

Supplementary Data for the Paper “Solving the Virtual Network Mapping Problem with Construction Heuristics, Local Search and Variable Neighborhood Descent”

Table 1: The best algorithms of each class (according to the number of solved instances S or their average R_{rel}), their average runtime t , C_u , C_u^{Solved} (which is C_u , but only regarding solved instances), C_u -Gap and the number of instances C_u -Gap is based upon ($|C_u$ -Gap|) over all instances for each size and load.

Algorithm	Load:Size	S								R_{rel}						t[s]				C_u						C_u^{Solved}						C_u -Gap[%]						$ C_u$ -Gap													
		20	30	50	100	200	500	1000	20	30	50	100	200	500	1000	20	30	50	100	20	30	50	100	20	30	50	100	20	30	50	100	20	30	50	100	20	30	50	100	20	30	50	100	20	30	50	100	20	30	50	100
CH: SVN4, TVN3, SVA4, IVA1, AE	0.10	30	30	30	30	30	30	27	0.436	0.481	0.329	0.342	0.225	0.118	0.124	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.1	584.4	890.2	1292.3	2639.9	3112.4	3727.3	4625.0	19.4	22.6	19.8	21.7	20.0	16.7	20.1	30	30	30	30	30	29	30	20			
	0.50	29	30	29	26	22	21	9	0.242	0.188	0.189	0.206	0.194	0.180	0.219	0.0	0.0	0.0	0.1	0.1	0.3	0.8	2.3	0.0	1.5	31.5	86.2	25.4	237.9	4739.0	6435.2	9186.3	11999.1	27.1	25.5	27.9	27.7	27.5	-	-	20	30	29	30	23	9	-	-			
	0.80	27	23	25	18	6	3	0	0.141	0.138	0.145	0.160	0.211	0.248	0.322	0.0	0.0	0.0	0.1	0.2	0.6	1.5	55.3	62.5	27.5	301.3	648.9	2075.8	3993.5	1257.4	1829.0	2906.2	5655.6	7897.8	12763.3	-	25.1	27.5	30.0	29.4	34.3	-	-	27	23	24	6	1	-	-	
	1.00	13	13	7	3	0	0	0	0.155	0.142	0.194	0.205	0.316	0.357	0.396	0.0	0.0	0.0	0.1	0.2	0.8	2.1	386.0	786.9	1905.5	1470.6	5480.0	13765.3	23278.3	1350.2	2001.8	3172.7	6320.7	-	-	26.8	25.7	29.9	31.0	-	-	-	13	13	7	1	-	-	-		
CH: SVN3, TVN3, SVA1, IVA2-1, AE	0.10	30	30	30	30	30	30	26	0.553	0.614	0.533	0.588	0.427	0.218	0.214	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	1.9	614.2	943.9	1402.4	2917.2	3575.2	4403.3	5544.3	23.0	26.9	25.7	28.9	30.1	29.5	32.3	30	30	30	30	29	30	19				
	0.50	30	30	30	30	26	24	14	0.314	0.259	0.240	0.245	0.227	0.212	0.186	0.0	0.0	0.0	0.1	0.1	0.3	0.7	0.0	0.0	0.0	69.1	16.7	34.8	1134.6	1660.7	2559.7	5156.6	7116.4	10522.7	14444.3	31.3	31.9	32.4	33.8	32.6	-	-	30	30	30	26	12	-	-		
	0.80	29	30	30	28	21	9	1	0.165	0.161	0.160	0.151	0.160	0.159	0.140	0.0	0.0	0.0	0.1	0.2	0.5	1.3	1.7	0.0	0.0	12.5	132.6	381.6	510.1	1334.2	2006.2	3088.9	6274.7	9620.8	15166.8	20666.0	30.5	34.3	33.9	36.0	39.8	-	-	29	30	29	11	1	-	-	
