

TABLE I  
RESULTS OF 1HOPREASON, 1HOPNoREASON, 1HOP\*, 2HOP\* ON SNAP BENCHMARKS.

Instance	V	E	1hopReason			1hopNoReason			1hop*	2hop*		
			$ V_{in}^G $	$ V_{out}^G $	min	avg	time	min	avg	time	min	min
333SP	3712815	11108633	0	8	1202378	1202555.8	13.96	<b>1202112</b>	<b>1202539.5</b>	12.52	1367950	1390253
as-22july06	22963	48436	1870	11927	<b>2059</b>	<b>2060.2</b>	0.06	2062	2063.1	0.05	2859	2346
audikw1	943695	38354076	0	2658	<b>12147</b>	<b>12186</b>	37.9	12159	12189.6	35.58	15988	19373
belgium	1441295	1549970	211952	52575	1216936	1217055.1	3.09	1217159	1217234.9	2.1	1260193	<b>1206836</b>
cage15	5154859	47022346	0	128	586757	<b>586947.2</b>	59.72	<b>586749</b>	586959.7	52.16	695138	1154163
caidaRo*erLevel	190914	607610	30228	52004	<b>48669</b>	<b>48682.7</b>	0.73	48977	48997.6	0.68	61017	53648
citatio*iteseer	268495	1156647	31071	49457	<b>50491</b>	<b>50502.9</b>	1.36	51237	51279.6	1.35	65702	61691
cnr-2000	325557	2738969	19545	126537	<b>25003</b>	<b>25019.8</b>	4.64	25174	25184.1	2.56	31275	36180
coAutho*iteseer	227320	814134	29867	145237	<b>38298</b>	<b>38306</b>	0.91	38743	38752.7	0.93	50459	40728
coAuthorsDBLP	299067	977676	38269	184302	<b>48983</b>	<b>48989.9</b>	1.46	49426	49436.7	1.12	66052	51728
cond-mat-2005	36458	171734	3049	19107	<b>5200</b>	<b>5203.3</b>	0.17	5262	5267.1	0.17	7033	5543
coPaper*iteseer	434102	16036720	10951	180347	<b>36014</b>	<b>36027</b>	15.54	36326	36341.1	15.44	45830	39529
coPapersDBLP	540486	15245729	16301	231168	<b>48218</b>	<b>48229.1</b>	14.9	48770	48785.3	14.22	61921	53475
ecology1	1000000	1998000	0	0	<b>359585</b>	<b>361515.6</b>	2.43	<b>359585</b>	<b>361515.6</b>	2.24	454883	424932
eu-2005	862664	16138468	24873	126473	<b>34782</b>	<b>34797.7</b>	23.7	34911	34932.6	15.21	43921	52841
G_n_pin_pout	99995	501198	53	54	15414	15437.6	0.68	<b>15404</b>	<b>15430.8</b>	0.51	19280	24187
in-2004	1353703	13126172	66448	521664	<b>87562</b>	<b>87576.6</b>	19.21	88044	88054.9	12.56	109688	112797
kron_g5*-logn16	55319	2456070	3251	8604	<b>3888</b>	<b>3889.2</b>	2.45	3897	3899.4	2.3	5223	3896
ldoor	952203	22785136	0	0	<b>34665</b>	<b>34713.8</b>	22.32	<b>34665</b>	<b>34713.8</b>	21.15	41290	47529
luxembourg	114599	119666	22426	3948	102257	102287.6	0.15	102248	102302.7	0.14	105146	<b>101870</b>
prefere*achment	100000	499985	0	0	<b>9171</b>	<b>9196.3</b>	0.54	<b>9171</b>	<b>9196.3</b>	0.51	12441	10122
rgg_n_2_17_s0	131067	728750	25	704	<b>23657</b>	<b>23709.3</b>	0.77	23688	23716.6	0.72	28144	28649
rgg_n_2_19_s0	524280	3269760	47	1274	84655	84700.7	3.73	<b>84639</b>	<b>84672.9</b>	3.48	100599	105553
rgg_n_2_20_s0	1048572	6891617	54	1723	<b>160652</b>	160803.3	7.34	160688	<b>160801.9</b>	6.99	190501	201899
rgg_n_2_21_s0	2097142	14487992	54	2267	306238	<b>306395.4</b>	16.22	<b>306182</b>	306444.4	15.83	363352	389032
rgg_n_2_22_s0	4194299	30359197	65	2908	585191	<b>585364.1</b>	32.47	<b>585139</b>	585434.4	34.46	694961	751498
rgg_n_2_23_s0	8388601	63501390	53	246	<b>1120430</b>	<b>1120729.8</b>	70.24	1120661	1120823.1	68.06	1329443	1449467
rgg_n_2_24_s0	16777215	132557200	68	232	2150059	2150502.1	144.87	<b>2150017</b>	<b>2150374.3</b>	142.7	2550995	2806078
smallworld	100000	499998	0	0	<b>15771</b>	<b>15821.1</b>	0.57	<b>15771</b>	<b>15821.1</b>	0.51	19543	26632
uk-2002	18459128	261556721	773160	3049470	<b>1175517</b>	<b>1175713.3</b>	263.63	1185305	1185487.3	253.68	1469643	1568781
wave	156317	1059331	0	13	<b>18060</b>	<b>18149</b>	1.25	18118	18171.3	1.07	23233	29430

TABLE II  
RESULTS OF 1HOPREASON, 1HOPNoReason, 1HOP\*, 2HOP\* ON NDR BENCHMARKS.

