Gurobi test results

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Here we present our runtime statistics when using Gurobi to solve random instances of the warehouse problem with different attributes. Every attribute is either of the value 'Low' or 'High'. The first table displays what high and low for the different attributes represents.

Attribute \Value	Low	High
Demands	Demands on $\frac{1}{4}$ of all products	Demands on all products
Sparsity	No warehouses are empty	$\frac{1}{2}$ of all warehouses are empty
Products	Warehouses have at least 0 of each product	Warehouses have at least $\frac{1}{5}$ of the maximum demand of each product

"Simplex" denotes the number of simplex iterations performed by Gurobi while solving the specific problem. Therefore each branch may consist of differently many simplex iterations.

In these tables we have also omitted "Optimal Value" since there is no clear connection between the optimal value and number of iterations.

Size	Type			Branches	Simplex	Setup Time (s)	Solve Time (s)
	Demands	Sparsity	Products				
	Low	Low	High	2	2		0.01
	Low	Low	Low	13	13		0.01
	Low	High	High	2	2		0.01
10x10	Low	High	Low	2	3	0	0.00
	High	Low	High	12	15		0.01
	High	Low	Low	8	8		0.01
	High	High	High	19	36		0.01
	High	High	Low	15	25		0.01

Size	Type			Branches	Simplex	Setup Time (s)	Solve Time (s)
	Demands	Sparsity	Products				
	Low	Low	High	18	32		0.01
	Low	Low	Low	6	13		0.01
	Low	High	High	22	51		0.01
10x100	Low	High	Low	14	38	0	0.01
	High	Low	High	3	9		0.01
	High	Low	Low	22	34		0.01
	High	High	High	34	101		0.01
	High	High	Low	5	13		0.01

Size	Type			Branches	Simplex	Setup Time (s)	Solve Time (s)
	Demands	Sparsity	Products				
	Low	Low	High	38	45		0.01
	Low	Low	Low	7	12		0.01
	Low	High	High	12	32		0.01
20x100	Low	High	Low	69	160	0	0.01
	High	Low	High	11	22		0.01
	High	Low	Low	39	75		0.02
	High	High	High	26	82		0.01
	High	High	Low	78	278		0.02

Size	Type			Branches	Simplex	Setup Time (s)	Solve Time (s)
	Demands	Sparsity	Products				
	Low	Low	High	32	32		0.01
	Low	Low	Low	14	31		0.01
	Low	High	High	74	144		0.01
30x100	Low	High	Low	68	136	0	0.01
	High	Low	High	11	21		0.01
	High	Low	Low	12	30		0.01
	High	High	High	129	461		0.02
	High	High	Low	82	240		0.02

Size	Type			Branches	Simplex	Setup Time (s)	Solve Time (s)
	Demands	Sparsity	Products				
	Low	Low	High	75	85		0.02
	Low	Low	Low	81	154		0.02
	Low	High	High	229	502		0.02
40x100	Low	High	Low	192	362	0	0.02
	High	Low	High	62	87		0.02
	High	Low	Low	74	114		0.03
	High	High	High	99	280		0.03
	High	High	Low	224	715		0.04

Size	Type			Branches	Simplex	Setup Time (s)	Solve Time (s)
	Demands	Sparsity	Products				
	Low	Low	High	54	54		0.01
	Low	Low	Low	13	29		0.01
	Low	High	High	41	103		0.01
50x50	Low	High	Low	91	161	0	0.01
	High	Low	High	103	115		0.02
	High	Low	Low	5	11		0.01
	High	High	High	251	659		0.03
	High	High	Low	299	748		0.04

Size		Type		Branches	Simplex	Setup Time (s)	Solve Time (s)
	Demands	Sparsity	Products				
	Low	Low	High	3	7		0.01
	Low	Low	Low	59	71		0.02
	Low	High	High	8	35		0.01
50x100	Low	High	Low	60	105	1	0.01
	High	Low	High	98	137		0.03
	High	Low	Low	83	154		0.03
	High	High	High	11	34		0.02
	High	High	Low	437	1557		0.07

