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Several bugs found by fuzzing #182

⊙ Closed Iinhlhq opened this issue on Jan 10, 2020 · 9 comments



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linhlhq commented on Jan 10, 2020
After fuzzing libredwg, I found the following bugs on the latest commit on master.
Command: ./dwg2SVG $PoC
1.NULL pointer dereference in htmlescape ../../programs/escape.c:29
ASAN says:
   ==19607==ERROR: AddressSanitizer: SEGV on unknown address 0x000000000000 (pc 0x7f433bb56646 bp 0x7ffed1176670 sp 0x7ffed1175de8 T0)
   ==19607==The signal is caused by a READ memory access. ==19607==Hint: address points to the zero page.
         #0 0x7f433bb56645 (/lib/x86_64-linux-gnu/libc.so.6+0xb1645)
#1 0x7f433c28557b (/usr/lib/x86_64-linux-gnu/libasan.so.4+0x5157b)
         #2 0x55950b27cdd4 in htmlescape ../../programs/escape.c:29
        #3 0x55950b27abb5 in output_TEXT ./../programs/dwg2SVG.c:113 #4 0x55950b27abb5 in output_object ./../programs/dwg2SVG.c:312
        ## 0x55950027abb5 in output_BOCK_HADRER .//../programs/dwg25VG.c:317
##6 0x55950b278477 in output_SVG .//../programs/dwg25VG.c:411
##7 0x55950b278477 in main .//../programs/dwg25VG.c:525
##8 0x7f433bac6096 in _libc_start_main //lib/x86_64-linux-gnu/libc.so.6+0x21b96)
##9 0x55950b278d19 in _start (/home/user/linhlhq/libredwg/asan_build/programs/dwg25VG+0x27ad19)
   AddressSanitizer can not provide additional info. 
SUMMARY: AddressSanitizer: SEGV (/lib/x86_64-linux-gnu/libc.so.6+0xb1645) 
==19607==ABORTING
```

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Author
linhlhq commented on Jan 10, 2020
2.heap-buffer-overflow in htmlescape ../../programs/escape.c:46
POC: https://github.com/linhlhq/research/blob/master/PoCs/libreDWG_7b9cb829/id:000016\%2Csig:06\%2Csrc:000000\%2Cop:flip1\%2Cpos:125355
   ==4460==ERROR: AddressSanitizer: heap-buffer-overflow on address 0x603000044cc6 at pc 0x7f2ccba2f66e bp 0x7ffd5b9c04e0 sp 0x7ffd5b9bfc88
  READ of size 22 at 0x603000044cc6 thread T0
      #0 0x7f2ccba2f66d (/usr/lib/x86_64-linux-gnu/libasan.so.4+0x5166d)
      #1 0x561be92280e7 in strcat /usr/include/x86_64-linux-gnu/bits/string_fortified.h:128
      #2 0x561be92280e7 in htmlescape ...../programs/escape.c:46
#3 0x561be9225b38 in output_BLOCK_HEADER .../../programs/dwg2SVG.c:361
      #4 0x561be9223544 in output_SVG ../../programs/dwg25VG.c:418 #5 0x561be9223544 in main ../../programs/dwg25VG.c:525
      #6 0x7f2ccb270b96 in __libc_start_main (/lib/x86_64-linux-gnu/libc.so.6+0x21b96)
#7 0x561be9223d19 in _start (/home/user/linhlhq/libredwg/asan_build/programs/dwg2SVG+0x27ad19)
   0x603000044cc6 is located 0 bytes to the right of 22-byte region [0x603000044cb0,0x603000044cc6)
  allocated by thread TO here:
      #0 0x7f2ccbabcb50 in __interceptor_malloc (/usr/lib/x86_64-linux-gnu/libasan.so.4+0xdeb50)
      #1 0x561be9227de0 in htmlescape ../../programs/escape.c:30
  SUMMARY: AddressSanitizer: heap-buffer-overflow (/usr/lib/x86_64-linux-gnu/libasan.so.4+0x5166d)
  Shadow bytes around the buggy address:
0x0c0680000940: fa fa 00 00 00 fa fa 00 00 00 fa fa 00 00
    0x0c0680000950: 00 00 fa fa 00 00 00 fa fa fa 00 00 00 00 fa fa
    0x0c0680000960: 00 00 00 00 fa fa 00 00 00 fa fa 00 00 00 fa
    0x0c0680000970: fa fa 00 00 00 fa fa 00 00 00 fa fa 00 00
  Addressable:
    Partially addressable: 01 02 03 04 05 06 07
    Heap left redzone:
    Freed heap region:
Stack left redzone:
    Stack mid redzone:
    Stack right redzone:
    Stack after return:
    Stack use after scope:
    Global redzone:
    Global init order:
    Poisoned by user:
    Container overflow:
    Array cookie:
    ASan internal:
    Left alloca redzone:
```

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Author
linhlhq commented on Jan 10, 2020
3.heap-buffer-overflow in htmlescape ../../programs/escape.c:51
ASAN says:
  ==1959==ERROR: AddressSanitizer: heap-buffer-overflow on address 0x603000044x67 at pc 0x7f57a7a3f66e bp 0x7fff31617330 sp 0x7fff31616ad8 READ of size 16 at 0x603000044x67 thread T0
       #0 0x7f57a7a3f66d (/usr/lib/x86_64-linux-gnu/libasan.so.4+0x5166d)
       #1 0x561c57375e53 in strcat /usr/include/x86_64-linux-gnu/bits/string_fortified.h:128
      #2 0x561c57375e53 in htmlescape ../../programs/escape.c:51
#3 0x561c57373bb5 in output_TEXT ../../programs/dwg2SVG.c:113
      #4 0x561c57373bb5 in output_object ../../programs/dwg2SVG.c:312 #5 0x561c57373bb5 in output_BLOCK_HEADER ../../programs/dwg2SVG.c:371
      #6 0x561c57371477 in output_SVG ../../programs/dwg2SVG.c:411
#7 0x561c57371477 in main ../../programs/dwg2SVG.c:525
#8 0x7f57a7280b96 in _libc_start_main (/lib/x86_64-linux-gnu/libc.so.6+0x21b96)
       #9 0x561c57371d19 in _start (/home/user/linhlhq/libredwg/asan_build/programs/dwg2SVG+0x27ad19)
  0x603000044c67 is located 0 bytes to the right of 23-byte region [0x603000044c50,0x603000044c67)
  allocated by thread T0 here:
       #0 0x7f57a7accb50 in __interceptor_malloc (/usr/lib/x86_64-linux-gnu/libasan.so.4+0xdeb50) #1 0x561c57375de0 in htmlescape ../../programs/escape.c:30
  SUMMARY: AddressSanitizer: heap-buffer-overflow (/usr/lib/x86_64-linux-gnu/libasan.so.4+0x5166d)
  Shadow bytes around the buggy address:
0x0c0680000930: 00 00 00 00 fa fa 00 00 00 fa fa 00 00 00 fa
0x0c0680000940: fa fa 00 00 00 fa fa 00 00 00 fa fa 00 00
     0x0c0680000950: 00 00 fa fa 00 00 00 fa fa fa 00 00 00 fa fa 0x0c0680000960: 00 00 00 00 fa fa 00 00 00 00 fa fa 00 00 00 fa
    0x0c0680000970: fa fa 00 00 00 0f fa fa 00 00 00 0f a fa 00 00
>0x0c0680000980: 00 00 fa fa fd fd fd fa fa fa 00 00[07]fa fa fa
    Shadow byte legend (one shadow byte represents 8 application bytes):
    Addressable: 00
Partially addressable: 01 02 03 04 05 06 07
Heap left redzone: fa
     Freed heap region:
Stack left redzone:
     Stack mid redzone:
                                  f2
     Stack right redzone:
     Stack after return:
                                  f5
     Stack use after scope:
     Global redzone:
     Global init order:
     Poisoned by user:
                                  f7
     Container overflow:
     Array cookie:
     Intra object redzone:
ASan internal:
                                  bb
    Left alloca redzone:
Right alloca redzone:
  ==1959==ABORTING
```

```
0x6030000048c0 is located 0 bytes to the right of 32-byte region [0x6030000048a0,0x6030000048c0)
  #0 0x7f496174fd38 in __interceptor_calloc (/usr/lib/x86_64-linux-gnu/libasan.so.4+0xded38) #1 0x56426731003d in dwg_decode_handleref_with_code .././src/decode.c:3890
SUMMARY: AddressSanitizer: heap-buffer-overflow ../../programs/dwg2SVG.c:114 in output_TEXT
Shadow bytes around the buggy address:
 =>0x0c067fff8910: 00 fa fa fa 00 00 00 [fa]fa 00 00 00 00 fa fa
 Shadow byte legend (one shadow byte represents 8 application bytes):
 Partially addressable: 01 02 03 04 05 06 07
 Heap left redzone:
 Freed heap region:
                       fd
 Stack left redzone:
 Stack mid redzone:
                       f2
 Stack right redzone:
Stack after return:
 Stack use after scope:
Global redzone:
                       f8
 Global init order:
 Poisoned by user:
 Container overflow:
                       fc
 Array cookie:
Intra object redzone:
                       bb
 ASan internal:
Left alloca redzone:
                       ca
 Right alloca redzone:
==17789==ABORTING
```

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Author
linhlhq commented on Jan 10, 2020
6.heap-buffer-overflow in htmlwescape ../../programs/escape.c:97
ASAN says:
  ==19465==ERROR: AddressSanitizer: heap-buffer-overflow on address 0x60300000725c at pc 0x7f769710266e bp 0x7ffef73ec550 sp 0x7ffef73ebcf8
 READ of size 28 at 0x60300000725c thread T0
     #0 0x7f769710266d (/usr/lib/x86 64-linux-gnu/libasan.so.4+0x5166d)
     #1 0x55d1b06549e7 in strcat /usr/include/x86_64-linux-gnu/bits/string_fortified.h:128
     #2 0x55d1b06549e7 in htmlwescape ../../programs/escape.c:97
     #3 0x55d1b0650235 in output_BLOCK_HEADER ../../programs/dwg2SVG.c:359 #4 0x55d1b064f503 in output_SVG ../../programs/dwg2SVG.c:413
    #5 0x55d1b064f503 in main ../../programs/dwg2SVG.c:525
#6 0x7f7696943b96 in __libc_start_main (/lib/x86_64-linux-gnu/libc.so.6+0x21b96)
     #7 0x55d1b064fd19 in start (/home/user/linhlhg/libredwg/asan build/programs/dwg2SVG+0x27ad19)
  0x60300000725c is located 0 bytes to the right of 28-byte region [0x603000007240,0x60300000725c)
  allocated by thread T0 here:
     #0 0x7f769718fb50 in __interceptor_malloc (/usr/lib/x86_64-linux-gnu/libasan.so.4+0xdeb50) #1 0x55dlb06543f2 in htmlwescape ../../programs/escape.c:79
 SUMMARY: AddressSanitizer: heap-buffer-overflow (/usr/lib/x86 64-linux-gnu/libasan.so.4+0x5166d)
  Shadow bytes around the buggy address:
   Shadow byte legend (one shadow byte represents 8 application bytes):
   Addressable:
   Partially addressable: 01 02 03 04 05 06 07
   Heap left redzone:
Freed heap region:
   Stack left redzone:
   Stack mid redzone:
   Stack right redzone:
                        f3
   Stack after return:
                        f5
f8
   Stack use after scope:
   Global redzone:
Global init order:
   Poisoned by user:
                        f7
   Container overflow:
                        fc
   Array cookie:
   Intra object redzone:
                        bb
   ASan internal:
Left alloca redzone:
   Right alloca redzone:
                        cb
  ==19465==ABORTING
```

linhlhq commented on Jan 10, 2020

```
==9632==ERROR: AddressSanitizer: heap-buffer-overflow on address 0x604000000abd at pc 0x7f1b8c9f066e bp 0x7ffe890ea740 sp 0x7ffe890e9e8
READ of size 10 at 0x604000000abd thread T0
#0 0x7f1b8c9f066d (/usr/lib/x86_64-linux-gnu/libasan.so.4+0x5166d)
     #1 0x55ff72e70067 in strcat /usr/include/x86 64-linux-gnu/bits/string fortified.h:128
     #2 0x55ff72e70067 in htmlescape ../../programs/escape.c:48
    #3 0x55ff72e6dbb5 in output_TEXT ../../programs/dwg2SVG.c:113 #4 0x55ff72e6dbb5 in output_object ../../programs/dwg2SVG.c:312
    #5 0x55ff72e6dbb5 in output_BLOCK_HEADER ../../programs/dwg2SVG.c:371
     #6 0x55ff72e6b544 in output_SVG ../../programs/dwg2SVG.c:418
     #7 0x55ff72e6b544 in main ../../programs/dwg2SVG.c:525
     #8 0x7f1b8c231b96 in _libc_start_main (/lib/x86_64-linux-gnu/libc.so.6+0x21b96)
#9 0x55ff72e6bd19 in _start (/home/user/linhlhq/libredwg/asan_build/programs/dwg2SVG+0x27ad19)
0x604000000abd is located 0 bytes to the right of 45-byte region [0x604000000a90,0x604000000abd)
allocated by thread TO here:
     #0 0x7f1b8ca7df40 in realloc (/usr/lib/x86_64-linux-gnu/libasan.so.4+0xdef40)
     #1 0x55ff72e6ffa1 in htmlescape ../../programs/escape.c:39
SUMMARY: AddressSanitizer: heap-buffer-overflow (/usr/lib/x86 64-linux-gnu/libasan.so.4+0x5166d)
Shadow bytes around the buggy address:

0x0c087fff8100: fa fa fd fd fd fd fa fa fa 00 00 00 00 06 fa
