Table Of Contents 1/3

Table Of Contents

Table Of Contents	.]
Understanding :(){ : :& };: fork() bomb code	. 2

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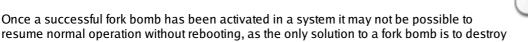
Home > Faq > BASH Shell

Understanding Bash fork() bomb ~ :(){ :|:& };:

Posted by Vivek Gite <vivek@nixcraft.com>

Q. Can you explain following bash code or bash fork() bomb? :(){ :(:& };:

A. This is a bash function. It gets called recursively (recursive function). This is most horrible code for any Unix / Linux box. It is often used by sys admin to test user processes limitations (Linux process limits can be configured via /etc/security/limits.conf and PAM).





[1]



all instances of it.

WARNING! These examples may crash your computer if executed.

Understanding :(){ :|:& };: fork() bomb code

:() - It is a function name. It accepts no arguments at all. Generally, bash function is defined as follows:

```
foo() {
  arg1=$1
  echo ''
  #do_something on $arg argument
}
```

fork() bomb is defined as follows:

```
:(){
:|:&
};:
```

- :: Next it call itself using programming technique called recursion and pipes the output to another call of the function ':'. The worst part is function get called two times to bomb your system.
- & Puts the function call in the background so child cannot die at all and start eating system resources.
- ; Terminate the function definition
- : Call (run) the function aka set the fork() bomb.

Here is more human readable code:

```
bomb() {
bomb | bomb &
}; bomb
```

Properly configured Linux / UNIX box should not go down when fork() bomb sets off.

Related: How to: Prevent a fork bomb by limiting user process under Linux [2].

Update: Check out comment # 5 [3] for more fork bomb examples under Perl, Windows XP and C.

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URLs in this post:

- [1] Image: http://www.cyberciti.biz/faq/faq/category/bash-shell/
- [2] How to: Prevent a fork bomb by limiting user process under Linux: http://www.cyberciti.biz/tips/linux-limiting-user-process.html
- [3] comment # 5: #comment-37097

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