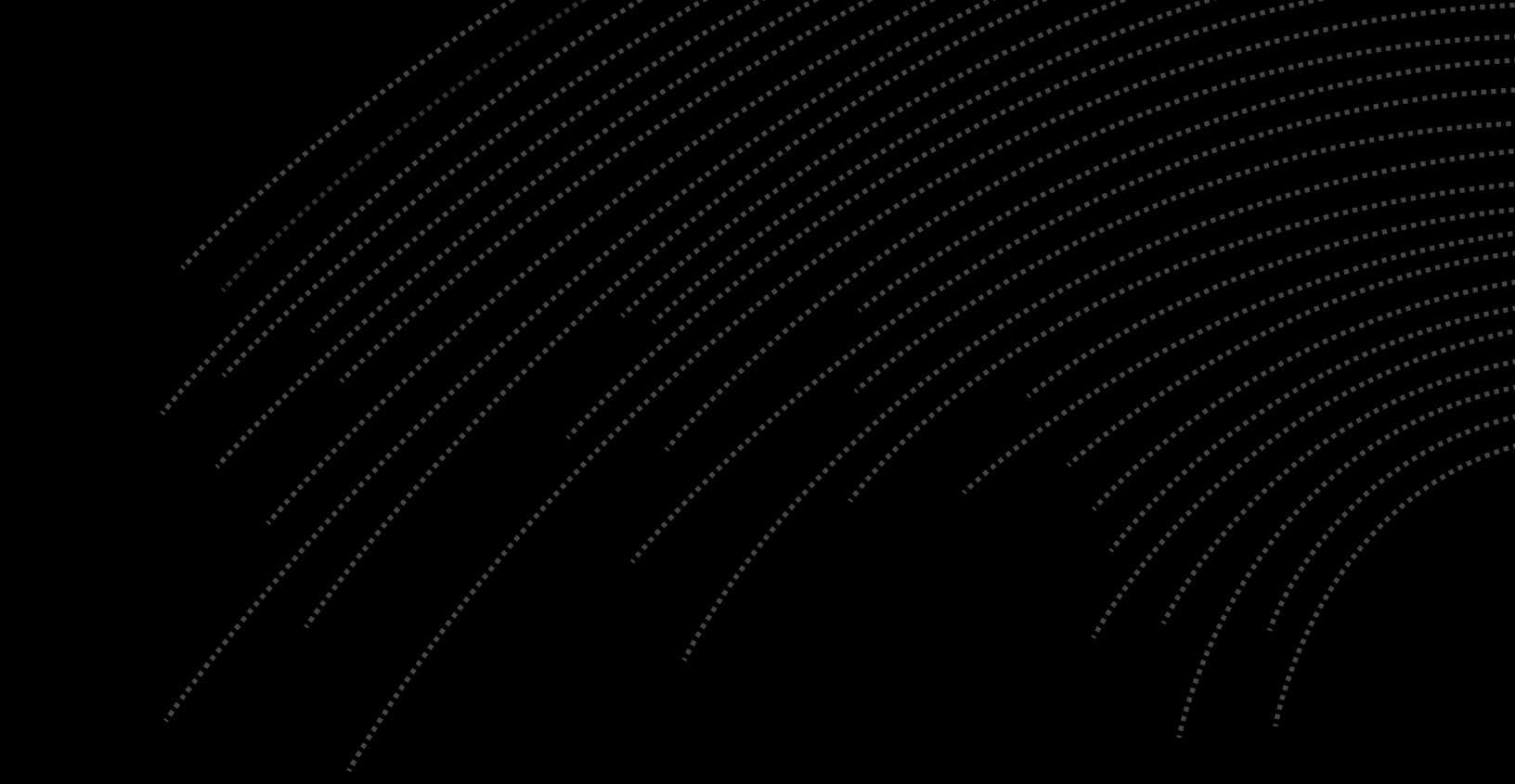


GREYNOISE



Mass Internet Exploitation Report

2025



Mass Exploitation is evolving — and defenders need real-time visibility to keep up.

Attackers aren't just targeting newly disclosed vulnerabilities; they're reviving old, forgotten CVEs and automating mass exploitation at scale. Organizations relying on static risk models and advisory updates are missing key signals of active threats.

The GreyNoise 2025 Mass Internet Exploitation Report provides security leaders, SOC analysts, vulnerability managers, and threat intelligence teams with actionable insights into:

- Which vulnerabilities were most exploited in 2024 — and why attackers keep targeting legacy CVEs.
- How ransomware groups, botnets, and mass scanning operations weaponize public vulnerabilities.
- Why defenders need real-time intelligence to filter noise, reduce alert fatigue, and focus resources on actively exploited threats.

Attackers are industrializing reconnaissance and exploitation. Security teams must adapt. This report provides the intelligence needed to prioritize, respond, and defend against the next wave of mass exploitation.

Key Research Findings



The most exploited vulnerability of 2024 targeted home internet routers, fueling massive botnets used in global cyberattacks.



40% of exploited vulnerabilities in 2024 were from 2020 or earlier — some dating back to the 1990s.



GreyNoise detected exploitation of 29 vulnerabilities before they were added to CISA's Known Exploited Vulnerabilities catalog.



Attackers are exploiting vulnerabilities within hours of disclosure, making real-time defense more critical than ever.



Ransomware groups leveraged 28% of the CVEs in CISA's Known Exploited Vulnerabilities catalog that GreyNoise tracked in 2024.



A surge in May 2024 was traced to 12,000+ hacked Android devices, showing mobile threats are growing.



Hackers are hijacking home internet routers — including ISP-provided fiber modems — to build massive botnets and launch cyberattacks worldwide.



D-Link and Ivanti devices were among the most heavily exploited in 2024, posing critical security risks for businesses and governments.



Legacy vulnerabilities like CVE-2014-8361 and CVE-2018-10561 remain among the most targeted in 2024, proving old flaws are still profitable for attackers

Mass exploitation isn't slowing down — it's becoming more entrenched. Attackers aren't just leveraging newly disclosed vulnerabilities; they're scaling operations across both new and legacy CVEs, some dating back to over two decades. This report unpacks these exploitation trends, exposing why attackers keep targeting certain vulnerabilities, how defenders have blind spots, and why real-time intelligence is critical for prioritizing response.

Introduction

Mass Exploitation

mass ex-ploi-ta-tion
/ˈmɑːs ˌɛk-ˌsplɔɪ-ˈtɑː-shən/

The systematic, automated targeting of one or more specific vulnerabilities across numerous systems or networks, typically executed through scripted tools designed to maximize reach and impact. Attackers leverage either zero-day or recently disclosed vulnerabilities, often striking in the critical window between public disclosure of a proof-of-concept (PoC) and widespread patch deployment, with the goal of compromising either broad swaths of internet-facing systems or specific collections of targeted organizations.

The internet is a **cacophonous space**, filled with the constant hum of digital noise and activity. This perpetual din includes benign traffic, suspicious signals, a swath of connections with as-yet unknown intent, and an ever-increasing deluge of packets with malicious objectives.

GreyNoise acts as an intelligence filter, distinguishing between background noise and real threats. By leveraging advanced research, deception techniques, and engineering expertise, we help organizations identify and respond to actual cyber threats while reducing distraction from irrelevant activity.

Why This Matters

The Intelligence Gap

Traditional threat intelligence providers, while cybersecurity-savvy, often struggle to deliver truly actionable data. Many solutions provide substandard data quality and hesitate to support automated blocking decisions — a critical flaw in an environment where rapid, machine-driven responses are essential.

Infrastructure Complexity

Modern internet architecture has evolved into an intricate ecosystem that presents significant management challenges. This complexity makes organizations particularly vulnerable to initial access attempts and denial of service (DoS) attacks. The rising tide of nation-state conflicts further compounds this vulnerability, placing every organization potentially in the crosshairs.

