
3 R = 4;
4 realReq = 4;
5 C = 3;
6 X = 100;
7 % total_connection = 3;
8
9 videoSize = [50, 50, 80, 30, 110];
10
11 videoInCap = [50, 50, 80, 30, 0];
12
13 nReqVid = 2;
14 reqVid = [0, 50, 0, 30, 0];
15
16
17 % nUnReqVid = 3;
18
19 % unreqVid = [50, 0, 80, 0, 110];
20
21 endpoint = [| 1000, 3
22             | 500, 0 |];
23
24 request = [| 4, 1, 1500
25             | 1, 2, 1000
26             | 5, 1, 500
27             | 2, 1, 1000 |];
28
29 eConCache = [| 100, 300, 200
30              | 0, 0, 0 |];
31
```



Model 1



Model 2



Solutions

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