Samsung DDR2 for Servers

Fully Buffered and Registered DIMMs Support Maximum Bandwidth and Fast Data Access

Samsung's broad line of high-density memory modules delivers the ultimate in computing power, flexibility and performance for servers.

DDR2 Features Optimize Server Performance

The need for increased server performance is unrelenting, thus DDR2 SDRAM is now the high-density standard for server main memory. Its advanced architecture gives DDR2 a host of advantages over earlier standards, such as faster speeds, better signal integrity, lower power consumption and better thermal characteristics. With the industry's broadest product selection, Samsung offers DDR2 as registered, parity-registered, very-low-profile-registered and fully buffered modules in densities up to 8GB and in a range of speeds and configurations to support the needs of performance-conscious users.

Many of DDR2's key features are optimal for servers. For example, DDR2's higher-density memory capabilities ce higher peak bandwidth and support twice the data transfer rate of DDR333. Another DDR2 advantage is increased memory support because FBDIMMs allow up to eight modules per channel compared to three with DDR. In addition, the lower power consumption and reduced heat of DDR2 are ideal for blade and rack servers where air flow may be limited.

FB DIMMs for Maximum Density

Samsung Fully Buffered DIMMs (FBDIMMs) give servers the highest possible memory density and bandwidth. Servers equipped with FBDIMMs can get up to 64 gigabytes per channel of total system memory, with the architecture's increased number of memory channels delivering up to 21.2GB/second of memory bandwidth. In addition, FBDIMMs deliver exceptional reliability. Most notable is a silent data error rate of one per 100 years or less, enabled by a robust CRC scheme that protects both commands and data. Also boosting reliability are features such as transient bit-error detection and retry and "bit-lane fail-over correction." This enables the server board to shut down a bad data path on the fly. Optional bit widths and CRC coverage are applicable to a wide range of server applications.

Outstanding Power Advantages

Power usage is rapidly increasing in importance but servers equipped with high-density FBDIMMs have strong advantages. For example, 2Gb-based 8GB FBDIMMs provide today's most energy-efficient high-density server solution. Compared to 1Gb-based FBDIMMs, the higher-density modules make possible server main memory configurations that require half the number of DIMMs while achieving the same overall density. (See chart below.) This is made possible because four 8GB modules using 2Gb components consume 47% less power than eight 1Gb-based modules.

2GB-BASED FBDIMM POWER ADVANTAGE

47%

85.6W

45.6W

4GB x 8pcs
(1Gb, 1.8V)

8GB x 4pcs
(2Gb, 1.8V)

2 configurations of 32GB FBDIMMs
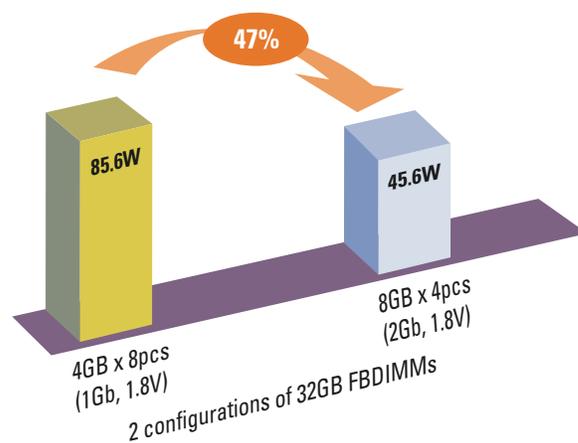
Samsung's 2Gb-based FBDIMMs have significant power advantages, enabling server configurations that deliver the same power and voltage as 1Gb-based FBDIMM modules but consuming 47% less energy because only half the number of modules are required. In this case, two different configuration that achieve 32GB of main memory are pictured.
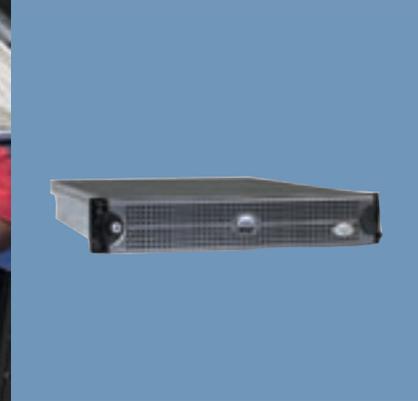
DDR2 SDRAM Registered Modules

Density	Composition	Speeds (Mbps)	Rank
512MB	(64M x8)*9	400/533/667/800	1
1GB	(128M x4)*18	400/533/667/800	1
1GB	(64M x8)*18	400/533/667/800	2
1GB	(128Mx8)*9	400/533/667/800	1
2GB	(128M x4)*36	400/533/667/800	2
2GB	(256M x4)*18	400/533/667/800	1
2GB	(128M x8)*18	400/533/667/800	2
4GB	st. (512M x4)*18	400/533/667/800	2
8GB	st. (512Mx4)*36	400/533/667/800	4

DDR2 SDRAM Fully Buffered Modules

Density	Composition	Speeds (Mbps)	Rank
512MB	(64M x8)*9	667/800	1
1GB	(64M x8)*18	667/800	2
1GB	(128M x8)*9	667/800	1
2GB	(128M x4)*36	667/800	2
2GB	128M x8)*18	667/800	2
4GB	(256M x4)*36	667/800	2
4GB	(128M x8)*36	667/800	4
4GB	(256M x8)*18	667/800	2
8GB	st. (512Mx8)*18	667/800	4
8GB	st. (1Gx4)*18	667/800	2

* All parts lead free

* VLP registrered modules also available

Samsung's lower-power DDR2 DIMMs produce less heat, making them ideal for blade and rack servers.

Densest Monolithic DRAM Memory

In its newest 2Gb-based DR2 components, Samsung is mass producing the lowest-power, highest-density DDR2 memory available for servers. For this product, Samsung developed the industry's first 60-nanometer-class process technology. This new component delivers up to 50% less power at 1.55 volts, which represents the best power/performance ratio for today's high-density server memory.

With the increasing concern about escalating data center energy costs, Samsung's new DDR2 components offer a solution for achieving the major energy savings that most IT managers are seeking. Samsung uses its advanced process for its highest-density RDIMMs and FBDIMMs, offering 8GB modules that are the highest-capacity server memory solution.

Whether for single-or dual-core processors or as add-on memory, Samsung's large portfolio of fully validated DDR2 products meets any needs for advanced server memory.