	1.00	23	28	27	27	7	0	0	0.122	0.116	0.131	0.148	0.166	0.176	0.164	0.0	0.0	0.0	0.1	0.3	0.8	1.9	36.0	2.8	21.6	144.0	585.0	2214.2	3211.0	1435.8	2204.3	3489.5	6923.8	10993.1	-	-	28.1	33.6	34.8	35.0	-	-	-	23	28	26	9	-	-	-	
LS: N_2 , best-improvement, OverloadingFirst, CH2, CH3	0.10	30	30	30	30	30	30	30	0.090	0.054	0.053	0.062	0.052	0.040	0.048	0.0	0.0	0.1	1.0	2.3	7.3	25.1	0.0	0.0	0.0	0.0	0.0	496.3	709.2	1088.0	2181.0	2656.1	3287.5	4067.9	5.7	3.8	4.7	6.0	6.4	5.7	7.3	30	30	30	30	29	30	22			
	0.50	30	30	30	30	30	27	25	0.042	0.029	0.023	0.022	0.022	0.022	0.019	0.1	0.3	1.1	9.1	25.0	96.1	328.6	0.0	0.0	0.0	0.0	0.0	1.9	2.5	847.6	1220.3	1880.5	3685.6	4984.3	6954.5	9068.5	8.7	7.4	8.4	7.7	7.9	-	-	30	30	30	26	12	-	-	
	0.80	29	30	30	29	28	20	8	0.050	0.024	0.021	0.016	0.025	0.055	0.081	0.2	0.6	2.2	18.2	55.0	245.4	860.3	6.0	0.0	0.0	2.3	2.2	339.3	290.0	1064.7	1488.0	2300.6	4512.3	6580.5	9951.1	13554.8	12.3	11.7	11.7	11.0	12.1	-	-	29	30	29	10	1	-	-	
	1.00	24	28	27	26	12	0	0	0.065	0.032	0.036	0.030	0.097	0.150	0.122	0.3	0.9	3.3	24.3	77.6	427.3	1009.4	101.3	50.7	124.8	30.7	229.8	1963.2	2527.5	1192.0	1695.8	2703.0	5233.5	7906.2	-	-	12.4	13.5	15.1	13.4	-	-	-	24	28	25	6	-	-	-	
LS: N_6 , best-improvement, OverloadingFirst, CH2, CH1	0.10	30	30	30	30	30	30	30	0.273	0.225	0.155	0.195	0.156	0.096	0.079	0.0	0.1	0.2	2.2	8.8	73.6	429.5	0.0	0.0	0.0	0.0	0.0	549.6	793.5	1186.0	2427.5	2972.1	3642.0	4395.1	15.0	14.0	12.5	14.9	16.3	14.8	13.0	30	30	30	30	29	30	22			
	0.50	30	30	30	29	30	30	29	0.138	0.107	0.080	0.081	0.070	0.066	0.056	0.1	0.4	1.7	16.0	96.5	764.8	1039.5	0.0	0.0	0.0	2.3	0.0	0.1	969.9	1383.6	2135.0	4268.9	5613.5	7821.2	11590.7	19.9	18.3	19.1	20.0	17.8	-	-	30	30	30	25	12	-	-		
	0.80	30	30	30	29	30	30	12	0.097	0.071	0.057	0.060	0.063	0.034	0.057	0.2	0.7	3.5	29.1	206.6	1015.7	1058.0	0.0	0.0	0.0	2.3	0.0	0.0	136.0	1200.6	1702.1	2561.5	5132.4	7229.5	11447.5	18834.2	22.3	22.6	20.4	21.4	21.2	-	-	30	30	29	10	1	-	-	
	1.00	27	30	28	28	26	16	0	0.066	0.053	0.047	0.052	0.052	0.028	0.184	0.3	0.9	5.1	38.9	313.3	1024.8	1108.6	24.7	0.0	8.4	5.5	15.7	88.5	3736.1	1303.6	1909.4	2944.4	5750.5	8451.6	15775.8	-	20.4	23.2	22.4	20.1	-	-	-	27	30	26	7	-	-	-	
VND: C_1 , best-improvement, CH2, CH3	0.10	30	30	30	30	30	30	30	0.078	0.038	0.028	0.031	0.024	0.013	0.014	0.0	0.1	0.4	2.9	8.6	44.3	235.5	0.0	0.0	0.0	0.0	0.0	493.4	699.3	1065.2	2144.3	2567.4	3185.4	3885.8	5.0	2.6	2.7	4.3	3.6	2.8	2.6	30	30	30	30	29	30	22			