  0x0c087fff8110: fa fa fd fd fd fd fd fa fa fa fd fd fd fd fa 6 0x0c087fff8120: fa fa 00 00 00 00 fa fa fa 00 00 00 00 fa
0x0c087fff8130: fa fa 00 00 00 00 00 fa fa fa 00 00 00 00 fa fa 60 00 00 00 fa 0x0c087fff8140: fa fa 00 00 00 00 00 fa fa fa fd fd fd fd fa =>0x0c087fff8150: fa fa 00 00 00 00 00[05]fa fa fa fa fa fa fa fa fa
  Addressable: 00
Partially addressable: 01 02 03 04 05 06 07
  Heap left redzone:
Freed heap region:
  Stack left redzone:
                               f1
  Stack mid redzone:
  Stack right redzone:
                               f3
  Stack after return:
                               f8
  Stack use after scope:
  Global redzone:
Global init order:
  Poisoned by user:
Container overflow:
                               f7
  Array cookie:
Intra object redzone:
  ASan internal:
                               fe
  Left alloca redzone:
  Right alloca redzone:
                               cb
 ==9632==ABORTING
```

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linhlhq commented on Jan 10, 2020
                                                                                                                                                                                      Author
8.heap-buffer-overflow in htmlwescape ../../programs/escape.c:97
POC: https://aithub.com/linhlha/research/blob/master/PoCs/libreDWG 7b9cb829/id:000099%2Csia:06%2Csrc:005125%2B003017%2Cop:splice%2Crep:8
ASAN savs:
  ==682==ERROR: AddressSanitizer: heap-buffer-overflow on address 0x6040000019fa at pc 0x7ff79912866e bp 0x7ffdca846b10 sp 0x7ffdca8462b8
  READ of size 28 at 0x6040000019fa thread T0
      #0 0x7ff79912866d (/usr/lib/x86_64-linux-gnu/libasan.so.4+0x5166d)
      #1 0x5586562889e7 in strcat /usr/include/x86_64-linux-gnu/bits/string_fortified.h:128 #2 0x5586562889e7 in htmlwescape ../../programs/escape.c:97
      #3 0x5586562848de in output_TEXT ../../programs/dwg2SVG.c:111
      #4 0x5586562848de in output_object ../../programs/dwg2SVG.c:312
      #5 0x5586562848de in output_BLOCK_HEADER ../../programs/dwg2SVG.c:371 #6 0x558656283477 in output_SVG ../../programs/dwg2SVG.c:411
      #7 0x558656283477 in main ../../programs/dwg25VG.c:525
#8 0x7ff798969b96 in _libc_start_main (/lib/x86_64-linux-gnu/libc.so.6+0x21b96)
      #9 0x558656283d19 in _start (/home/user/linhlhq/libredwg/asan_build/programs/dwg2SVG+0x27ad19)
  0x6040000019fa is located 0 bytes to the right of 42-byte region [0x6040000019d0,0x6040000019fa)
  allocated by thread T0 here:
#0 0x7ff7991b5b50 in __interceptor_malloc (/usr/lib/x86_64-linux-gnu/libasan.so.4+0xdeb50)
      #1 0x5586562883f2 in htmlwescape ../../programs/escape.c:79
  SUMMARY: AddressSanitizer: heap-buffer-overflow (/usr/lib/x86_64-linux-gnu/libasan.so.4+0x5166d)
  Shadow bytes around the buggy address:
0x0c087fff82e0: fa fa 00 00 00 00 fa fa fa 00 00 00 00 00
    0x0c087fff82f0: fa fa fd fd fd fd fa fa fa 00 00 00 00 00 fa
    0x0c087fff8300: fa fa 00 00 00 00 fa fa fa fd fd fd fd fd fa
    0x0c087ffff8310: fa fa 00 00 00 00 00 fa fa 00 00 00 00 00 fa
0x0c087fff8320: fa fa 00 00 00 00 fa fa fa fd fd fd fd fd fa
  Shadow byte legend (one shadow byte represents 8 application bytes):
    Addressable:
                           99
    Partially addressable: 01 02 03 04 05 06 07 Heap left redzone: fa
    Freed heap region:
    Stack left redzone:
    Stack mid redzone:
    Stack right redzone:
Stack after return:
                             f3
    Stack use after scope:
                             f8
    Global redzone:
    Global init order:
    Poisoned by user:
```

