Cymulate

The Principle of Security Validation

A Cymulate Security Validation
Best Practices eBook

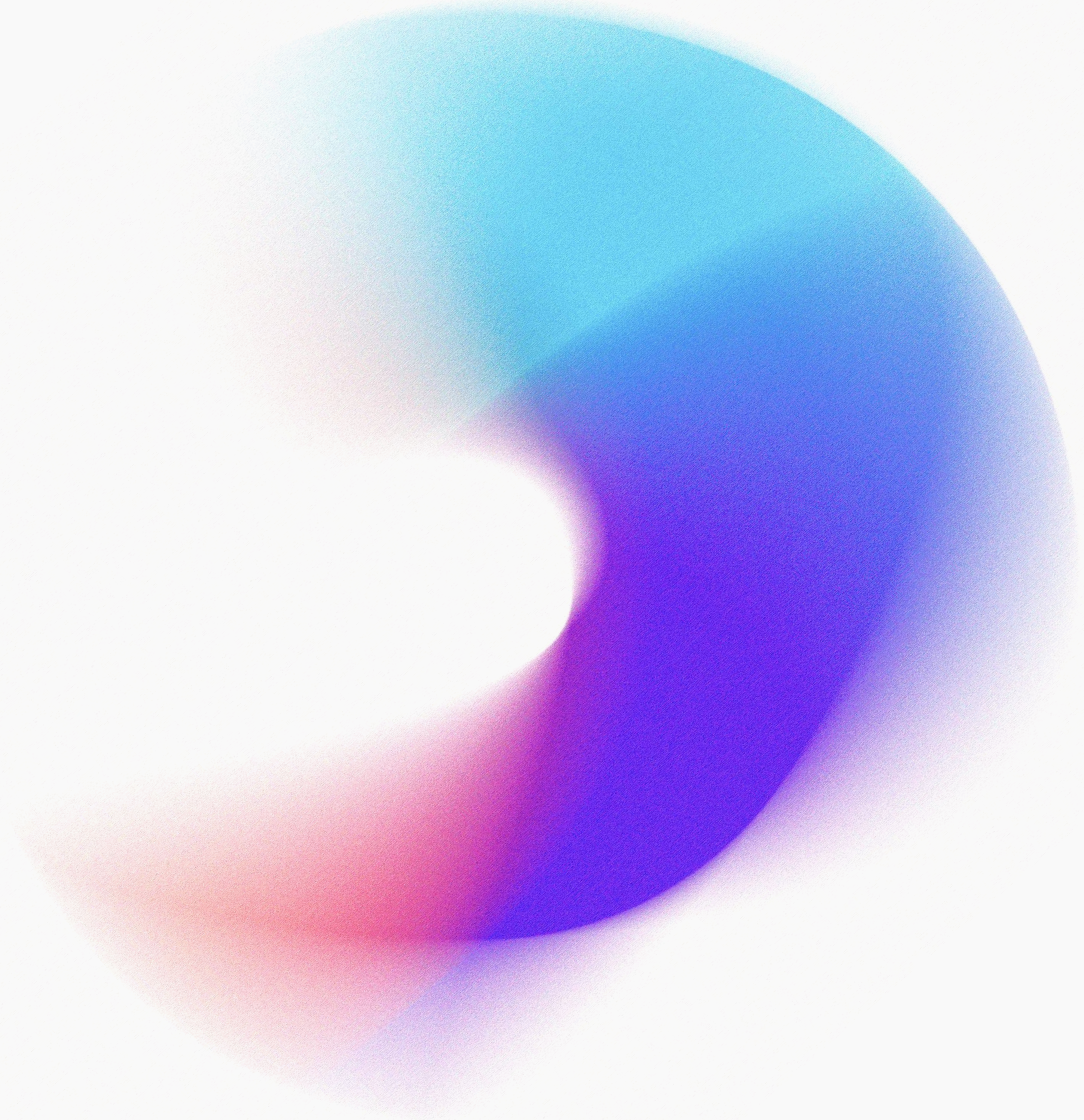
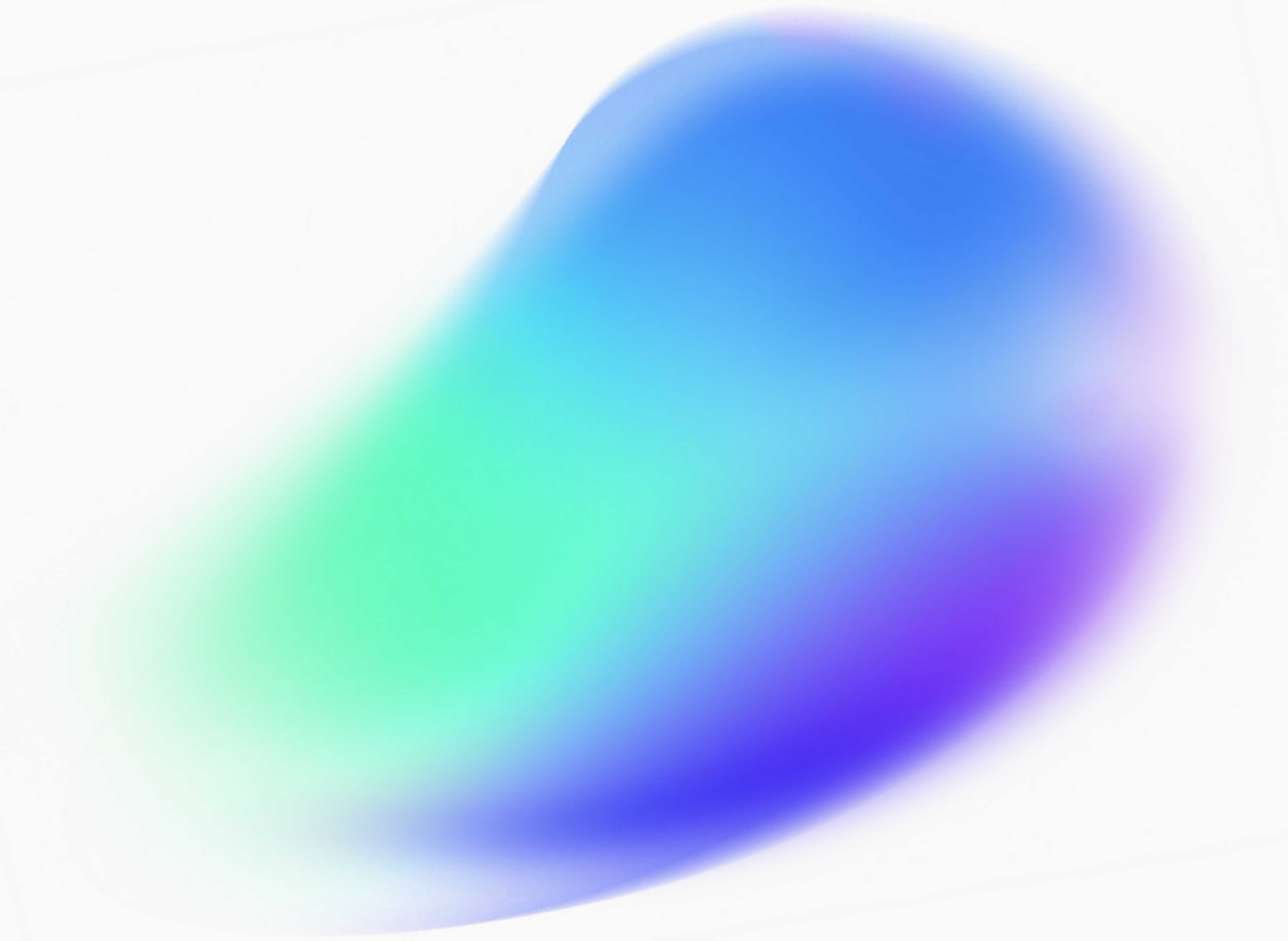


Table of Contents



The Principle of Security Validation

Security Validation is a fundamental principle in cybersecurity aimed at ensuring that systems, applications, and processes are secure and operate as intended.

By adhering to the principle of security validation, organizations can identify weaknesses in their security controls, address threats to their IT assets, and improve overall resilience of their security operations.

01 Validation of Security Controls

Confirmation that the security controls put in place, such as email gateways, web gateways and firewalls, endpoint and cloud security, access controls, etc., are effectively implemented and function as expected.

02 Validation of Threats

Active testing for the latest persistent, emerging, and immediate threats discovered by the threat intelligence community and validated daily.

03 Validation of Operational Response

Evaluation of security operations team to respond to alerts and recover from security incidents. This includes running purple teaming simulations and drills to assess the effectiveness of security operations and incident response plans.

04 Simulation & Modeling of Attacks

Organizations can simulate and enact various breach and attack scenarios within a safe, controlled environment with an attacker's approach of the latest threat tactics and techniques that will better prepare their defenses to stop such attacks.

05 Compliance Verification

Ensuring that the security measures adhere to relevant industry standards, regulations, and best practices. Compliance validation often involves audits and assessments against standards such as ISO 27001, NIST, PCI DSS, GDPR, DORA, etc.

06 Continuous Improvement

Security validation is not a one-time event but an ongoing improvement process that begins by benchmarking an organization’s risk level against peers in their industry. Security validation measures the performance of controls, threats, and responses over time with frequent assessments that help ensure security measures remain effective against evolving threats and changes in the IT environment and that these measures do not drift over time.

Cymulate Best Practices

As a recognized authority on **security validation**, Cymulate has published this eBook to outline the best practices for security validation across the IT environment.

These best practices have been established within the Cymulate Platform based on years of **red team, blue team** experience, testing and validating security operations and technologies, informed by the latest threat intelligence from the **Cymulate Threat Research Group**.

Cymulate best practices provide comprehensive assessments to validate security controls, immediate and persistent threats, and security operations response, to help security teams improve their defensive posture against the latest cyber attacks.

01

Validate Controls

- Email Gateway
- Web Gateway
- Web App Firewall
- Endpoint Security
- Cloud Security
- Data Exfiltration
- SIEM Observability

02

Validate Threats

- Immediate Threats
- Lateral Movement
- Full Kill-Chain Attacks

03

Validate Response

- SOC Exercises
- Red Team Exercises

Cymulate Best Practices

01

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- Email Gateway
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Security Validation Best Practices

Email Gateway

Email is the **most frequently used** delivery method of attack for exploiting security weaknesses and email gateways are critical components in defending against email-based threats with executable payloads.