Defensive Capabilities

Our planetary-scale sensor network identifies probing attempts and attacks with exceptional accuracy as they emerge, empowering defenders with the necessary tools and data for preemptive defense while creating crucial windows for patching, mitigation, and incident response.

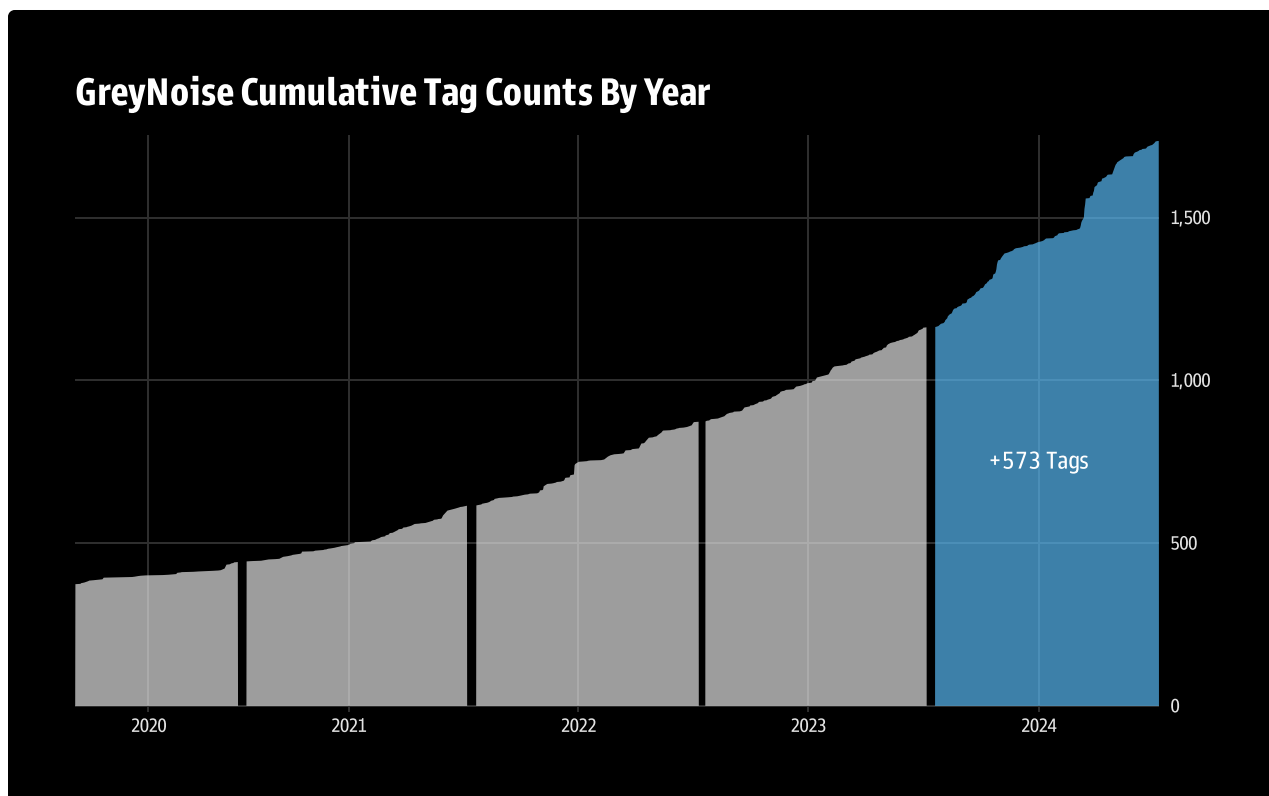
This report examines key mass exploitation events of 2024 through the lens of a security operations (SOC) team with comprehensive GreyNoise visibility, illustrating how organizations could have leveraged our data to stay ahead of widespread internet exploits.



2024 GreyNoise By The Numbers

Tags	CVEs	CISA KEV References
1,736	1,119	361
+418	+241	+67
+573	+394	+84
2023	2023	2023
2024	2024	2024

GreyNoise Tags



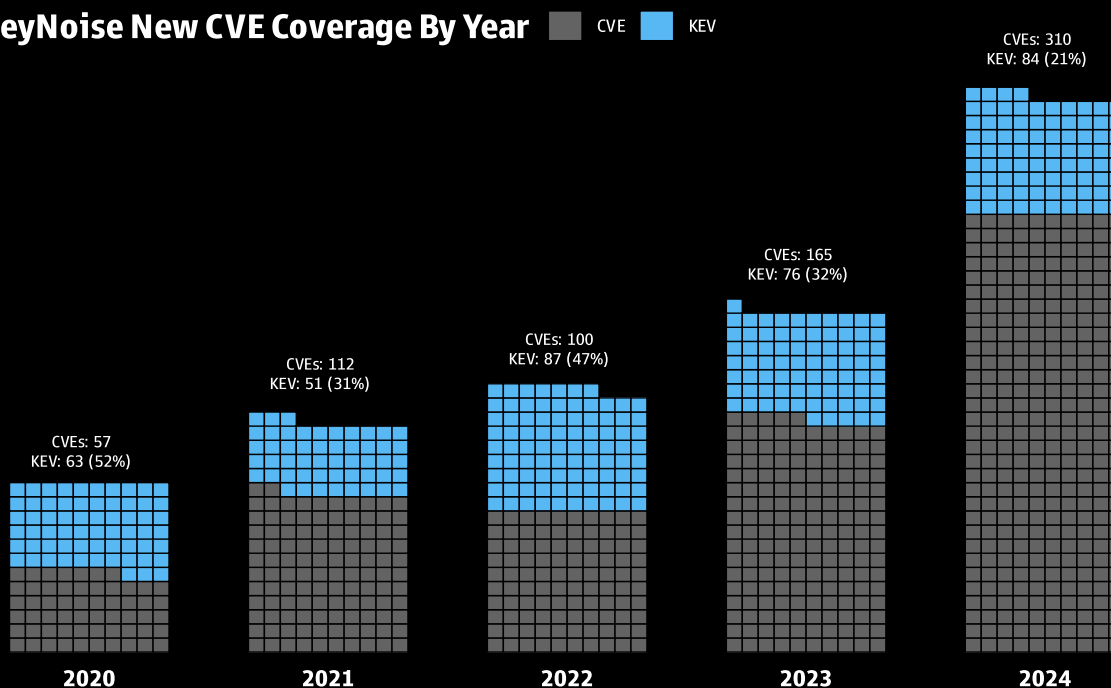
In 2024 GreyNoise produced **573 new tags/detections** covering **394 Common Vulnerabilities and Exposures (CVEs)** to help organizations proactively identify and respond to internet probes and attacks.

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2024 GreyNoise By The Numbers

GreyNoise New CVE Coverage By Year



84 of these tags created in 2024 have corresponding entries in CISA's [Known Exploited Vulnerabilities \(KEV\)](#) catalog, 28% (24 CVEs) of which are also known to be associated with ransomware attacks.

So What?

Organizations face an increasingly complex threat landscape where speed of detection and response is crucial. With GreyNoise processing millions of events daily and identifying hundreds of new vulnerabilities — particularly those being actively exploited in ransomware campaigns — security teams can dramatically reduce alert fatigue and focus their limited resources on actual threats. By leveraging this intelligence, organizations can implement more targeted controls, prioritize patch deployment for actively exploited vulnerabilities, and make data-driven decisions about their security posture that align with real-world attack patterns rather than theoretical risks.

