

Sena Technologies, Inc.

HelloDevice Super

가

1.1.0

Sena Technologies, Inc.

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가

HelloDevice™

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Sena Technologies, Inc.

Revision history

Revision	Date	Name	Description
V0.0.1	2003-09-09	H. Yeom	Initial Draft
V1.0.0	2003-09-22	H. Yeom	Initial Release
V1.1.0	2004-01-12	H. Yeom	GDB 가

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1.

HelloDevice Super 가 - 가 .
RS-232/422/485

HelloDevice Super
(SDK) .

’ , ’ .

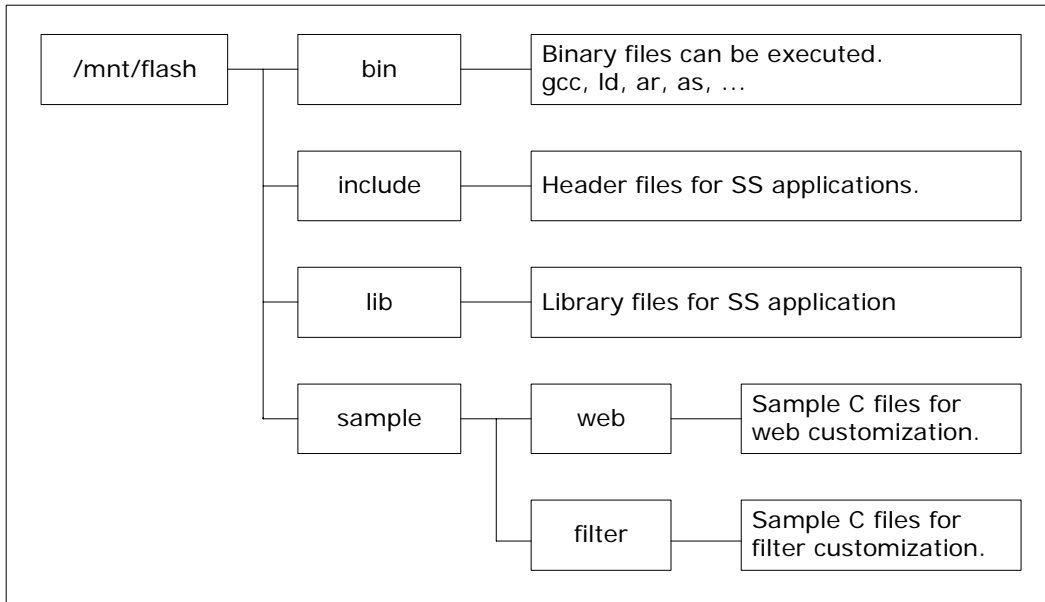
’ . FIFO
(read/write) ,

HelloDevice Super Linux OS , UNIX / Linux
- 가 .

2. SDK ()

가 HelloDevice Super SDK가
HelloDevice Super SDK PC CF
HelloDevice Super SDK가
. SDK , , , C

SDK



3.

3.1.

- 1) CF HelloDevice Super SDK
- 2) SS PCMCIA (PC) SDK
- 3) PC ,

3.2.

C HelloDevice Super CLI
 , PC Linux /mnt/flash/lib

3.3.

HelloDevice Super CLI
 PC , HelloDevice Super
 가
 - SCP
 - FTP
 -
 가 가

3.4.

C prog (proga.c prog.b.c
 가 .)

```
# gcc -o prog proga.c prog.b.c
# ./prog
```

4.

4.1. HTML

```

HelloDevice Super          가          HTML          가
          가          .          HTML
/usr2/usrweb          . index.html          HTML
/usr2/usrweb          ,          HTML          .

