The data collected in this paper is based on generating 1 million address per simulation.

The number of misses and their types were collected to help on the analysis of the findings.

1- Direct-Mapped Cash

a- Constant Cash size with 64 KB, and different block sizes between 4 and 128 bytes, in steps that are power of 2.

i- 4 byte block size;

	memGen1	memGen2	memGen3	memGen4	memGen5	memGen6
Hits	750000	492449	994	999744	983616	0
Compulsory M	16383	16384	16384	256	16384	256
Conflict M	0	428098	126610	0	0	99974
Capcity M	233616	63069	856012	0	0	0

ii- 8 byte block size;

	memGen1	memGen2	memGen3	memGen4	memGen5	memGen6
Hits	875000	496470	986	999872	991808	0
Compulsory M	8192	8192	8192	128	8192	256
Conflict M	0	40322	80716	0	0	99974
Capcity M	116808	455016	910106	0	0	0

iii- 16 byte block size;

	memGen1	memGen2	memGen3	memGen4	memGen5	memGen6
Hits	937500	498105	1021	999936	995904	0
Compulsory M	4096	4096	4096	64	4096	256
Conflict M	0	13969	27972	0	0	99974
Capcity M	58404	483830	966911	0	0	0

iv- 32 byte Block size;

	memGen1	memGen2	memGen3	memGen4	memGen5	memGen6
Hits	968750	499009	1021	999968	997952	0
Compulsory M	2048	2048	2048	32	4096	256
Conflict M	0	5923	11998	0	0	99974
Capcity M	29202	493020	984933	0	0	0

v- 64 byte block size;

	memGen1	memGen2	memGen3	memGen4	memGen5	memGen6
Hits	984375	499603	1023	999984	998976	0
Compulsory M	1024	1024	1024	16	1024	256
Conflict M	0	3379	6693	0	0	99974
Capcity M	14601	495994	991260	0	0	0

vi- 128 block size;

	memGen1	memGen2	memGen3	memGen4	memGen5	memGen6
Hits	992187	500094	978	999992	999488	0
Compulsory M	512	512	512	8	512	256
Conflict M	0	1214	2403	0	0	99974
Capcity M	7301	498180	996107	0	0	0

b- Constant block size of 16 bytes and different cash sizes between 1KB and 64 KB.

i- 1KB cash;

	memGen1	memGen2	memGen3	memGen4	memGen5	memGen6
Hits	937500	7979	15	999936	937500	0
Compulsory M	64	64	64	64	64	4
Conflict M	62436	198	198	0	0	999996
Capcity M	0	991759	999723	0	62436	0

ii- 2 KB cash;

	memGen1	memGen2	memGen3	memGen4	memGen5	memGen6
Hits	937500	15782	30	999936	937500	0
Compulsory M	128	128	128	64	128	8
Conflict M	0	656	666	0	0	999992
Capcity M	62372	983434	999176	0	62372	0

iii- 4 KB cash;

	memGen1	memGen2	memGen3	memGen4	memGen5	memGen6
Hits	937500	31468	75	999936	937500	0
Compulsory M	256	256	256	64	256	16
Conflict M	0	967027	1286	0	0	999984
Capcity M	62244	1249	998383	0	62244	0

iv- 8KB cash;

	memGen1	memGen2	memGen3	memGen4	memGen5	memGen6
Hits	937500	62505	141	999936	937500	0
Compulsory M	512	512	512	64	512	32
Conflict M	0	4800	5130	0	0	999984
Capcity M	62436	932183	994217	0	61988	0

v- 16 KB cash;

	memGen1	memGen2	memGen3	memGen4	memGen5	memGen6
Hits	937500	124573	253	999936	937500	0
Compulsory M	1024	1024	1024	64	1024	64
Conflict M	0	868635	6588	0	0	999968
Capcity M	61476	5768	992135	0	61476	0

vi- 32KB cash;

	memGen1	memGen2	memGen3	memGen4	memGen5	memGen6
Hits	937500	249652	509	999936	937500	0
Compulsory M	2048	2048	2048	64	2048	128
Conflict M	0	735614	16905	0	0	999872
Capcity M	60452	12686	980538	0	60452	0

vii- 64 KB cash;

	memGen1	memGen2	memGen3	memGen4	memGen5	memGen6
Hits	937500	498105	1021	999936	995904	0
Compulsory M	4096	4096	4096	64	4096	256
Conflict M	0	483830	27972	0	0	999744
Capcity M	58404	13969	966911	0	0	0