The GreyNoise Global Observation Grid

The GreyNoise Global Observation Grid (“GOG”) comprises thousands of deception sensors spanning 75 countries. In 2024, we migrated to a completely new deception infrastructure which gave us unparalleled visibility into activity on the global internet.

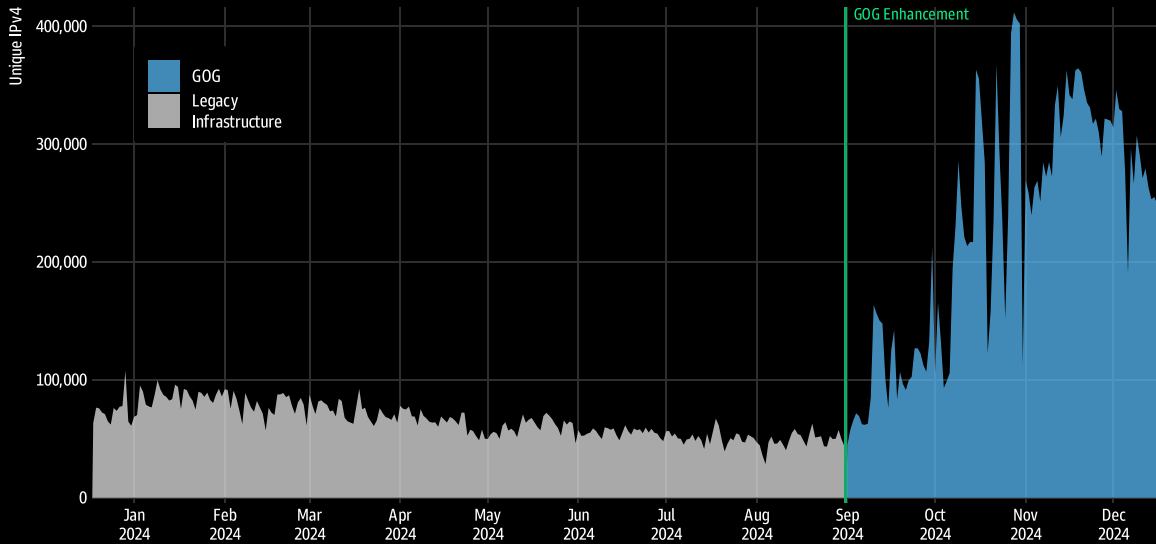
We tagged nearly 13.5 million IPv4 addresses and increased the daily unique IPv4 capture rate by 200% (on average).

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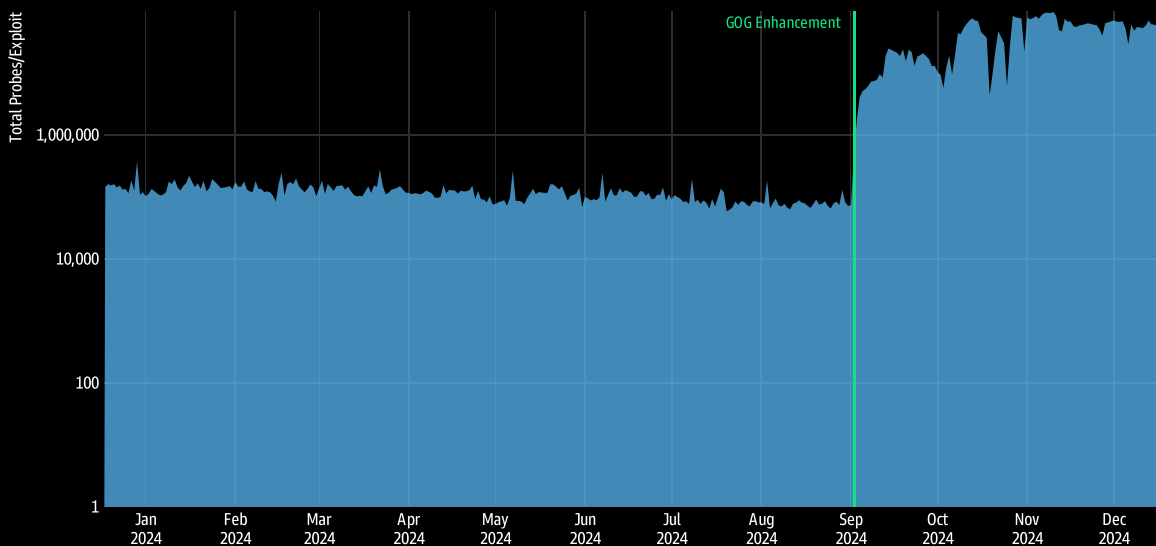
2024 GreyNoise By The Numbers

Daily Unique IPv4 Addresses Collected By The GreyNoise Global Observation Grid



The new deception technologies combined with the new collection architecture has also substantially increased the daily volume of events we process. So much so, that we had to put the following chart on a logarithmic scale to not make the legacy architecture feel bad.

Daily Total Interactions With GreyNoise Global Observation Grid



A View Through The Vulnerability Lens

The Hottest CVEs

Twenty CVE-based tags dominated the year when it comes to attracting daily unique IPv4 activity:

Tag	Total Unique IPv4s
GPON CVE-2018-10561 Router Worm	96,042
X Server Connection Attempt	65,121
ENV Crawler	49,402
HTTP Request Smuggling	45,037
Realtek Miniigd UPnP Worm CVE-2014-8361	41,522
NETGEAR Command Injection CVE-2016-6277	40,597
Huawei HG532 UPnP CVE-2017-17215 RCE Attempt	37,147
Zyxel CPE CVE-2024-40891 Command Injection Attempt	29,620
Azure OMI RCE Check	21,330
Git Config Crawler	21,261
MVPower CCTV DVR RCE CVE-2016-20016 Attempt	17,496
FiberHome Telnet Backdoor	15,739
Dahua DVR Auth Bypass	15,033
HNAP Worm CVE-2016-6563	14,162
Oracle Weblogic RCE CVE-2018-2628	14,063
LB-LINK RCE Attempt	13,873
PHPUnit RCE Attempt	13,522
Shell Shock CVE-2014-6271	12,481
Apache HTTP Server Path Traversal Attempt	11,702
D-Link Devices HNAP SOAPAction Header RCE Attempt	11,434






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A View Through The Vulnerability Lens

While they may appear to be “random”, there are some broad categories each fits into:


Network Device Emulation

-  **GPON Router vulnerabilities** target ISP-provided fiber modems, primarily for botnet recruitment, and mostly found in ASPAC (Asia Pacific) countries.
-  **NETGEAR and Huawei exploits** focus on UPnP services to gain remote code execution capabilities, enabling cryptocurrency mining and DDoS infrastructure.
-  **FiberHome and LB-LINK attacks** target predominantly Asian market devices for botnet expansion
-  **Dahua and MVPower CCTV/DVR** systems are targeted for both surveillance system access and botnet infrastructure.
-  **Tenda AC8 wireless router exploitation** attempts seek to compromise home/small business networks for lateral movement.



Web Infrastructure > Web Server Components

-  **Apache HTTP Server path traversal** and Shell Shock remain persistent threats for legacy systems still in production.
-  **Oracle WebLogic targeting** continues due to widespread enterprise deployment and high-value data access.
-  **Git config crawling** aims to discover credentials and sensitive repository information for supply chain attacks.
-  **PHPUnit exploitation attempts** target CI/CD systems and development environments.

Cloud Services

-  **Azure OMI RCE checks** are part of broader cloud service enumeration campaigns, seeking vulnerable management interfaces.