```



4.2. CGI

4.2.1 CGI

```

CGI          .
CGI          /mnt/flash/sample/web/cgi/shell.c          .

```

1 .CGI .

```
# cd /mnt/flash/sample/web/cgi
# make
```

2 .CGI .

```
# cp shell.cgi /usr2/cgi-bin/
```

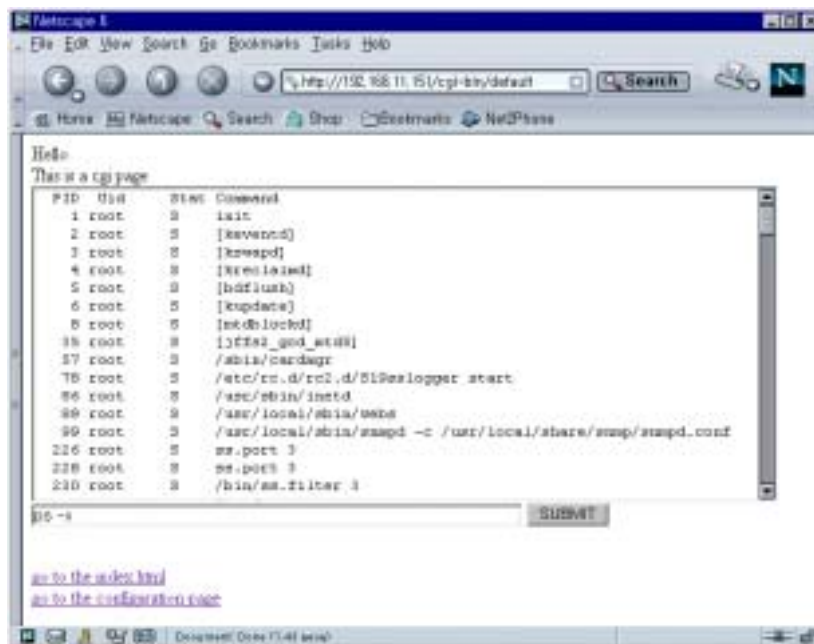
3 . , SS11 0/400/800 .

4 .

<http://192.168.1.2/cgi-bin/shell.cgi>

. (HelloDevice Super

IP 192.168.1.2 가 .)



4.2.2 CGI

CGI /usr2/cgi-bin . default CGI

가

Shell.c Makefile .

```

CC = gcc
BIN = shell.cgi
OBJS = shell.o util CGI.o
LDFLAG = -L/mnt/flash/lib

BIN : $(OBJS)
    $(CC) -o $(BIN) $(OBJS) $(LDFLAG)
c.o :
    $(CC) -c $<
all : $(BIN)
clean :
    rm -f $(BIN) $(OBJS)
  
```

util CGI.h util CGI.c Appendix A . CGI

/usr2/cgi-bin .

4.3.

. CGI

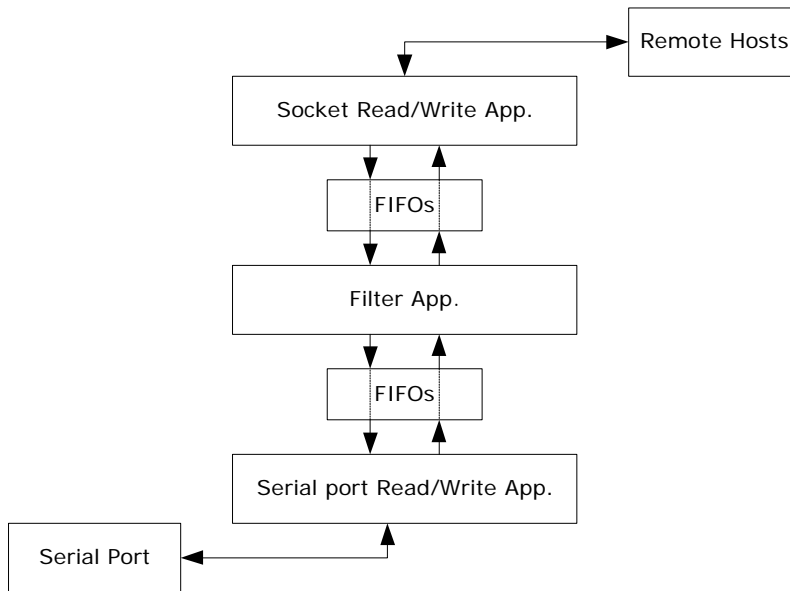
/usr2/usrweb

5.

5.1.

HelloDevice Super FIFO

가
(read/write) FIFO



가 FIFO , 가
FIFO

Sena Technologies, Inc.

- 1) 가 /tmp/port_fifos/portX_f2s FIFO
(,X 1).
- 2) 가 /tmp/port_fifos/portX_f2e FIFO
.
- 3) /tmp/port_fifos/portX_s2f FIFO
FIFO .
- 4) /tmp/port_fifos/portX_e2f FIFO
FIFO .
- 5) , FIFO .
- 6) 가 , .
- 7) /var/run/portX_filter.pid PID(Process ID) . (PID
, 가 (disable)
.)
- 8) SIGTERM .

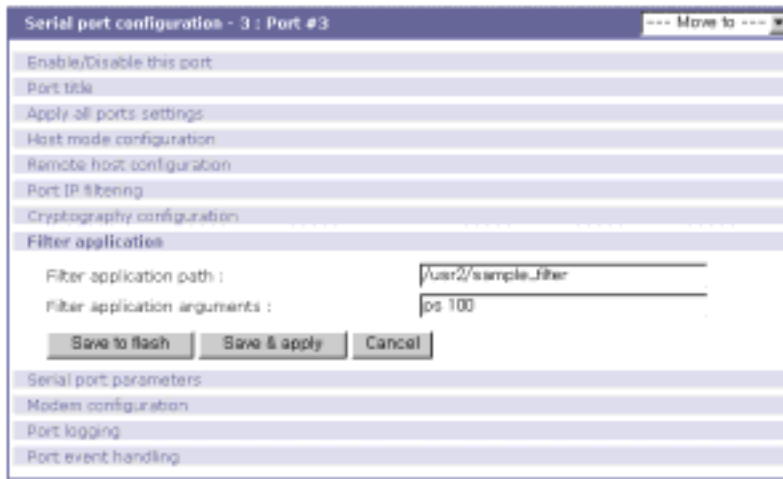
5.2.

/mnt/flash/sample/filter/ .

```
1 .
# cd /mnt/flash/sample/filter
# make
```

```
2 .
# cp data_conversion /usr2/sample_filter
```

3



5.3.

	Thread,	Thread	Thread
Thread	.	Thread	Thread
	Thread	SIGTERM	, SIGTERM
	/	Thread	Thread
- empty.c	/	/	FIFO
- periodic_command.c	/	/	FIFO
- data_conversion.c			
- data_calibration.c			(:
	,)	
- data_storing.c		(:	,) RAM
(/tmp)		

- data_event_handling.c

(: ,) SNMP

- cq.c

Circular queue

6. GDB

HelloDevice Super

SDK GNU GDB

가 . (: GDB

SDK v1.1.0

.)

GDB 가

:

-
-
-
-

GDB

gdb

, GDB

가 **quit**

GDB

가

help

GDB

GDB

GDB

가

GDB

, -g

6.1. GDB

GDB

Web UI editconf

가

1

```
# cp /mnt/flash/sample/filter/Makefile /usr2/  
# cp /mnt/flash/sample/filter/data_conversion.c /usr2/  
# cp /mnt/flash/sample/filter/cq.c /usr2/  
# cp /mnt/flash/sample/filter/cq.h /usr2/
```

2

```
. -g Makefile  
-g CFLAGS 가 .
```

```
# cd /usr2/  
# vi Makefile  
...  
//CFLAGS = -pipe  
CFLAGS = -pipe -g  
...
```

3

```
. GDB . do_daemon()  
save_pid(portnum)  
GDB (foreground)
```

```
# vi data_conversion.c  
...  
int main(int argc, char **argv)  
{  
    if (argc < 2){  
        fprintf(stderr, "\nUsage: %s [portnumber]  
[echo|no_echo]\n\n", get_program_name(argv[0]));  
        return -1;  
    }  
  
    portnum = atoi(argv[1]);  
    if (argc>2 && !strcmp(argv[2], "no_echo")) echo_flag = 0;  
  
    (void) signal(SIGTERM, handle_sigterm);  
    (void) signal(SIGPIPE, handle_sigterm);  
  
    // Remark following two lines to run this program on the foreground  
    // do_daemon();  
    // save_pid(portnum);  
  
    do_filter();  
    close_fifos();  
  
    return 0;  
}
```

```
}
...
```