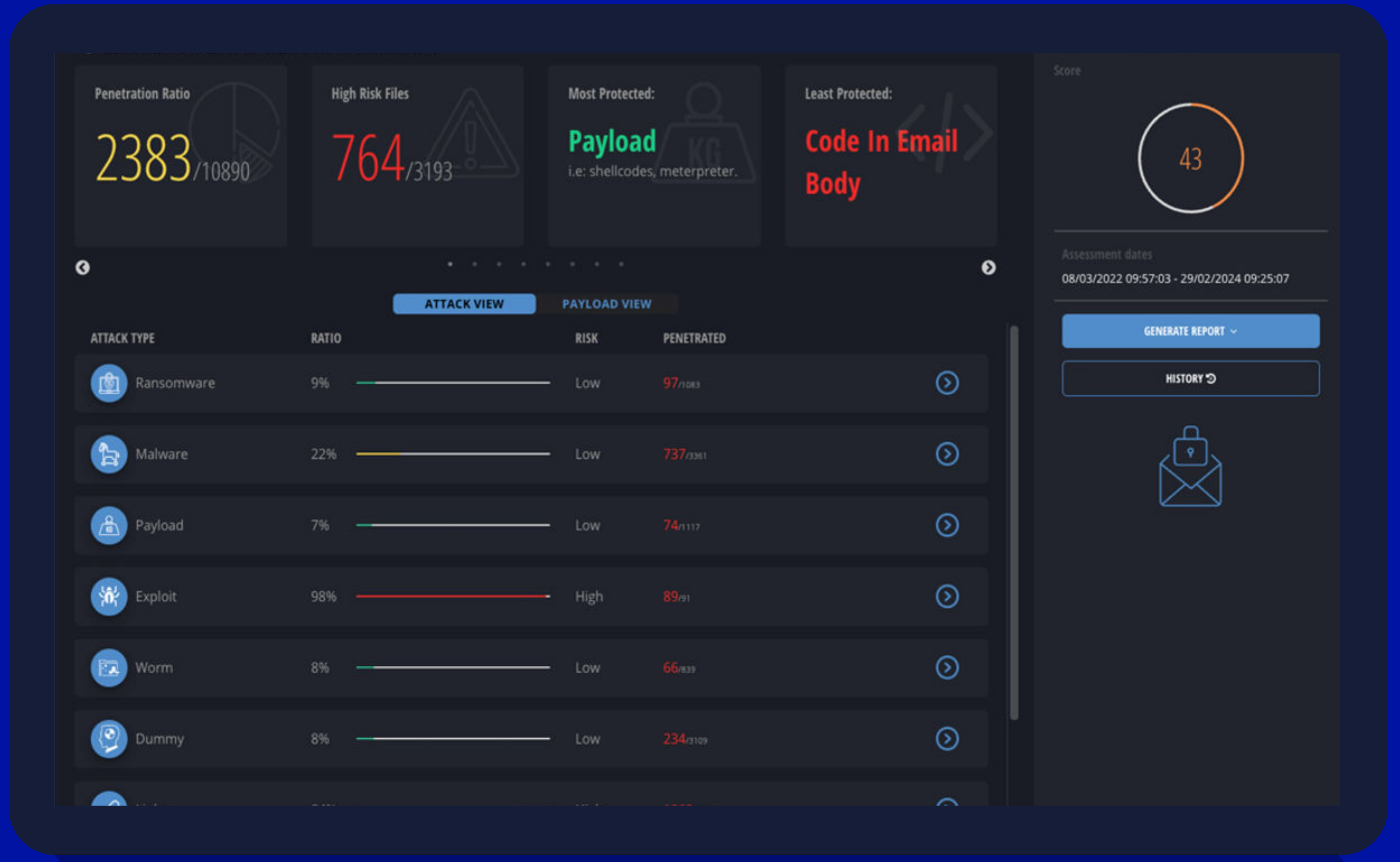
The Cymulate best practices for email gateway validation include a wide range of scenarios for:

- **Malicious Links**: Test for malicious links in the email body.
- **Malicious Attachments**: Test for emails containing malware embedded in attachments such as ransomware, worms, trojans, and exploits.
- **Executable Payloads (Attachments):** Test policy enforcement for handling emails with executable payloads like .exe, .com, .scr, file types.
- **Dummy Code Execution:** Simulate the possibility for real malicious code execution using dummy files.
- **True File Type Detection**: Test whether executable payloads with forged extensions are blocked.
- **File Attachment Policies**: Test policy enforcement for handling and blocking different file types.

Test the effectiveness of your organization's email gateway and policies by simulating different types of email-based threats, including ransomware, malware, worms, trojans, and exploits delivered through malicious links and attachments. These tests are production-safe and will not cause harm to your environment.

Security Validation Best Practices

Email Gateway



Penetration Ratio 2383/10890

High Risk Files 764/3193

Most Protected: Payload i.e: shellcodes, meterpreter.

Least Protected: Code In Email Body

Score 43

Assessment dates 08/03/2022 09:57:03 - 29/02/2024 09:25:07

ATTACK TYPE	RATIO	RISK	PENETRATED
Ransomware	9%	Low	97/1083
Malware	22%	Low	737/3361
Payload	7%	Low	74/1117
Exploit	98%	High	89/91
Worm	8%	Low	66/839
Dummy	8%	Low	234/3109

Cymulate Platform Best Practice Assessments

Email Gateway Attack Types	• Ransomware • Malware • Worm • Exploit • Payload • Dummy • Links • True File Type • Code in Email Body • File Type Policy
Test Scenarios	Over 10,000 test cases for the comprehensive validation of email gateway controls.
Recommended Test Frequency	**Weekly**

Security Validation Best Practices

Web Gateway

Securing web gateways is **crucial for protecting organizations** and blocking malicious websites and objectionable content from various web-based threats.

The Cymulate best practices for web gateway security validation include broad spectrum assessments for:

Inbound Validation

- **Payloads (Files):** Test files that mimic malicious behavior of ransomware, worms, trojans, botnets, and other payloads downloaded over HTTPS.
- **File Policies:** Test for the detection of different file types like zip files, batch files, script files that the organization wishes to block users from downloading.

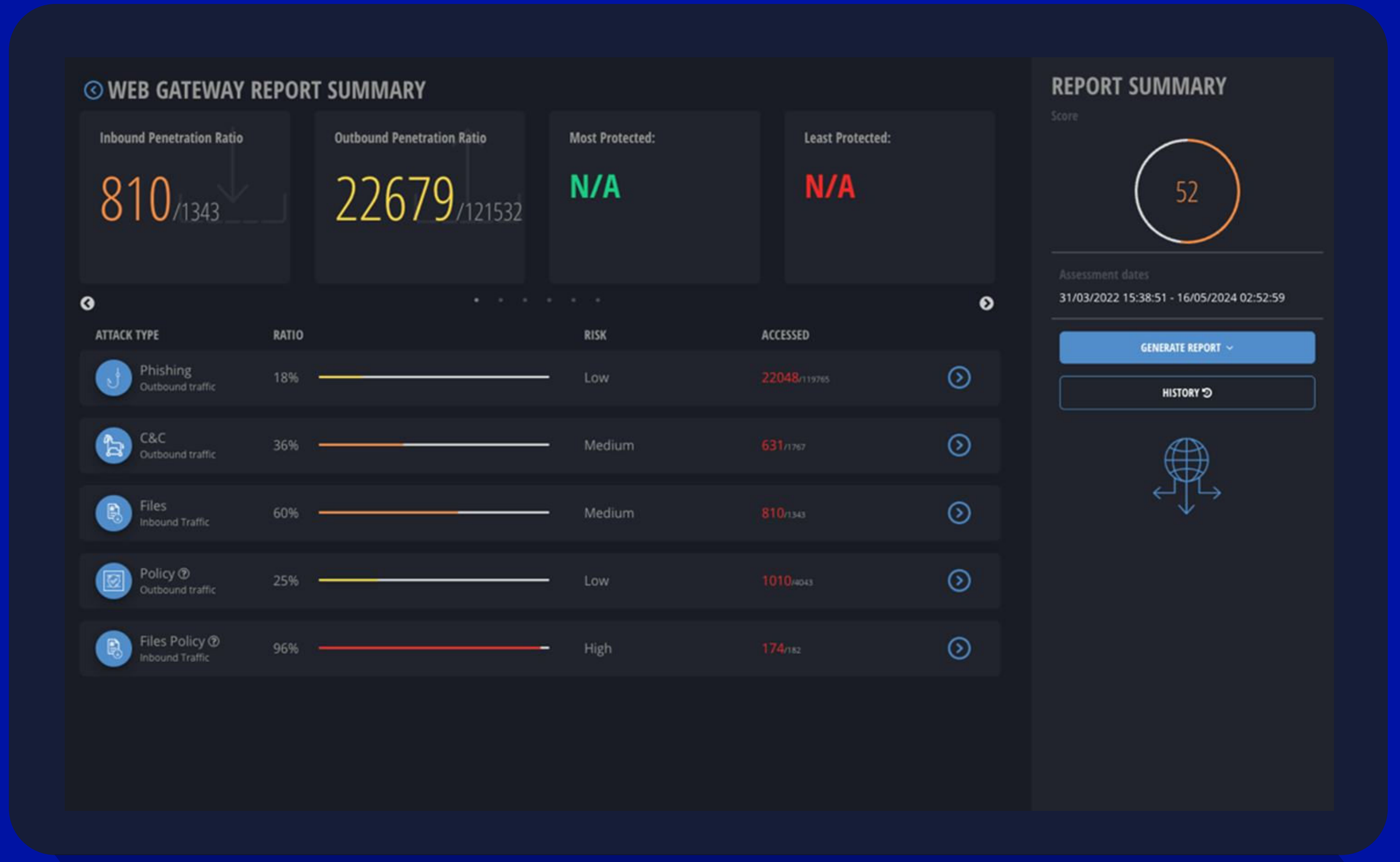
Outbound Validation

- **Malicious Links**: Test against a complete list of IP addresses and URLs associated with phishing and command and control activity.
- **URL Category Policies**: Test access to certain categories of objectionable websites and inappropriate content (gambling, pornography, terrorism, etc.) are blocked by the web gateway.

Malicious payload files used in the inbound validation tests should be detectable as malicious by the web gateway. These tests are production-safe and will not cause harm to your environment.