Protocol Abuse

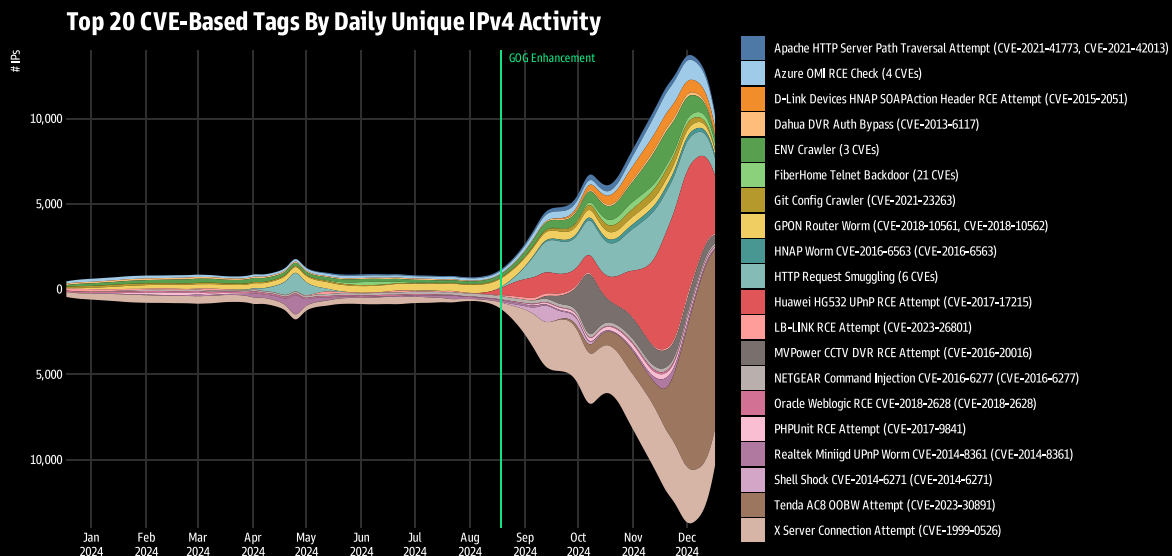
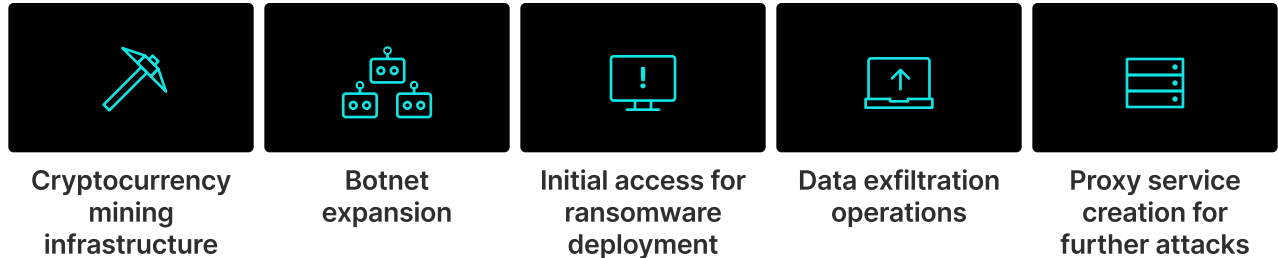
-  **HTTP Request Smuggling** attacks target reverse proxy configurations and CDN services to bypass security controls.
-  **X Server connection attempts** seek exposed display servers for screen capture and keylogging.

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A View Through The Vulnerability Lens

Automated Reconnaissance - ENV and Git crawlers are part of larger reconnaissance efforts to identify exposed development artifacts and configuration files.

The majority of these exploits are being weaponized in 2024 for:



So What?

Organizations need to take immediate, concrete steps to address these persistent threats since attackers are successfully monetizing both legacy and new vulnerabilities through sophisticated automation. Prioritize hardening network device configurations (especially UPnP and management interfaces), implement strict version control hygiene, and maintain comprehensive asset inventory with automated patch deployment. Focus on fundamentals first: proper .gitignore usage, environment file protection, and routine configuration audits will significantly reduce your attack surface against the majority of these high-frequency threats. For maximum impact, implement continuous security posture monitoring focused on these specific attack patterns, and ensure your detection engineering efforts can identify exploitation attempts across all affected vectors.



A View Through The Vulnerability Lens

While we've covered "what" is under attack, the bigger question is "why". Two words can succinctly describe the reasons: "simplicity" and "effectiveness". Despite being a 7-year-old vulnerability, PHPUnit's RCE (CVE-2017-9841) remains actively exploited in 2024 since it only requires a basic HTTP POST request to execute arbitrary PHP code, making it ideal for automated attacks. Its presence in widely-used applications like WordPress plugins, Drupal modules, and Moodle gives it a huge footprint on the internet.

The vulnerability's persistence is further amplified by its integration into modern attack chains, particularly through the AndroXgh0st malware which combines this legacy exploit with newer vulnerabilities like CVE-2024-4577. This malware leverages PHPUnit RCE for code execution, credential theft, and maintaining persistent access, demonstrating how older vulnerabilities can remain valuable when incorporated into contemporary attack frameworks and automation tools.

X Server Connection Attempt is baked into a vast array of botnets, is also a quick and easy check to make, and can score dividends if someone leaves their X11 configuration in a promiscuous state. Shellshock also remains an attractive target for all the same reasons.

Exposed environment files and Git configurations remain prime targets for cybercriminals in 2024, with researchers uncovering over 67,000 vulnerable Git config URLs and 110,000 domains with exposed .env files. These resources often contain valuable cloud credentials, API tokens, and database access details that attackers can leverage to expand their access and compromise additional systems.

Finally, attackers have developed sophisticated automation tools to scan for and exploit these exposures at scale, while many organizations continue to make fundamental security mistakes like failing to block access to dot-files or properly use .gitignore. Once initial access is gained, attackers can create privileged IAM roles, deploy scanning functions, and gain access to private repositories — leading to cascading compromises across connected cloud services and databases.

We Need To Talk About [CISA] KEV

GreyNoise continues to be huge fans of CISA's Known Exploited Vulnerabilities (KEV) program, and is proud to be one of their program partners. We also hold ourselves to a pretty high standard when it comes to having tag coverage for initial access vulnerabilities that make it into the KEV program.

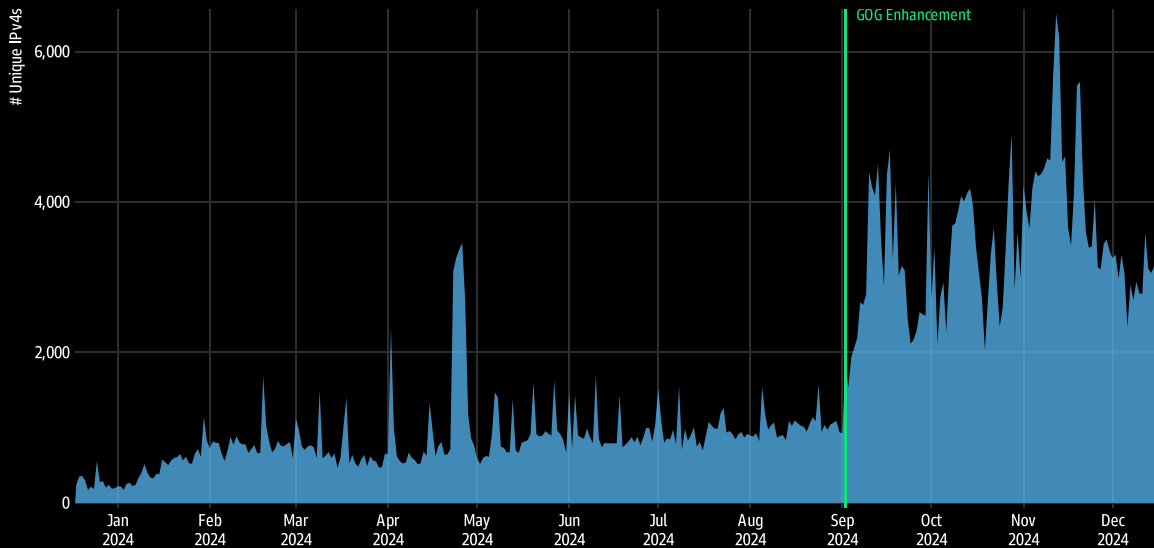
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A View Through The Vulnerability Lens

This is the view of daily unique IPv4 activity across all KEV tags in the GreyNoise tag library:

Daily Unique IPv4 KEV Tag Activity



So What?

