kongtop dvr backdoor

Description:

There's a backdoor in the “KONGTOP DVR devices” product.
KONGTOP A403 DVR devices contain a backdoor that prints the login password via a Print_Password.

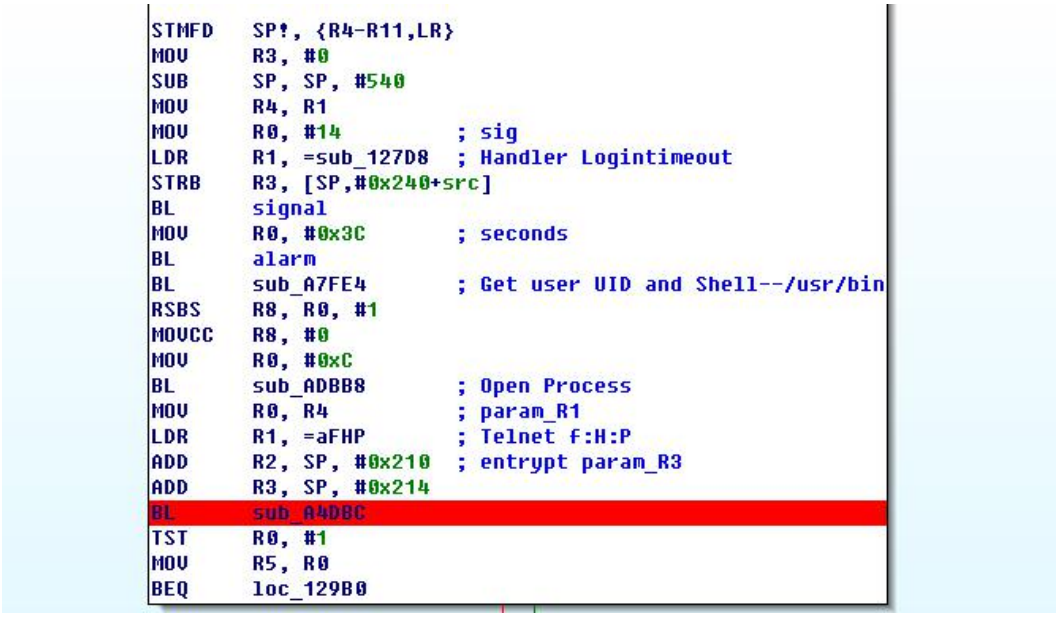
The all DVR Using HiSilicon firmware.
Vulnerability version:

- KONGTOP D303 DVR
- KONGTOP D305 DVR
- KONGTOP D403 DVR
- KONGTOP A303 DVR
- KONGTOP A403 DVR

Linux kernel：hi3515-hi3531

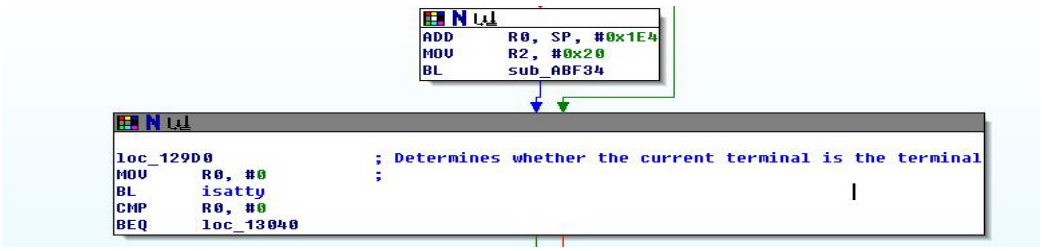
Analysis:

The backdoor is stored in the Telnetd file. Telnetd is responsible for opening telnet and providing services. Here we can see the preparation of a series of services after opening the Telnet service.

