The DTEX Insider Threat Kill Chain

Anatomy of Intent: How to Identify and Stop Real-World Insider Threats

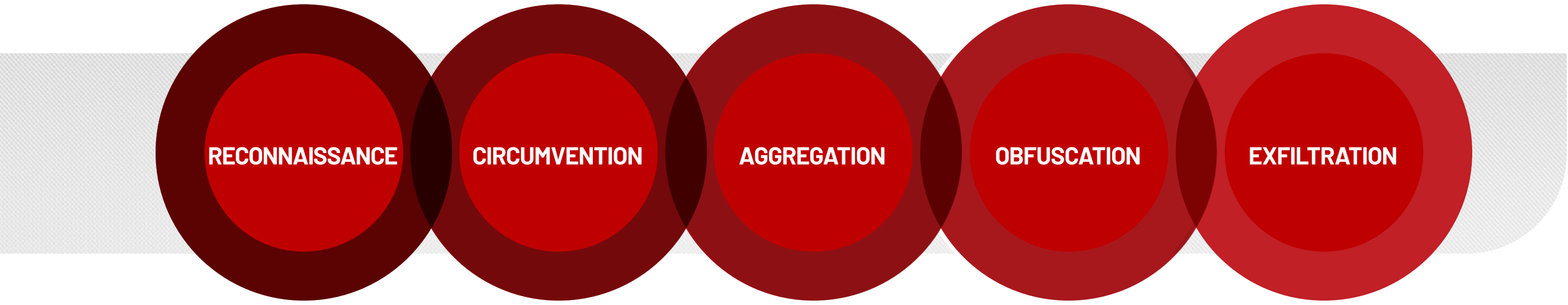
The vast majority of security threats follow a pattern of activity during an attack, and insider threats are no exception. But the truth is, insider threats are not the same as a typical malware attack. Insider threat investigations require a more nuanced approach and security analysts must have both the technical aptitude and human investigative domain knowledge to be effective.

Understanding the detailed steps taken during an insider attack plays a big part in preventing a data loss incident, enabling organizations to identify issues before an insider risk turns into an insider threat.

The DTEX Insider Threat Kill Chain

Over the course of thousands of insider threat investigations and incidents, DTEX analysts have developed the Insider Threat Kill Chain to increase awareness around the pattern of activity during a sometimes-slow moving attack. It encompasses the five steps present in nearly all insider attacks.

Insider Threat Kill Chain



Visibility into the entire kill chain — not just one or two steps — is imperative. This is because the earlier phases of the kill chain hold the answers to some of the most important questions, both for incidents that have yet to fully unfold and for those that have already occurred.

Questions that must be answered include:

- What is the intent of this user?
- Is this an accidental breach or a calculated attack?
- Is this truly an insider, or was this user's credentials compromised by an infiltrator?
- Did a security misconfiguration allow this to happen?
- What files were affected?
- If this is a case of stolen credentials, how did the credential thief get into the account?

DTEX offers comprehensive activity data and intelligence that spans every stage of the kill chain. With this data, analysts can answer these critical questions, and more, without resorting to hiring outside experts to investigate incidents. What's more, based on machine learning and behavioral risk modeling, DTEX has full visibility into the kill chain to elevate early warning signs that a breach may be imminent.

Security Solution Gaps

Too often, today's approach to security suggests developing complex, layered security architectures. But evolving attacks take advantage of this complexity to slip through siloed defenses. And while a wide range of security solutions suggest they protect against insider threats, they aren't sending quality data to a continuous and comprehensive behavioral analytics platform.

LOG FILE-BASED BEHAVIOR ANALYTICS

Log file-based behavior analytics products analyze aggregated log data (e.g. Windows event logs, OSquery etc.), typically from a SIEM or XDR platform.

Integrating log aggregation solutions with User and Entity Behavior Analytics (UEBA) does not address the fundamental challenge of data quality. And continuing to collect more data under the guise of better visibility only makes the problem worse. False positives are rampant because simply detecting "abnormal", also known as behavior that is different than normal, does not make behavior malicious.

NETWORK DETECTION AND RESPONSE (NDR)

NDR platforms analyze network traffic gathered from network devices like firewalls.

Analyzing network data provides insight into only one aspect of the network and misses the behavioral context needed for proactive detection. Sending NDR log data to a SEIM only adds to the waterfall of overwhelming alerts to sort through, some relying on normal baselining and "abnormal" activity.

ENDPOINT DETECTION AND RESPONSE (EDR)

EDR solutions analyze activity data on endpoint devices.

Relying on EDR solutions alone can be problematic because the sheer volume of data creates the potential for false positives, where benign activities are flagged as malicious, and actual threats go undetected. And the complexity of these solutions can lead to misconfigurations, and ultimately security gaps.

DATA LOSS PREVENTION (DLP)

Legacy DLP vendors analyze the sharing, transferring, and use of sensitive data on network endpoints. Detection techniques are based on keywords, keyword patterns, regular expressions and hashing.

These products rely on complex content rule configuration that require frequent maintenance and lack the context and behavioral analysis to understand threats. They are heavy on the endpoint, riddled with false positives, and primarily detect negligent behavior, not malicious data loss so many organizations ultimately find these solutions hard to use. Opening every file, email, IM, and web request creates many issues with privacy and compliance.

While each of these approaches may address one step or small part of the insider threat kill chain, none of them have been designed specifically as a holistic insider threat platform and so do not address the subtle and insidious ways insiders operate.

The Insider Threat Kill Chain Checklist

Below is a checklist that organizations can use to prepare for and ultimately identify real-world indicators of intent. The attack vectors included are taken from actual insider threat attacks that DTEX customers discovered using the DTEX Insider Threat Kill Chain.

RECONNAISSANCE

When preparing for data theft, insiders typically begin with research. This is where they locate the data that they would like to steal, or, in the case of compromised credentials, where the insider will test the bounds of the stolen credentials' privileges.

	DTEX	NDR / EDR	Log File Analytics
Researching security bypass methods / tools	X		
Use of Network Scanning Tools	X	X	Partial
Anomalous Use of Network Scanning Tools in comparison to peer group	X		
Installation and Usage of Portable Applications	X		X
Unusual Usage of sysinternals Tools and Utilities	X		X
Network share enumeration	X	X	
File and Folder Access Denied Events	X	Partial	X
Unusual access to remote support tools	X		
Unusual rates of opening files	X		Partial
Unusual access to new file locations	X	Partial	X
Successful and failed attempts to mount USB drives or access cloud storage	X	X	
Commands issued through tools like cmd.exe, PowerShell, Terminal, etc.	X		
Suspicious internet search activities (e.g. google searches)	X		
Unusual login behaviors (e.g. outside of normal working hours)	X		Partial

CIRCUMVENTION

This is the stage where the insider attempts to get around existing security measures, such as web blocking and DLP tools. It is particularly important to have visibility into this activity because it can shed light on intent: if a user is going through great lengths to get around company security, they are acting very deliberately.

This is also often where organizations can see where their security tools are failing. By capturing circumvention activity, DTEX shows analysts where and how users are able to bypass existing measures.

	DTEX	NDR / EDR	Log File Analytics
Usage of anonymous web browsers (e.g. ToR), including the actual sites visited during these anonymous sessions	X		
Disabling of corporate VPN	X	X	Partial
Research into tampering of corporate security tools	X		
Tampering of corporate security tools	X	Partial	
Suspicious off network activities (including detection of corporate and non-corporate networks, Wi-Fi SSID etc)	X		
Unusual usage of privileged admin accounts	X		Partial
Usage of vulnerability exploit tools	X	X	X
Unusual usage or creation of local accounts	X		Partial
Anomalous modification of configuration files	X	Partial	
Modification of file and directory permissions	X	X	Partial
Unusual privilege escalation activities	X	Partial	Partial

IMPORTANT NOTE:
Monitoring of super users and IT admins requires special consideration in the development of insider threat programs. DTEX InTERCEPT provides visibility into super user activity without slowing them down, opting for "trust but verify" instead of "locking and blocking."

AGGREGATION

This is when the insider assembles all of the data to steal, often moving it into one file directory or compressing it in a single location.