Organizations need to fundamentally shift their vulnerability management approach from a reactive to a proactive stance. The data shows that threat actors — from sophisticated teams to run-of-the-mill operators — maintain active reconnaissance operations, with some vulnerabilities being exploited within hours of disclosure while others become attractive targets months later. Security teams should implement continuous monitoring solutions that track both immediate and long-tail exploitation attempts, prioritize patching based on actual exploitation evidence rather than just CVSS scores, and maintain visibility into potentially compromised devices (especially IoT/mobile) that could be weaponized for scanning activities. The significant Android device compromise event also highlights the critical need to include non-traditional endpoints in security monitoring and response planning. Oh, and if your organization is not yet leveraging CISA's KEV program, you should put this report down and go make that happen, now.

There are some regular mini-spikes that we designate as “inventory scans”. While most sophisticated attackers have moved on to mining public scan data repositories to identify internet-facing IP ranges of organizations they wish to target, there are still plenty of what we affectionately call “C-listers” (and, some “B-listers”) who still grind for a living. They use their botnets of coopted routers (et al.) to keep fresh inventories of what is running and where.

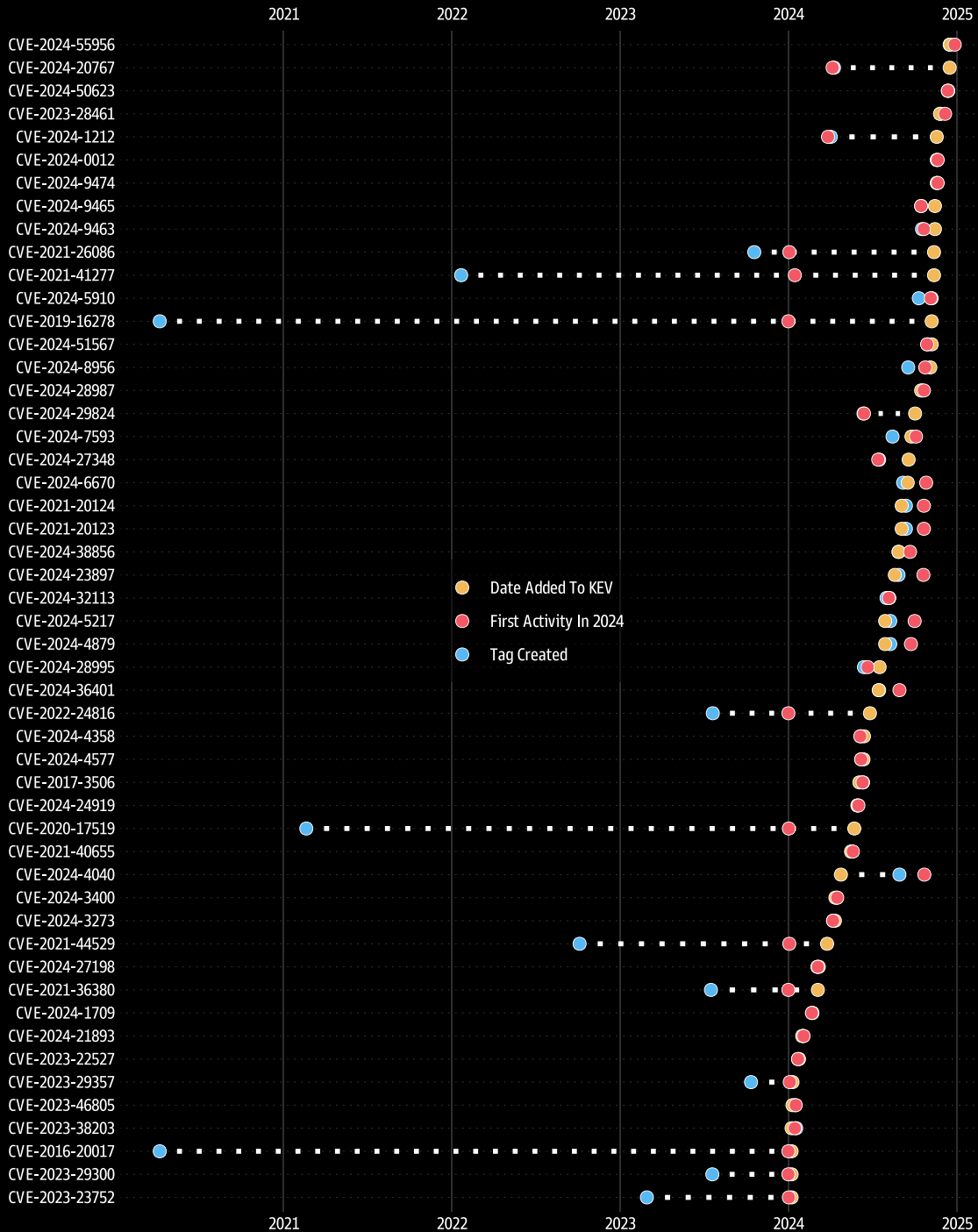
Now, about that spike near May...

We saw similar activity in the larger vulnerability view in the previous section. All signs point to a series of compromised Android devices (over 12,000 IPv4s across multiple days). These may be any combination of Android phones or IPTV boxes — we cross-referenced them with our pals over at Censys and most had no current or historical service exposure, which is a core attribute of such devices.

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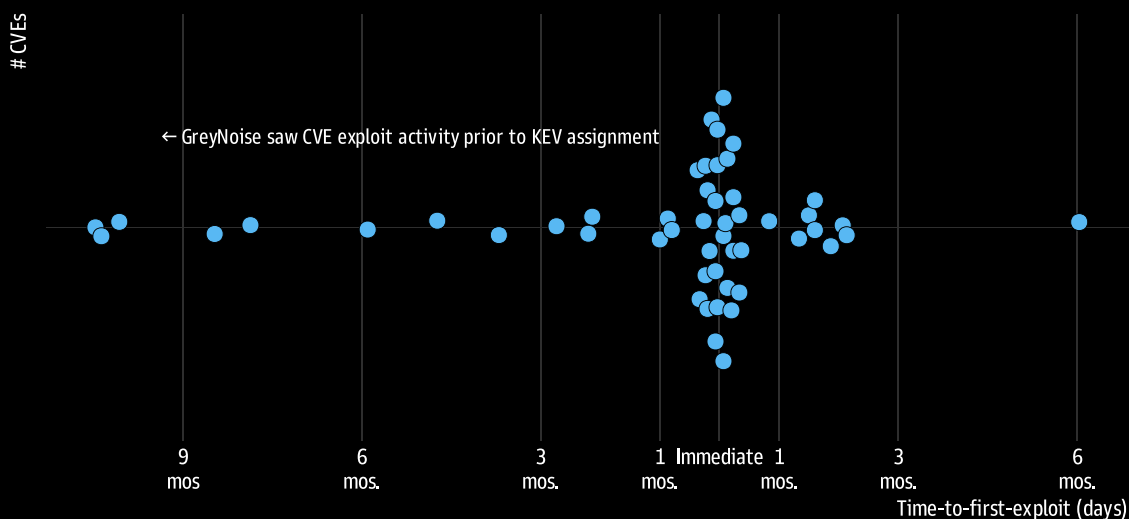
GreyNoise KEV Coverage And Time-To-Exploit Comparison



GreyNoise logged fifty-one of the KEV 2024 CVEs we have coverage for and had coverage for thirty-one (50%) of the CVEs before the vulnerability was added to the KEV program (we tied with them 3 times). The GreyNoise Observation Grid (“GOG”) also saw activity for 29 of the CVEs ahead of the KEV program announcement. The time-to-first-exploit for the remaining 22 is surprisingly diverse:



KEV 2024 CVEs Time-To-First Observed Exploit In GOG



Since your eyes cannot help but notice the extreme outlier at six months, that's CVE-2024-4040 (CrushFTP VFS Sandbox Arbitrary File Read via SSTI). One reason for the exploit catch lag is that it took a few months to have tag coverage (other CVEs had priority). Even still, it took two additional months to observe the first malicious activity attempts.