Size		Type		Branches	Simplex	Setup Time (s)	Solve Time (s)
	Demands	Sparsity	Products				
	Low	Low	High	258	252		0.02
	Low	Low	Low	3	4		0.01
	Low	High	High	4	5		0.01
100x10	Low	High	Low	11	16	0	0.01
	High	Low	High	120	139		0.02
	High	Low	Low	5	7		0.01
	High	High	High	102	170		0.02
	High	High	Low	132	282		0.02

Size		Type		Branches	Simplex	Setup Time (s)	Solve Time (s)
	Demands	Sparsity	Products				
	Low	Low	High	103	103		0.02
	Low	Low	Low	107	126		0.02
	Low	High	High	4	8		0.01
100x20	Low	High	Low	17	19	0	0.01
	High	Low	High	152	165		0.03
	High	Low	Low	139	179		0.03
	High	High	High	15	50		0.01
	High	High	Low	201	315		0.03

Size		Type		Branches	Simplex	Setup Time (s)	Solve Time (s)
	Demands	Sparsity	Products				
	Low	Low	High	11	15		0.01
	Low	Low	Low	100	111		0.02
	Low	High	High	204	256		0.02
100x30	Low	High	Low	36	46	0	0.01
	High	Low	High	13	27		0.01
	High	Low	Low	6	31		0.01
	High	High	High	212	385		0.03
	High	High	Low	69	160		0.02

Size		Type		Branches	Simplex	Setup Time (s)	Solve Time (s)
	Demands	Sparsity	Products				
	Low	Low	High	4	9		0.01
	Low	Low	Low	8	15		0.01
	Low	High	High	143	196		0.02
100x40	Low	High	Low	148	186	0	0.02
	High	Low	High	10	33		0.01
	High	Low	Low	176	232		0.04
	High	High	High	239	586		0.04
	High	High	Low	269	641		0.04

Size		Type		Branches	Simplex	Setup Time (s)	Solve Time (s)
	Demands	Sparsity	Products				
	Low	Low	High	281	336		0.03
	Low	Low	Low	4	8		0.01
	Low	High	High	146	189		0.02
100x50	Low	High	Low	101	133	0	0.02
	High	Low	High	102	115		0.04
	High	Low	Low	85	110		0.03
	High	High	High	22	89		0.02
	High	High	Low	260	420		0.04

Size	Type			Branches	Simplex	Setup Time (s)	Solve Time (s)
	Demands	Sparsity	Products				
	Low	Low	High	105	147		0.03
	Low	Low	Low	155	198		0.03
	Low	High	High	97	289		0.03
100x100	Low	High	Low	130	248	2	0.02
	High	Low	High	265	349		0.07
	High	Low	Low	50	112		0.05
	High	High	High	292	832		0.07
	High	High	Low	781	2714		0.16

Size	Type			Branches	Simplex	Setup Time (s)	Solve Time (s)
	Demands	Sparsity	Products				
	Low	Low	High	7	38		0.03
	Low	Low	Low	114	177		0.05
	Low	High	High	232	521		0.08
200x200	Low	High	Low	852	2254	6	0.19
	High	Low	High	532	724		0.39
	High	Low	Low	441	665		0.33
	High	High	High	2769	14277		1.06
	High	High	Low	2015	9876		0.52

Size	Type			Branches	Simplex	Setup Time (s)	Solve Time (s)
	Demands	Sparsity	Products				
	Low	Low	High	115	400		0.24
	Low	Low	Low	641	1896		1.05
	Low	High	High	3650	17277		1.95
500x500	Low	High	Low	2785	13987	35	1.26
	High	Low	High	267	1776		1.42
	High	Low	Low	1619	9295		8.96
	High	High	High	14916	115214		19.85
	High	High	Low	9865	79314		13.26

Size	Type			Branches	Simplex	Setup Time (s)	Solve Time (s)
	Demands	Sparsity	Products				
	Low	Low	High	1555	4450		10.54
	Low	Low	Low	2558	12061		9.76
	Low	High	High	112353	959491		93.38
1000x1000	Low	High	Low	100644	917911	168	91.19
	High	Low	High	1476	5983		49.50
	High	Low	Low	3154	26854		50.10
	High	High	High	1625252	18031132		5612.15
	High	High	Low	3042412	34843163		10120.62