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Log360

Using Indicators To Deal With Security Attacks

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Introduction

Security breaches and sophisticated attacks are on the rise, spurring continued improvements in the security information and event management (SIEM) space. To further combat these advanced attacks, security intelligence platforms and solutions have been strengthened by their vendors.

Improvements in attack mitigation techniques have given rise to several new parameters that detect potential threats and attack patterns early on. Later sections of this white paper elaborate on two such parameters—indicators of compromise (IoCs) and indicators of attack (IoAs)—that help detect attacks instantly, blueprint an attack sequence, identify an attack before damage is caused, and more.

This white paper helps security professionals understand the unique capabilities of these indicators, the differences between them, and the steps to configure a SIEM solution to detect **IoCs** and **IoAs.**

Attack patterns and their indicators.

Enterprises are not immune to security attacks, no matter how good their security systems are. Hackers always try to exploit a network's vulnerabilities and security loopholes, usually either to gain access to critical network resources or to bring down business services.

Security attacks can thus be broadly classified into two types:

- Attacks that disrupt business operations, such as DDoS attacks targeted at bringing down an e-commerce or banking company's web service.
- Attacks that steal confidential information.

Depending on the attack type, the pattern of approach will be different. For instance, attacks that attempt to bring down business operations will concentrate on bypassing endpoint security systems and flooding the resources with irrelevant traffic. On the other hand, attacks attempting to steal data will focus on acquiring confidential information through unauthorized access to critical resources.

Regardless of its type, every attack will leave a trace, which is known as an indicator.
These indicators provide details that help security professionals:

- Conclude whether a suspicious event is a threat or an on-going attack. .
- Detect threats at their initial stage, which helps contain an attack before it even occurs.
- Identify whether an attack is ongoing or if it has happened before.
- Speed up the attack discovery process.
- Ascertain an attack's total impact once it has been resolved.

Two major indicators come in handy for security professionals: IoCs and IoAs

IoCs

Most enterprises rely on IoCs to contain an ongoing attack or to conduct forensic analysis to resolve an attack or assess its impact. Essentially, IoCs tell administrators the network has been compromised. They answer the vital w's: what happened, who was involved, and when it occurred.

IoAs

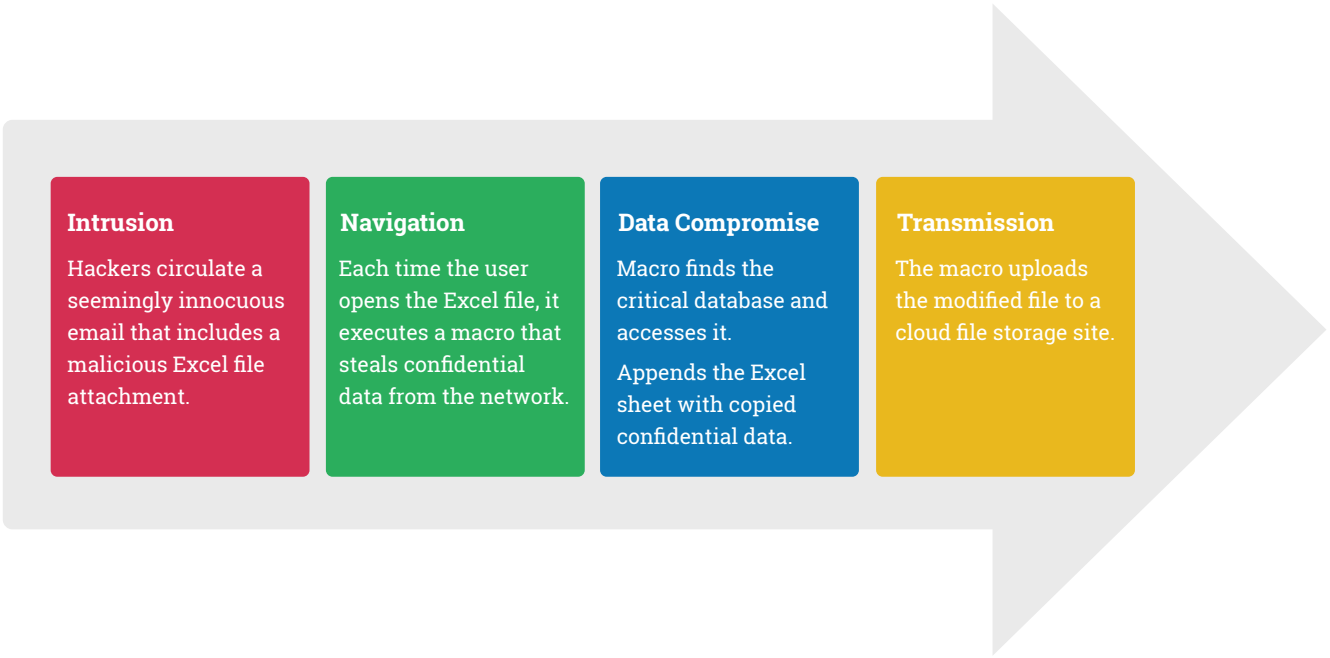
IoAs are suspicious security events that could turn out to be a potential threat or attack. Once they're detected, IoAs are then enriched with contextual information such as user behavior patterns, vulnerabilities, and input data from other security tools. All these details help in ascertaining whether an IoA is a potential threat. Since IoAs identify attacks at an early stage, they play a major role in preventing attacks.

Explaining the indicators with an attack scenario.

Fighting security attacks is a multi-step process. Gathering clues, aka indicators, from the network Is the first step in that process. Let's use an attack scenario to elaborate on the process of identifying indicators.

Attack scenario

Assume in this scenario that a malicious Microsoft Excel file is spread over email to employees in an organization. The email is drafted with authentic message threads, so many employees download the malicious file because they are made to believe it is a message from someone they know. When a user opens that file, a macro is automatically executed. That macro then tries to access critical databases, copies confidential customer information from those databases, appends that data to the Excel file, and then uploads the modified Excel file to a cloud site.



Investigating the attack

Attacks can be prevented during the intrusion stage if the source of the attack is found to be suspicious or malicious. In this scenario, the email has come from a non-suspicious IP address and the message looks authentic, thus deceiving the spam filter. Therefore, detecting and containing this attack at the initial stage would be difficult.

The compromise stage is when the attack surfaces, allowing it to be detected. These kinds of attacks can be detected promptly by configuring the right alert profiles for the following IoCs:

- Unauthorized access attempts on critical databases.
- Unauthorized copy actions performed in a database.
- Attempts to upload or transfer a file to an unauthorized cloud site.

Again, the success of this attack discovery process depends on validating each of the IoCs (with respect to user context) and enriching the events by correlating them with other related events. Security administrators need to delve deep into this specific attack pattern and identify the indicators of this attack. Once they do so, they can proactively deal with any attack that follows a similar pattern. However, attacks don't occur like this all the time.

Considering this scenario, every time the attacker attempts an attack, they may not use the same technique of infiltrating the network with an Excel file. With that in mind, security administrators should set up traps by defining correlation rules that cover all possible actions in an attack pattern.

**For this scenario,
security administrators can build a custom correlation rule that includes the following actions:**

Correlation actions	Reasons for setting up the action
Malware is installed in the system or a malicious file is executed.	An attacker may not use the same vector to force their way into the network each time. Therefore, set up an action to detect malware in the system, either in the form of a malicious file or script execution.
An IP spoofing attack occurs within an internal firewall.	Following a malicious file injection in the network, the attacker may try to find the IP address of a critical database or server in order to gain unauthorized access. Therefore, it is crucial to set up an action to detect any spoof attacks in internal firewalls.
Multiple unauthorized access attempts on a critical database or server.	After an attacker finds a server or database, their next step would be to gain access to these resources. Attackers with insufficient privileges will either try to bypass the authentication process or access the system with a password attack. In either case, setting up an action for a high number of login failures will help validate the events as a potential threat.
Attempts to read or copy files from a database in bulk.	When there's an attempt to perform database read or file copying actions in bulk, the event can be classified as an ongoing attack. This action can be used to stop hackers from reading or copying database files before they leak critical data.
Suspicious file transfer attempts to a cloud site or external IP address.	Even if hackers have already copied data from critical resources, there's still a chance to prevent the data from leaving the premises by tracking file transfer events within the network. Set up actions for file transfer attempts to a suspicious destination (malicious IP destination, destination located at unrelated geographical region, restricted cloud site, etc.) or during non-business hours to prevent data leakage.

These kinds of correlation rules cover all possible scenarios in which similar attack patterns can occur. More importantly, these rules alert security administrators in real time, helping them prevent security threats from compromising their organization's security and reputation. To further aid in threat mitigation, each correlation rule can be enriched with contextual business information specific to that event.

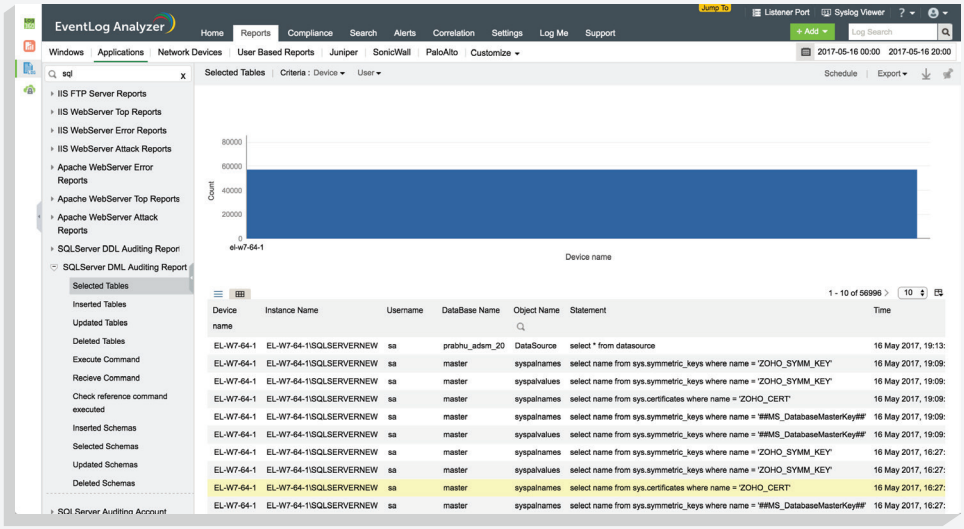
Detecting and enriching IoCs and IoAs with Log360

Log360 comes with a built-in, real-time event response system that detects IoCs, and a correlation engine that helps enrich IoAs.

This solution also has a prepackaged global IP threat database that has over 600 million malicious IP addresses. Whenever traffic from any of these IP addresses hit resources in the network, the security administrators will be notified in real-time and with the solution, they can even configure a custom script to block this IP address right away.

Real-time event response system: Log360 has over 700 prebuilt alert profiles that are based on meticulous study of various IoCs. Security administrators can choose to enable alert profiles that are relevant to their business context to detect attacks instantly. Whenever an IoC occurs, administrators will get real-time notifications via email or SMS, as well as a detailed report on the event, speeding up the attack mitigation process. Furthermore, to reduce the number of false positives, Log360 includes the ability to create alert profiles for specific devices based on event frequency or time frame. Log360 also provides detailed reports on each of the following:

- Unauthorized access attempts to critical databases.
  - Unusual login failures-Identify who attempted to log on, from which IP address, when, and whether it was from a remote host.
  - Login failure details—Lists all logon failures, including why the logon failed (for example, whether it was due to a bad password or incorrect username).
- Unauthorized copy of critical information.
  - Detailed DML auditing—Track who executed a select query in the database, from where, and when.
  - Copy attempts—Determine who tried to copy data, to where, and from which machine the attempt was made.



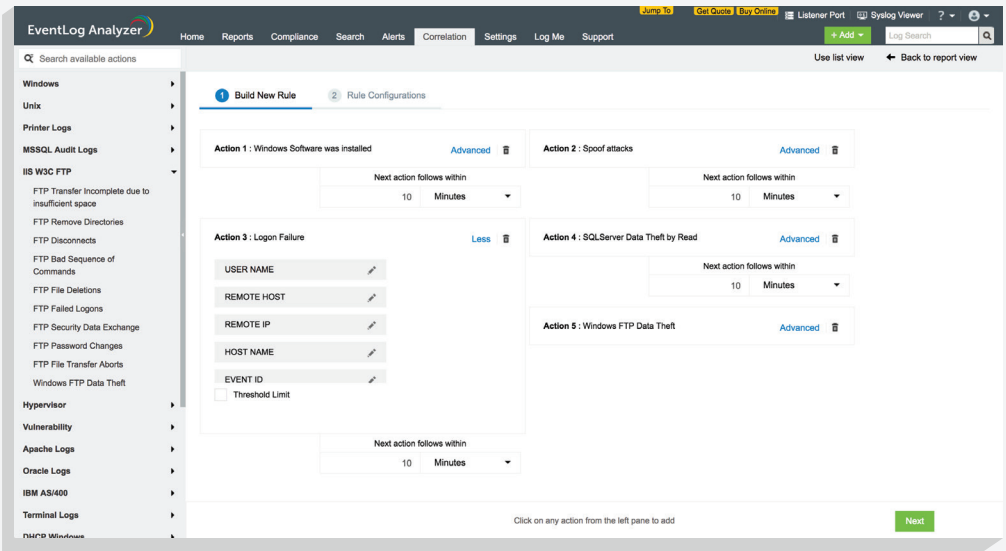
Detailed analysis of suspicious activities on a database

These details give Log360 users additional context, which helps them validate incidents as a threat or attack.

The correlation engine: Log360 offers the capability to correlate different events across the network to recreate and detect known attack patterns.

In terms of the data breach scenario above, administrators can use Log360 to build a custom correlation rule and detect similar attacks faster. With Log360's drag-and-drop correlation rule builder, users can simply select predefined actions and create a rule for any attack pattern.

Further, users can set up threshold values for each of the actions to precisely detect attack patterns and save time investigating false positives.



Log360 rule builder

IoA or IoC:
Which one should be used?

There is no single answer. Security attacks are dynamic and they change pattern very often. While some attacks are identified at their earlier stage, many sophisticated attacks happen over a long period of time and aren't detected until the damage is done. Therefore, many times businesses realize they're the victims of an attack once it's too late. There's no hard and fast rule on which indicators security operations centers should use.

To effectively secure their network from attacks, audit activities occurring on the network, and detect anomalies, organizations should configure their SIEM solution to track all known IoCs as well as IoAs that synchronize with their security strategy.

About ManageEngine

ManageEngine is the enterprise IT management division of Zoho Corporation, catering to a wide range of organizations, MSPs and MSSPs. Established and emerging enterprises—including 9 of every 10 Fortune 100 organizations—rely on ManageEngine's real-time IT management tools to ensure optimal performance of their IT infrastructure, including networks, servers, applications, endpoints and more. ManageEngine has offices worldwide, including in the United States, the United Arab Emirates, the Netherlands, India, Colombia, Mexico, Brazil, Singapore, Japan, China, Australia and the United Kingdom as well as 200+ global partners to help organizations tightly align their business and IT.

About Log360

Log360 is a unified SIEM solution with integrated DLP and CASB capabilities that detects, prioritizes, investigates and responds to security threats. Vigil IQ, the solution's TDIR module, combines threat intelligence, ML-based anomaly detection and rule-based attack detection techniques to detect sophisticated attacks, and it offers an incident management console for effectively remediating detected threats. Log360 provides holistic security visibility across on-premises, cloud and hybrid networks with its intuitive and advanced security analytics and monitoring capabilities.

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Visit www.manageengine.com/log360 for in-depth information about the solution and all its features.