Instance	V	E			1hopReason			1hopNoReason			1hop*	2hop*
			$ V_{in}^G $	$ V_{out}^G $	min	avg	time	min	avg	time	min	min
bn-huma*on_1-bg	197084	42103873	613	8616	4797	4814.4	40.26	4847	4856.6	38.66	5976	8144
bn-huma*on_2-bg	160336	22783120	568	9987	3791	3803	21.5	3850	3860.3	20.92	4781	8155
ca-coau*rs-dblp	540486	15245729	16301	231168	48218	48229.1	15.69	48770	48785.3	14.43	61921	53475
ca-dblp-2012	317080	1049866	39811	195028	51209	51215.8	1.46	51689	51705.2	1.22	68844	53974
ca-holl*od-2009	1069126	56306653	20467	642608	53771	53793.9	60.44	55009	55036.9	54.22	71798	56429
channel*00-b050	4802000	42681372	0	0	590396	590597.3	58.29	590396	590597.3	45.96	679238	940553
dbpedia-link	11609793	78613912	1512635	7582394	1533650	1533658.2	105.66	1534805	1534816.2	98.0	1991671	N/A
delaunay_n22	4194304	12582869	0	47285	1141669	1141798.4	16.77	1141562	1141734.7	15.47	1361120	1418675
delaunay_n23	8388608	25165784	0	94442	2283135	2283952.3	36.56	2283640	2283943.6	29.67	2710218	2837288
delaunay_n24	16777216	50331601	0	188843	4567254	4567611.7	66.28	4567261	4567572.8	63.69	5432219	5675019
friendster	8556203	45604593	592852	4031990	650511	650519.2	67.41	654727	654769.9	67.37	862952	989617
hugebub*s-00020	21198119	31790179	0	0	11598117	11599292.1	56.02	11598117	11599292.1	48.16	12636584	14234612
hugetrace-00010	12057441	18082179	0	0	6591721	6592692.4	33.97	6591721	6592692.4	25.86	7185088	8137047
hugetrace-00020	16002413	23998813	0	0	8744667	8744932.1	36.62	8744667	8744932.1	32.5	9531885	10773517
inf-europe_osm	50912018	54054660	11007317	2065091	44158122	44159527.7	96.04	44165763	44166335.4	92.25	45556355	43964376
inf-germany_osm	11548845	12369181	2375511	660034	9616166	9616649.8	21.03	9618270	9618837.9	17.85	10027719	9541824
inf-roadNet-CA	1957027	2760388	326965	321923	986843	987074	3.83	992660	993239.9	3.54	1168170	1110911
inf-roadNet-PA	1087562	1541514	193743	191185	544514	544612	2.75	548360	548647	1.99	647236	616481
inf-road-usa	23947347	28854312	6229607	4818270	14507920	14508553.8	44.61	14537554	14538737.6	42.88	16423355	14893036
rec-dating	168791	17351416	10378	20464	11748	11749.8	17.57	11778	11781.9	17.38	15410	11779
rec-epinions	755200	13396042	6778	30927	9084	9087.3	34.6	9117	9118.4	14.13	11904	15651
rec-lib*eti-dir	220970	17233144	10564	20974	12992	12994.3	17.7	13151	13160.1	18.27	17238	13155
rgg_n_2_23_s0	8388601	63501390	53	246	1120430	1120729.8	70.24	1120661	1120823.1	68.06	1329443	1449467
rgg_n_2_24_s0	16777215	132557200	68	232	2150059	2150502.1	144.87	2150017	2150374.3	142.7	2550995	2806078