Security Validation Best Practices

Web Gateway



WEB GATEWAY REPORT SUMMARY

Inbound Penetration Ratio: 810/1343

Outbound Penetration Ratio: 22679/121532

Most Protected: N/A

Least Protected: N/A

ATTACK TYPE	RATIO	RISK	ACCESSED
Phishing Outbound traffic	18%	Low	22048/119765
C&C Outbound traffic	36%	Medium	631/1767
Files Inbound Traffic	60%	Medium	810/1343
Policy Outbound traffic	25%	Low	1010/4043
Files Policy Inbound Traffic	96%	High	174/182

REPORT SUMMARY

Score: 52

Assessment dates: 31/03/2022 15:38:51 - 16/05/2024 02:52:59

Cymulate Platform Best Practice Assessments

Web Gateway Attack Types:	Inbound • Files • File Policies Outbound • Phishing • Command and Control • URL Category Policies
Test Scenarios	Over 1,300 malicious payloads and nearly 120,000 known malicious and objectionable websites to validate web gateway controls.
Recommended Test Frequency	**Weekly**

Security Validation Best Practices

Web App Firewall

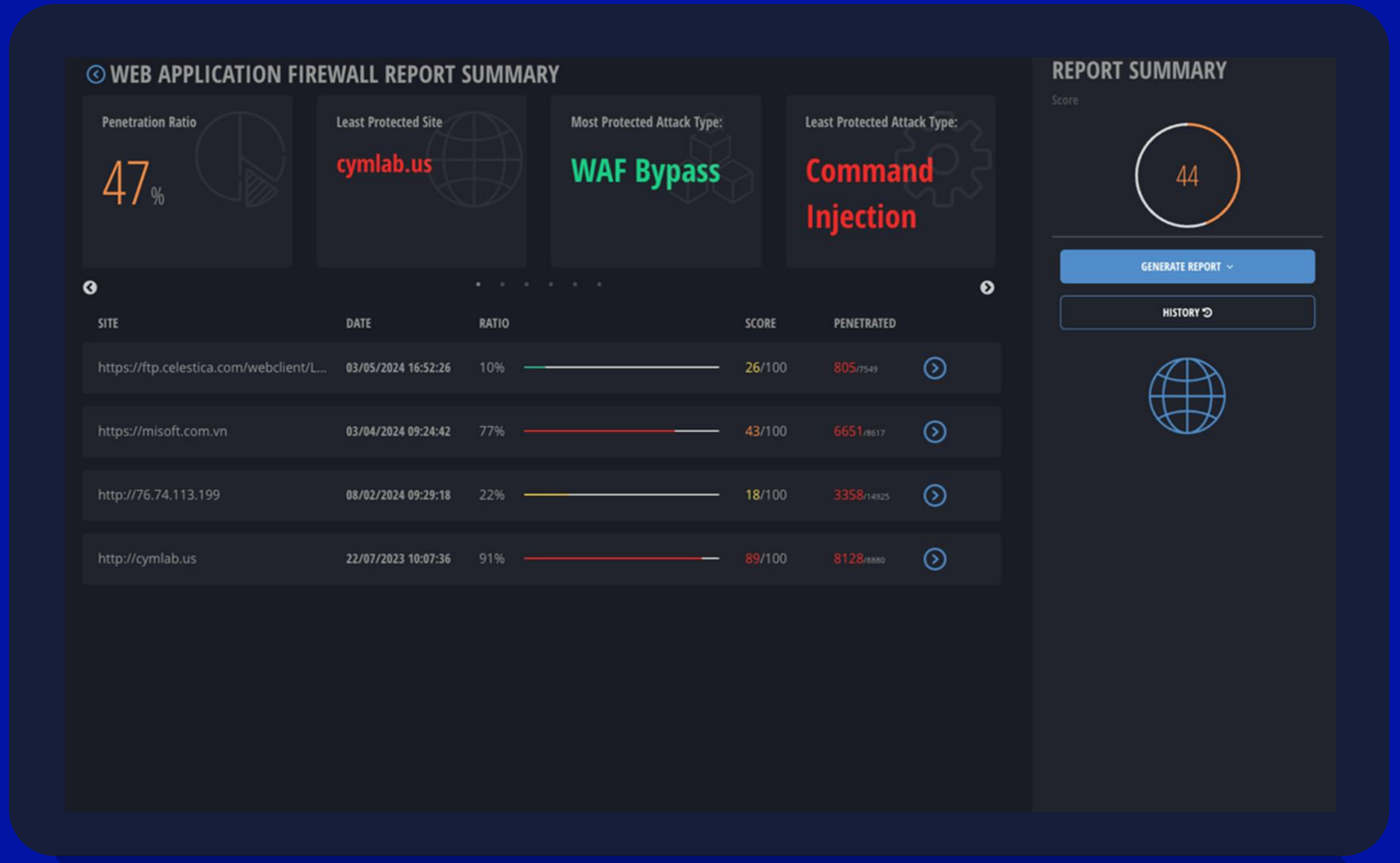
Web application attacks have become **increasingly common** and pose a significant threat to organizations. With the rise of these threats, it is imperative that organizations implement robust security measures to protect their web applications.

The Cymulate best practices for web application firewall assessments include:

- **SQL Injection**: Test for SQL injection attacks using crafted payloads to inject malicious database commands (SQL code) into an application on the web.
- **NoSQL Injection**: Test for attacks involving injecting code into commands for databases that don't use SQL queries, such as MongoDB.
- **Command Injection**: Test when an application passes unsafe user-supplied data, such as forms, cookies, or HTTP headers, to a system shell.
- **XML Injection**: Test for attacks that manipulate or compromise the logic of an XML application or service.
- **File Inclusion**: Test for crafted payloads that have the potential to lead to remote code execution on the web server hosting the application.
- **Cross-Site Scripting (XSS):** Test for the injection of client-side scripts into web pages viewed by other users, potentially enabling attackers to steal sensitive information.
- **Server-Side Request Forgery (SSRF)**: Test for the SSRF vulnerability that allows an attacker to induce a server-side application to make HTTP requests to an arbitrary domain of the attacker's choosing.
- **Path (Directory) Traversal**: Test for access to files and directories stored outside the web root folder.
- **WAF Bypass**: Test for obfuscation techniques being used to disguise malicious payloads and bypass the web app firewall.

Security Validation Best Practices

Web App Firewall



WEB APPLICATION FIREWALL REPORT SUMMARY

Penetration Ratio: 47%

Least Protected Site: cymlab.us

Most Protected Attack Type: WAF Bypass

Least Protected Attack Type: Command Injection

SITE	DATE	RATIO	SCORE	PENETRATED
https://ftp.celestica.com/webclient/L...	03/05/2024 16:52:26	10%	26/100	805/7549
https://misoft.com.vn	03/04/2024 09:24:42	77%	43/100	6651/8617
http://76.74.113.199	08/02/2024 09:29:18	22%	18/100	3358/14925
http://cymlab.us	22/07/2023 10:07:36	91%	89/100	8128/8880

REPORT SUMMARY

Score: 44

Cymulate Platform Best Practice Assessments

Web App Firewall Attack Types:	• File Inclusion • Command Injection • SQL / NoSQL Injection • XML Injection • Cross-Site Scripting (XSS) • Server-Side Request Forgery (SSRF) • Path Traversal • WAF Bypass
Test Scenarios	Over 7,000 malicious payloads used to validate web application firewall controls.
Recommended Test Frequency	**Weekly**

Security Validation Best Practices

Endpoint Security

Endpoint security controls are **critical to stopping breaches**, especially malicious payloads that manage to evade detection by the email and web gateways and the web app firewalls.

Endpoint security solutions include both antivirus (Known Malicious File) and EDR: Endpoint Detection & Response (Malicious Behavior). The Cymulate best practices for endpoint security validation cover both antivirus and EDR solutions with:

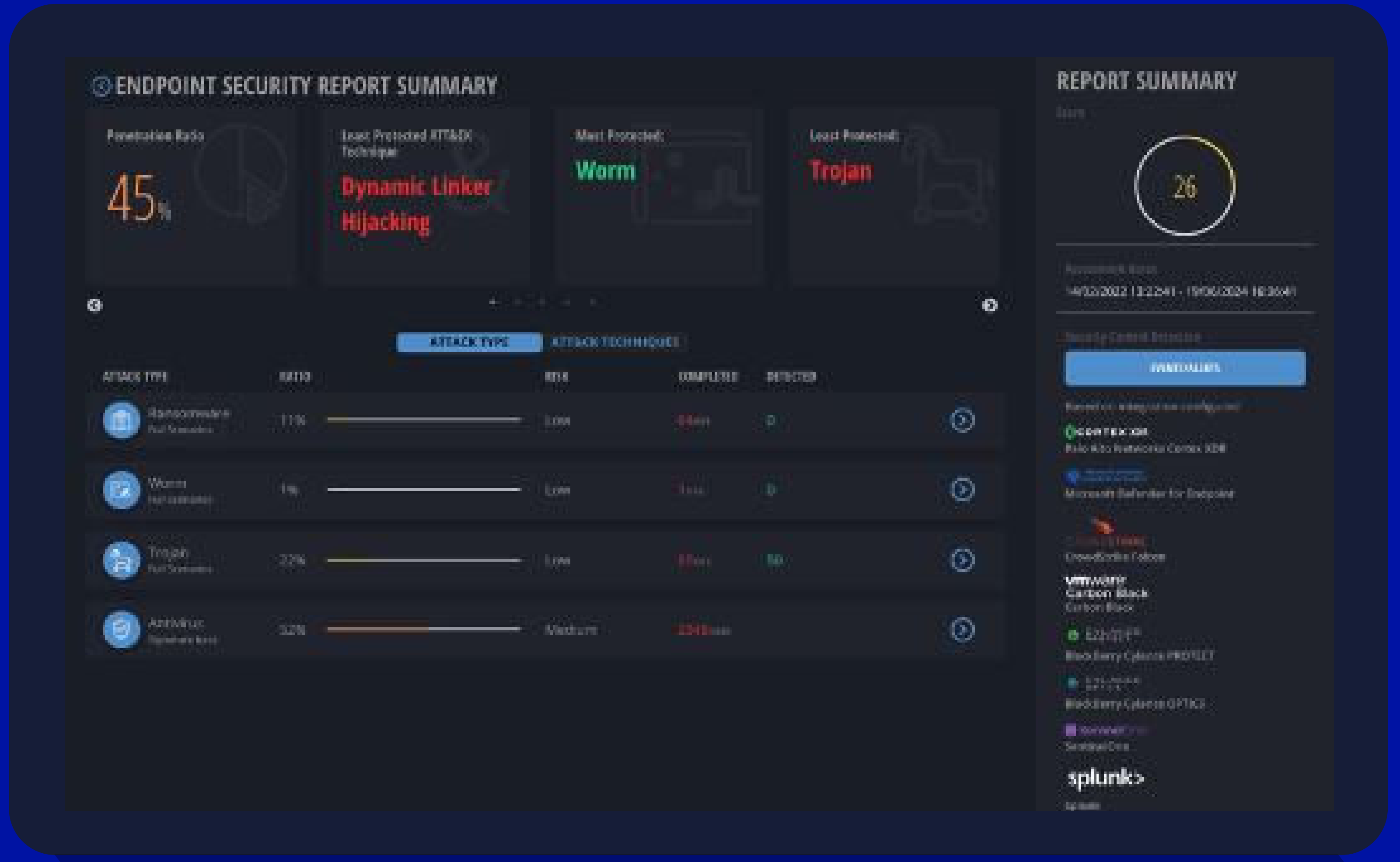
- **Known Malicious Files**: Test for known malware samples written to disk without execution to validate the antivirus response.
- **Malicious Behaviors**: Test for attacks that simulate adversary behaviors using common malware types (ransomware, worms, trojans) and execution methods.

