

BLOG HIGHLIGHTS

Intel® Memory Protection Extensions (Intel® MPX) support in the GNU Toolchain

BY [IGOR ZAMYATIN](#) »

The invalid memory access problem is commonly found in many C/C++ programs and leads to time-consuming [debugging](#), program instability, and vulnerability. Many attacks exploit software bugs related to inappropriate memory accesses caused by buffer overflow (or buffer overruns). The existing set of techniques and tools to find such memory bugs in the programs and defend them from the attacks are software-only solutions, which result in poor performance of the protected code.

Intel is introducing a new ISA extension called Intel® Memory Protection Extensions (Intel® MPX) to be used for memory protection in applications with low performance overhead. To take advantage of this new extension, changes are required in the OS kernel, binutils, compiler, and system libraries support.

Intel MPX introduces new registers, called “bound registers,” to hold bounds for a pointer and instructions to manipulate those registers (for details see the Programming Reference). Therefore, the first step is to implement support for new hardware features in binutils and the GCC.

This paper describes changes in GNU Binutils, GCC, and Glibc to support Intel MPX.

[More](#)

