

## Section 1.1 C++11

**static\_assert**

value, whose value is **false**. Although this second implementation is more likely to produce the desired result (i.e., a controlled compilation failure only when `serialize` is invoked with unsuitable **arguments**), sufficiently sophisticated compilers looking at just the current **translation unit** would still be able to know that no valid instantiation of `serialize` exists and would therefore be well within their rights to refuse to compile this still technically **ill formed** program.

Equivalent workarounds achieving the same result without a helper class are possible.

```
template <typename T>
void serialize(char* buffer, const T& object, SerializableTag<false>) // (2c)
{
    static_assert(0 == sizeof(T), "T must be serializable."); // OK
    // not too obviously ill formed: compile-time error when instantiated
}
```

Using this sort of obfuscation is not guaranteed to be either portable or future-proof.

**Misuse of static assertions to restrict overload sets**

Even if we are careful to *fool* the compiler into thinking that a **specialization** is wrong *only* if instantiated, we still cannot use this approach to remove a candidate from an **overload set** because translation will terminate if the static assertion is triggered. Consider this flawed attempt at writing a **process** function that will behave differently depending on the size of the given argument:

```
template <typename T>
void process(const T& x) // (1) first definition of process function
{
    static_assert(sizeof(T) <= 32, "Overload for small types"); // BAD IDEA
    // ... (process small types)
}

template <typename T>
void process(const T& x) // (2) compile-time error: redefinition of function
{
    static_assert(sizeof(T) > 32, "Overload for big types"); // BAD IDEA
    // ... (process big types)
}
```

While the intention of the developer might have been to statically dispatch to one of the two mutually exclusive **overloads**, the ill-fated implementation above will not compile because the **signatures** of the two **overloads** are identical, leading to a redefinition error. The semantics of **static\_assert** are not suitable for the purposes of **compile-time dispatch**, and **SFINAE**-based approaches might be used instead.

To achieve the goal of removing up front a **specialization** from consideration, we will need to employ **SFINAE**. To do that, we must instead find a way to get the failing compile-time expression to be part of the function’s declaration: