Subject: Get characteristics of memory environment
From: Van Snyder
Reference: 03-258r1, section 2.4.4.1

1 Number

2 TBD

3 Title

4 Get characteristics of memory environment.

5 Submitted By

6 J3

7 Status

8 For consideration.

9 Basic Functionality

10 Get characteristics of memory environment.

11 Rationale

12 Many algorithms in linear algebra have highest performance when blocked. The block dimensions depend
13 on the characteristics of the cache.

14 Estimated Impact

15 Minor – a few intrinsic functions.

16 Detailed Specification

17 Provide intrinsic procedures to inquire the number of levels of cache, and the size and relative speed (or
18 relative access time) of each level of cache. Main memory should be included in the hierarchy. It may be
19 last, or next-to-last if virtual memory is included. The reported size should be in terms of an argument
20 of the procedure, not in machine-dependent units such as "words" or "computer science" units such as
21 "bytes." The reported relative speed (or relative access time) should take the cache data transfer width
22 into account. Additional parameters of the cache, e.g. is it set-associative and if so how many ways?, is
23 it write-through?, is it write-back?, etc., are interesting but haven't as much effect as the first three.

24 History