

# **The ethics of providing kernel-level access to video games**

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April 30, 2025

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# Introduction

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## **Types of anti-cheating software**

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# Types of anti-cheating software

## By technique

- Server-side vs. client-side
- User-level vs. kernel-level
- Machine learning & deep learning [1]

# Types of anti-cheating software

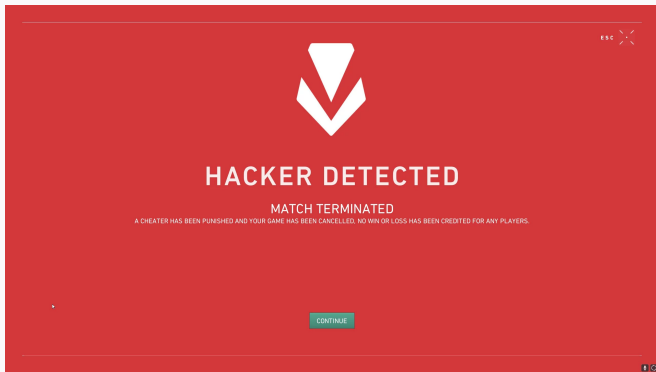
## By vendor

- Valve Anti-Cheat (Valve)
- Riot Vanguard (Riot Games)
- Easy Anti-Cheat (Epic Games)

### **Riot Vanguard:**

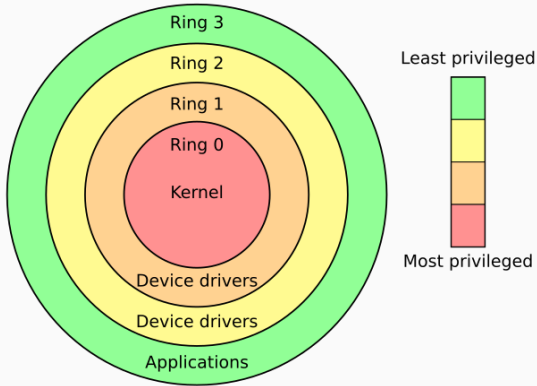
- Requires kernel-level access [2].
- Installs like a driver.
- Has elevated privileges.
- Runs even when the game is not running.

## Case study: Vanguard



**Figure 1:** Riot Vanguard in action. Photo courtesy of Riot Games.

## Case study: Vanguard



**Figure 2:** Privilege rings for x86 architecture. Image courtesy of Wikipedia.

## **Ethical implications**

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- Anti-cheat software can be a security risk.
- It can compromise privacy.
- It requires trust in an unknown program.
- It may not be necessary at all.

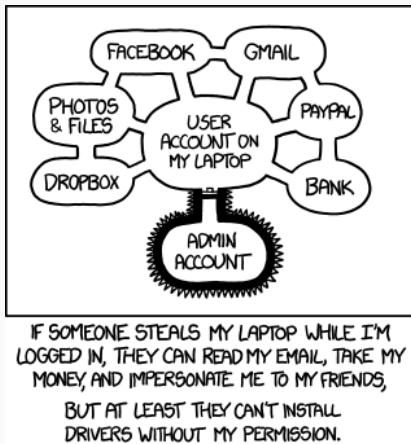
# Conclusion

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Anti-cheat software comes in different types. The users must use their own discretion (Can users give an informed decision even if they aren't pursuing a master's degree in computer engineering?). Beware of powerful tools.

## Discussion

Maybe kernel-level access doesn't matter so much in the end:



**Figure 3:** xkcd 1200: Authorization. Image courtesy of xkcd.

## References

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- [1] John McDonald. ***Robocalypse Now: Using Deep Learning to Combat Cheating in Counter-Strike: Global Offensive.***  
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<https://www.youtube.com/watch?v=kTiP0zKF9bc>.
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