Plus:

- **Rootkits**: Test for unusual system behaviors that likely indicate the existence of a rootkit (collection of malicious payloads) to check the integrity of system files.
- **DLL Side-Loading**: Test for the misuse of trusted applications used by attackers to load malicious versions of application DLLs.
- **Code Injection**: Test for the injection of malicious code into input fields of trusted applications running on endpoints.

Security Validation Best Practices

Endpoint Security



Cymulate Platform Best Practice Assessments

Endpoint Security Attack Types:	Known Malicious Files • Antivirus Malicious Behaviors • Ransomware • Worm • Trojan
Test Scenarios	Over 4,000 known malicious files and 1,000 malicious behavior test scenarios across 60 MITRE ATT&CK techniques for the validation of endpoint security controls.
Recommended Test Frequency	**Weekly**

Security Validation Best Practices

Cloud Security

Cloud has become the **latest frontier in the threat landscape** as threat actors turn their attention to exploiting cloud platforms. Common cloud misconfigurations are the root cause of many cloud data breaches, requiring continuous validation given the very dynamic nature of a cloud environment.

The Cymulate best practices for cloud security validation use a wide variety of tactics and techniques across the Cloud MITRE ATT&CK framework, for example:

- **Initial Access**: Exploit public-facing applications, misuse of valid accounts, public / anonymous access granted.
- **Execution**: Cloud admin command execution, suspicious file downloads terminate processes, create containers.
- **Persistence**: Account manipulation, account takeover, exploit useradd.
- **Privilege Escalation**: Create high-privilege roles, create privileged containers, host path mount.
- **Defense Evasion**: Clear history files, delete events, disable logging, create cloud instance.
- **Credential Access**: Credential dumping, list secrets, access credentials in config files.
- **Discovery**: Discover cloud infrastructure, discover cloud groups, remote system discovery, host network access.
- **Lateral Movement**: Remote service abuse, deploy software tools.

Cloud workloads can also be validated using Cymulate, for example Windows virtual machines (VMs) running in cloud can be validated using the Endpoint Security module and a cloud web application firewall can be validated using the Web Application Firewall module in the Cymulate platform.

Security Validation Best Practices

Cloud Security

Cymulate breach and attack simulations for cloud validates security controls across **multiple layers of your cloud architecture.**

Each layer has specific security controls that need to be tested and validated to provide effective prevention and detection in both pre and post (assume breach) exploitation phases of an attack.

CONTROL TYPE	SECURITY CONTROL	TESTED LAYER		
Cloud Application Security Control	WAF	Business Application App Binaries & Libraries	Business Application App Binaries & Libraries	Business Application App Binaries & Libraries
Container & Kubernetes Security Controls	CWPP, CNAPP, SIEM, FW/IPS	Container Engine / Kubernetes		
Cloud Workloads Security Controls	EDR, WG, SEG, SIEM, DLP, FW/IPS	Virtual Machines / Operating Systems / Container Host		
Cloud Infrastructure Security Controls	CSPM, CNAPP, SIEM	Infrastructure		

Cloud Applications

Validate using test scenarios for:

- Web App Firewall (WAF)

Containers & Kubernetes

Validate using test scenarios for:

- Cloud Workload Protection Platform (CWPP)
- Cloud-Native Application Protection Platform (CNAPP)
- Cloud-native container and Kubernetes security controls (Azure Cloud Defender, AWS GuardDuty, GCP Command Center)
- Security Information and Event Management (SIEM)

Security Validation Best Practices

Cloud Security

Cloud Workloads

Validate using test scenarios for:

- Endpoint Detection and Response (EDR)
- Web Gateway (WG)
- Secure Email Gateway (SEG)
- Security Information and Event Management (SIEM)
- Data Loss Prevention (DLP)
- Firewall (FW) / Intrusion Prevention System (IPS)

Cloud Infrastructure

Validate using test scenarios for:

- Cloud Logs
- Native Cloud Security Tools
- Cloud Security Posture Management (CSPM)
- Cloud Native Application Protection Platform (CNAPP)
- Security Information and Event Management (SIEM)

Security Validation Best Practices

Cloud Security

Cymulate Platform Best Practice Assessments

Cloud Security Attack Types:	• Assume Breach • Kubernetes for Azure, AWS, GCP
Test Scenarios	Over 40 assume breach with high privilege activity and 29 Kubernetes templates with 400+ executable scenarios to validate different components of a cloud environment.
Recommended Test Frequency	**Weekly**

Data Exfiltration

Data exfiltration controls are **one of the last lines of defense** in stopping a data breach. Organizations need to be able to protect sensitive files and data from leaving their organization and being held for ransom by threat actors.

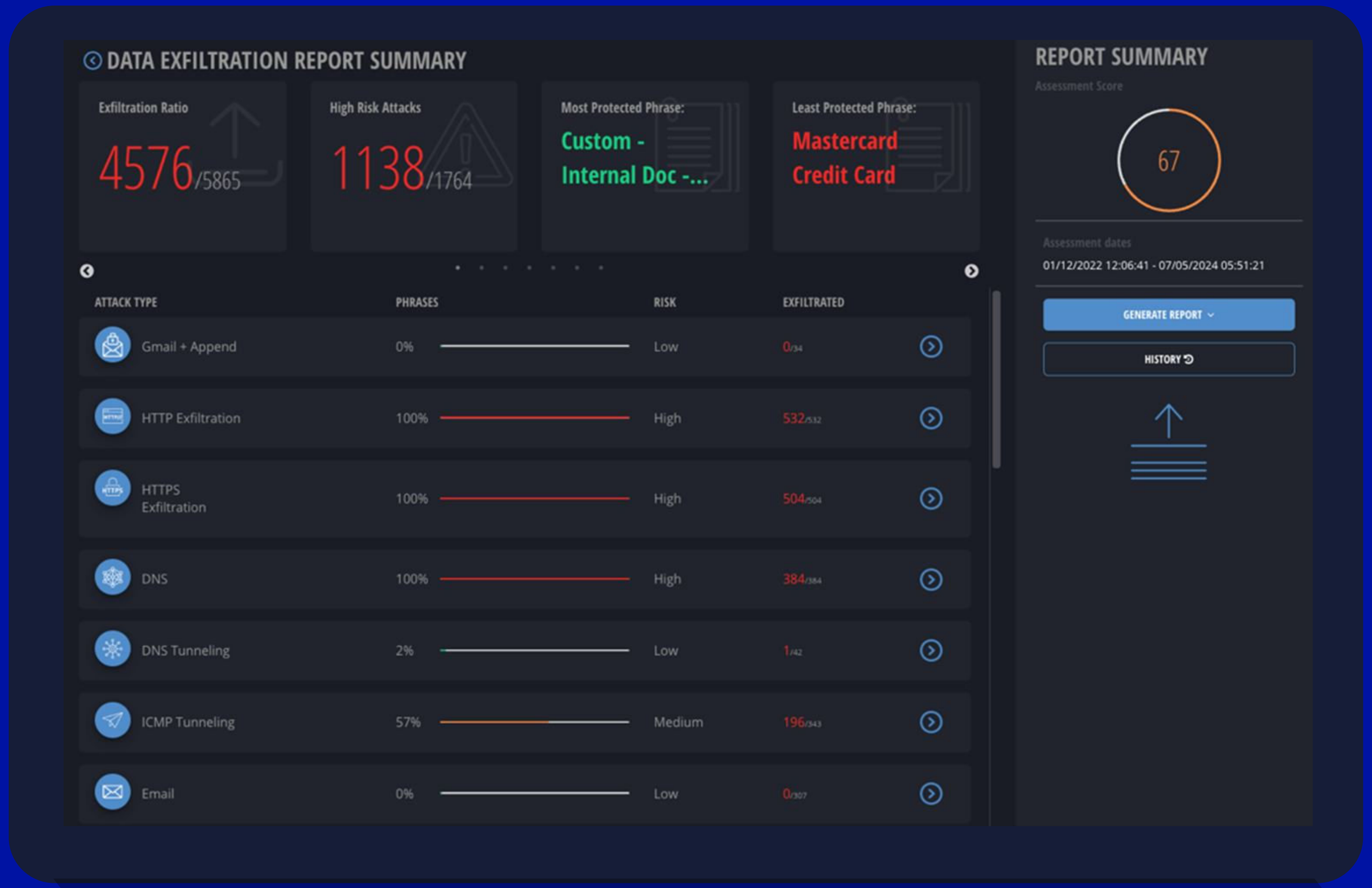
The Cymulate best practices for data exfiltration assessments cover a range of data and file transfer methods including:

- **Email**: Test if sensitive information can be transmitted through the enterprise email system.
- **Network Protocols**: Test if sensitive data can be transmitted over network protocols like Telnet, SFTP, TCP (Open Ports).
- **HTTP(S)**: Test if HTTP or HTTPS can be used to inject sensitive data into HTTP request headers (or HTTPS encrypted) and sent to a remote server.
- **DNS**: Test if controlled DNS servers or tunneling through public DNS servers can be used to inject sensitive data into a DNS request.
- **Cloud Hosted Services**: Test if sensitive files can be uploaded to external file hosting services like Gitlab, Github, Google Drive, Google Storage, AWS S3 Buckets, Azure Blobs, MS One Drive.
- **Collaboration Applications**: Test if sensitive files can be sent through applications used for collaboration like MS Teams, Slack.
- **Physical Devices**: Test if sensitive information can be copied to removable media devices like USB flash drives.

Test the effectiveness of your organization's data loss prevention capabilities and policies by simulating different types of transfer methods for data and files that are tagged as sensitive and confidential.

Security Validation Best Practices

Data Exfiltration



DATA EXFILTRATION REPORT SUMMARY

Exfiltration Ratio: 4576/5865

High Risk Attacks: 1138/1764

Most Protected Phrase: Custom - Internal Doc -...

Least Protected Phrase: Mastercard Credit Card

ATTACK TYPE	PHRASES	RISK	EXFILTRATED
Gmail + Append	0%	Low	0/34
HTTP Exfiltration	100%	High	532/532
HTTPS Exfiltration	100%	High	504/504
DNS	100%	High	384/384
DNS Tunneling	2%	Low	1/42
ICMP Tunneling	57%	Medium	196/343
Email	0%	Low	0/307

REPORT SUMMARY

Assessment Score: 67

Assessment dates: 01/12/2022 12:06:41 - 07/05/2024 05:51:21

Cymulate Platform Best Practice Assessments

Data Exfiltration Attack Types:	• Email, Gmail + Append • HTTP / HTTPS • Browser HTTP / HTTPS • DNS, DNS Tunneling • ICMP Tunneling • Removable Device • Open Ports • Cloud AWS /Azure / Google • MS Teams / OneDrive • Slack • Gitlab, Github • SFTP, Telnet
Test Scenarios	Over 5,800 methods tested for exfiltrating data from your environment.
Recommended Test Frequency	**Weekly**

Security Validation Best Practices

SIEM Observability

SIEM event logging and observability is a **critical control** for the correlation and alerting of malicious behaviors.

