

- Each Instance is run 30 times.  
Pool Size/ Size of Bees is set as 30. (Time will decrease if pool size is set to 20)  
We can reduce the time doing some further optimization.
- Employed Bees Neighborhood is set as 10% (3 for 30, 32 for 324 and 81 for 818 data sets.)
- Scout bees check for last 20 evolutions (max no improvement)
- Fitness/Nectar function selection is done comparing all the 4 fitness functions for initial 50 epochs. Later roulette wheel selection is made for obtaining the nectar.

	ANLS			MS_Heuristic		CS			GRASP			CPLEX			ABC WITH LOCAL REFINEMENT							
Instance	Best	Average	Time	Best	Time	Best	Average	Time	Best	Average	Time	Best	Time		Best	Average	Epochs	Standard Deviation	Current Gap (%)	Earlier Gap (%)	Earlier Gap(%)	Time(s)
30_2_0_0_85	3700	3700	12.333	3700	0.000	3700	3700	0.009	3700	3700	0.007	3700	0		3700	3700	71	0	0	0	0	1.05
30_2_0_1_85	5100	5100	9.000	4630	0.000	5090	5090	0.018	5090	5090	0.016	5100	0		5090	5010	71	87.40	0.19	0.19	0.19	1.16
30_2_0_2_85	5210	5210	4.667	4780	0.000	5210	5210	0.016	5210	5210	0.015	5210	0		5210	5073	71	129.77	0	0	0	1.23
30_2_0_2_95	4520	4520	11.333	4470	0.000	4520	4520	0.015	4520	4520	0.013	4520	0		4520	4520	71	0	0	0	0	1.21
30_3_0_0_85	5390	5390	5.000	5210	0.000	5390	5390	0.025	5390	5390	0.025	5390	0		5390	5360	71	30	0	0	0	1.76
30_3_0_1_85	5390	5390	3.000	5210	0.000	5390	5390	0.024	5390	5390	0.024	5390	0		5390	5377	71	26.09	0	0	0	1.79
30_3_0_1_95	5270	5270	44.667	5080	0.000	5240	5240	0.024	5240	5240	0.024	5270	6		5260	5238	71	19.39	0.18	0.18	0.56	1.57
30_3_0_2_85	5390	5390	3.667	5210	0.000	5390	5390	0.023	5390	5390	0.022	5390	1		5390	5378	71	24	0	0	0	1.72
30_3_0_2_95	5390	5390	3.667	5230	0.000	5390	5390	0.027	5390	5390	0.023	5390	0		5390	5372	71	27.49	0	0	0	1.64
30_4_0_1_95	5390	5390	8.333	5260	0.000	5390	5390	0.026	5390	5390	0.022	5390	0		5390	5390	71	0	0	0	0	2.15
30_5_0_0_95	5330	5330	288.667	5210	0.000	5330	5317.6	0.041	5330	5312.8	0.032	5330	13		5330	5283	71	33.77	0	0	0.56	2.53
30_6_0_0_95	5410	5410	62.333	5390	0.000	5410	5391	0.037	5390	5390	0.029	5410	1		5390	5390	71	0	0.36	0.36	0.36	3.06
Type of fitness evaluation															Percentage(%) Used (Approx)							
Allocating to Least Congested Facility														~98								
Allocating to Random Facility														1.99								
Allocating to Nearest Facility														0								
Allocating as per Max Demand/Distance														0.01								

