

A Visual Guide to Insider Threat Investigations

AD-HOC INVESTIGATIONS VS. OBSERVEIT



Getting Practical: Insider Threat Investigations

What do we mean when we say **Insider Threat**?

The truth is, at times, it can be very abstract. And while there is value in understanding the principles and best practices that underlie a strong security program, it can also be very helpful to see for yourself what a given process actually looks like.

Today, we want to do just that: give you a visual glimpse into a practical security process. We'll walk you through exactly how an insider threat investigation works.

In this eBook, we'll cover:

- The Insider Threat investigation process with security solutions like Security Information and Event Management (SIEMs)
- What an investigation looks like within ObserveIT, a dedicated insider threat management platform, including:
 - **Proactive** threat hunting
 - Reactive alert investigations after a known incident



Ad-Hoc Insider Threat Investigations A Step-by-Step Look

Step 1 Kicking off an Ad-Hoc Investigation

Without an Insider Threat platform and/or a dedicated program in place, investigations can be piecemeal, messy, and inefficient.

First, an alert will come in. This can come from one of two places:

Inside: This is the best-case scenario. If an internal alert goes off, it usually comes from a system, like a SIEM platform, which consist of monitoring logs and the security tools that feed into them (such as data loss prevention [DLP] or endpoint detection and response [EDR] tools.) **Outside:** The worst-case scenario? A customer, regulatory body, or someone else on the outside notices something out of the ordinary and notifies the company that there may have been a security breach.

Regardless of where the alert comes from, this is what kicks off the investigation.

Step 2 Gathering Intel

The next step is to gather more intel. While the alert will usually let you know "what" has happened, it wont tell you the whole story. You need to dig around to figure out:

- Where did this happen? (In a web app? On the desktop?)
- What systems are affected?
- When did the potential incident take place?
- What other suspicious user activity has taken place within the time frame of the incident? (Important context that will determine the course of action)

As you can imagine—or may know from going through this process yourself—handling an alert in this manner can be very time-consuming. It requires the security team to go through many different tools, often searching through massive amounts of logs under significant time pressure. This alert may be one of hundreds coming in every day, which can make it challenging to identify which ones represent real problems.



Typical security log fed through a SIEM

ve	nt 4648,	Microsoft Windows security	/ auditing.
G	eneral	Details	
	A logo	n was attempted using explic	it credentials.
	Subject		
	Subject	 Security ID:	OBSERVEIT-SYS\lucas.calixto
		Account Name:	lucas.calixto
		Account Domain:	OBSERVEIT-SYS
		Logon ID:	0x126BC132
		Logon GUID:	{0000000-0000-0000-000000000000}}
	Accour	nt Whose Credentials Were U	sed:
		Account Name:	lucas.calixto
		Account Domain:	OBSERVEIT-SYS.LOCAL
		Logon GUID:	{5fcee335-99ef-0bfe-bb97-ced3d1826ef9}
	Target	Server:	
		Target Server Name:	fps01
		Additional Information:	cifs/fps01
	Process	Information:	
		Process ID:	0x4
		Process Name:	
	Networ	k Information:	
		Network Address: 10.199.1	.14
		Port:	445

Source: Microsoft Windows Logs

Step 3 Determining User Actions

Once you have dug up the appropriate logs, you will need to determine what the perpetrator was up to. For example, you will need to figure out whether there is any history around this user that will help you understand what they did and why.

- Is it a disgruntled former employee attempting to exfiltrate data? (intentional threat)
- Or someone who simply slipped up and did something out of policy? (accidental threat)

Context is crucial, and it can be very difficult to build on an adhoc basis. Pictured on the right are typical log files and security solutions used to investigate insider threats.



Source: Microsoft Windows Logs

Application Security Setup System

Step 4 Building Evidence

Finally, when it is clear what happened, you will need to build evidence. You can't simply go to leadership (or the authorities if it is a legal issue) and say, "This is what happened." You need proof, which can be especially hard to provide when all you have to work with is logs.

In case your organization needs to move forward with legal action, you must know what type of digital forensic evidence is admissible to law enforcement. If you suspect that there's a possibility of criminal activity, seek help from outside legal experts early in the process to make these determinations.



Ad-Hoc Investigations are Not Ideal

Conducting Insider Threat investigations on an ad-hoc basis, as you can see, **is not ideal**.

It is:

- Inefficient
- Time-consuming
- Lacking in context
- Difficult to dig deep enough
- High risk

Ineffective investigational tools can really slow down the entire process, and in the meantime, the threat may continue to evolve and put the business at great risk of reputational damage or cost. <u>According to Deloitte</u>, average remediation costs can exceed \$10 million. This cost is also largely dependent on the size of the organization, the extent of the damage, and required mitigation actions.

Investing in tools that are purpose-built for Insider Threat Management can increase accuracy and efficiency of investigations. This is a very common threat source today, and having tools that can quickly provide the appropriate context can protect your organization's reputation and resources.

Insider Threat Investigations with ObserveIT

Proactive Insider Threat Hunting and Reactive Incident Investigation



Scenario 1 Insider Threat Hunting (Proactive Investigation)

Insider Threat hunting means taking a look at your riskiest users' behavior on a regular basis.

If you spot anomalous behavior during one of these routine checks, you can take a deeper look.



Gathering Intel

Insider Threat Intelligence Screen

It all starts with a proactive threat analyst looking at the riskiest users on a regular basis. If the analyst sees some risky behavior, they will proceed to investigate the user behind it.



Diving Into Specific Alerts

Alerts Screen

Next, the analyst will want to get more context around the "who, what, where, when and why" on this specific alert. A timeline view correlates intelligence about the user, application, file, critical system, and the user's actions and presents it in an easy-to-understand format.

In these examples within the ObserveIT platform, you can see that the user, Derek F, opened a root shell using a non-standard command, and hid files by moving them to a hidden directory. In the Alerts view, it becomes evident that this user has been abusing his privileges, and is up to something suspicious.

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		Original file name	Client-Profiles-2017.xlsx				l
		To website/web-application	on uploadfiles.io				l
			https://uploadfiles.io				l
		To website category	Storage				l
		Originated from website	observeit.my.salesforce.com				l
			https://observeit.my.salesforce.com/sfc/#version?selectedDocumentId=	069w00000056vak			l
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Gathering Context

Timeline View

Next, the analyst will want to get more context around the "who, what, where, when and why" of this specific alert. TA timeline view brings together user and application data, including details on the user's actions and the file system in question.

Once they have this context, they will want to examine whether the information explains the validity of the user action that lead to the alert (case closed). Or, on the other hand, does the information illuminate an actual insider threat action?

11:32:39 AM	www.advanced-ip-scanner.com	4	Downloaded/exported file "Advanced_IP_Scanner_2.5.3850.exe" from www.advanced-ip-scanner.com to C:\Users\oitserviceaccount\Downloads\	↓ ▶
11:32:53 AM	Setup/Uninstall		Select Setup Language	↓ ▶
11:32:56 AM			Setup - Advanced IP Scanner 2.5	↓ ▶
11:33:04 AM	advanced_ip_scanner		Advanced IP Scanner	▶
11:34:32 AM	Windows Explorer		\\10.0.2.226\Corporate Share Folder	↓ 🕨
11:34:38 AM			\\10.0.2.226\Corporate Share Folder\Data Sets 2017	↓ 🕨
11:35:33 AM	LibreOffice		Patient Records.xlsx (read-only) - LibreOffice Calc	►
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Building Evidence

Diary Screens

If this incident is considered "out of policy" and egregious enough, then the analyst will need to leverage User, File, Email and Endpoint diaries to understand exactly what happened. Using ObserveIT, they can navigate Endpoint diaries if a critical system is in question, or User, File or Email diaries for all other reasons

In this example, the analyst is viewing the Email Diary to gather more evidence about the suspicious activity taken by user.

ENDPOINT DIARY	USER DIARY	FILE DIARY	EMAIL DIARY	DBA ACTIVITY	ALERTS	CONFIGURATION	SEARCH	REPORTS		
			-							
Email Activity		Email Activity								
		Period:	• Last 1	Months \$	OBetween 06/12/2	2019 to: 07/12/2019				
		Subject:				Attachment na	me:			
		From:				Attachment ex	istence: Any			\$
		Recipient:				Endpoint:	All			\$
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Confirming and Sharing Evidence

ObservelT Reports

At the end of the evidence-gathering stage, the analyst can use ObservelT's screen recording features to confirm their suspicion. Visual activity replays can back up the metadata evidence gathered from the Diaries screen.

Once the evidence is confirmed, the analyst can share the screen recording and metadata as an easy-to-understand report for Legal, HR and other stakeholders on the incident response team for decision-making purposes.



Alert 1/8

Scenario 2 Reactive Incident Investigation



An Alert is Triggered

In the **Alerts Screen**, the analyst can get a real-time view of all suspicious user activity at any given time, and dig in to learn more about a potential insider threat incident. Or, if an alert is triggered from an external security solution, an analyst can gather further detail into user activity within ObserveIT. In these examples, you can see that the user is accessing an unauthorized cloud storage website and uploading seemingly sensitive data to unknown websites. These look like out of policy violations, which need further investigation.



Search Screen Provides a Microscope

Using the **Search Screen**, the analyst can learn more about any activity related to the search term of interest. In this case, you can see various instances "gmail" came up, across users, user sessions, applications and endpoints.

The session history can be viewed as a summary or timeline, or the analyst can choose to view a video playback of the potential incident.

With ObserveIT, analysts can search many different forms of metadata, including username, machine type, application used, file name, and more.

	Search								
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Timeline View Gives Context

The analyst can then click into a specific user's timeline to investigate the user's activity further.

From the timeline view, the analyst can see who did what, on which computer, from which client, and when.

They can then view a video playback of a user's session to confirm their suspicions.

USER ACTIVITY (WINDOW TITLES)									
Time 🔺		Application/Website		Activity Details					
8:33:10 AM		Microsoft Outlook	₽?	Sent email including file(s) "Hey_ya.mp3" From: oituser888@gmail.com Recipients (Untrusted recipient domains): tim.armstrong@observeit.com, oituser888@gm Subject: Your favorite song		Þ			
10:25:42 PM 🕒		Windows Explorer		Start	Φ	Þ			
10:26:08 PM 🕒				Program Manager		►			
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10:26:44 PM 🕒		Google Chrome				►			
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Diary Screens Illuminate Details

Once the analyst finds the user at fault, they'll go to **User, Email, File or Endpoint diaries** to quickly add more evidence before, during and after incident(s) in question. Pictured here is an Email Diary in ObserveIT

ENDPOINT DIARY	USER DIARY	FILE DIARY	EMAIL DIARY	DBA ACTIVITY	ALERTS	CONFIGURATION	SEARCH	REPORTS		
Email Activity			_							
		Email Activity								
		Period:	• Last 1	Months \$	Between 06/12/201	9 to: 07/12/2019				
		Subject:				Attachment na	me:			
		From:				Attachment ex	istence: Any			\$
		Recipient:				Endpoint:	All			\$
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Reports Confirm Evidence

Once the analyst collects relevant information, they can export it into easyto-understand **User Alert Summaries** and **ObserveIT Reports** to send to Legal, HR or other stakeholders in the incident response chain of command.



Context is Always King

As you can see, ObservelT's timeline, search function, user diary, and other features make it much easier to gather the necessary context around an insider threat incident whether it is discovered reactively or proactively. Having a purpose-built insider threat management solution makes it possible to build a case in a time-sensitive fashion and take appropriate action to protect the organization and mitigate further risks.

Want to see how ObserveIT could work for your organization? **Request a demo** of ObserveIT today.



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