TABLE I

COMPARING *AutoCCAG* WITH *TCA-opt*, *TCA*, *CASA* AND *CHiP* FOR 4-WAY CCAG ON THE REAL-WORLD AND IBM BENCHMARKS. THE RUN TIME IS MEASURED IN SECOND.

Instance	AutoCCAG		TCA-opt		TCA		CASA		CHiP	
	min (avg)	time	min (avg)	time	min (avg)	time	min (avg)	time	size	time
Apache	**772 (789.2)**	8068	838 (838.0)	9652	– (–)	>10000	– (–)	>10000	838	86169
Bugzilla	**167 (167.8)**	428	168 (169.6)	638	171 (172.4)	897	274 (280.7)	931	176	20821
GCC	**374 (379.2)**	8478	444 (444.0)	8199	– (–)	>10000	– (–)	>10000	444	103177
SPIN-S	**308 (308.0)**	44	**308 (308.0)**	122	311 (317.6)	332	355 (362.1)	863	339	12853
SPIN-V	**1113 (1117.0)**	912	1562 (1562.6)	938	1637 (1655.3)	982	– (–)	>1000	1166	33773
Banking1	**139 (139.0)**	<1	**139 (139.0)**	<1	**139 (139.0)**	<1	**139** (141.8)	<1	**139**	16074
Banking2	**71 (71.0)**	2	**71 (71.0)**	8	71 (71.0)	9	74 (76.5)	53	**71**	915
CommProtocol	**83 (83.0)**	<1	**83 (83.0)**	2	**83 (83.0)**	3	**83** (85.2)	4	99	31846
Concurrency	**8 (8.0)**	<1	**8 (8.0)**	<1	**8 (8.0)**	<1	**8 (8.0)**	<1	**8**	1334
Healthcare1	**300 (300.0)**	<1	**300 (300.0)**	1	**300 (300.0)**	2	301 (303.0)	9	331	8723
Healthcare2	**159 (166.6)**	758	169 (171.4)	377	171 (173.3)	463	184 (186.8)	299	177	905
Healthcare3	**723 (729.1)**	768	757 (763.4)	852	770 (773.1)	928	1127 (1159.4)	955	851	29062
Healthcare4	**1317 (1320.4)**	907	1475 (1494.3)	987	1763 (1791.2)	997	2492 (2605.8)	944	1536	36719
Insurance	**75361 (75361.0)**	165	75486 (75489.1)	992	76273 (76310.5)	997	474131 (613700.6)	972	75764	213365
NetworkMgmt	**5610 (5610.0)**	234	**5610 (5610.0)**	338	**5610** (5610.1)	561	6008 (6045.9)	976	**5610**	207136
ProcessorComm1	**485 (487.8)**	452	489 (491.7)	461	491 (495.3)	633	571 (589.1)	902	544	11187
ProcessorComm2	**574 (575.1)**	596	585 (587.0)	517	592 (595.6)	877	850 (869.9)	961	837	7942
Services	**6404 (6407.8)**	808	6409 (6414.1)	853	6419 (6431.3)	961	7198 (7312.1)	954	6855	441412
Storage1	**25 (25.0)**	<1	**25 (25.0)**	<1	**25 (25.0)**	<1	**25 (25.0)**	<1	25	12795
Storage2	**162 (162.0)**	4	**162 (162.0)**	<1	**162 (162.0)**	<1	**162** (163.6)	<1	**162**	2346
Storage3	**570 (570.0)**	55	**570 (570.0)**	330	**570 (570.0)**	384	1085 (1085.0)	37	627	5979
Storage4	**5486 (5494.0)**	952	6077 (6084.0)	994	6774 (6805.1)	999	9393 (9500.5)	942	5671	86073
Storage5	**10982 (11010.8)**	822	13161 (13163.1)	971	14067 (14104.0)	993	– (–)	>1000	13292	36930
SystemMgmt	**135 (135.0)**	<1	**135 (135.0)**	2	**135 (135.0)**	3	138 (140.5)	1	139	4124
Telecom	**360 (360.0)**	<1	**360 (360.0)**	2	**360 (360.0)**	3	365 (365.3)	23	**360**	10070