2- Fully Associative Cash

a- constant block size of 32 byte and block size from 1KB to 16KB in steps that are powers of 2.

i- 1 KB cash;

	memGen1	memGen2	memGen3	memGen4	memGen5	memGen6
Hits	968750	7765	14	999968	969215	0
Compulsory M	32	32	32	32	32	32
Conflict M	0	0	0	0	0	0
Capcity M	31218	992203	999954	0	30753	999968

ii- 2KB cash;

	memGen1	memGen2	memGen3	memGen4	memGen5	memGen6
Hits	968750	15523	30	999968	969695	0
Compulsory M	64	64	64	32	64	64
Conflict M	0	0	0	0	0	0
Capcity M	31186	984413	999906	0	0	999936

iii- 4KB cash;

	memGen1	memGen2	memGen3	memGen4	memGen5	memGen6
Hits	968750	31249	68	999968	970655	0
Compulsory M	128	128	128	32	128	128
Conflict M	0	0	0	0	0	0
Capcity M	31122	968623	999804	0	29217	999872

iv- 8KB cash;

	memGen1	memGen2	memGen3	memGen4	memGen5	memGen6
Hits	968750	62493	134	999968	972574	0
Compulsory M	256	256	256	32	256	256
Conflict M	0	0	0	0	0	0
Capcity M	30994	937251	999610	0	27170	999744

v- 16KB cash;

	memGen1	memGen2	memGen3	memGen4	memGen5	memGen6
Hits	968750	124779	247	999968	976414	0
Compulsory M	512	512	512	32	512	512
Conflict M	0	0	0	0	0	0
Capcity M	30738	874709	999241	0	23074	999488

b- **Fully Associative cash with constant block size of 32 byte and block size of size 4 KB vs replacement policies.**

i- LRU policy

	memGen1	memGen2	memGen3	memGen4	memGen5	memGen6
Hits	968750	31211	73	999968	968750	0
Compulsory M	128	128	128	32	128	128
Conflict M	0	0	0	0	0	0
Capcity M	31122	968661	999799	0	31122	999872

ii- LFU policy

	memGen1	memGen2	memGen3	memGen4	memGen5	memGen6
Hits	968750	31211	68	999968	970655	381
Compulsory M	128	128	128	32	128	128
Conflict M	0	0	0	0	0	0
Capcity M	31122	968586	999804	0	29217	999491

iii- FIFO policy

	memGen1	memGen2	memGen3	memGen4	memGen5	memGen6
Hits	968750	31224	73	999968	968750	0
Compulsory M	128	128	128	32	128	128
Conflict M	0	0	0	0	0	0
Capcity M	31122	968648	999799	0	31122	999872

iv- Random Replacment policy

	memGen1	memGen2	memGen3	memGen4	memGen5	memGen6
Hits	968750	31267	68	999968	968750	0
Compulsory M	128	128	128	32	128	128
Conflict M	0	0	0	0	0	0
Capcity M	31122	968605	999804	0	23074	999872

3- N- Way Set Associative Cash with constant block size 32 byte and cash size 64 KB.

a- 2 Way cash

	memGen1	memGen2	memGen3	memGen4	memGen5	memGen6
Hits	968750	498942	998	999968	997952	0
Compulsory M	2048	2048	2048	32	2048	512
Conflict M	0	0	0	0	0	0
Capcity M	29202	499004	996954	0	0	999488

b- 4 way cash

	memGen1	memGen2	memGen3	memGen4	memGen5	memGen6
Hits	968750	499579	1016	999968	997952	0
Compulsory M	2048	2048	2048	32	2048	1024
Conflict M	0	0	0	0	0	0
Capcity M	29202	498373	996936	0	0	998976

c- 8 way cash

	memGen1	memGen2	memGen3	memGen4	memGen5	memGen6
Hits	968750	498825	988	999968	997952	0
Compulsory M	2048	2048	2048	32	2048	2048
Conflict M	0	0	0	0	0	0
Capcity M	29202	499127	999694	0	0	997952

d- 16 way cash

	memGen1	memGen2	memGen3	memGen4	memGen5	memGen6
Hits	968750	498763	969	999968	997952	0
Compulsory M	2048	2048	2048	32	2048	2048
Conflict M	0	0	0	0	0	0
Capcity M	29202	499189	996964	0	0	997952