	0.50	30	30	30	30	30	30	28	0.030	0.018	0.012	0.012	0.008	0.002	0.006	0.3	0.9	3.1	22.2	71.6	408.9	1020.7	0.0	0.0	0.0	0.0	0.0	0.4	837.2	1201.0	1838.5	3615.5	4817.9	6568.6	8762.9	7.7	6.0	6.3	6.0	5.1	-	-	30	30	30	26	12	-	-		
	0.80	29	30	30	29	30	30	15	0.037	0.013	0.011	0.009	0.008	0.004	0.019	0.6	1.8	6.1	41.4	168.5	945.0	1050.1	6.0	0.0	0.0	2.3	0.0	0.0	71.4	1048.8	1459.3	2231.1	4448.1	6322.8	9463.9	14032.6	11.1	10.0	8.8	10.0	7.1	-	-	29	30	29	10	1	-	-	
	1.00	28	30	28	28	28	19	1	0.033	0.015	0.020	0.011	0.006	0.007	0.021	0.7	2.2	7.2	52.4	230.1	1022.3	1006.2	11.8	0.0	8.4	10.8	4.0	55.7	723.6	1188.9	1691.1	2680.7	5137.2	7657.1	12761.5	21347.0	12.3	13.3	14.4	12.5	-	-	-	28	30	26	7	-	-	-	
VND: C_1 , best-improvement, CH1, CH2	0.10	30	30	30	30	30	30	30	0.233	0.239	0.143	0.177	0.134	0.075	0.079	0.0	0.1	0.3	3.0	6.3	32.3	142.3	0.0	0.0	0.0	0.0	0.0	534.3	794.6	1174.0	2408.5	2919.5	3558.9	4425.1	12.8	14.3	11.6	14.4	14.7	12.8	14.6	30	30	30	30	29	30	22			
	0.50	30	30	30	29	30	30	29	0.139	0.103	0.079	0.081	0.079	0.080	0.075	0.3	0.8	3.0	27.0	132.9	870.8	1035.8	0.0	0.0	0.0	2.3	0.0	0.0	0.1	971.8	1379.9	2136.1	4274.6	5718.8	8046.9	11982.5	20.1	18.1	19.1	20.0	17.9	-	-	30	30	30	25	12	-	-	
	0.80	29	30	30	29	30	28	19	0.100	0.067	0.067	0.069	0.076	0.070	0.040	0.4	1.4	6.4	49.8	317.8	1016.3	1070.2	6.0	0.0	0.0	2.3	0.0	10.7	51.6	1189.4	1692.9	2592.4	5200.3	7480.3	12330.2	19661.3	21.3	22.1	21.3	22.2	22.2	-	-	29	30	29	10	1	-	-	
	1.00	28	30	30	28	28	17	0	0.065	0.054	0.056	0.071	0.064	0.032	0.041	0.6	1.8	8.4	73.9	507.1	1027.7	1073.8	11.8	0.0	0.0	5.5	4.0	45.2	1036.8	1315.9	1904.9	3028.8	5903.2	8677.4	16232.0	-	20.7	23.0	24.0	21.3	-	-	-	28	30	28	7	-	-	-	
ILP	0.10	30	30	30	30	29	30	22	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.0	0.0	0.0	0.3	0.8	4.1	363.5	1101.1	2956.3	8884.4	0.0	0.0	0.0	0.0	0.0	466.1	677.9	1037.2	2053.9	2452.2	3096.7	3647.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	30	30	30	30	29	30	22
	0.50	30	30	30	26	12	-	-	0.000	0.000	0.000	0.001	0.000	-	-	-	4.0	375.6	966.8	6312.5	7899.0	-	-	-	-	-	-	773.6	1126.1	1723.0	3381.7	4474.8	-	-	-	0.0	0.0	0.0	0.0	0.0	-	-	-	30	30	30	26	12	-	-	
	0.80	30	30	29	11	1	-	-	0.000	0.000	0.000	0.000	0.000	-	-	-	86.2	1749.3	3465.9	9680.4	10009.2	-	-	-	-	-	-	931.6	1312.9	2012.2	3899.3	5074.0	-	-	-	0.0	0.0	0.0	0.0	0.0	-	-	-	30	30	29	11	1	-	-	
	1.00	30	30	28	9	-	-	-																																											