	ANLS			MS_Heuristic		CS			GRASP			CPLEX			ABC WITH LOCAL REFINEMENT							
Instance	Best	Average	Time	Best	Time	Best	Average	Time	Best	Average	Time	Best	Time		Best	Average	Epochs	Standard Deviation	Current Gap (%)	Earlier Gap (%)	Earlier Gap(%)	Time(s)
324_10_0_0_85	37180	37180	1255.333	37081	0.220	37173	37163.2	3.460	37157	37155.8	2.24	37180	13		37161	36990.43	101	131.49	0.05	0.08	1.02	32.55
324_10_0_0_95	21460	21460	865.667	21386	0.140	21455	21447.2	3.160	21446	21441.2	2.05	21460	9		21438	21381.60	101	53.62	0.10	0.14	1.56	29.09
324_10_0_1_85	51000	51000	1435.000	50750	0.200	50948	50946.3	3.410	50948	50946.3	2.30	51000	22		50928	50722	101	126.37	0.14	0.245	2.08	32.48
324_10_0_1_95	35360	35360	857.000	35250	0.160	35359	35354.6	3.170	35339	35336.5	2.06	35360	14		35351	35322.40	101	18.42	0.02	0.05	0.67	34.84
324_10_0_2_85	59740	59740	987.667	59598	0.200	59693	59688.5	3.330	59693	59688.5	2.24	59740	22		59527	59206.33	101	143.65	0.18	0.17	1.92	34.06
324_20_0_0_85	74360	74357.7	6191.667	73981	0.830	74165	74106.7	9.710	74165	74106.0	4.80	74360	198		73679	73190.20	101	281.43	0.91	0.94	2.93	76.89
324_20_0_0_95	42920	42919.7	3936.333	42714	0.730	42840	42804.9	9.370	42813	42792.2	4.24	42920	22		42698	42506.10	101	104.76	0.51	0.35	4.48	69.88
324_20_0_1_85	101978	101974	7212.667	100628	1.020	101374	101177.4	9.070	101374	101177.4	4.88	102000	612		99613	98789.40	101	420.33	2.34	2.41	2.94	78.03
324_20_0_1_95	70720	70720	4417.333	70368	0.740	70656	70628.2	9.060	70561	70529.8	4.43	70720	55		70588	70341.33	101	144.05	0.18	0.31	2.12	93.26
324_20_0_2_85	119455	119447.3	6388.000	118451	0.770	118771	118613.6	8.990	118771	118613.6	4.86	119740	10804		117333	116264.04	101	596.30	1.77	1.81	4.91	78.95
324_20_0_2_95	90780	90780	6667.333	90424	0.810	90556	90521.2	9.400	90550	90518.9	4.64	90780	74		90087	89531.76	101	326.19	0.76	0.80	3.29	79.28
Type of fitness evaluation														Percentage(%) Used								
Allocating to Least Congested Facility														~97								
Allocating to Random Facility														~2.88								
Allocating to Nearest Facility														~0								
Allocating as per Max Demand/Distance														~0.12								

	ANLS			MS_Heuristic		CS			GRASP			CPLEX			ABC WITH LOCAL REFINEMENT							
Instance	Best	Average	Time	Best	Time	Best	Average	Time	Best	Average	Time	Best	Time		Best	Average	Epochs	Standard Deviation	Current Gap (%)	Earlier Gap (%)	Earlier Gap(%)	Time(s)
818_10_0_0_95	21460	21460	6818	21429	4.94	21460	21459.9	11.23	21459	21458.3	6.30	21460	557	21460	21455.36	101	6.33	0	0	0.22	67.51	
818_10_0_1_95	35360	35360	10407	35339	13.05	35360	35360	11.54	35360	35360	6.65	35360	657	35360	35356.83	101	4.68	0	0.002	0.09	71.07	
818_10_0_2_95	45390	45390	7400	45375	12.09	45390	45390	12.17	45389	45388.2	6.97	45390	648	45390	45382.60	101	8.17	0	0.002	0.15	71.07	
818_20_0_0_85	74360	74360	17183.67	74313	75.05	74360	74359.8	66.81	74353	74352.1	16.27	74360	785	74344	74309.46	101	34.89	0.02	0.03	1.45	187.43	
818_20_0_0_95	42920	42920	9890.33	42793	25.67	42920	42918.9	54.84	42903	42900	14.51	42920	562	42912	42903.20	101	10.47	0.01	0.03	0.60	164.23	
818_20_0_1_85	102000	102000	16602	101933	76.06	102000	101998.9	67.36	101996	101991.9	19.24	102000	1491	101987	101920.26	101	48.58	0.01	0.30	0.97	167.14	
818_20_0_1_95	70720	70720	16880.67	70644	37.03	70720	70719.2	62.91	70717	70715.1	16.90	70720	610	70706	70663.83	101	26.05	0.01	0.02	0.81	162.78	
818_20_0_2_85	119480	119480	19074.67	119397	105.48	119480	119477.6	74.36	119468	119466	21.26	119480	1579	119449	119361.16	101	68.32	0.02	0.13	0.95	173.90	
818_20_0_2_95	90780	90780	14622.67	90730	75.19	90780	90779.6	66.80	90772	90769.5	19.18	90780	841	90769	90727.56	101	29.74	0.01	0.07	0.91	169.36	
818_50_0_0_85	185637	185587.7	24094.33	185426	756.72	185880	185775.6	364.20	1857791	185755.8	50.62	185900	2956	185253	184584.93	101	509.38	0.27	1.61	2.69	720.69	
818_50_0_1_85	254996	254987.3	23978	254509	730.20	254985	254905.0	387.37	254860	254836.6	58.37	255000	6332	254374	253891.20	101	359.15	0.24	1.38	2.15	681.18	
818_50_0_2_85	298692	298648.3	23978	298217	757.73	298582	298517.6	392.29	2998547	298511.2	63.58	298700	4435	297309	296308.23	101	558.01	0.46	1.61	2.33	722.68	
Type of fitness evaluation																Percentage(%) Used						
Allocating to Least Congested Facility																	96.5					
Allocating to Random Facility																	3.4					
Allocating to Nearest Facility																	0.1					
Allocating as per Max Demand/Distance																	0					