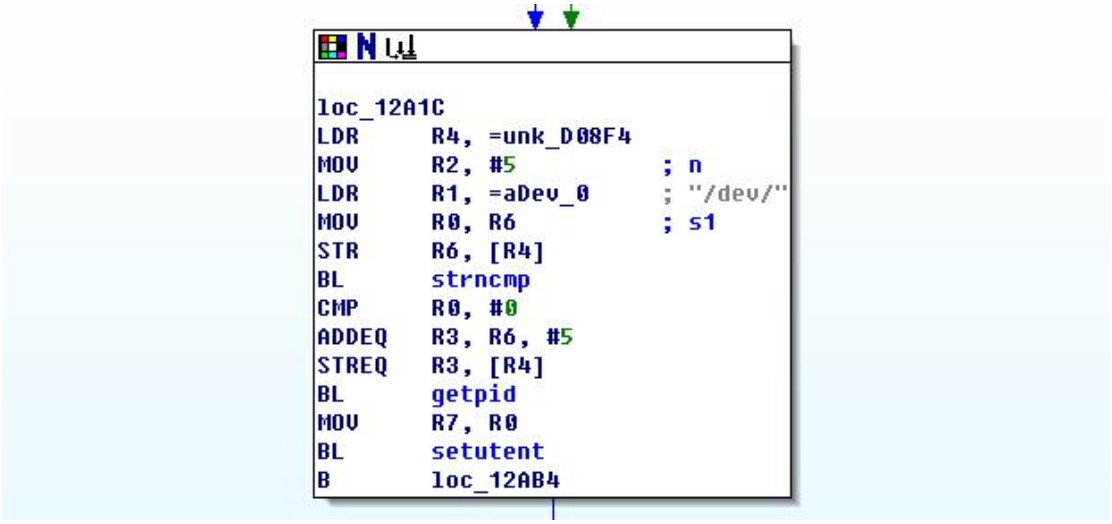


```
STMFD   SP!, {R4-R11,LR}
MOV     R3, #0
SUB     SP, SP, #540
MOV     R4, R1
MOV     R0, #14         ; sig
LDR     R1, =sub_127D8  ; Handler Logintimeout
STRB    R3, [SP,#0x240+src]
BL      signal
MOV     R0, #0x3C       ; seconds
BL      alarm
BL      sub_A7FE4       ; Get user UID and Shell--/usr/bin
RSBS    R8, R0, #1
MOVCC   R8, #0
MOV     R0, #0xC
BL      sub_ADBB8       ; Open Process
MOV     R0, R4          ; param_R1
LDR     R1, =aFHP       ; Telnet f:H:P
ADD     R2, SP, #0x210  ; entrypt param_R3
ADD     R3, SP, #0x214
BL      sub_A4DBC
TST     R0, #1
MOV     R5, R0
BEQ     loc_129B0
```

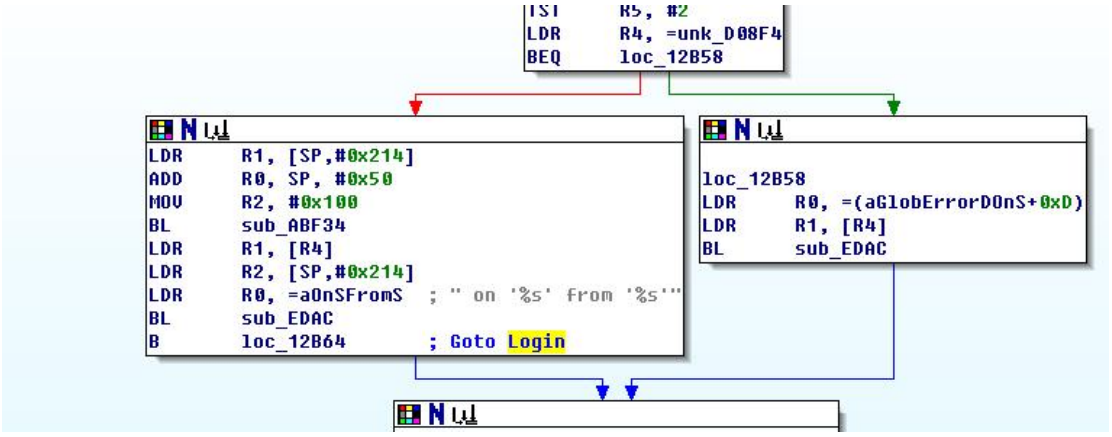
And then judged the local environment.



Get user information



Goto Login



sub_12880() Create Login Cache

```
ADD     R7, SP, #452
MOV     R10, R0
ADD     R4, SP, #420
LDR     R0, [R3]          ; ident
BL      openlog
MOV     R1, #0            ; c
MOV     R2, #0x20         ; n
MOV     R0, R7            ; s
BL      memset
MOV     R1, #0            ; c
MOV     R2, #0x20         ; n
MOV     R0, R4            ; s
BL      memset
MOV     R1, R4
MOV     R0, R7
BL      sub_12880         ; Create Login Cache
UXTB    R1, R0
CMP     R1, #0
BNE     loc_12C10
```

In the end, Before returning the login user data, the program made an action that was to output the login password of Telnet. Here, for the sake of visualization, the function was changed to Print_Password. This function is the key point of this back door. This function prints the login password, and we follow the Print_Password function.

```
MOV     R11, R0
MOV     R0, R7            ; s
BL      strlen
RSB     R2, R11, #31
MOV     R1, R7            ; src
CMP     R2, R0
MOVCS   R2, R0            ; n
ADD     R0, R4, R11       ; dest
BL      memcpy
MOV     R0, R4            ; s
BL      strlen
MOV     R1, R9
MOV     R2, R0
MOV     R0, R4
BL      Print_Password    ; Print Password
```

As you can see, the function uses MD5 encryption and returns.

```
MOV     R4, #0
BL      sub_126B8
MOV     R0, SP
MOV     R1, R5
BL      sub_1276C         ; MD5
LDR     R0, =aPasswd      ; "passwd:"
BL      printf
```

```
loc_1284C                 ; Print Password
LDRB    R1, [R5,R4]
ADD     R4, R4, #1
LDR     R0, =a02x         ; "%02x"
BL      printf
CMP     R4, #16
BNE     loc_1284C
```

Found DVR IP ,Telnet Login