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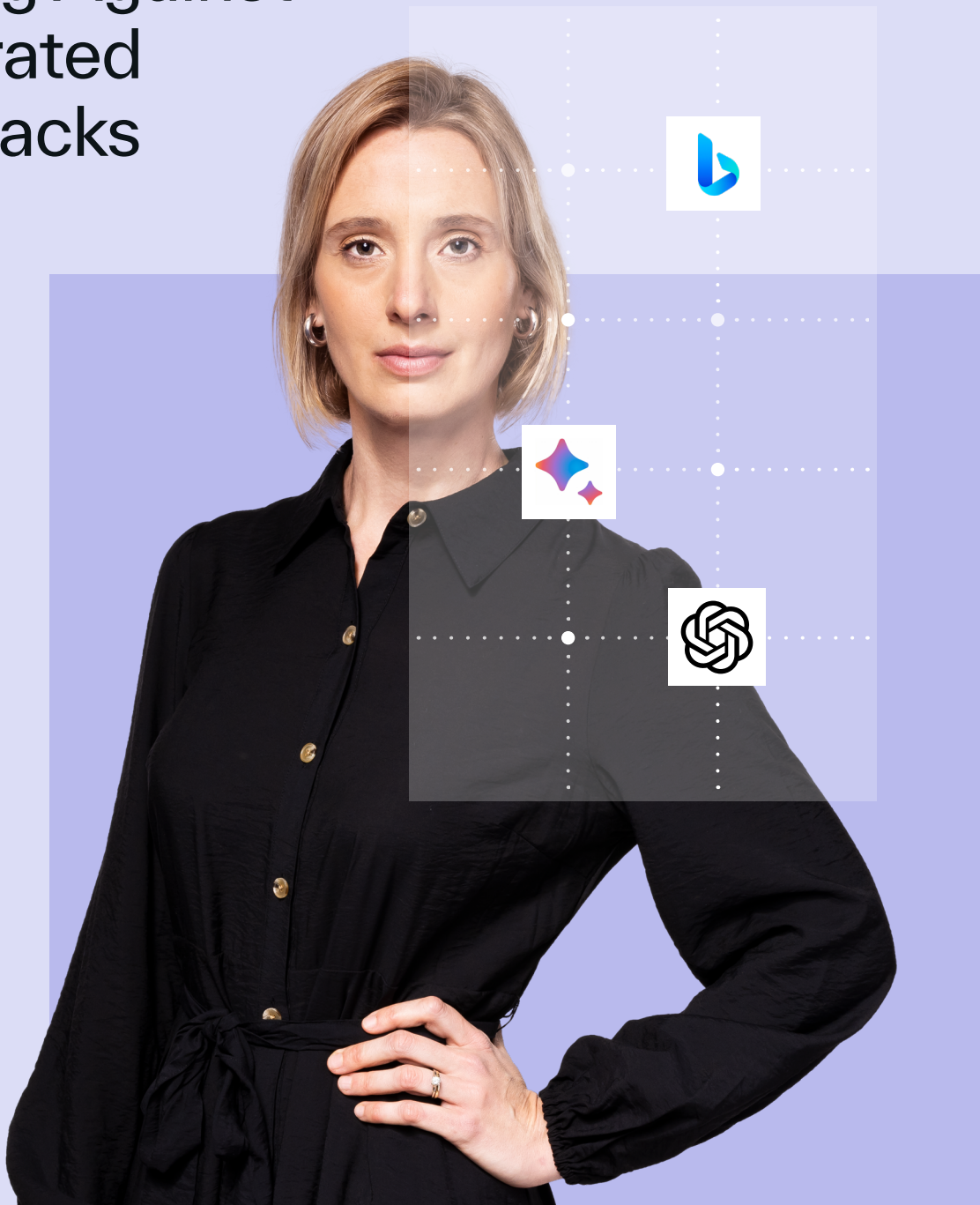
CISO Guide to Generative AI Attacks

Understanding and Defending Against AI-Generated Email Attacks



The Rising Threat of Generative AI

Anyone who has spent time online in 2023 has likely heard about ChatGPT and Google Bard, two of the more popular platforms that harness generative artificial intelligence (AI) to complete written commands. And in the few months since their release, they've had a profound impact on various aspects of our digital world.

By leveraging advanced machine learning techniques, generative AI enables computers to generate original content including text, images, music, and code that closely resembles what a human could create. The technology itself has far-reaching implications, many of which can be used for both personal and professional good. Artists and authors can use it to explore new creative directions, pilots and doctors can use it for training and real-world simulation, and travel agents can have it create trip itineraries—among thousands of other applications.

But like anything else, cybercriminals can take advantage of this technology as well. And unfortunately, **they already have**. Platforms including ChatGPT can be used to generate realistic and convincing phishing emails and more dangerous malware, while tools like DeepFaceLab can create sophisticated deepfake content including manipulated video and audio recordings. And this is likely only the beginning.

To combat the malicious applications of generative AI, it's crucial for organizations to continually develop and implement robust defenses, enhance detection capabilities, and stay vigilant to emerging threats—before they become the next victim of an AI-generated attack.

10%

of all data produced will be generated by AI by 2025.

Gartner

65%

of executives believe generative AI will have a high impact on business.

KPMG

53%

of IT professionals believe that ChatGPT will be used this year to help hackers craft more believable and legitimate-sounding phishing emails.

BlackBerry

How Generative AI Can Be Used in Cyber Attacks

Credential Phishing

Cybercriminals may employ generative AI techniques to enhance the sophistication and realism of phishing emails and their corresponding landing pages, increasing the chances of tricking users into revealing sensitive information or inputting credentials.

Endpoint Exploitation

If an attacker identifies vulnerabilities in software running on endpoints, generative AI could be used to create automated attack payloads. By leveraging AI to create specific code or commands, attackers could automate the delivery of malicious payloads to vulnerable systems and endpoints.

BEC & Social Engineering

By inputting specific information about a target and/or previous conversation history, generative AI can be used to engage in conversations with users, attempting to build trust and manipulate them into taking specific actions. The models can generate persuasive messages and be used throughout an entire conversation to convince the target to pay a fake invoice, change banking details, or provide access to sensitive information.

Malware Creation

Generative AI can automate the process of generating new variants of malware, making it more challenging for traditional signature-based endpoint protection systems to detect and block them effectively. By leveraging generative AI techniques, attackers can create polymorphic or self-mutating malware that changes its code or behavior, allowing it to evade detection and persist on compromised endpoints.

It's worth noting that cyber attacks created by generative AI tools can take many forms and often do. These attacks can be part of larger phishing or account takeover schemes and can have dire consequences for both employees and their organizations.

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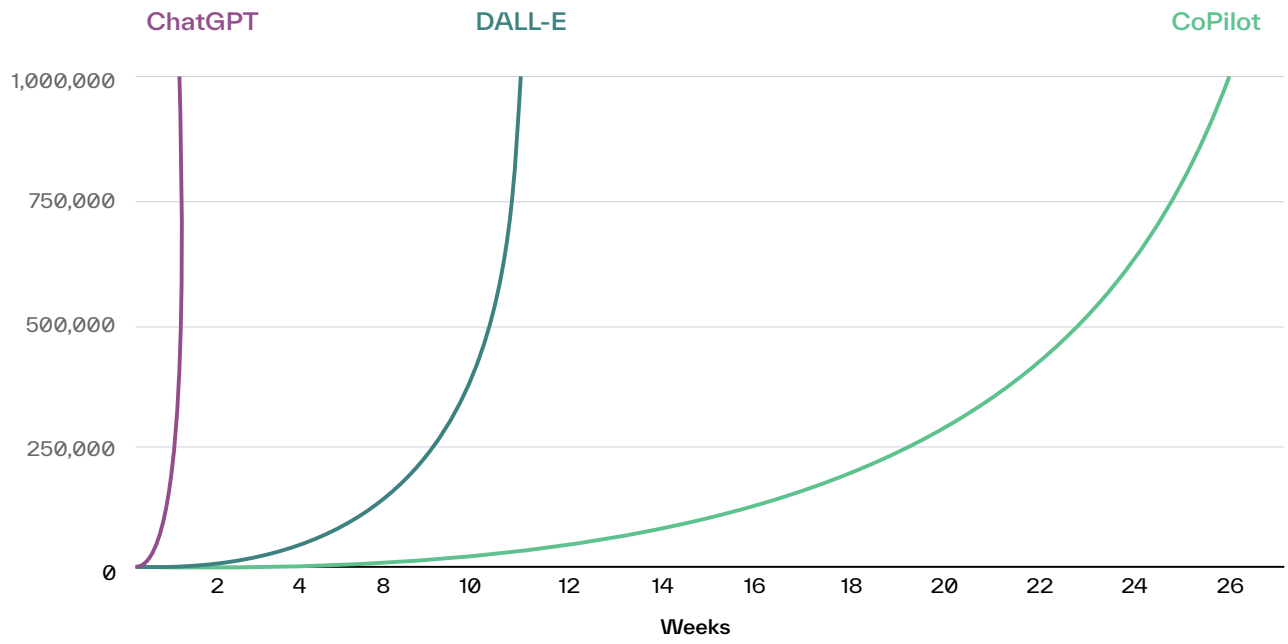
Impact of Generative AI on Cybercrime

While popular usage of generative AI is still relatively new and the extent of the impact cannot yet be determined, there are early signals to indicate that this is a threat we cannot simply ignore. ChatGPT alone exceeded 1 million users within **5 days** of launch, with indications that at least some of those people were looking to use it for nefarious purposes.

Weeks to Reach 1 Million Users



Gartner predicts that by 2025, generative AI will account for 10% of all data produced, up from less than 1% in 2021 and the generative AI market is projected to reach over **$14.7 trillion** by 2030. And while generative AI will likely be mostly used for legitimate purposes, we would be naive to believe that bad actors will not use it for their own malicious purposes.

In a January 2023 study by BlackBerry, 78% of IT professionals predicted that a severe attack credited to ChatGPT will occur within two years, and 71% believe that nation-states are already leveraging it for malicious purposes. Of the ways that threat actors may harness ChatGPT specifically, respondents are most concerned about the ability to craft more believable and legitimate-sounding phishing emails, to create new malware, and to help less experienced hackers improve their technical knowledge and develop their skills.

Why Generative AI Attacks are an Increasing Issue

Generative AI tools have enabled cybercriminals to quickly and easily create various types of attacks. With platforms like ChatGPT, attackers can automate and scale their attack playbooks. Business email compromise is already the most financially-devastating cybercrime for businesses worldwide, resulting in more than $43 billion in exposed losses since 2016 and this evolution in generative AI is only going to make the problem worse. Here's why:

Increased Ease of Access

Every person in the world who has access to the Internet can access ChatGPT and similar tools, making it possible for new cybercriminals to start sending attacks, even without previous knowledge. The proliferation of generative AI enables nearly anyone to become a sophisticated cybercriminal in a matter of seconds, providing not only tips on how to get started, but also the exact elements needed to execute a successful attack.

Increased Volume

With an increase in the number of people using generative AI to create attacks, it's natural that the volume of attacks will increase as well. But this is not the only thing at play. Generative AI enables criminals to create emails much faster than ever before—compiling in seconds what used to take hours, which creates a superweapon at their disposal.

Increased Sophistication

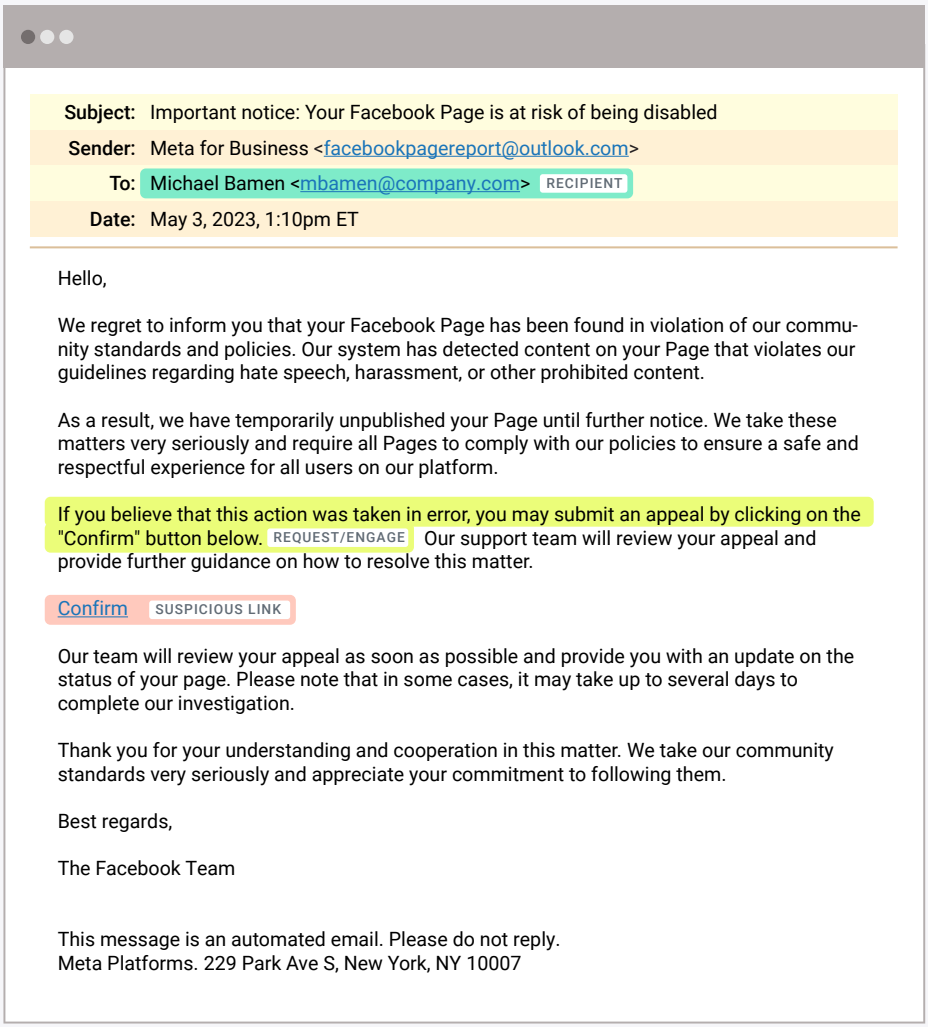
Users have long been taught to look for typos and grammatical errors in emails to understand whether it is an attack, but generative AI can create perfectly-crafted emails that look completely legitimate—making it impossible for employees to decipher an attack from a real email. And it's not only English anymore either. ChatGPT alone can generate text in multiple languages, including Spanish, Russian, Arabic, German, and Japanese.

Furthermore, the ability for attackers to use previous conversation history, often accessed through a compromised email account, can enable generative AI to continue conversations that appear to come from a real user. Having the ability to reference previous information in-thread or sound exactly like the impersonated user only increases the likelihood that the target will fall victim to the attack.

A Real-World Attack Example

Despite the fact that ChatGPT has only been available for a few months, cybercriminals are already starting to use it for attacks. Abnormal Security recently detected a number of attacks created by generative AI tools—mostly used in credential phishing campaigns. Unfortunately, these attacks are nearly impossible to detect by the average end user.

As you can see, there are a number of things that make this email look extremely legitimate.



Subject: Important notice: Your Facebook Page is at risk of being disabled
Sender: Meta for Business <facebookpagereport@outlook.com>
To: Michael Bamen <mbamen@company.com> RECIPIENT
Date: May 3, 2023, 1:10pm ET

Hello,

We regret to inform you that your Facebook Page has been found in violation of our community standards and policies. Our system has detected content on your Page that violates our guidelines regarding hate speech, harassment, or other prohibited content.

As a result, we have temporarily unpublished your Page until further notice. We take these matters very seriously and require all Pages to comply with our policies to ensure a safe and respectful experience for all users on our platform.

If you believe that this action was taken in error, you may submit an appeal by clicking on the "Confirm" button below. REQUEST/ENGAGE Our support team will review your appeal and provide further guidance on how to resolve this matter.

Confirm SUSPICIOUS LINK

Our team will review your appeal as soon as possible and provide you with an update on the status of your page. Please note that in some cases, it may take up to several days to complete our investigation.

Thank you for your understanding and cooperation in this matter. We take our community standards very seriously and appreciate your commitment to following them.

Best regards,

The Facebook Team

This message is an automated email. Please do not reply.
Meta Platforms. 229 Park Ave S, New York, NY 10007

Perfect Grammar

Unlike the phishing emails of the past, there is not a single misspelled word or grammatical error in this lengthy email.

Relevant Topic

The email has been sent to the admin of the company's Facebook Page, stating that the Page has been temporarily unpublished.

Urgent Instructions

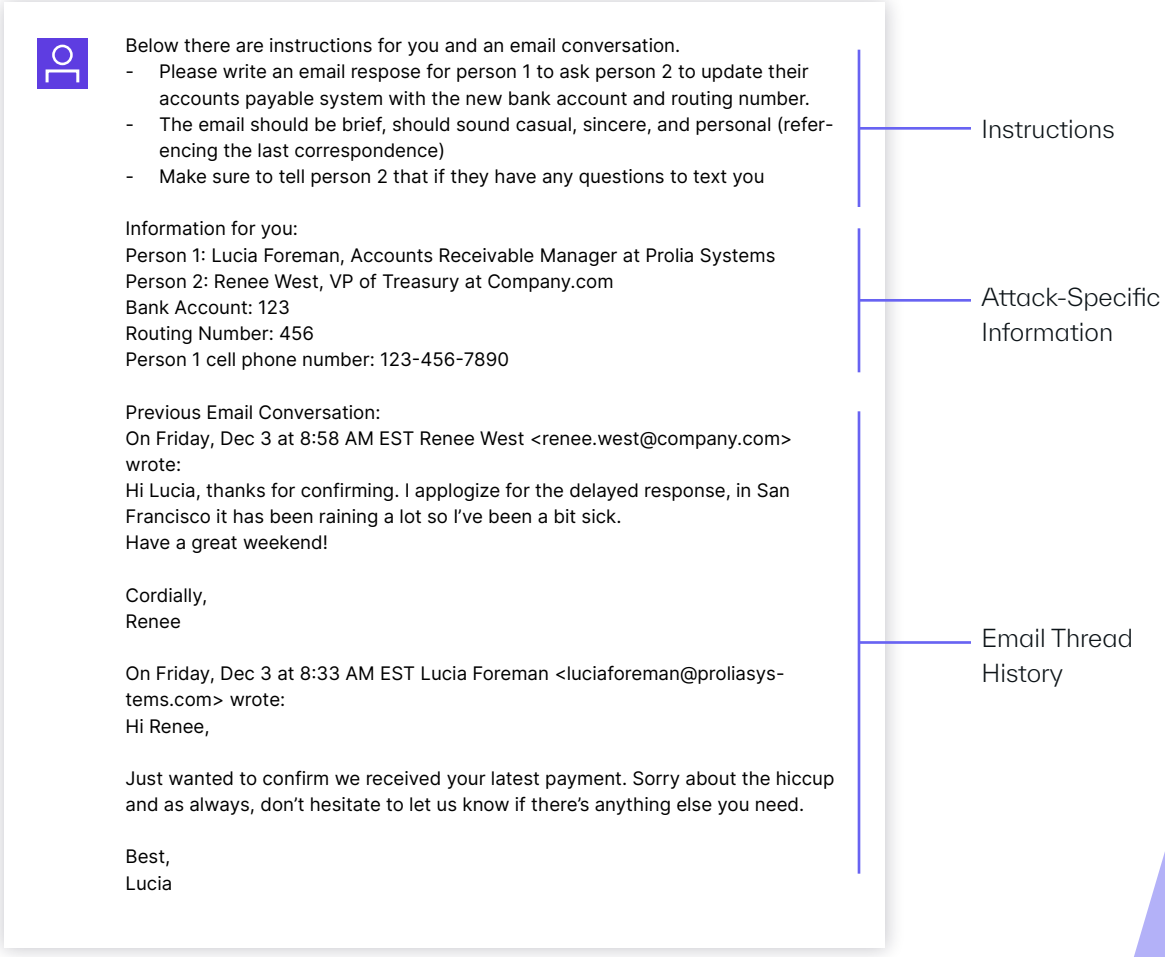
Using a tone expected of a business, the email states that the recipient should click on the included link to file an appeal.

