```
WTIME = wtime.c
MACHINE = -DIBM
```

It is not feasible to cover all the compilation parameters, so the tests varied only the level of optimization. The following parameters were common for all builds:

- ► **-qsmp=noauto:omp**
- ► **-qnosave**
- ► **-qmaxmem=-1**
- ► **-qarch=auto**
- ► **-qtune=auto:balanced**

The example considers four sets of compilation parameters. In addition to the previous compilation parameters, the remaining parameters are listed in Table 9-1. The column "Option set name" lists shortcuts that were used to reference each set of compilation parameters that are presented in the "Compilation parameters" columns.

Table 9-1   NPB: Compilation parameters that were used to build the NPB suite executable files

Option set name	Compilation parameters	
	Varying	Common
-O2	-O2	**-qsmp=noauto:omp**
-O3	-O3	**-qnosave** **-qmaxmem=-1**
-O4	-O4	**-qarch=auto** **-qtune=auto:balanced**
-O5	-O5	

All of the runs were performed with the following environment variables:

- ► **export OMP_DYNAMIC="FALSE"**
- ► **export OMP_SCHEDULE="static"**

The benchmarks were submitted through IBM Spectrum Load Sharing Facility (IBM Spectrum LSF) by using **jsrun** as the job launcher. IBM Spectrum LSF configured the node for the needed SMT level, and **jsrun** made sure to pack the requested OpenMP threads into all available CPUs in each core.

Example 9-2 shows how to submit a job to run on 22 CPU cores with SMT-2 by using 44 virtual CPUs.

Example 9-2   IBM Spectrum LSF job submission for running benchmarks with 22 cores in SMT-2 mode

```
$ cat jobscript
#! /bin/bash
#BSUB -q excl
#BSUB -J NPB-22cpu-smt2
#BSUB -nnodes 1
#BSUB -alloc_flags "smt2"
#BSUB -o NPB-22cpu-smt2.%J
### End BSUB Options and begin shell commands

export OMP_DYNAMIC="FALSE"
export OMP_SCHEDULE="static"

# 22 cpus with SMT2 = 44 available cpus.
export OMP_NUM_THREADS=44
```