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## CyaSSL Resource Use

### RSA Cipher Suites

Math Library	Key Size	Peak Stack Use	Peak RAM (Heap) Use
fast	1024	10k	9k
fast	2048	13k	11k
normal	1024	6k	14k
normal	2048	7k	17k

CyaSSL object is 1k.

Handshake resources require an additional 8k just during the handshake.

RSA takes another 5-8k depending on key size when using normal math.

or

RSA takes another 4-6k stack space depending on key size when using fastmath.

This assumes zero sized input/output buffers that use dynamic memory only when needed.

Each buffer can use an additional 17k if using full SSL record size.

## ECC Cipher Suites

Math Library	Key Size	Peak Stack Use	Peak RAM (Heap) Use
fast	256	7k	12k
normal	256	6k	15k

The fastmath library only needs an additional 1k of stack when using ECC because the max bits can be lowered to 512 ( $256 \times 256$ ) instead of 4096 or 2048 for RSA. And it saves 3k dynamic memory.

### Testing Notes:

The memory usage numbers noted in this document were gathered using a 32-bit instruction set. When using fastmath with 1024-bit keys, FP\_MAX\_BITS was defined as 2048 (by default, it is set to 4096, to allow for 2048-bit keys).

On desktop systems, stack usage can be higher due to functions such as printf() and gmtime() using a higher amount of stack space than an embedded system would use.