The Cymulate platform integrates with your SEIM to validate that events are captured in the SIEM and alerts are generated to notify security analysts, threat hunters, and incident responders of the threat activity taking place. The Cymulate best practices for validating SIEM observability include test cases from:

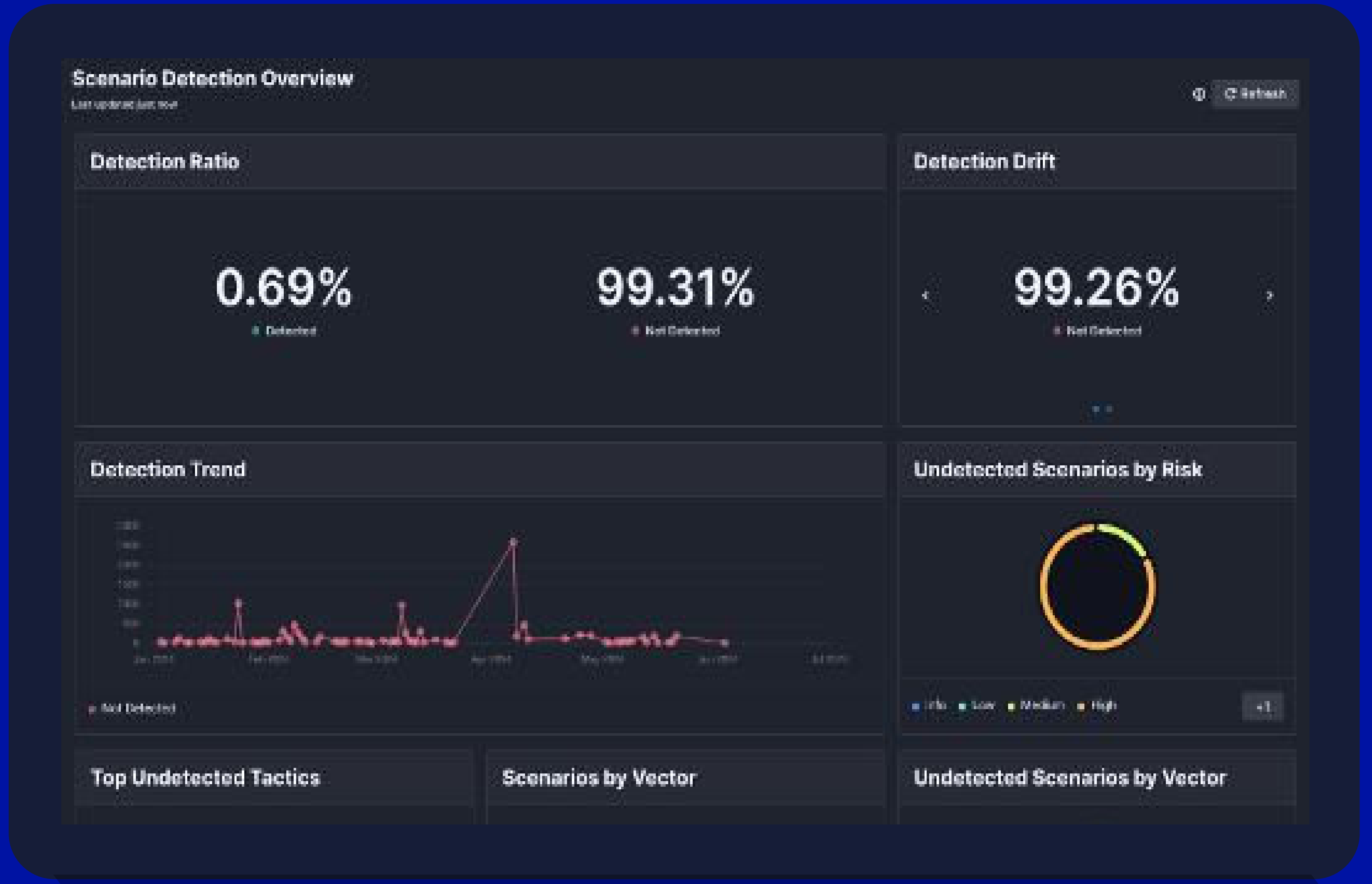
- **Immediate Threats**
  - Known malicious files written to disk
  - Email attachments with malicious code execution
  - Outbound traffic to a malicious link
  - Code execution file downloads from trusted sources
- **Endpoint Security Detections**
- **Cloud Security Detections**
- **Other Advanced Scenarios**

Sigma Rules

The Cymulate platform provides security analysts with Sigma Rules and enables the analyst to generate detection rules for their specific SIEM technology. These rules can be copied from the Cymulate platform into your SIEM configuration to enhance detection and alerting of malicious behaviors.

Security Validation Best Practices

SIEM Observability



Cymulate Platform Best Practice Assessments

Advanced Scenarios for SIEM Observability:	• Immediate Threats Assessments • Endpoint Security Assessments • Advanced Scenarios • Assume Breach: SIEM Validation (Cloud)
Test Scenarios	Over 500 templates used to evaluate SIEM effectiveness to detect threat activities.
Recommended Test Frequency	**Weekly**

Cymulate Best Practices

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- Cloud Security
- Data Exfiltration
- SIEM Observability

02

Validate Threats

- Immediate Threats
- Lateral Movement
- Full Kill-Chain Attacks

03

Validate Response

- SOC Exercises
- Red Team Exercises

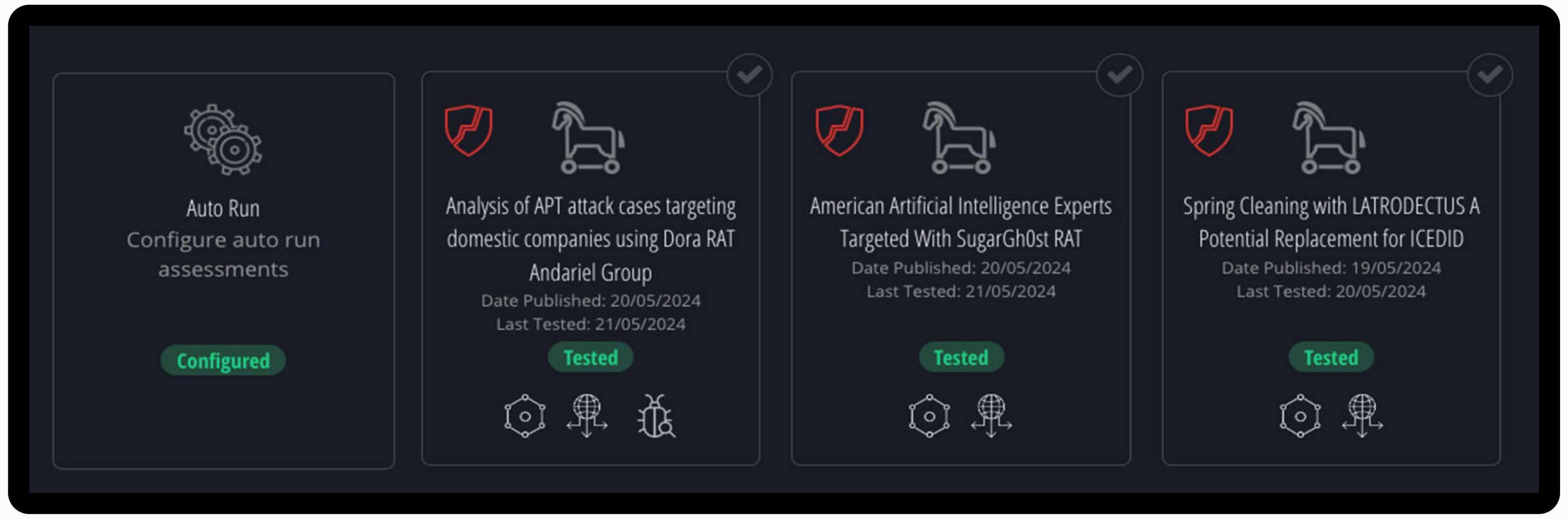
Security Validation Best Practices

Immediate Threats

Threat actors are constantly devising new tactics and techniques to exploit the latest vulnerabilities and gain unauthorized access to your network. **These new threats emerge daily** and represent an immediate threat to the security controls of your organization.

The Cymulate best practices for security validation of immediate threats includes **Auto Run** for validation tests for all new threats and notifications through email when you have exposure to a threat.

- **Emerging Threats**: Test for exposure to the latest immediate threats identified by trusted cybersecurity community threat intelligence sources.
- **Attack Vectors**: Tests should include validation of your email gateway, web gateway, and endpoint security to determine if compensating controls can detect and block the attack.



Auto Run
Configure auto run assessments
Configured

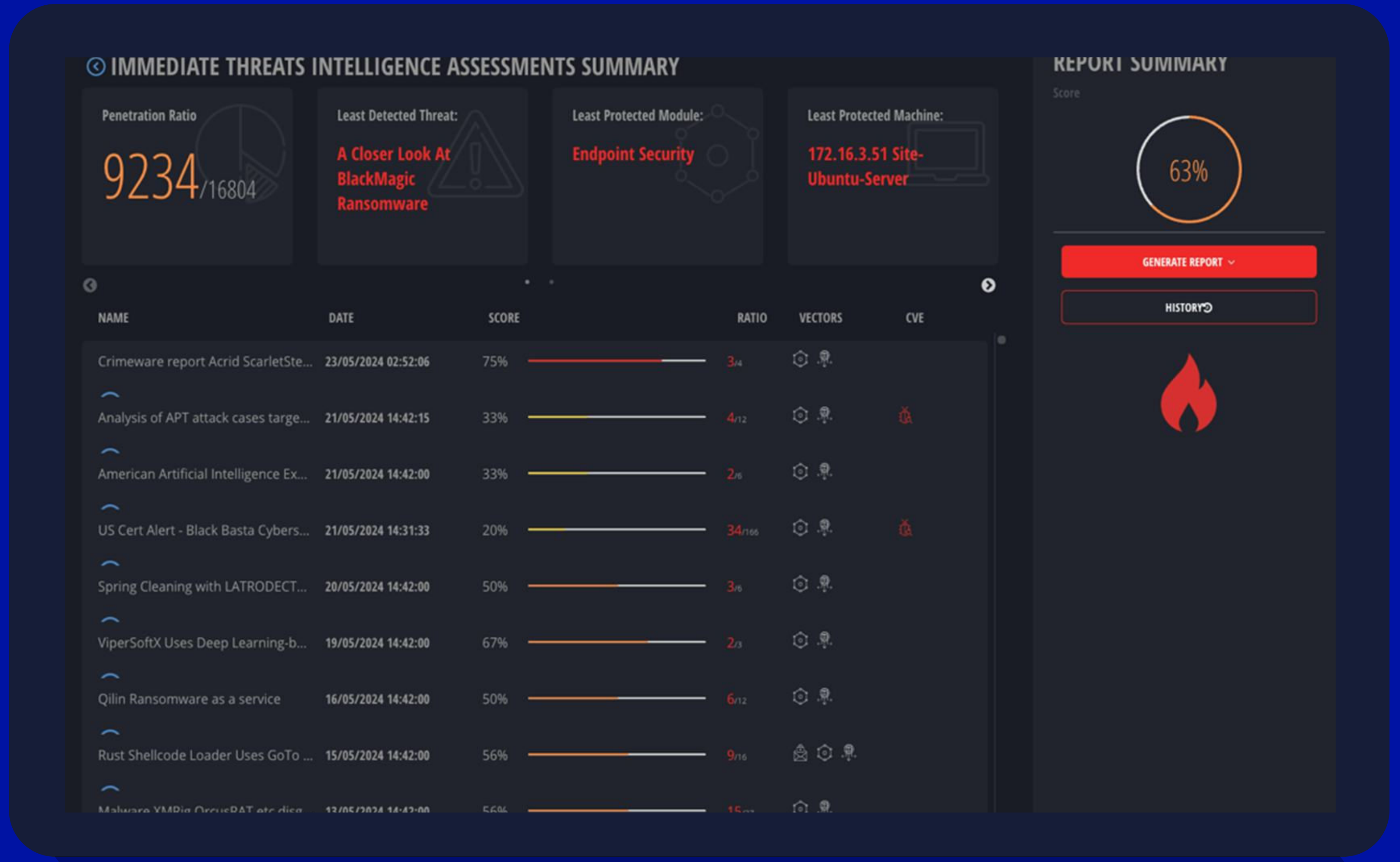
Analysis of APT attack cases targeting domestic companies using Dora RAT Andariel Group
Date Published: 20/05/2024
Last Tested: 21/05/2024
Tested