rt-retw*t-crawl	1112702	2278852	77400	773235	82956	82960.8	4.11	83019	83025.3	2.8	109538	131970
sc-ldoor	909537	20770807	0	0	34598	34661.2	20.54	34598	34661.2	19.41	41374	48090
sc-msdoor	404785	9378650	0	0	15423	15466.9	9.18	15423	15466.9	8.72	18327	20760
sc-pwtk	217883	5653217	18	93	8813	8979.7	5.35	8789	8965.4	5.23	9975	12261
sc-re19	5921786	23667162	0	2	158048	158529.9	36.27	158048	158530	31.48	220689	405256
sc-shipsec1	139995	1705212	0	62	12155	12192.5	1.73	12159	12201.8	1.62	14576	21730
sc-shipsec5	178573	2197367	0	295	15399	15439.1	2.37	15421	15446.4	2.19	18591	26750
soc-buzznet	101163	2763066	39	8097	132	133.8	3.16	135	136.4	2.57	173	1764
soc-delicious	536108	1365961	53076	309216	57775	57781.1	1.78	57951	57956.3	1.48	76965	68871
soc-digg	770799	5907132	63693	379778	70829	70837.3	6.63	71227	71246.4	6.08	90818	87239
soc-dogster	426485	8543321	13253	37257	27393	27399.5	12.56	27530	27537.6	10.11	34984	29199
socfb-A-anon	3097165	23667394	186402	1783133	204879	204882.1	30.61	206312	206339.2	27.77	275096	249953
socfb-B-anon	2937612	20959854	178642	1777796	190413	190418.7	26.53	191257	191275.7	25.4	254291	241333
socfb-uci-uni	58790782	92208195	915979	39475684	1239451	1239543	136.35	1243296	1243365.2	120.12	1514103	18346561
soc-flickr	513969	3190452	97890	304640	105784	105788	3.59	106182	106193.4	3.21	136308	107996
soc-flickr-und	1624992	15476835	275157	972024	296837	296842.6	16.95	297890	297909	17.37	378457	306204
soc-flixster	2523386	7918801	91286	1615516	91546	91546	10.01	91546	91546	9.17	124228	113666
soc-FourSquare	639014	3214986	58726	342998	61016	61018.5	3.75	61303	61316.7	3.26	79552	61349
soc-lastfm	1191805	4519330	66834	604661	67425	67425.3	5.44	67454	67455.4	5.45	90697	74812
soc-livejournal	4033137	27933062	660655	1213284	846856	846882.8	40.32	862214	862378.1	32.11	1128679	884565
soc-liv*-groups	7489073	112305407	1039658	3620344	1101915	1101918.4	158.97	1102911	1102921.7	133.38	1417605	N/A
soc-LiveMocha	104103	2193083	698	7852	1467	1469.7	2.28	1484	1488	2.06	1986	1489
soc-ljo*al-2008	5363186	49514271	860018	1720984	1065003	1065026.6	64.84	1080167	1080302.6	60.41	1396969	1106565
soc-orkut-dir	3072441	117185083	40467	87972	101751	101811.2	124.95	105883	105952.8	122.7	136434	124974
soc-orkut	2997166	106349209	41581	85067	121367	121427.3	133.63	125751	125867.1	107.87	162252	139548
soc-pokec	1632803	22301964	122070	195110	220918	220937.7	26.98	228058	228129.6	25.23	300407	239208
soc-sinaweibo	58655820	261321018	201218	27497010	201399	201399	350.06	201402	201402	273.82	264134	N/A
