NAME

sfile_hdl_base_t, sfile_read_hdl_t – File Descriptor I/O Handler Classes

SYNOPSIS

```
#include <sthread.h>

class sfile_hdl_base_t : public w_vbase_t {
public:
    enum { rd = 1, wr = 2, ex = 4 };
    enum { max = 64 };

    NORET               sfile_hdl_base_t(
      int                   fd,
      int                   mask);
    NORET               ~sfile_hdl_base_t();

    const int                 fd;

    virtual void        read_ready() = 0;
    virtual void        write_ready() = 0;
    virtual void        expt_ready() = 0;

    void                enable();
    void                disable();

    static w_rc_t       wait(long timeout = sthread_base_t::WAIT_FOREVER);
    static void               dump(const char* str, ostream& out);

    static bool               is_active(int fd);
};

class sfile_read_hdl_t : public sfile_hdl_base_t {
public:
    NORET               sfile_read_hdl_t(int fd);
    NORET               ~sfile_read_hdl_t();

    w_rc_t              wait(long timeout);
    void                shutdown();
    bool                is_down()  { return _shutdown; }
protected:
    // hide base::read_ready
    virtual void        read_ready();
};

class sfile_write_hdl_t : public sfile_hdl_base_t {
public:
    NORET               sfile_write_hdl_t(int fd);
    NORET               ~sfile_write_hdl_t();

    w_rc_t              wait(long timeout);
    void                shutdown();
    bool                is_down()  { return _shutdown; }
protected:
    // hide base::write_ready
```

```
        virtual void        write_ready();
};
```

DESCRIPTION

File handlers are used in situations when a thread needs to wait for I/O on a unix file descriptor but does not want the operating system to suspend the whole process. File handlers provide a means with which a thread can wait for I/O without affecting other threads that are ready to run.

Class sfile_hdl_base_t

Class **sfile_hdl_base_t** is an abstract base class for handling asynchronous file events. In general, users should not be concerned with this class. They should, instead, be instantiating more refined file handler classes such as **sfile_read_hdl_t.**For**an**example**of**using see the implementation of **sfile_read_hdl_t** in src/sthread/sthread.c.

sfile_hdl_base_t(fd, mask)

The constructor creates a file handler for the file descriptor *fd.* Parameter *mask* is a bitwise ORed value of the following flags:

```
rd    signifying read intention
wr    signifying write intention
ex    signifying exception intention
```

˜sfile_hdl_base_t()

enable()

The **enable** method enables the file handler to be waited on when the thread package calls the **select** system call.

disable()

The **disable** method disables the file handler from being waited on when the thread package calls the **select** system call.

wait()

The **wait** method waits for some file handlers to be ready. An error is returned if *timeout* milliseconds elapsed before any file handler is ready. **Warning:** this method blocks the entire process on a unix **select** system call.

is_active(fd)

The **is_active** method returns **true** if a file handler exists for file descriptor *fd.*

Class sfile_read_hdl_t

Class **sfile_read_hdl_t** inherits from **sfile_hdl_base_t** but handles only read events. It is used to block a thread that needs to wait for input on a file descriptor before proceeding. For example, a thread that processes user commands from stdin would create a **sfile_read_hdl_t** on file descriptor 0. The the EXAMPLES section for more details.

sfile_read_hdl_t(fd)

The constructor creates a read-intention file handler on file descriptor *fd.*

~sfile_read_hdl_t()

shutdown()

The **shutdown** method turns off monitoring of the file descriptor manages by the file handler. Any threads is waiting on it, awakened with a **stBADFILEHDL** error code.

wait()

The **wait** method suspends the current thread, waiting to read from the file descriptor. The method returns timeout error if *timeout* milliseconds elapse before anything arrives on the file descriptor.

Class sfile_write_hdl_t

Class **sfile_write_hdl_t** inherits from **sfile_hdl_base_t** but handles only write events. It is used to block a thread that needs to wait for a file descriptor to be ready for writing.

This class has only recently been implemented. No documentation is available yet. TODO

ERRORS

TODO.

EXAMPLES

```
stdin_thread_t::run()
{
  sfile_read_hdl_t h(0);    // handle on stdin
  char buf[256];
  for (;;)  {
      if (h.wait())  {
        /* handle error */
        ...
      }
      /* stdin is ready -- read user command into buf */
      read(0, buf, sizeof(buf)-1);
      /* process user command */
      ...
  }
}
```

VERSION

This manual page applies to Version 1.1 of the Shore software.

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SEE ALSO

errors(sthread), sthread_t(sthread), smutex_t(sthread), scond_t(sthread), sevsem_t(sthread), intro(sthread).