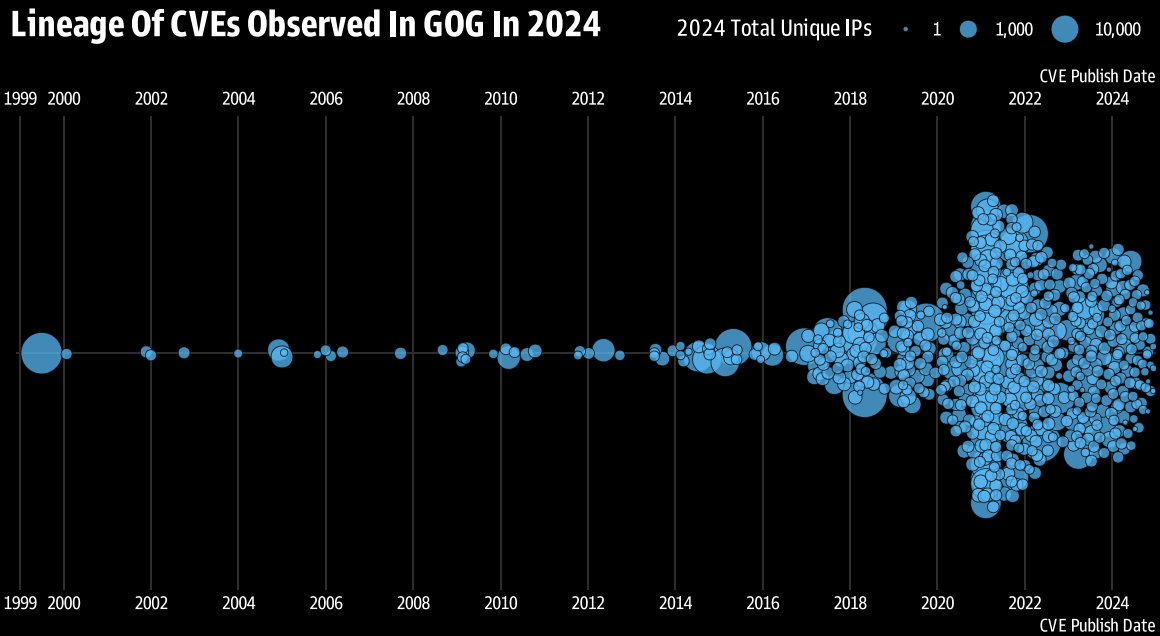
So What?

Organizations that focus solely on patching new vulnerabilities are missing nearly half of active attack surface (provided they're exposed to these CVEs). Threat actors continue to successfully weaponize "vintage" vulnerabilities, likely because they know many organizations struggle with comprehensive vulnerability management programs. The continued exploitation of decades-old CVEs suggests that "patch the new stuff" is a failed strategy, and that proper asset inventory, configuration management, and systematic vulnerability remediation must be core components of any cybersecurity program.

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Should Old Vulnerabilities Be Forgotten (No!)



While a well-crafted, single-malt Scotch may improve with age, the same cannot be said for CVEs. **40% of the observed exploited CVEs in 2024 were published in or before 2020**, and roughly 10% in or before 2016, with CVE-1999-0526 (the aforementioned X Server vulnerability) permanently anchoring almost every CVE temporal lineage plot in 1997. And, just over 13% of the CVEs with 2024 activity were published in 2024.

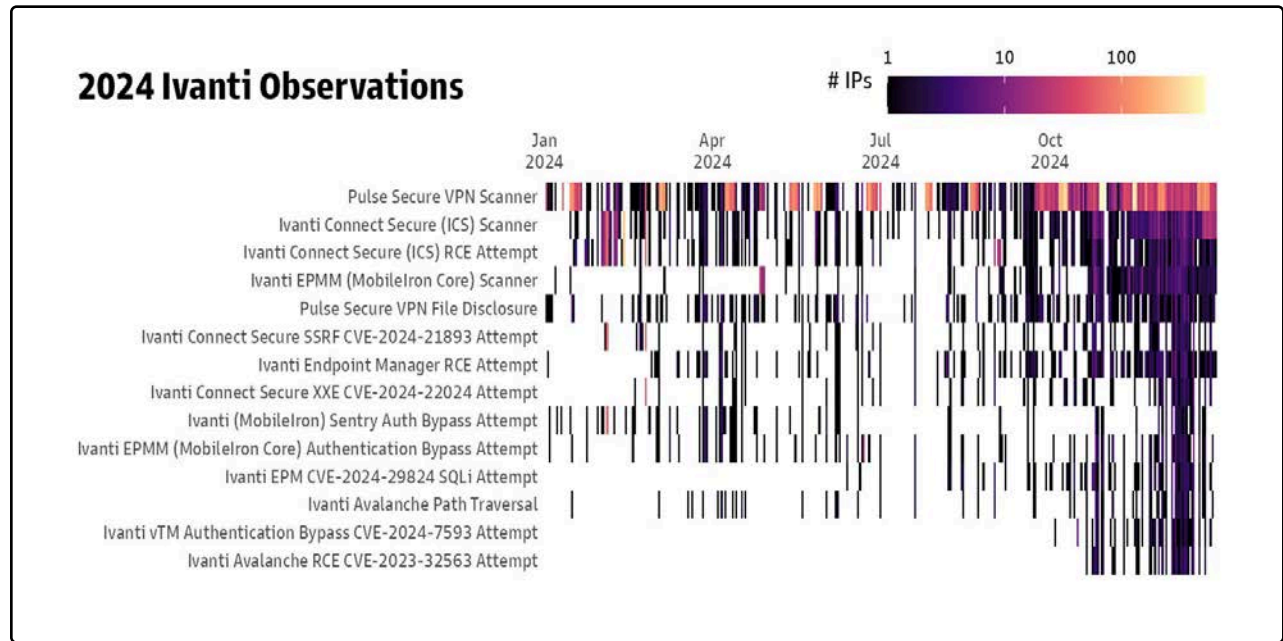
Notable Mentions (a.k.a. The GreyNoise Rogue's Gallery)

We would be remiss in our duties if we did not provide some focused visibility on attacker activity against some high-profile, internet-facing technologies. While any software component can have a vulnerability, you might want to think twice about investing in (or keeping) ones you attach to the toxic network wasteland that is the modern-day internet.

