The OpenMP validation suite is a collection of C and Fortran programs with OpenMP directives that were designed to validate the correctness of an OpenMP implementation. It is a joint effort of the High Performance Computing Center Stuttgart, the Center for Information Services and High Performance Computing (Dresden) and the University of Houston.

The suite is designed to cover the complete 2.5 and most of the 3.0 version of the OpenMP standard. It is currently extended to cover the new 4.0 standard as well. This version not only merges the Fortran and C/C++ language binding, but it also contains a number of clarifications or more detailed specifications. For the C/C++ language binding it consists of eleven different constructs, two directives and eleven clauses that can be applied to the constructs.

Although not all clauses can be used together with all constructs, this results in a sufficient complexity to make the implementation of an OpenMP compiler a difficult task. Unfortunately, to the best of our knowledge, there exists currently no freely available validation suite that could support the efforts to develop open source OpenMP compilers. The target of this work is to provide a starting point and open framework for such a suite.

Currently the suite consists of 106 different tests, each testing different constructs. It has been tested with 10 different compilers. Our validation suite covers all the constructs and clauses of OpenMP. We have one subroutine for each OpenMP construct. Each subroutine performs a calculation and returns a correct result if the OpenMP construct is implemented correctly. In order to check the dependency of the result from the correct implementation we evaluate the result when the construct is missing.

More Information:
www.hlrs.de/organization/av/spmt/research/openmp-validation-suite