soc-twi*r-higgs	456293	12508249	6600	29555	15354	15362.5	17.33	15491	15505.5	13.37	20163	20265
soc-youtube	495957	1936748	89466	199594	101945	101954.9	2.44	102318	102330.7	2.17	130689	108693
soc-you*be-snap	1134890	2987624	223409	650530	235911	235919.8	4.17	236319	236327.8	3.54	299557	248405
tech-as-skitter	1694616	11094209	111350	345469	200977	200995.2	14.75	202533	202571.9	12.11	251664	243606
tech-ip	2250498	21643497	1	46	175	176.2	166.44	173	176.2	21.97	226	177
twitter_mpi	9807184	99904238	537894	5126770	567900	567908.9	163.61	568435	568444.5	108.52	730280	N/A
web-arabic-2005	163598	1747269	17652	111666	20785	20795.4	1.88	20850	20858.9	1.64	26850	22773
web-baidu-baike	2107689	16996139	225464	574133	273548	273556.6	33.82	274845	274853.9	21.34	360969	302009
web-it-2004	509338	7178413	34127	447051	34550	34552	6.93	34599	34607.1	6.8	47188	34714
web-uk-2005	129632	11744049	1728	127904	1728	1728	10.63	1728	1728	10.39	2391	1728
web-wik*dia2009	1864433	4507315	314637	799224	396023	396043.1	6.49	398744	398789.2	5.79	511756	442291
web-wik*-growth	1870521	36532421	70473	128331	118937	118952	64.11	119924	119938.6	43.72	154510	122836
web-wik*ia_link	2787609	86753367	139648	256867	190989	190997.9	100.65	192855	192877.2	89.16	244728	210971
wikiped*link_en	3369169	31022996	209132	1379366	212250	212251.1	34.63	212566	212571.8	32.16	275693	245210

TABLE III  
RESULTS OF FASTCDS, NUCDS, MSLS, ACO-EFFICIENT, ACO-RVNS AND RNS-TS ON DIMACS10 AND SNAP BENCHMARKS.

Instance	FastCDS			NuCDS			MSLS		ACO <sub>e</sub>	ACO	RNS
	min	avg	time	min	avg	time	min	avg	min	min	min
Amazon0302	47458	47580.1	1.62	<b>45815</b>	<b>45992.6</b>	3190.61	48225	48625.6	47969	N/A	N/A
Amazon0312	<b>51096</b>	<b>51153.9</b>	1731.2	52077	52257.8	3522.06	N/A	N/A	N/A	N/A	N/A
Amazon0505	<b>53029</b>	<b>53069.3</b>	1632.52	54041	54125.7	3582.33	N/A	N/A	N/A	N/A	N/A
Amazon0601	<b>46978</b>	<b>47012.6</b>	1900.63	47963	48195.4	3275.92	N/A	N/A	N/A	N/A	N/A
Cit-HepPh	<b>3223</b>	<b>3225.1</b>	3350.13	3263	3270	3508.45	3395	3407.2	3363	3417	31018
Cit-HepTh	<b>3177</b>	<b>3178.8</b>	1177.47	3197	3204.7	2998.91	3289	3303.3	3264	3320	24036
cit-Patents	<b>686740</b>	<b>686969.8</b>	86.58	734910	735877.2	2683.82	N/A	N/A	N/A	N/A	N/A
Email-EuAll	<b>2368</b>	<b>2368</b>	1.07	2371	2371	5.45	<b>2368</b>	2368.6	<b>2368</b>	2373	224163
p2p-Gnutella04	<b>2267</b>	<b>2267</b>	0.99	2268	2270	2297.17	2294	2295.6	2270	2279	6526
p2p-Gnutella24	<b>5468</b>	<b>5468</b>	1.25	5471	5471	10.68	5475	5477.1	5469	5470	23819
p2p-Gnutella25	<b>4556</b>	<b>4556</b>	0.76	4558	4558	4.18	4561	4562.7	<b>4556</b>	4557	19467