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A View Through The Vulnerability Lens



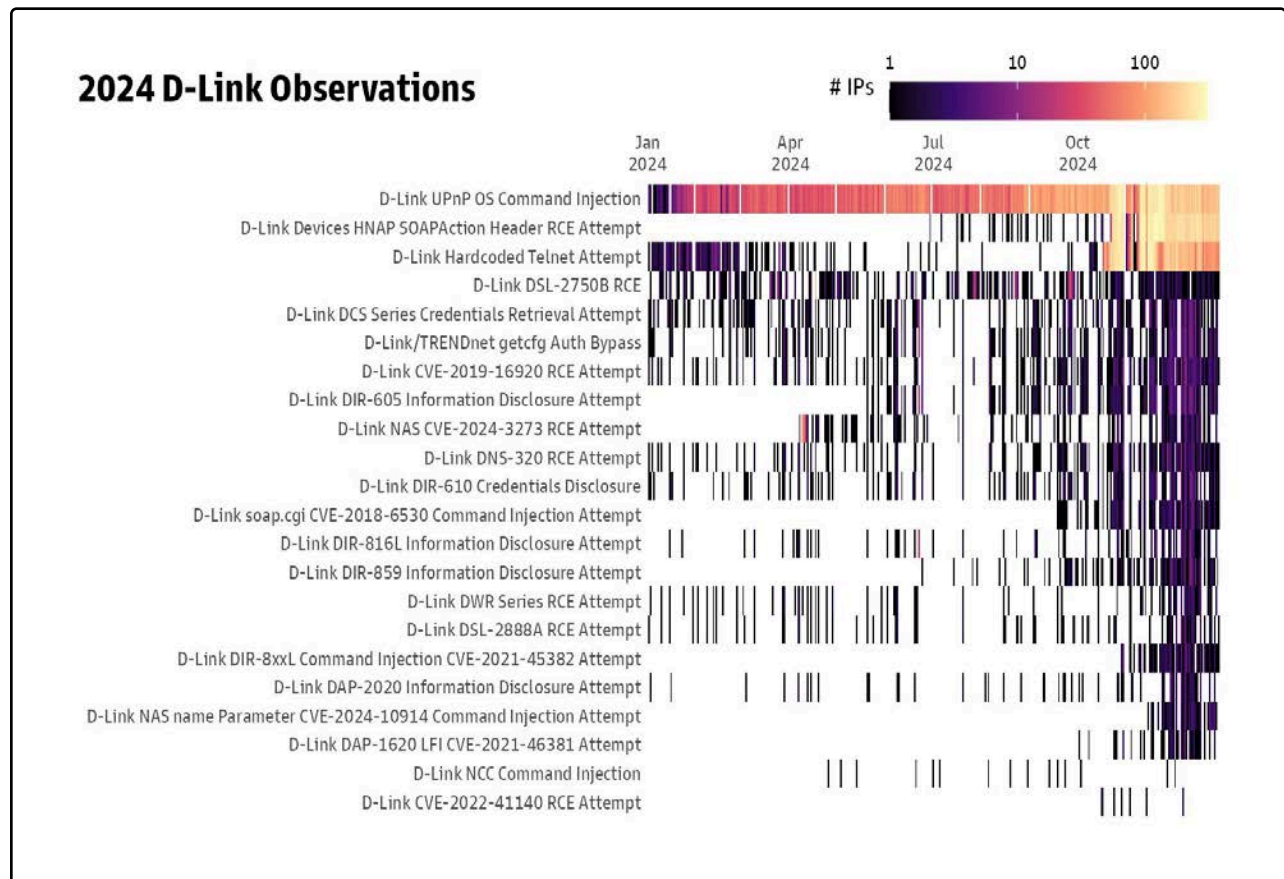
Ivanti’s track record in 2024 shows a concerning pattern of critical vulnerabilities across their product portfolio, with multiple instances of zero-day exploits being discovered in the wild before patches were available. The company’s VPN and security products have been targeted by both nation-state actors and cybercriminals, leading to compromises of government agencies, defense contractors, and Fortune 500 companies.

Organizations continuing to use Ivanti products must implement rigorous monitoring for anomalous activity, maintain robust offline backups, regularly rotate all credentials, and deploy patches immediately upon release. Given that attackers have consistently demonstrated the ability to chain multiple vulnerabilities for full system compromise, organizations should strongly consider evaluating alternative VPN and security solutions that have demonstrated better security practices and more rapid response to vulnerabilities.

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A View Through The Vulnerability Lens

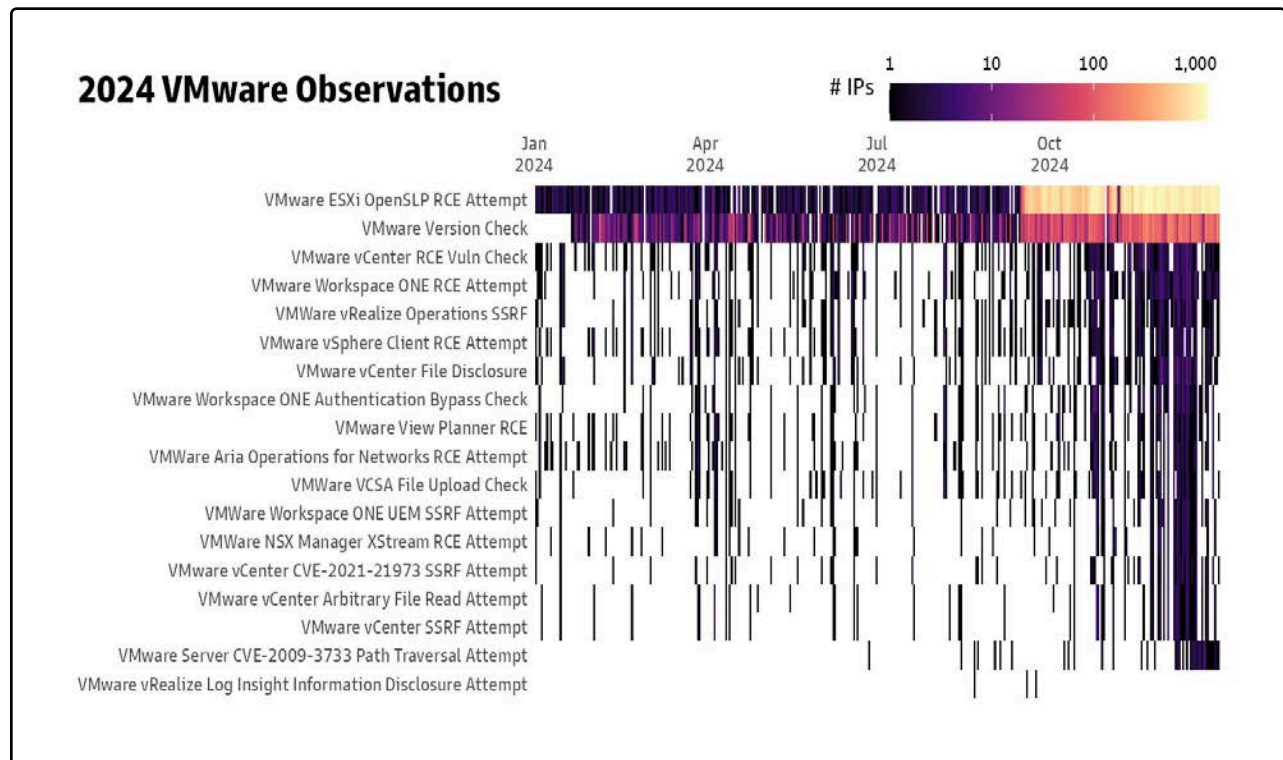


D-Link's 2024 vulnerability track record also reveals a concerning pattern of critical flaws across multiple product lines, including NAS devices, routers, and VPN appliances, with CVE scores frequently reaching 9.8. The company's stance of refusing to patch end-of-life products — even when tens of thousands of devices remain internet-accessible — combined with rapid exploitation of vulnerabilities by botnet operators, creates a legitimate untenable risk for organizations. Those continuing to use D-Link products must implement aggressive network segmentation, disable remote management capabilities, monitor for anomalous activity using modern detection tools, maintain comprehensive asset inventories to track EOL status, and deploy the absolute latest firmware even on EOL devices. However, given D-Link's demonstrated pattern of leaving critical vulnerabilities unpatched, the frequency of new exploits being discovered, and the company's clear messaging about not supporting older products, organizations should strongly consider transitioning to networking vendors with more robust security practices and clearer long-term support commitments.