	DTEX	NDR / EDR	Log File Analytics
Download of sensitive files from corporate web portal	X		
Archive creation including correlation of files within the archive	X		
Unusual network file transfers (both from the file server and the endpoint)	X	X	Partial
Anomalous data aggregation behaviors based on file type, file size and other meta-data	X		
Unusual Clipboard Activity (e.g. excessive screenshots during a conference call or presentation)	X		
Anomalous mapped drive creation and data transfers	X		Partial
Automatic data collection (RPA)	X	Partial	
Anomalous email archive creation and transfers	X		
Administrative file copy utilities	X	X	
Unusual symbolic link creation	X		
Automated backup software (e.g. time machine)	X		

OBFUSCATION

In the Obfuscation step, insiders will cover their tracks in order to avoid detection, often by renaming files, changing file types, or by using more advanced tactics such as steganography. This is another important step to capture in order to prove malicious intent, as well as to understand where other security tools might be failing.

	DTEX	NDR / EDR	Log File Analytics
Download of sensitive files from corporate web portal	X		
Archive creation including correlation of files within the archive	X		
Unusual network file transfers (both from the file server and the endpoint)	X	X	Partial
Anomalous data aggregation behaviors based on file type, file size and other meta-data	X		
Unusual Clipboard Activity (e.g. excessive screenshots during a conference call or presentation)	X		
Anomalous mapped drive creation and data transfers	X		Partial
Automatic data collection (RPA)	X	Partial	
Anomalous email archive creation and transfers	X		
Administrative file copy utilities	X	X	
Unusual symbolic link creation	X		
Automated backup software (e.g. time machine)	X		

EXFILTRATION

This is the final step in the process of stealing data: the moment that the data is actually transferred out of the organization. Many security tools focus only on this specific step, and often by way of blocking tools. Rigid rules, however, can't catch the hundreds of methods that can be used to get data out of the organization. Since DTEX sees all activity from the point closest to the user, it has visibility into less common exfiltration methods that other tools often miss.

	DTEX	NDR / EDR	Log File Analytics
Airdrop Exfiltration	X		
Bluetooth	X		
Encrypted USB	X	Partial	
Unencrypted USB	X	Partial	
FTP / sFTP Transfers	X		Partial
Online File Sharing	X		
Personal Webmail Uploads	X	Partial	
Printing	X		X
Anomalous Uploads	X	X	X
Network to Removable Device	X		Partial
Remote Support Tool Upload	X		
Messaging Tool Upload	X		
Automated Exfiltration / Scheduled Transfers	X	Partial	
Exfiltration over Alternative Protocol	X	X	Partial
Exfiltration over Command & Control	X	X	Partial
Exfiltration over Physical Medium	X	Partial	Partial
Data Transfer Size Limits	X		X
Exfiltration of High Sensitivity Score Documents	X		

❗ IMPORTANT NOTE:
Employees leaving the company are significantly more likely to take sensitive data with them when they leave. DTEX InTERCEPT endpoint visibility looks to look for signs of pending departure or disengagement.

DTEX Insider Risk Management

DTEX InTERCEPT™ is a purpose-built insider risk management platform that consolidates the essential capabilities of user and entity behavior analytics (UEBA), user activity monitoring (UAM) and data loss prevention (DLP) in a single, light-weight platform to provide early detection and mitigation of insider risks.

DTEX Focused Observation

When more extensive monitoring is appropriate to capture contextual, behavioral metadata, InTERCEPT provides an array of focused observation and forensic investigation capabilities for deeper insights. Features include:

- Screen capture capability
- Replay and export capability
- Trigger initiated focused observation
- Internal fraud use cases
- Timestamp alignment to audit trail

To learn more about DTEX Systems, please visit dtexsystems.com.

ABOUT DTEX SYSTEMS

DTEX Systems helps hundreds of organizations worldwide better understand their workforce, protect their data and make human-centric operational investments. Its Workforce Cyber Intelligence & Security platform brings together next-generation DLP, UEBA, digital forensics, user activity monitoring and insider threat management in one scalable, cloud-native platform. Through its patented and privacy-compliant meta-data collection and analytics engine, the DTEX platform surfaces abnormal behavioral "indicators of intent" to mitigate risk of data and IP loss, enabling SOC enrichment with human sensors and empowering enterprises to make smarter business decisions quickly.