4 . . .

```
# make data_conversion
```

```
5 . . . (ss.port) tcp (ss.tcp)
. ss.port , ss.tcp TCP
. 가 SS /bin
. '1' 1 .
```

```
# ss.port 1
# ss.tcp 1
# ps -ef
  PID Uid   Stat Command
   1 root    S    init
   2 root    S    [keventd]
   3 root    S    [kswapd]
   4 root    S    [kreclaimd]
   5 root    S    [bdflush]
   6 root    S    [kupdate]
   8 root    S    [mtdblockd]
  35 root    S    [jffs2_gcd_mtd5]
  57 root    S    /sbin/cardmgr
  80 root    S    dhcpcd eth0
  87 root    S    /etc/rc.d/rc2.d/S19sslogger start
  97 root    S    /usr/sbin/inetd
 100 root    S    /usr/local/sbin/webs
 110 root    S    /usr/local/sbin/snmpd -c
/usr/local/share/snmp/snmpd.conf
 113 root    S    /bin/linkupchecker -c 1
 118 root    R    /etc/rc.d/rc2.d/S53ss800mand start
 126 root    S    /etc/rc.d/rc2.d/S53ss800mand start
 128 root    S    /usr/sbin/cron
 129 root    S    -bash
 523 root    S    ss.port 1
 524 root    S    ss.port 1
 525 root    S    ss.port 1
 526 root    S    ss.port 1
 527 root    S    ss.port 1
 529 root    S    ss.tcp 1
 530 root    S    ss.tcp 1
 532 root    S    ss.tcp 1
 533 root    S    ss.tcp 1
 534 root    S    ss.tcp 1
 535 root    R    ps -ef
```

6 .GDB .

```
# /mnt/flash/bin/gdb data_conversion
```

7 . GDB , GDB

```
GNU gdb 5.0
Copyright 2000 Free Software Foundation, Inc.
GDB is free software, covered by the GNU General Public License, and
you are
welcome to change it and/or distribute copies of it under certain
conditions.
Type "show copying" to see the conditions.
There is absolutely no warranty for GDB. Type "show warranty" for
details.
This GDB was configured as "powerpc-hardhat-linux"...
(gdb) set args 1
```

'1' 1

8 . *e2s_thread , TCP
가

```
(gdb) break *e2s_thread
Breakpoint 1 at 0x10003054: file data_conversion.c, line 255.
```

'r'

```
(gdb) r
Starting program: /usr2/data_conversion 1
[New Thread 539 (manager thread)]
[New Thread 538 (initial thread)]
[New Thread 540]
[New Thread 541]
[Switching to Thread 541]

Breakpoint 1, e2s_thread (arg=0x0) at data_conversion.c:255
255 {
(gdb)
```

9 . *e2s_thread

'n'()

```
(gdb) n
e2s_thread (arg=0x0) at data_conversion.c:257
257 int nread=0;
(gdb) n
261 pthread_setcancelstate(PTHREAD_CANCEL_ENABLE, NULL);
(gdb) n
262 pthread_setcanceltype(PTHREAD_CANCEL_ASYNCHRONOUS,
NULL);
(gdb) n
...
```

10 . 274 , SS 1
TCP , TeraTerm Pro Hyper Terminal

TCP

```

...
(gdb) n
270         if (f2s_fd < 0) pthread_exit(NULL);
(gdb) n
272         while(!exit_flag) {
(gdb) n
274             nread = read(e2f_fd, buf, sizeof(buf));
(gdb) n
275             if (nread<=0) continue;
(gdb)

```

11 TCP 275 buf[0] 가

```

(gdb) display buf[0]
1: buf[0] = 97 'a'
(gdb) break 275
Breakpoint 2 at 0x10003160: file data_conversion.c, line 275.
(gdb) n
277         if (echo_flag) {
1: buf[0] = 97 'a'
(gdb) c
Continuing.

Breakpoint 2, e2s_thread (arg=0x0) at data_conversion.c:275
275         if (nread<=0) continue;
1: buf[0] = 50 '2'
(gdb) c
Continuing.

Breakpoint 2, e2s_thread (arg=0x0) at data_conversion.c:275
275         if (nread<=0) continue;
1: buf[0] = 51 '3'
(gdb)

```

12 GDB 'quit'

```

(gdb) quit
The program is running.  Exit anyway? (y or n) y

```

ss.port ss.tcp

5

```

# killall ss.port
# killall ss.tcp

```

GDB

GNU

(<http://www.gnu.org/software/gdb/documentation/>)