p2p-Gnutella30	<b>7226</b>	<b>7226</b>	5.82	7229	7229	55.23	7238	7240.5	7229	7231	34578
p2p-Gnutella31	<b>12672</b>	<b>12672.1</b>	134.54	12674	12674.4	267.24	12677	12678.7	12677	12683	61061
Slashdot0811	<b>14989</b>	<b>14989</b>	1.54	14990	14990	37.81	14993	14994.5	14994	N/A	76148
Slashdot0902	<b>16159</b>	<b>16159</b>	35.61	16160	16160	138.27	16170	16173.81	16169	N/A	81006
soc-Epinions1	<b>16667</b>	<b>16667</b>	290.36	<b>16667</b>	<b>16667</b>	77.64	16668	16668.8	16671	N/A	74677
web-BerkStan	<b>30887</b>	<b>30898</b>	2266.24	30967	30984.4	3542.31	31308	31332.3	N/A	N/A	N/A
web-Google	<b>86882</b>	<b>86905.4</b>	3079.25	86963	86992.3	3582.44	N/A	N/A	N/A	N/A	N/A
web-NotreDame	25565	25586.2	2.21	25664	25665.8	824.37	<b>25406</b>	<b>25462</b>	25686	25641	N/A
web-Stanford	11553	<b>11557.2</b>	1888.73	11581	11586.6	2351.61	<b>11541</b>	11600.3	11706	11742	N/A
WikiTalk	<b>35038</b>	<b>35038</b>	8.86	<b>35038</b>	<b>35038</b>	132.11	N/A	N/A	N/A	N/A	N/A
Wiki-Vote	<b>1101</b>	<b>1101</b>	0.09	<b>1101</b>	<b>1101</b>	0.48	<b>1101</b>	<b>1101</b>	<b>1101</b>	<b>1101</b>	3093
333SP	<b>1186502</b>	<b>1186858.1</b>	36.97	1233397	1233545.2	125.82	N/A	N/A	N/A	N/A	N/A
as-22july06	<b>2059</b>	<b>2059</b>	0.05	<b>2059</b>	<b>2059</b>	1.67	<b>2059</b>	<b>2059</b>	<b>2059</b>	<b>2059</b>	19917
audikw1	<b>10319</b>	<b>10432.7</b>	2112.62	11092	11146.7	3411.03	N/A	N/A	11864	N/A	N/A
belgium	1207728	1207843.7	26.78	<b>1201674</b>	<b>1201683.8</b>	20.68	N/A	N/A	N/A	N/A	N/A
cage15	<b>581885</b>	<b>582174.7</b>	206.46	680979	684575.2	800.59	N/A	N/A	N/A	N/A	N/A
caidaRo*erLevel	<b>47922</b>	<b>47935.1</b>	2363.89	47994	48002.8	3394.37	48361	48707.8	48422	N/A	N/A
citatio*iteseer	<b>49494</b>	<b>49502.5</b>	3148.56	49659	49696.8	3286.72	50488	51109	50434	N/A	N/A
cnr-2000	<b>24748</b>	<b>24751.6</b>	3303.93	24780	24788.9	2374.51	25177	25190.5	24880	N/A	N/A
coAutho*iteseer	<b>38104</b>	<b>38108</b>	2088.81	38123	38128.9	2630.0	38203	38453.8	38265	N/A	N/A
coAuthorsDBLP	<b>48774</b>	<b>48779.3</b>	3101.11	48809	48820.5	2482.52	49103	49141.5	48963	N/A	N/A
cond-mat-2005	<b>5119</b>	<b>5119</b>	21.46	5125	5127	345.32	5165	5169.3	5168	5175	33782
coPaper*iteseer	<b>34465</b>	<b>34494.6</b>	3443.34	34781	34813.7	3575.36	N/A	N/A	N/A	N/A	N/A
coPapersDBLP	<b>45745</b>	<b>45773.6</b>	3328.96	46392	46483.9	3546.35	N/A	N/A	N/A	N/A	N/A
ecology1	<b>358317</b>	<b>360050.6</b>	8.02	400020	403547.3	3599.42	N/A	N/A	N/A	N/A	N/A
eu-2005	<b>34206</b>	<b>34217.7</b>	3424.09	35146	35157.8	3320.62	N/A	N/A	N/A	N/A	N/A
