

# Investigating and Mitigating Malicious Drivers

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The security landscape continues to [rapidly evolve](#) as threat actors find [new](#) and innovative methods to gain access to environments across a wide range of vectors. As the industry moves closer to the adoption of a Zero Trust security posture with broad and layered defenses, we remain committed to sharing threat intelligence with the community to shine a light on the latest techniques and exploits of attackers so the industry can better protect itself.

Microsoft is investigating a malicious actor distributing malicious drivers within gaming environments. The actor submitted drivers for certification through the Windows Hardware Compatibility Program. The drivers were built by a third party. We have suspended the account and reviewed their submissions for additional signs of malware.

## No Evidence of Certificate Exposure

We have seen no evidence that the WHCP signing certificate was exposed. The infrastructure was not compromised. In alignment with our Zero Trust and layered defenses security posture, we have built-in detection and blocking of this driver and associated files through Microsoft Defender for Endpoint. We are also sharing these detections with other AV security vendors so they can proactively deploy detections.

The actor's activity is limited to the gaming sector specifically in China and does not appear to target enterprise environments. We are not attributing this to a nation-state actor at this time. The actor's goal is to use the driver to spoof their geo-location to cheat the system and play from anywhere. The malware enables them to gain an advantage in games and possibly exploit other players by compromising their accounts through common tools like keyloggers.

It's important to understand that the techniques used in this attack occur **post exploitation**, meaning an attacker must either have already gained administrative privileges in order to be able to run the installer to update the registry and install the malicious driver the next time the system boots or convince the user to do it on their behalf.

We will be sharing an update on how we are refining our partner access policies, validation and the signing process to further enhance our protections. There are no actions customers should take other than follow security best practices and deploy Antivirus software such as Windows Defender for Endpoint.

Just like our defenders, our adversaries are creative and determined. Because of this, Microsoft approaches security with an assume breach mentality and layered defenses. We work tirelessly alongside our industry partners to ensure the community as a whole is aware of new attack tools, tactics and procedures that we have observed or that have been reported through responsible disclosure. By sharing the information we've learned with this report, we are raising awareness of these techniques so that more protections can be built in across the industry and to increase the degree of difficulty for attackers.

## Additional Information on the Windows Hardware Compatibility Program

Microsoft Defender and Windows Security teams work diligently with driver publishers to detect security vulnerabilities before they can be exploited by malicious software. [Microsoft Defender for Endpoint's UEFI scanner](#) is able to scan below the operating system where these attacks occur to add further detection and protection from these kinds of low-level attacks. We also build automated mechanisms through Windows Update to block vulnerable versions of drivers and protect customers against vulnerability exploits based on ecosystem and partner engagement as this is an issue that challenges the industry at large.

Our security teams continue to work closely with the OEM and driver publishers to analyze and patch any known vulnerabilities and to update affected devices prior to shipment. Once the driver publisher patches the vulnerability, an update to all affected drivers is pushed out via the Windows Update (WU) platform. Once affected devices receive the latest security patches, drivers with confirmed security vulnerabilities are blocked on Windows 10 devices using Microsoft Defender for Endpoint Attack Surface Reduction (ASR) and Microsoft Windows Defender Application Control (WDAC) technologies to protect devices against exploits. More information is available via our [Microsoft recommended driver block rules](#) document.

### Indicators of compromise

In addition to [creating antimalware signatures](#) for Microsoft Defender antivirus, sharing key detection guidance with our AV partners, we are also sharing these hashes and IP addresses for other defenders to leverage.

### Known C2 IP addresses

110.42.4[.]180  
45.113.202[.]180

### Known malicious files

These are the list of SHA256 file hashes known to Microsoft as malicious:

04a269dd0a03e32e5b2a1c8ab0768791962e040d080d44dc44dab01dd7954f2b  
0856a1da15b2b3e8999bf9fc51bbdedd4051e21fab1302e2ce766180b4931d86  
0c42fe45ffa9a9c36c87a7f01510a077da6340ffd86bf8509f02c6939da133c5  
0eace788e09c8d3f793a1fad94d35bcfd233f0777873412cd0c8172865562eec  
115034373fc0ec8f75fb075b7a7011b603259ecc0aca271445e559b5404a1406  
12656fc113b178fa3e6bfff6473897766c44120082483eb8059ebff29b5d2df  
12c0002af719c6abbc1e726b409fce099fffb90f758477f5295c152bde504caa  
16b6be03495a4f4cf394194566bb02061fba2256cc04dcbde5aa6a17e41b7650  
18b923b169b2c3c7db5cbfda0db0999f04adb2cf6c917e5b1fb2ff04714ecac1  
1aa8ba45f9524847e2a36c0dc6fd80162923e88dc1be217dde2fb5894c65ff43  
1cd75de5f54b799b60789696587b56a4a793cf60775b81f236f0e65189d863af  
1d1f7e26109e6cb28c6b369c937b407d7b0cce3c4800ce9852eda94742b12259  
1d60819f0ab8547dcd4eb18d39a0c317ec826332afa19c0a6af94bc681a21f14

1f05f74ebae7e65d389703d423445ffb269e657d8278b0523417e1f72b0228eb  
1f90d9c4d259c1fde4c7bb66a95d71ea0122e4dfb75883a6cb17b5c80ce6d18a  
22da5a055b7b17c69def9f5af54e257c751507e7b6b9a835fcf6245ab90ae750  
22f6fe6bd62fb03f7aee489ccbc918999f49596052ac0153c02cd7a3320de13  
23c061933d471c1f959c77806098ec0528d9b1d0130689bb3f417dd843138468  
24ea733bae1b8722841fb4c6cead93c4c4f0b1248ca9a21601b1ce6b95b06864  
26d67d479dafe6b33c980bd1eed0b6d749f43d05d001c5dcaaf5fcddb9b899fe  
26f2b9cf6e0fb50bad49a367bee63e808f1d53c476b38642d13c7db6e50687f4  
2fa78c2988f9580b0c18822b117d065fb419f9c476f4cfa43925ba6cd2dffac3  
314affdc86f62c8f8069ccd50a2cdf73bcd319773a031be700ba97a1ea4129a8  
34c890fa43ca0e5165a4960549828ba43d7f48a216a22fc46204548ebfc34f72  
3700b38d63d426ff0a985226b45eca6e24d052f4262d12aff529e62c2cb889c3  
40c45c9b1c764777096b59f99ae524cbd25b88c805187e615c3ed6840f3d4c15  
45ee083e28fbb33afa41b1b8cd00d94c29dea8cb7cee70bae4079e6c3dfb5501  
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