

# Caching

Level	1	2	3	4	5
Name	Registers	Cache	Memory	SSD	Disk
Typical Size	< 1KB	<16MB	< 64GB	<1TB	< 10TB
Implementation Strategy	Custom memory with multiple ports, CMOS	On-chip or off-chip CMOS SRAM	CMOS DRAM	flash memory	Magnetic Disks
Access Time (ns)	0.25 – 0.5	0.5 – 25	80 – 250	25,000-50,000	5,000,000
Bandwidth (MB/s)	20,000 – 100,000	5000 – 10,000	1000 – 5000	500	20 – 150
Managed by	Compiler	Hardware	OS	OS	OS
Backup by	Cache	Memory	Disk	Disk	CD/Tape