G_n_pin_pout	<b>13481</b>	<b>13530.8</b>	713.19	14280	14339.6	3361.24	15124	15154.4	15040	15351	N/A
in-2004	86863	<b>86872.2</b>	2944.51	<b>86847</b>	86876.4	2247.82	N/A	N/A	N/A	N/A	N/A
kron_g5*-logn16	<b>3886</b>	<b>3886</b>	2.99	<b>3886</b>	3886.1	84.85	3888	3889.2	3887	N/A	53980
ldoor	<b>33436</b>	<b>33494.5</b>	40.08	34086	34177.7	3571.83	N/A	N/A	N/A	N/A	N/A
luxembourg	101673	101695	3558.5	<b>101552</b>	<b>101562.6</b>	3577.45	102284	102305.8	101968	N/A	113387
prefere*achment	<b>8356</b>	<b>8359.1</b>	3479.18	8544	8563.9	3240.6	9100	9116.3	9022	9155	N/A
rgg_n_2_17_s0	<b>22518</b>	<b>22604.3</b>	346.27	23146	23193.6	3570.98	23631	23662.3	23621	N/A	N/A
rgg_n_2_19_s0	<b>83791</b>	<b>83863</b>	5.45	84063	84288.9	3585.14	N/A	N/A	N/A	N/A	N/A
rgg_n_2_20_s0	<b>158867</b>	<b>158937.8</b>	11.69	162289	163454.6	3541.92	N/A	N/A	N/A	N/A	N/A
rgg_n_2_21_s0	<b>302163</b>	<b>302389.6</b>	24.72	316284	318593.7	3599.47	N/A	N/A	N/A	N/A	N/A
rgg_n_2_22_s0	<b>576770</b>	<b>577023.8</b>	48.17	620372	623562.6	3580.18	N/A	N/A	N/A	N/A	N/A
rgg_n_2_23_s0	<b>1103096</b>	<b>1103648.3</b>	110.17	1199201	1199450	140.13	N/A	N/A	N/A	N/A	N/A
rgg_n_2_24_s0	<b>2115143</b>	<b>2115679.2</b>	238.57	2325926	2326036.3	430.99	N/A	N/A	N/A	N/A	N/A
smallworld	<b>13785</b>	<b>13839.9</b>	197.25	14355	14481	649.51	15354	15374.6	15609	15646	N/A
uk-2002	<b>1160524</b>	<b>1160612.8</b>	1708.24	1184688	1184715.3	288.93	N/A	N/A	N/A	N/A	N/A
wave	<b>15744</b>	<b>15861.3</b>	226.38	16285	16365.8	3582.3	17504	17547.8	17792	N/A	N/A

TABLE IV  
RESULTS OF FASTCDS, NUCDS, MSLS, ACO-EFFICIENT, ACO-RVNS AND RNS-TS ON NDR BENCHMARKS.

Instance	FastCDS			NuCDS			MSLS	ACO <sub>e</sub>	ACO	RNS
	min	avg	time	min	avg	time	min	min	min	min
bn-huma*on_1-bg	<b>4212</b>	<b>4218.3</b>	3337.39	4417	4511.6	3598.07	4683	4692	N/A	N/A
bn-huma*on_2-bg	<b>3345</b>	<b>3353.4</b>	3595.88	3454	3487.5	3462.56	3836	3704	N/A	N/A
ca-coau*rs-dblp	<b>45745</b>	<b>45773.6</b>	3099.34	46392	46493.6	3396.21	N/A	N/A	N/A	N/A
ca-dblp-2012	<b>50997</b>	<b>51003.4</b>	1399.86	51015	51029.6	2479.22	51072	51193	N/A	316258
ca-holl*od-2009	<b>51503</b>	<b>51599.9</b>	3598.88	53062	53259.8	3589.33	N/A	N/A	N/A	N/A
channel*00-b050	<b>580856</b>	<b>581204.2</b>	76.14	653869	654154	879.59	N/A	N/A	N/A	N/A
dbpedia-link	<b>1533532</b>	<b>1533536.7</b>	3520.33	N/A	N/A	N/A	N/A	N/A	N/A	N/A
delaunay_n22	<b>1125248</b>	<b>1125473</b>	166.83	1188266	1188358.1	102.31	N/A	N/A	N/A	N/A
delaunay_n23	<b>2250110</b>	<b>2250432.9</b>	689.43	2368743	2376193.4	2900.29	N/A	N/A	N/A	N/A