American Artificial Intelligence Experts Targeted With SugarGh0st RAT
Date Published: 20/05/2024
Last Tested: 21/05/2024
Tested

Spring Cleaning with LATRODECTUS A Potential Replacement for ICEDID
Date Published: 19/05/2024
Last Tested: 20/05/2024
Tested

Security Validation Best Practices

Immediate Threats



IMMEDIATE THREATS INTELLIGENCE ASSESSMENTS SUMMARY

Penetration Ratio
9234/16804

Least Detected Threat:
A Closer Look At BlackMagic Ransomware

Least Protected Module:
Endpoint Security

Least Protected Machine:
172.16.3.51 Site-Ubuntu-Server

NAME	DATE	SCORE	RATIO	VECTORS	CVE
Crimeware report Acrid ScarletSte...	23/05/2024 02:52:06	75%	3/4		
Analysis of APT attack cases targe...	21/05/2024 14:42:15	33%	4/12		
American Artificial Intelligence Ex...	21/05/2024 14:42:00	33%	2/6		
US Cert Alert - Black Basta Cybers...	21/05/2024 14:31:33	20%	34/166		
Spring Cleaning with LATRODECT...	20/05/2024 14:42:00	50%	3/6		
ViperSoftX Uses Deep Learning-b...	19/05/2024 14:42:00	67%	2/3		
Qilin Ransomware as a service	16/05/2024 14:42:00	50%	6/12		
Rust Shellcode Loader Uses GoTo ...	15/05/2024 14:42:00	56%	9/16		
Malware XMRig OrcusRAT etc disg...	13/05/2024 14:42:00	56%	15/		

REPORT SUMMARY

Score

63%

Cymulate Platform Best Practice Assessments

Immediate Threats Intelligence	• Ransomware Group Threats • APT Advanced Attacks • Other Threat Group Scenarios
Test Scenarios	New emerging threats are added to the Cymulate platform daily.
Recommended Test Frequency	**Daily (Auto Run)**

Security Validation Best Practices

Lateral Movement

The goal of many threat actors is to **gain access and move laterally** across your network until they find systems and data of value (aka your crown jewels).

The Cymulate best practices for lateral movement test your network segmentation and privilege management using:

Attack Methods simulate techniques used to obtain credentials and compromise systems including:

- Pass the Hash
- Brute Force
- Password Spraying
- Keberoasting
- Credentials Harvesting
- Verify SSH/SFTP Access
- Steal Local Admin Passwords
- LLMNR/NBT-NS Poisoning and Relay

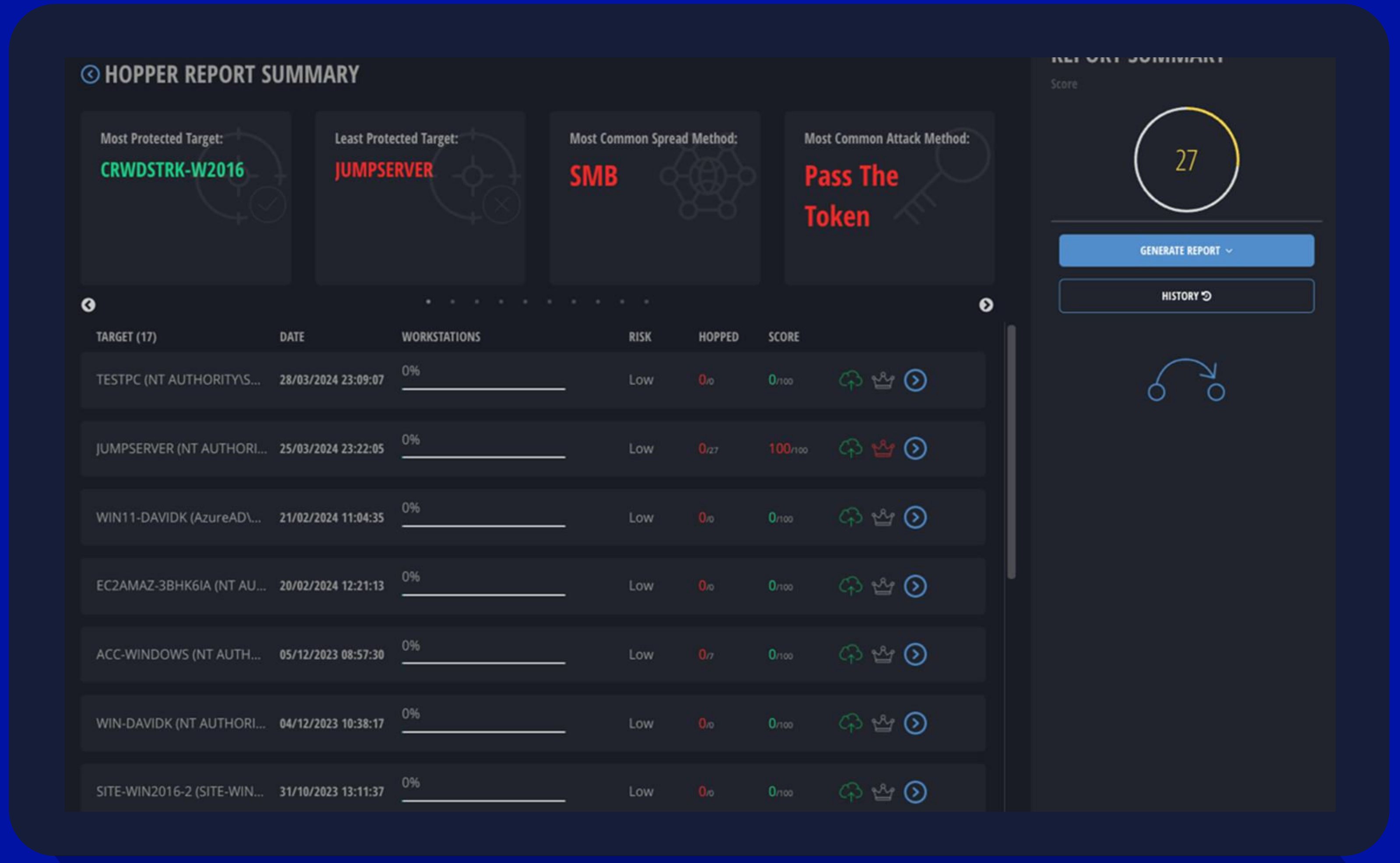
Spreading Methods simulate methods used to traverse the network and gain access to systems and data including:

- SMB
- DCOM
- SSH
- WinRM
- RPC
- WMI
- RDP
- RDP Port
- MSSQL

The focus of these test scenarios is to test your internal network configuration and segmentation policies against the various techniques and methods that attackers use to spread within a network and gain control over additional systems. Lateral movement is often achieved using evasion techniques and privilege escalation to disguise as legitimate users with the objective of reaching your critical IT assets.

Security Validation Best Practices

Lateral Movement



HOPPER REPORT SUMMARY

Most Protected Target: CRWDSTRK-W2016

Least Protected Target: JUMPSERVER

Most Common Spread Method: SMB

Most Common Attack Method: Pass The Token

TARGET (17)	DATE	WORKSTATIONS	RISK	HOPPED	SCORE
TESTPC (NT AUTHORITY\S...	28/03/2024 23:09:07	0%	Low	0/0	0/100
JUMPSERVER (NT AUTHORI...	25/03/2024 23:22:05	0%	Low	0/27	100/100
WIN11-DAVIDK (AzureAD\...	21/02/2024 11:04:35	0%	Low	0/0	0/100
EC2AMAZ-3BHK6IA (NT AU...	20/02/2024 12:21:13	0%	Low	0/0	0/100
ACC-WINDOWS (NT AUTH...	05/12/2023 08:57:30	0%	Low	0/7	0/100
WIN-DAVIDK (NT AUTHORI...	04/12/2023 10:38:17	0%	Low	0/0	0/100
SITE-WIN2016-2 (SITE-WIN...	31/10/2023 13:11:37	0%	Low	0/0	0/100

Score: 27

Cymulate Platform Best Practice Assessments

Hopper Attack Types	• Pass the Hash (Domain/Local) • Offline Brute Force • Password Spraying • Kerberoasting • 3rd Party Credentials Harvester • Verifiy SSH/SFTP Access • Steal LAPS Passwords • LLMNR/NBT-NS Poisoning and Relay
Test Scenarios	Choose from 8 attack methods and 9 spreading methods to validate network segmentation and privilege management.
Recommended Test Frequency	**Weekly**

Full Kill-Chain Attacks

Full kill-chain attacks simulate Advanced Persistent Threat (APT) groups and the sophisticated techniques they use to **gain access to a network and remain undiscovered** for extended periods of time.