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A View Through The Vulnerability Lens



Finally, VMware’s 2024 vulnerability track record speaks for itself, with multiple critical flaws (including CVE-2024-38812, CVE-2024-37085, and CVE-2024-38813) being actively exploited by ransomware groups and nation-state actors. Broadcom’s handling of these vulnerabilities has been especially troubling, with instances of incomplete patches requiring multiple iterations to fully address critical issues, and delayed acknowledgment of in-the-wild exploitation. Organizations continuing to use VMware products must implement comprehensive monitoring for exploitation attempts, maintain offline backups of critical VMs, segment management networks, disable unnecessary services (especially remote management when possible), and deploy patches immediately upon release regardless of change management windows. However, given the increasing frequency of critical vulnerabilities, Broadcom’s demonstrated challenges in providing timely and complete fixes, and the fact that VMware products are increasingly targeted by ransomware operators specifically because of their widespread enterprise deployment, organizations should strongly consider evaluating alternative virtualization platforms that have demonstrated more robust security practices and more transparent vulnerability management processes.

Active Defense With Tag Taxonomies

The vast majority of malign activity detected within the GreyNoise sensor fleet has associated CVEs. As a result, it's possible to further enrich this information with data from modern defender taxonomies such as MITRE [ATT&CK](#), [Common Attack Pattern Enumeration and Classification \(CAPEC\)](#), and [Common Weakness Enumeration \(CWE\)](#).

Intrepid readers of our 2023 Mass Exploitation Report were treated to a breakdown of the Common Weakness Enumerations (CWEs) of observed CVE-based attacks during that year.

This year, we're using the CAPEC lens to provide similar insights using that framework, and specifically from MITRE's CAPEC [Mechanisms of Attack](#) view.

This classification arranges attack patterns in a hierarchy based on common vulnerability exploitation methods. The categories represent distinct attack techniques, rather than their outcomes or objectives. While some attack patterns could potentially fit multiple categories, they are assigned based on their primary and consistent technical approach rather than occasional usage patterns.

We tallied up all the unique IPv4 observations for each of the CVE tags observed in 2024. The sections in the treemap, below, are sized by proportion within each attack mechanism, and have a consistent (log 10) color scale across all mechanisms. This helps us compare both vulnerability prevalence (relative to the attack mechanism) and the volume of attacker inventory being used to launch the attacks.

Continued on next page...



A View Through The Vulnerability Lens

CAPEC View Of 2024 GreyNoise CVE Observations

Inject Unexpected Items (108 CVEs)



Manipulate Data Structures (82 CVEs)



Manipulate System Resources (39 CVEs)



Subvert Access Control (71 CVEs)



Collect and Analyze Information (45 CVEs)



Abuse Existing Functionality (36 CVEs)



Engage in Deceptive Interactions (24 CVEs)



Employ Probabilistic Techniques (9 CVEs)



2024 Unique IPv4s



A View Through The Vulnerability Lens

So What?

This data provides organizations with actionable intelligence for prioritizing defensive measures. The combination of CVE data, exploit volumes, and CAPEC classifications enables security teams to:

- Focus patch management on vulnerabilities actively being exploited rather than just CVSS scores.
- Implement targeted detection and response strategies based on observed attack mechanisms.
- Allocate resources more effectively by understanding which legacy systems face ongoing exploitation.
- Adjust security controls and monitoring based on prevalent attack patterns in their industry.

This list presents the top two CVEs in each attack mechanism, grouping mechanisms together if a CVE spans more than one:

CVE	Tag	Mechanism(s) of Attack	2024 Unique IP Volume
CVE-2009-1151	PhpMyAdmin setup.php Remote Command Execution Check	Manipulate System Resources, Subvert Access Control	723
CVE-2015-2051	D-Link Devices HNAP SOAPAction Header RCE Attempt	Inject Unexpected Items, Manipulate Data Structures, Manipulate System Resources	11,434
CVE-2017-12149	Jboss Application Server CVE-2017-12149 Check	Inject Unexpected Items	4,588
CVE-2021-40655	D-Link DIR-605 Information Disclosure Attempt	Engage in Deceptive Interactions	195
CVE-2023-22527	Atlassian Confluence Template Injection RCE Attempt	Abuse Existing Functionality, Employ Probabilistic Techniques	476
CVE-2023-46805	Ivanti Connect Secure (ICS) RCE Attempt	Collect and Analyze Information, Engage in Deceptive Interactions	620
CVE-2024-20439	Cisco Smart Licensing CVE-2024-20439 Hardcoded Credentials Attempt	Employ Probabilistic Techniques	66
CVE-2024-24919	Check Point Quantum Gateway CVE-2024-24919 Information Disclosure Attempt	Collect and Analyze Information, Subvert Access Control	973
CVE-2024-3400	Palo Alto PAN-OS CVE-2024-3400 RCE Attempt	Abuse Existing Functionality	212
CVE-2024-4577	PHP CVE-2024-4577 RCE Attempt	X Server Connection Attempt	3,094

The prevalence of older vulnerabilities like CVE-2009-1151 alongside recent ones like CVE-2024-3400 demonstrates how attackers maintain diverse exploit portfolios spanning multiple attack mechanisms. This mixture of legacy and emerging vulnerabilities presents a complex threat landscape where defenders must simultaneously address technical debt while staying current with new attack vectors.







Conclusion

Mass exploitation in 2024 was characterized by **relentless automation, persistent targeting of legacy vulnerabilities, and the rapid weaponization of new exposures.**

Takeaways

Key Lessons from 2024 Mass Exploitation:

-  **Mass exploitation isn't just about new CVEs** — 40% of exploited CVEs were at least four years old.
-  **KEV helps, but it's not enough** — multiple GreyNoise-tracked CVEs were exploited before KEV additions.
-  **Real-time visibility is critical** — attackers automate exploitation faster than most patching workflows can respond.
-  **Ransomware groups and botnets are industrializing mass exploitation at scale.**

In short, two main truths stood out to us after conducting this research:

Automation Dominance: The volume of daily unique IPv4 observations demonstrates that automated scanning and exploitation has truly become the norm, not the exception.

Legacy is Liability: More than two-thirds of exploited vulnerabilities in 2024 were from 2020 or earlier, with some dating back to the 1990s, proving that attackers continue to profit from technical debt and lack of attention.

From CISO to Analyst: Action Items for Stronger Defense

- 1 Implement continuous security posture monitoring focused on both legacy and emerging threats.
- 2 Prioritize patching based on actual exploitation evidence rather than just CVSS scores.
- 3 Maintain comprehensive asset inventories with automated patch deployment capabilities.
- 4 Deploy robust detection engineering across all attack vectors.

Methodology

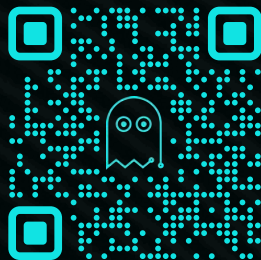
Probe and exploit observations are sourced from [the tag-based detections across the GreyNoise Global Observation Grid](#), with data collected by our planetary-scale sensor fleet.

Data from CISA is sourced directly from their [Known Exploited Vulnerabilities catalog](#).

CAPEC enrichments for our CVE-sourced tags are sourced from [Feedly](#).



GREYNOISE



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