delaunay_n24	<b>4507091</b>	<b>4507747.8</b>	188.48	4866995	4867078.2	158.46	N/A	N/A	N/A	N/A
friendster	<b>649542</b>	<b>649555.4</b>	1056.58	659802	659919.8	1170.39	N/A	N/A	N/A	N/A
hugebub*s-00020	<b>11431627</b>	<b>11475735.4</b>	3059.0	12438068	12554344.1	3234.79	N/A	N/A	N/A	N/A
hugetrace-00010	<b>6510298</b>	<b>6510786.9</b>	284.69	7014767	7119364.1	2857.97	N/A	N/A	N/A	N/A
hugetrace-00020	<b>8631122</b>	<b>8633275.2</b>	1717.65	9493668	9514712.4	356.83	N/A	N/A	N/A	N/A
inf-europe_osm	43987750	43992418.2	3599.73	<b>43785238</b>	<b>43785337</b>	3543.52	N/A	N/A	N/A	N/A
inf-germany_osm	9547995	9549133.5	3590.4	<b>9497412</b>	<b>9497590.6</b>	2771.98	N/A	N/A	N/A	N/A
inf-roadNet-CA	<b>969870</b>	<b>970396.2</b>	35.4	1015787	1015838.3	13.67	N/A	N/A	N/A	N/A
inf-roadNet-PA	<b>535031</b>	<b>535677.6</b>	17.75	539827	546456.7	3599.86	N/A	N/A	N/A	N/A
inf-road-usa	<b>14250176</b>	<b>14256927.6</b>	3594.54	14395692	14395784.3	223.37	N/A	N/A	N/A	N/A
rec-dating	<b>11739</b>	<b>11740.5</b>	3312.85	11745	11747.1	3306.1	11748	11754	N/A	N/A
rec-epinions	<b>9067</b>	<b>9067.3</b>	2013.69	9080	9084	2762.39	N/A	9100	N/A	N/A
rec-lib*eti-dir	<b>12956</b>	<b>12958.9</b>	3354.25	12977	13001.4	3497.2	N/A	13031	N/A	N/A
rgg_n_2_23_s0	<b>1103096</b>	<b>1103648.3</b>	110.17	1199201	1199450	140.13	N/A	N/A	N/A	N/A
rgg_n_2_24_s0	<b>2115143</b>	<b>2115679.2</b>	238.57	2325926	2326036.3	430.99	N/A	N/A	N/A	N/A
rt-retw*t-crawl	<b>82910</b>	<b>82916.1</b>	3446.08	83117	83120	3338.63	N/A	N/A	N/A	N/A
sc-lldoor	<b>33384</b>	<b>33447.5</b>	40.73	34151	34205.4	3531.43	N/A	N/A	N/A	N/A
sc-msdoor	<b>14673</b>	<b>14728.1</b>	462.77	15071	15101.8	3432.13	15279	15391	N/A	N/A
sc-pwtk	<b>8471</b>	<b>8512.7</b>	111.41	8757	8802.1	3451.43	8819	8931	N/A	N/A
sc-rel9	<b>120681</b>	<b>121304.9</b>	3546.2	124320	125264.9	3599.17	N/A	N/A	N/A	N/A
sc-shipsec1	<b>10631</b>	<b>10729</b>	607.79	10937	10998.8	2380.66	11791	11954	N/A	13766
sc-shipsec5	<b>13283</b>	<b>13694.4</b>	3042.98	13811	13921.5	2143.77	14839	15082	N/A	176869
soc-buzznet	<b>128</b>	<b>128</b>	9.9	<b>128</b>	<b>128</b>	38.79	<b>128</b>	<b>128</b>	N/A	99847
soc-delicious	<b>57662</b>	<b>57666.9</b>	1106.46	57685	57688.3	3037.08	N/A	N/A	N/A	535742
soc-digg	<b>70626</b>	<b>70637.9</b>	3596.03	70654	70664.9	3596.29	N/A	N/A	N/A	N/A
soc-dogster	<b>27216</b>	<b>27218.4</b>	3340.64	27284	27291.1	2614.78	27359	27391	N/A	N/A
socfb-A-anon	<b>204650</b>	<b>204656.5</b>	2767.83	206186	206809.1	3499.2	N/A	N/A	N/A	N/A
socfb-B-anon	<b>190246</b>	<b>190252.2</b>	124.78	192419	193223.6	2588.29	N/A	N/A	N/A	N/A