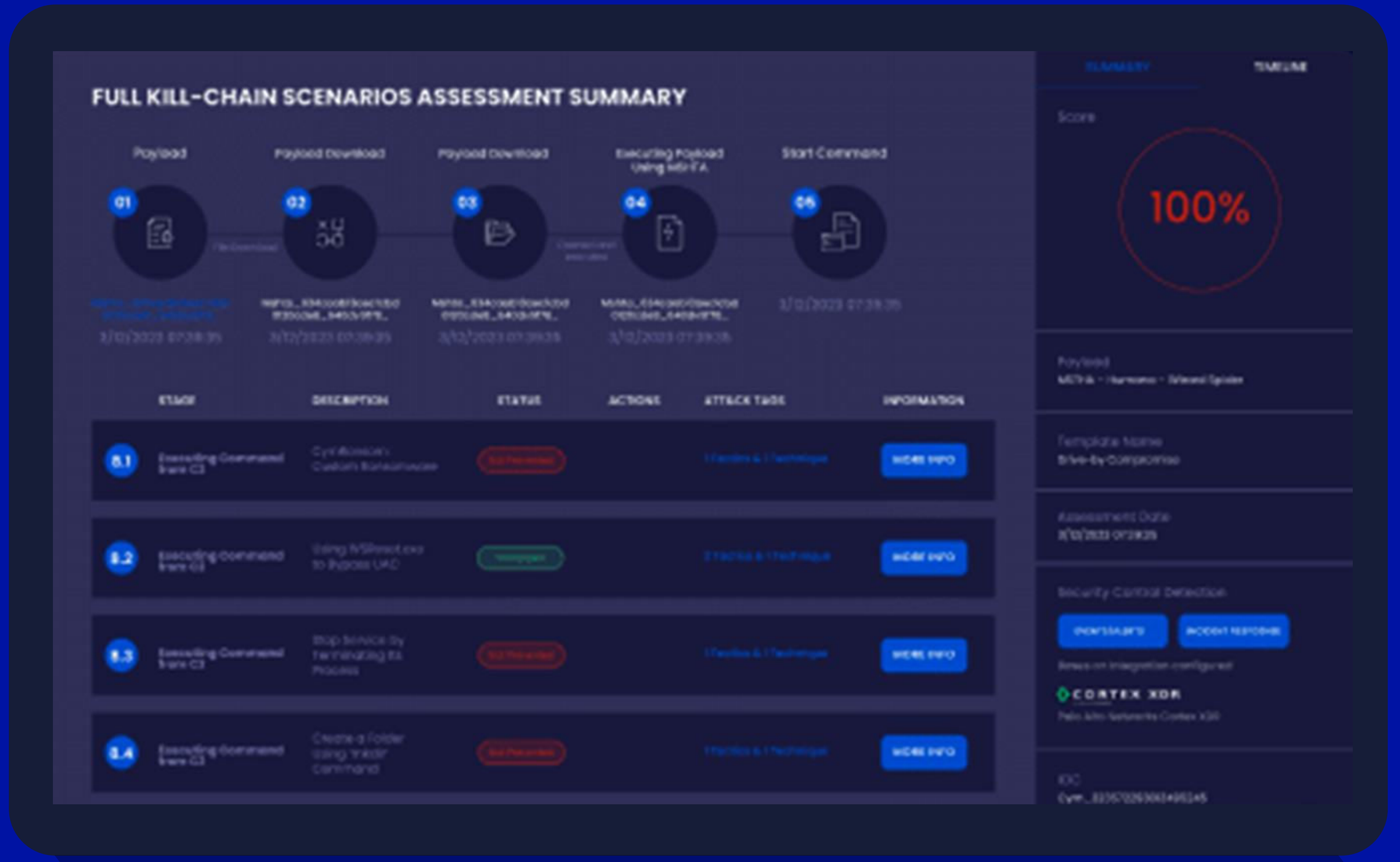
Cymulate best practices for full kill-chain attack validation include example scenarios for specific threat groups like:

Full Kill-Chain Scenarios (Examples)

- **Cobalt Group (APT29)**: Simulation of an APT attack technique that sends email to deliver Cobalt Strike payloads to download and create a scheduled task that runs a remote key ransomware to encrypt files.
- **OceanLotus (APT32)**: Simulation of an APT attack technique that sends email with a malicious link that downloads a MSHTA application that executes a trojan to exfiltrate data.
- **Refined Kitten (APT33)**: Simulation of an APT attack technique using excel with an embedded macro to establish persistence and use LaZagne tool to extract credentials.
- **Lazarus Group (APT38)**: Simulation of an APT attack technique that downloads a malicious DLL file that executes a trojan to exfiltrate data.

Security Validation Best Practices

Full Kill-Chain Attacks



Cymulate Platform Best Practice Assessments

Full Kill-Chain Scenarios:	• APT Templates
Test Scenarios	Choose from over 25 full kill-chain templates for real-world APT threat actors or create custom scenarios using hundreds of prebuilt delivery methods, payload structures, execution methods, and compiled scenarios.
Recommended Test Frequency	**Monthly**

Cymulate

Cymulate Best Practices

01

Validate Controls

- Email Gateway
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- Endpoint Security
- Cloud Security
- Data Exfiltration
- SIEM Observability

02

Validate Threats

- Immediate Threats
- Lateral Movement
- Full Kill-Chain Attacks

03

Validate Response

- SOC Exercises
- Red Team Exercises

Security Validation Best Practices

SOC Exercises

SOC exercises are used to **validate security processes, policies, and incident response** playbooks using full kill-chain scenarios for common threat group attacks.

These **red team / blue team exercises** go beyond traditional tabletop exercises with production-safe simulations of real-life attack scenarios in a purple teaming exercise that validates advanced APT scenarios. Cymulate best practices for SOC validation exercises include examples of highly prevalent threat groups using specific attacks like:

Full Kill-Chain Scenarios (Examples)

- **Lockbit 2.0**: An advanced and highly effective ransomware variant that exfiltrates sensitive data and encrypts files, making them inaccessible without a decryption key.
- **Qakbot**: A highly sophisticated banking trojan designed to steal banking credentials and financial data.
- **Ryuk**: A sophisticated ransomware simulation that has been involved in numerous high-profile cyberattacks targeting critical sectors like healthcare, government, and education.
- **Lokibot**: A type of malware that targets the Windows OS and is known for stealing credentials and other sensitive data.

Security Validation Best Practices

SOC Exercises

Cymulate Platform Best Practice Assessments

Full Kill-Chain Scenarios	• APT Templates
Test Scenarios	Choose from over 25 full kill-chain templates for real-world APT threat actors or create custom scenarios using hundreds of prebuilt delivery methods, payload structures, execution methods, and compiled scenarios.
Recommended Test Frequency	**Quarterly**

Red Team Exercises

Red team exercises are **offensive testing exercises** to determine how deep into a full kill-chain an advanced threat actor could penetrate your environment.

The real-life attack scenarios begin with a phishing campaign directly to your end users and then run a full APT campaign from a notorious threat actor.

Cymulate best practices for red team exercises begin with phishing campaigns to your end users and relies on users being manipulated to open the malicious files or links in the email.

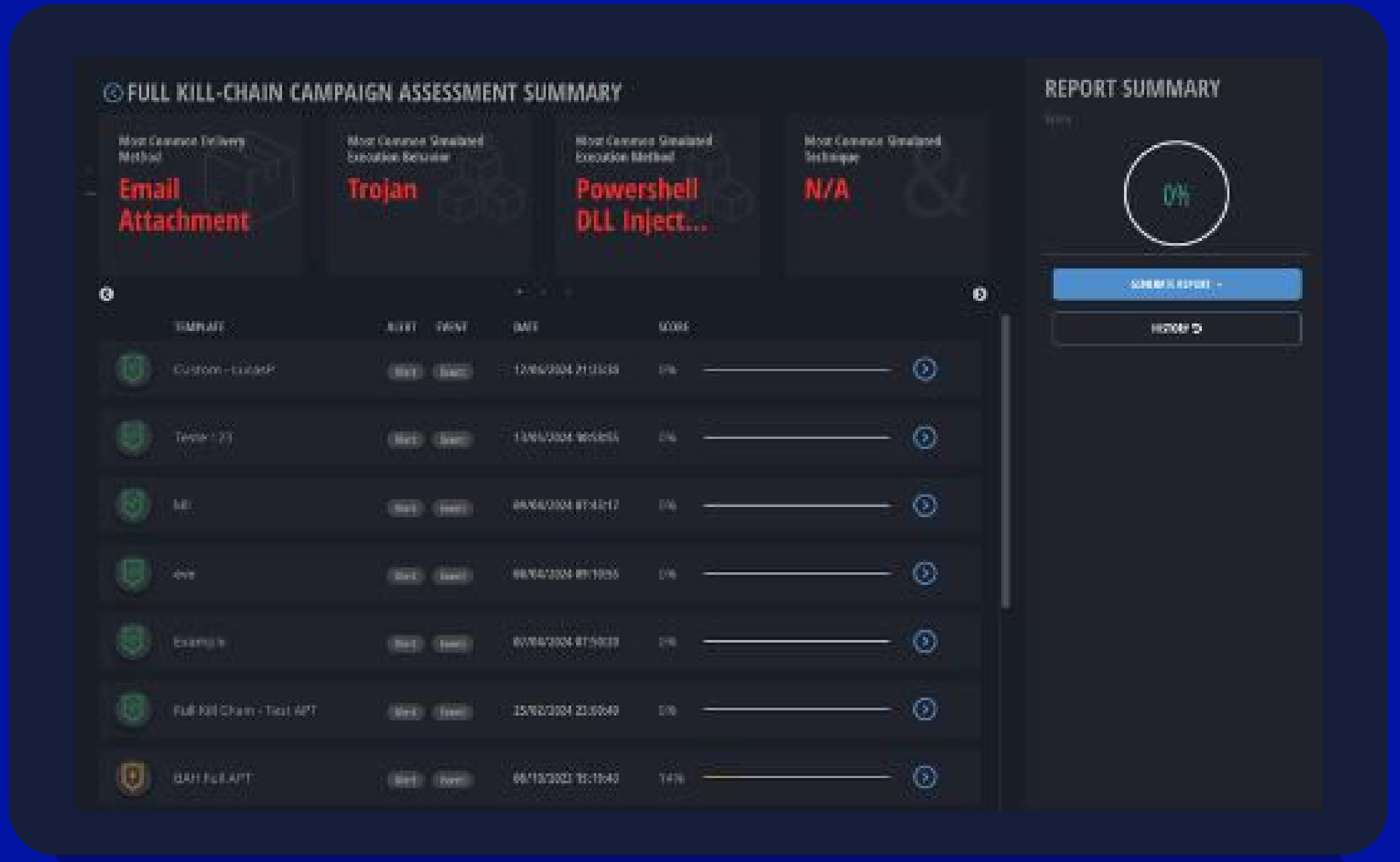
- **Phishing Campaigns**: Simulation of a trusted entity used to deceive users into clicking on a malicious links or downloading malicious payloads.
- **APT Campaigns**: Start with a phishing campaign and continue through an end-to-end cyber attack from an APT group.

Red Team

- **Reconnaissance**: Gather information about the target.
- **Exploitation**: Identify and exploit vulnerabilities.
- **Lateral Movement**: Move within the network to reach higher-value targets.
- **Persistence**: Establish a foothold to maintain access.
- **Exfiltration**: Extract data from the network.

