This factor always existed, but its sensitivity is higher with the current high frequency microprocessors. Spreading the same workload over more address spaces than necessary can raise a workload's RNI. This increase occurs because the working set of instructions and data from each address space increases the competition for the processor caches.

Tuning to reduce the number of simultaneously active address spaces to the optimum number that is needed to support a workload can reduce RNI and improve performance. In the LSPR, the number of address spaces for each processor type and *n-way* configuration is tuned to be consistent with what is needed to support the workload. Therefore, the LSPR workload capacity ratios reflect a presumed level of software configuration tuning. Retuning the software configuration of a production workload as it moves to a larger or faster processor might be needed to achieve the published LSPR ratios.

12.5 LSPR workload categories based on relative nest intensity

A workload's RNI is the most influential factor in determining workload performance. Other more traditional factors, such as application type or I/O rate, have RNI tendencies. However, it is the net RNI of the workload that is the underlying factor in determining the workload's performance. The LSPR now runs various combinations of former workload primitives, such as CICS, Db2, IMS, OSAM, VSAM, WebSphere, COBOL, and utilities, to produce capacity curves that span the typical range of RNI.

The following workload categories are represented in the LSPR tables:

- LOW (relative nest intensity)

  A workload category that represents light use of the memory hierarchy.

- AVERAGE (relative nest intensity)

  A workload category that represents average use of the memory hierarchy. This category is expected to represent most production workloads.

- HIGH (relative nest intensity)

  A workload category that represents a heavy use of the memory hierarchy.

These categories are based on the RNI. The RNI is influenced by many variables, such as application type, I/O rate, application mix, processor usage, data reference patterns, LPAR configuration, and the software configuration that is running. CPU MF data can be collected by z/OS System Measurement Facility on SMF 113 records or z/VM Monitor starting with z/VM V5R4.

12.6 Relating production workloads to LSPR workloads

Historically, the following techniques were used to match production workloads to LSPR workloads:

- Application name (a client that is running CICS can use the CICS LSPR workload)
- Application type (create a mix of the LSPR online and batch workloads)
- I/O rate (the low I/O rates that are used a mix of low I/O rate LSPR workloads)

The IBM Processor Capacity Reference for IBM Z (zPCR) tool supports the following workload categories:

- Low
- Low-Average