socfb-uci-uni	<b>1237712</b>	<b>1237862.4</b>	3453.03	1542814	16666186.3	3033.06	N/A	N/A	N/A	N/A
soc-flickr	105687	105694.6	23.83	<b>105659</b>	<b>105664.5</b>	3210.59	N/A	N/A	N/A	513557
soc-flickr-und	<b>296567</b>	<b>296575.6</b>	169.68	297000	297280	3577.6	N/A	N/A	N/A	N/A
soc-flixster	<b>91544</b>	<b>91544.2</b>	1807.06	91545	91545.6	47.51	N/A	N/A	N/A	N/A
soc-FourSquare	60980	<b>60981.7</b>	3502.39	<b>60979</b>	60982	2853.2	N/A	N/A	N/A	638426
soc-lastfm	<b>67424</b>	<b>67424</b>	5.88	67429	67429	558.08	N/A	N/A	N/A	N/A
soc-livejournal	<b>842865</b>	<b>842897.3</b>	1295.58	854550	854557.4	152.82	N/A	N/A	N/A	N/A
soc-liv*-groups	<b>1101690</b>	<b>1101710.4</b>	3595.97	N/A	N/A	N/A	N/A	N/A	N/A	N/A
soc-LiveMocha	<b>1424</b>	<b>1424</b>	85.51	1425	1426.9	2979.29	1430	1454	1476	103049
soc-ljo*al-2008	<b>1061607</b>	<b>1061692.4</b>	1962.46	1071978	1071990.7	347.33	N/A	N/A	N/A	N/A
soc-orkut-dir	<b>94975</b>	<b>95380.6</b>	3576.63	100708	101023.3	3570.36	N/A	N/A	N/A	N/A
soc-orkut	<b>113264</b>	<b>114206.2</b>	3597.64	120762	120854.1	3583.99	N/A	N/A	N/A	N/A
soc-pokec	<b>214958</b>	<b>215137.4</b>	3594.25	221800	222244.3	3592.73	N/A	N/A	N/A	N/A
soc-sinaweibo	<b>201399</b>	<b>201399</b>	510.02	N/A	N/A	N/A	N/A	N/A	N/A	N/A
soc-twi*r-higgs	<b>14961</b>	<b>14965.9</b>	2689.14	15164	15183.6	3378.36	15335	15375	N/A	N/A
soc-youtube	101716	101723.4	3235.94	<b>101657</b>	<b>101663.7</b>	3584.01	N/A	N/A	N/A	495497
soc-you*be-snap	235634	235641.4	85.2	<b>235575</b>	<b>235598.8</b>	2952.14	N/A	N/A	N/A	N/A
tech-as-skitter	<b>197800</b>	<b>197843.5</b>	3463.31	199864	200270.5	3598.07	N/A	N/A	N/A	N/A
tech-ip	<b>153</b>	<b>153.6</b>	2615.95	<b>153</b>	153.9	2790.7	N/A	170	N/A	N/A
twitter_mpi	<b>567536</b>	<b>567543</b>	1313.45	N/A	N/A	N/A	N/A	N/A	N/A	N/A
web-arabic-2005	<b>20646</b>	<b>20648.6</b>	410.96	20663	20670.9	676.52	20737	20730	N/A	162433
web-baidu-baika	<b>273145</b>	<b>273159.2</b>	428.08	273824	274001.6	3590.9	N/A	N/A	N/A	N/A
web-it-2004	<b>34548</b>	<b>34548.1</b>	7.15	34549	34549.3	132.54	34551	34557	N/A	N/A
web-uk-2005	<b>1728</b>	<b>1728</b>	10.62	<b>1728</b>	<b>1728</b>	1.62	<b>1728</b>	<b>1728</b>	<b>1728</b>	N/A
web-wik*dia-2009	<b>394301</b>	<b>394339.1</b>	288.63	396303	397633.5	3598.67	N/A	N/A	N/A	N/A
web-wik*-growth	<b>117956</b>	<b>118043.8</b>	3591.71	118964	118976.4	1243.04	N/A	N/A	N/A	N/A
web-wik*ia_link	<b>190180</b>	<b>190191.4</b>	1050.96	190982	191063.83	2848.3	N/A	N/A	N/A	N/A
wikiped*link_en	<b>212242</b>	<b>212243.1</b>	150.98	<b>212242</b>	212257.7	2807.97	N/A	N/A	N/A	N/A