Security Validation Best Practices

Red Team Exercises



FULL KILL-CHAIN CAMPAIGN ASSESSMENT SUMMARY

Most Common Delivery Method	Most Common Simulated Execution Behavior	Most Common Simulated Execution Method	Most Common Simulated Technique
Email Attachment	Trojan	Powershell DLL Inject...	N/A

TEMPLATE	ALERT	EVENT	DATE	SCORE
Custom - LudasP	Alert	Event	12/06/2024 21:23:38	0%
Teste 123	Alert	Event	13/05/2024 10:53:55	0%
MI	Alert	Event	09/04/2024 07:43:17	0%
eve	Alert	Event	08/04/2024 09:10:55	0%
Example	Alert	Event	07/04/2024 07:50:33	0%
Full Kill Chain - Test APT	Alert	Event	25/02/2024 22:30:40	0%
BAH Full APT	Alert	Event	06/10/2023 15:15:40	14%

REPORT SUMMARY

Cymulate Platform Best Practice Assessments

Continuous Automated Red Teaming:	• Phishing Awareness • Full Kill-Chain Campaigns
Test Scenarios	Over 30 pre-built phishing resources and full kill-chain campaigns to test user awareness and security operations detection and response to APT attacks.
Recommended Test Frequency	**Quarterly**

Offensive Testing

Moving from Defense to Offense

Offensive testing simulates real-world attack scenarios, providing insights into how an actual attacker might exploit your systems.

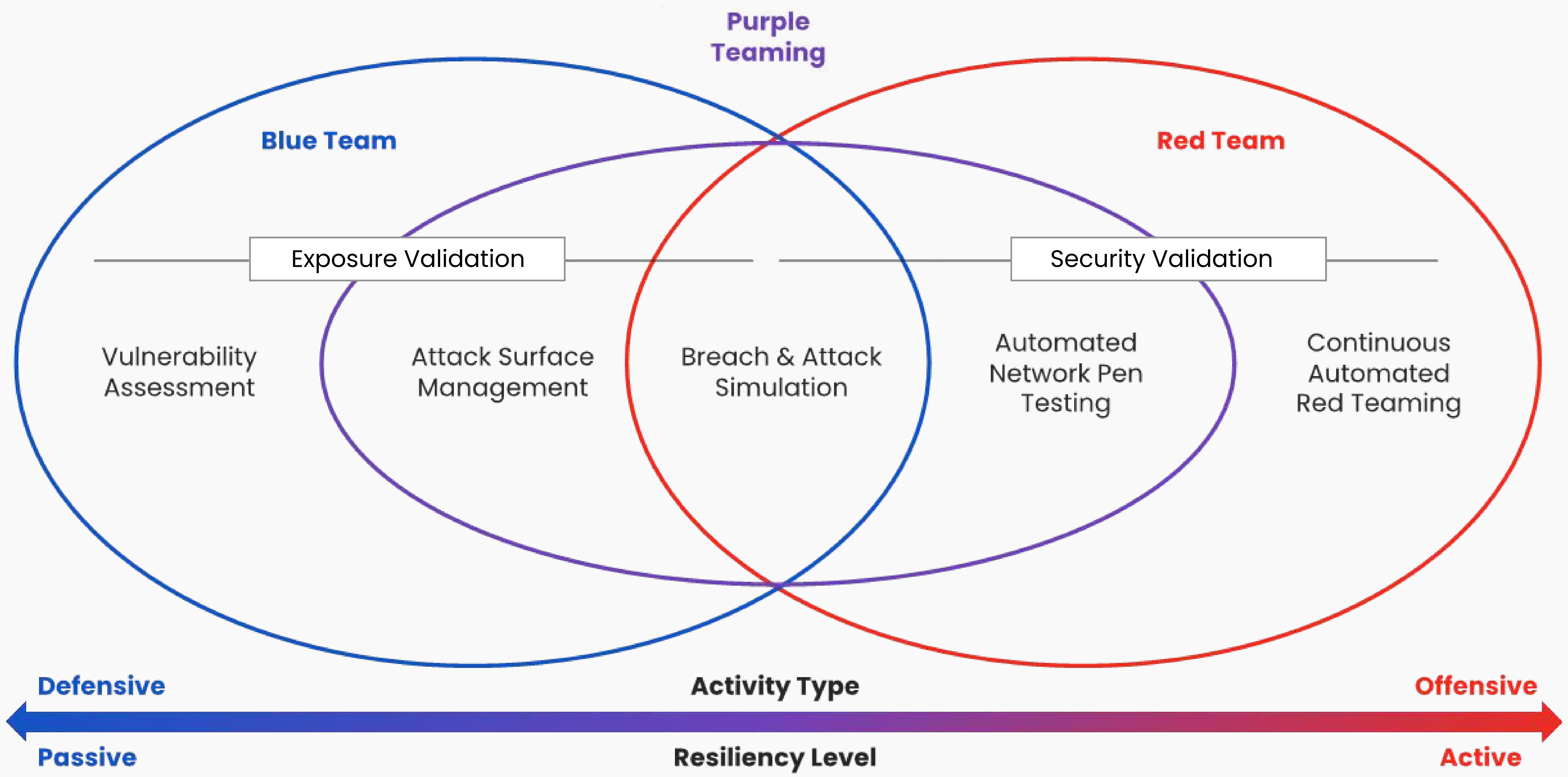
This perspective allows you to understand the potential impact of an attack and take appropriate measures to strengthen your defenses.

Offensive security testing isn’t so much about finding the flaws; it's about finding the courage to fix them before they're exploited.

Offensive Testing

The Rise of Purple Teaming in Offensive Strategies

The Cymulate platform is a catalyst for **Purple Teaming** and the integration of **offensive** (Red Team) and **defensive** (Blue Team) strategies, creating a more holistic approach to validate controls, threats, and response.



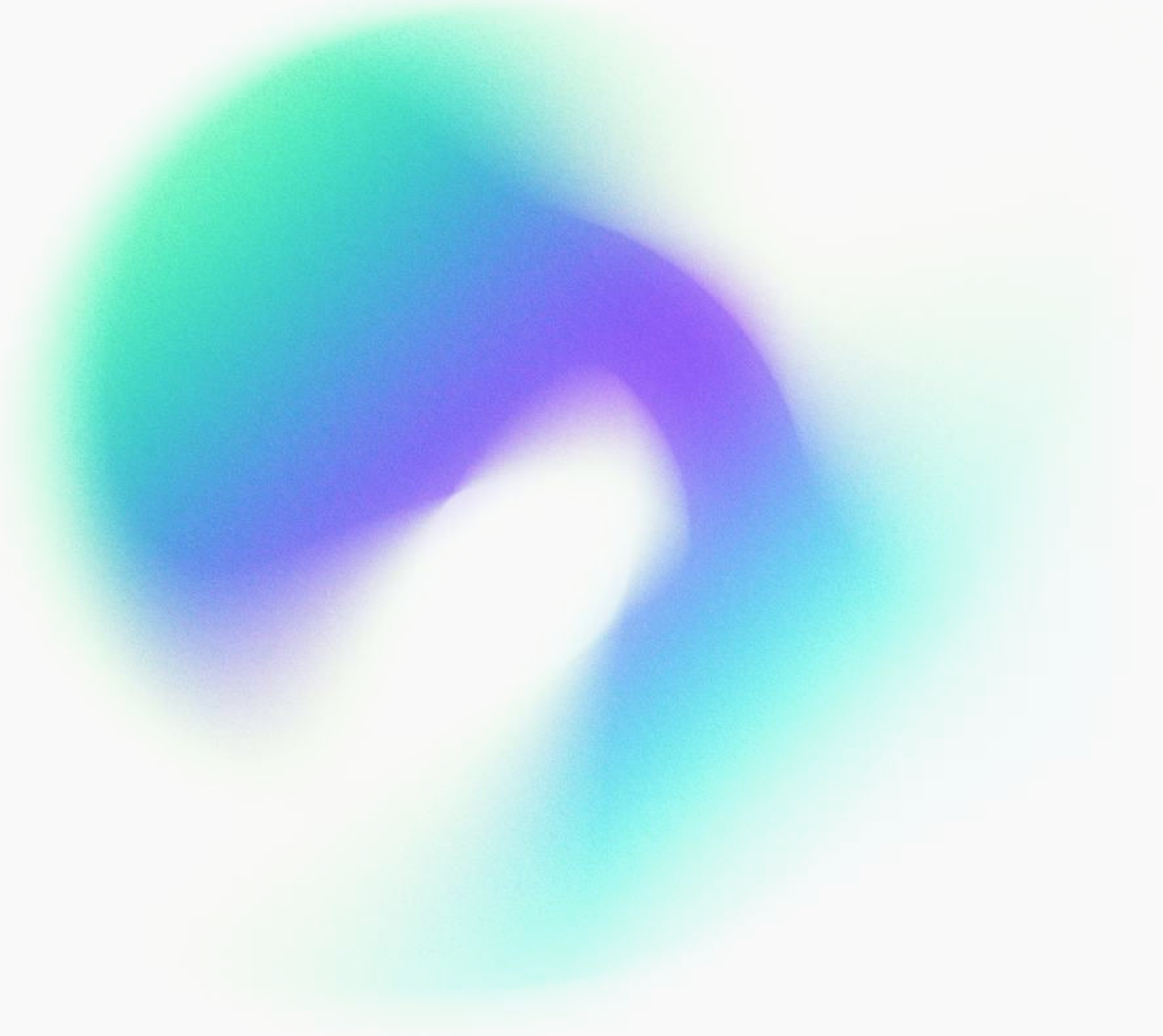
Source: Gartner – Key Objectives of Blue, Red and Purple Teams

Building Trust & Confidence

Demonstrating a commitment to continuous improvement of cybersecurity through offensive testing can enhance trust with customers, partners, and stakeholders.

It shows that you take security seriously and are proactive in safeguarding sensitive information.

Cyber resiliency isn't just about preventing attacks; it's about confidently navigating through adversity, knowing that every challenge strengthens our defenses and prepares us for what's next.



About Cymulate

Leading Security & Exposure Validation Platform, founded in June 2016

A team of top cybersecurity experts with strong technology background and enterprise security domain knowledge

Committed to continuous improvement of cyber defenses.

Over 500 customers in 50 countries

The leader in exposure management and security validation, provides a modular platform for continuously assessing, testing, and improving cybersecurity resilience — before an attack occurs.

More than 500 customers worldwide rely on the Cymulate platform to drive their threat exposure management programs from scoping through discovery, prioritization, validation, and mobilization.

The Cymulate platform automates the attacker's perspective to help organizations of all sizes understand threat exposure, how controls and processes respond to threats, and the improvements they can make to mitigate exposure risk.

For more information, visit www.cymulate.com