```cpp
void* operator new (std::size_t sz)
{
    if (is_real_time_context())
    {
        // Log violation
        ...
    }

    return std::malloc (sz);
}
```

```cpp
struct realtime_context_state
{
    realtime_context_state() = default;

    void realtime_enter()                   { realtime_flag.store (true); }

    void realtime_exit()                    { realtime_flag.store (false); }

    /// Returns true if this is in a real-time state
    bool is_realtime_context() const    { return realtime_flag.load(); }

private:
    std::atomic<bool> realtime_flag { false };
};
```