

std::byte is the correct name

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Background

A proposal ([P0298R2](#)) for a distinguished standard type (`std::byte`) implementing the several decades old notion of *byte* failed to pass plenary motion at the Fall 2016 Issaquah meeting, after passing all working subgroups straw polls. The failure in plenary was solely based on naming, an issue raised by the Canadian National Body.

To be sure, there were at least two national body comments calling for adding that functionality to the C++17 standards, with specific reference to the proposal P0298. Only the Canadian national body commented on the naming. Even then, all comments approved of the essence and the functionality of the proposal. The proposal removes ambiguity around the meaning of pointer to character types: pointer to character string or pointer to object representation? That ambiguity has always been a fertile source of security vulnerabilities. So, it increases type safety and adds much needed value. Alternatives such as `std::storage_byte` or `std::raw_byte` were suggested.

The P0298 proposal was vetted and reviewed at least twice by each of the Core Working Group, Evolution Working Group, Library Evolution Working Group, and Library Working Group. The name 'std::byte' was specifically polled by LEWG, including during ballot comments resolution at the Issaquah meeting where at least a representative of the Canadian National Body was present. The name was reaffirmed before the proposal was pushed forward for the entire WG21 committee vote.

In one instance of LEWG review, it was pointed out that some communities type alias 'BYTE' to a character type, which happens to support arithmetic. The happenstance is incidental and accidental, not fundamental. That accidental mistake suffered from limitations in previous C++. The `std::byte` type fixes that mistake.

Recommendation

The name *byte* is well established in the C and C++ community – for over four decades -- as the unit of addressable storage. That is the name used by the standards of both languages. It is only fitting that the type materialization in the standard library bear that name. Anything else is confusing and brings little to no value, except puzzlement, to the larger C++ community. Consequently, I suggest to keep the name `std::byte` as currently specified in P0298R2, and I encourage WG21 to approve the proposal for C++17.