

# Why Anomaly Based Intrusion Detection Systems are a Hax0rs Best Friend

By David Maynor  
GT Information Security

[David.Maynor@oit.gatech.edu](mailto:David.Maynor@oit.gatech.edu)

# The history of the castle.

- What is a Anomaly based IDS and how does it differ from Signature based systems?
  - a. Signature based systems rely on static analysis of event.
  - b. Anomaly systems rely on creating a baseline of normal activity then flag any deviations.
- History
  - a. Where they come from.
  - b. What drives their development.

# How the castle is built.

- How anomaly based systems work.
  - a. A baseline is normally gathered during a tuning phase. Gather all traffic, analyze it, store it.
  - b. Data mining process that does statistical analysis of data.
- Theory behind them.
  - a. If its traffic that hasn't been seen before, its bad.
  - b. Attacks cause things the system has not seen before.

# How the castle is built. (cont.)

- Can science brewed in research labs work in the wild?
  - a. Eggheads can build rockets, but can they build security products?
  - b. Crackers excel at creating attacks that bypass security models, why is traffic analysis any different?
- Hardware based considerations.
  - a. What kind of hardware is required to make this a effective scalable solution?
  - b. Type of information that would have to be stored leads to huge hardware requirements.
  - c. Speed.
    - sniffing
    - analysis

# The castle was built on a shaky foundation.

- Problems.
  - a. Unwieldy size.
  - b. Hardware limitations.
  - c. Integration of network changes.
- Things anomaly based systems assume.
  - a. If it hasn't been seen before, its bad.
  - b. Machines have normal patterns that can be easily distinguished.
  - c. Networks don't change.
    - This is somewhat of a half-truth.

# The castle was built on a shaky foundation. (cont.)

- Why it is so hard to tell good traffic from bad traffic?
  - a. Anomaly based systems rarely look at the payload.
  - b. If network runs in a nonstandard configuration there are problems.
  - c. Attacks against commonly used services on the machines are ignored.
    - Web server attacks against public web servers go unnoticed.
- Configuration problems.

# How to tear the castle down.

- More noise, less accuracy.
  - a. Single outside point to multiple inside machines.
  - b. Properly crafted packets will cause inside machines to appear as attackers.
- Covert channels.
  - a. Hiding the data in plain site.
  - b. How useful is this?
- Flooding.
  - a. Several outside sources to a single inside source.
  - b. Not very effective, but useful for quick and dirty.

# How to tear the castle down. (cont.)

- Breaking traffic analysis.
  - a. Teaching a old dog new tricks.
  - b. Recon of target
  - c. When in Rome...
- Flaws in the System
  - a. Attacks against the system itself.
  - b. Attacks against what feeds the system.



# Is there any way to fix the walls?

- Can weak science be fixed?
- Are these problems/holes fixable?

## Looking back.

- Is it useful?
- Who do they keep out?
- How can they be better?
- What does this all mean for your standard system cracker?