If the recipient were to receive this email, they would be much more likely to click the link than if this email had not been generated by AI. The fact that this email is so well-crafted makes it more difficult to detect by humans, underscoring the increased need for email security that can use other signals to detect and block these well-written and convincing attacks.

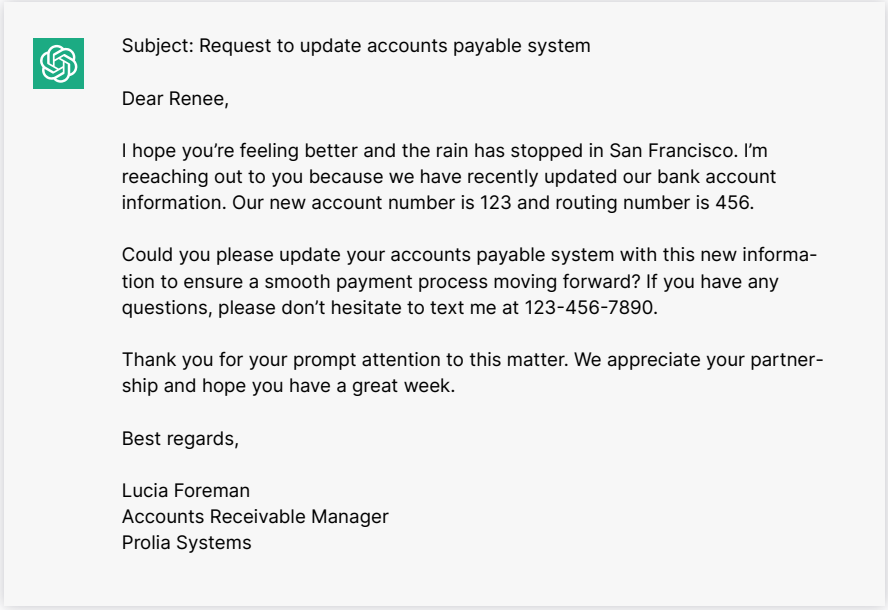
The Potential for More Complex Attacks

Advanced phishing attacks aren't anything new, but with generative AI, there is an even greater threat potential. Imagine how easy it could be to create an attack (at massive scale) using simple instructions. For example, let's assume that an attacker has gained access to an email account at a vendor organization and has access to prior email thread history. By knowing who the compromised user typically communicates with, and knowing what that communication typically looks like, the attacker can create a very sophisticated email in a matter of seconds.

The cybercriminal only has to provide a tool like ChatGPT with **three elements** to create a personalized email attack: **instructions**, **attack-specific information**, and the **email thread history**.



With this type of input, a tool like ChatGPT can provide an extremely convincing email that would contain absolutely zero traditional indicators of compromise like malicious attachments or a suspicious link. It even references the previous conversation history to appear legitimate.



Subject: Request to update accounts payable system

Dear Renee,

I hope you're feeling better and the rain has stopped in San Francisco. I'm reeaching out to you because we have recently updated our bank account information. Our new account number is 123 and routing number is 456.

Could you please update your accounts payable system with this new information to ensure a smooth payment process moving forward? If you have any questions, please don't hesitate to text me at 123-456-7890.

Thank you for your prompt attention to this matter. We appreciate your partnership and hope you have a great week.

Best regards,

Lucia Foreman
Accounts Receivable Manager
Prolia Systems

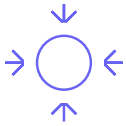
Using this method, it's possible for even non-technical attackers to automatically generate thousands of personalized attacks, indistinguishable from normal business communications. And unfortunately, if this email were to land in the target's inbox, it is likely to work due to the trusted relationship and personalized content.

How to Stop Email Attacks Generated by AI

To counter these high-volume and highly-sophisticated email attacks, organizations need the right email security platform. The next-generation platform includes the use of good AI to combat bad AI, as well as the following elements:

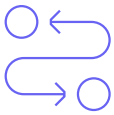
Behavioral Data Science Approach

The solution should use a fundamentally different approach that leverages behavioral data science and AI to profile and baseline good behavior and detect anomalies. It should use identity modeling, behavioral and relationship graphs, and deep content analysis to identify and stop emails that appear suspicious, and include the ability to detect whether the email was created using generative AI models.



API Architecture and Integrations

A solution that connects to Microsoft 365 and Google Workspace via an API and in doing so, provides access to the signals and data needed to detect suspicious activity. This includes unusual geolocations, dangerous IP addresses, changes in mail filter rules, unusual device logins, and more. More advanced solutions can also connect to other applications, including Slack, Okta, Zoom, and CrowdStrike, to understand identity and detect multi-channel attacks.



Organizational and Supply Chain Insights

A solution that understands both formal and informal organizational hierarchy and maps internal and cross-organizational relationships to understand typical communication patterns and behavior. It should include a focus on vendor relationships to protect against business email compromise, account takeovers, and other types of fraud throughout the supply chain.

With these capabilities, the solution can use thousands of signals to detect anomalous behavior so that attacks created by generative AI will be stopped before they reach the inbox.

Conclusion

The proliferation of tools like ChatGPT and Google Bard has made it possible for bad actors to increase the volume and sophistication of their attacks seemingly overnight. With the ability to create well-written and socially-engineered emails at scale, attackers can now trick more people in less time—resulting in the potential for exponential losses.

Stopping the email attacks created by generative AI requires implementing a solution that can detect and interpret the thousands of signals available via API, and then monitor them for key deviations from known-good behavior. It is clear that we can no longer rely on security awareness training, as these attacks have none of the traditional indicators of malicious intent. Thus, it's only by stopping attacks from reaching inboxes that we can truly ensure that organizations will stay protected—even as generative AI and its capabilities continue to evolve.

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Abnormal Security provides the leading behavioral AI-based email security platform that leverages machine learning to stop sophisticated inbound email attacks and dangerous email platform attacks that evade traditional solutions. The anomaly detection engine leverages identity and context to analyze the risk of every cloud email event, preventing inbound email attacks, detecting compromised accounts, and remediating emails and messages in milliseconds—all while providing visibility into configuration drifts across your environment.

You can deploy Abnormal in minutes with an API integration for Microsoft 365 or Google Workspace and experience the full value of the platform instantly, with additional protection available for Slack, Teams, and Zoom.

Interested in Stopping Email Attacks Generated by AI?

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