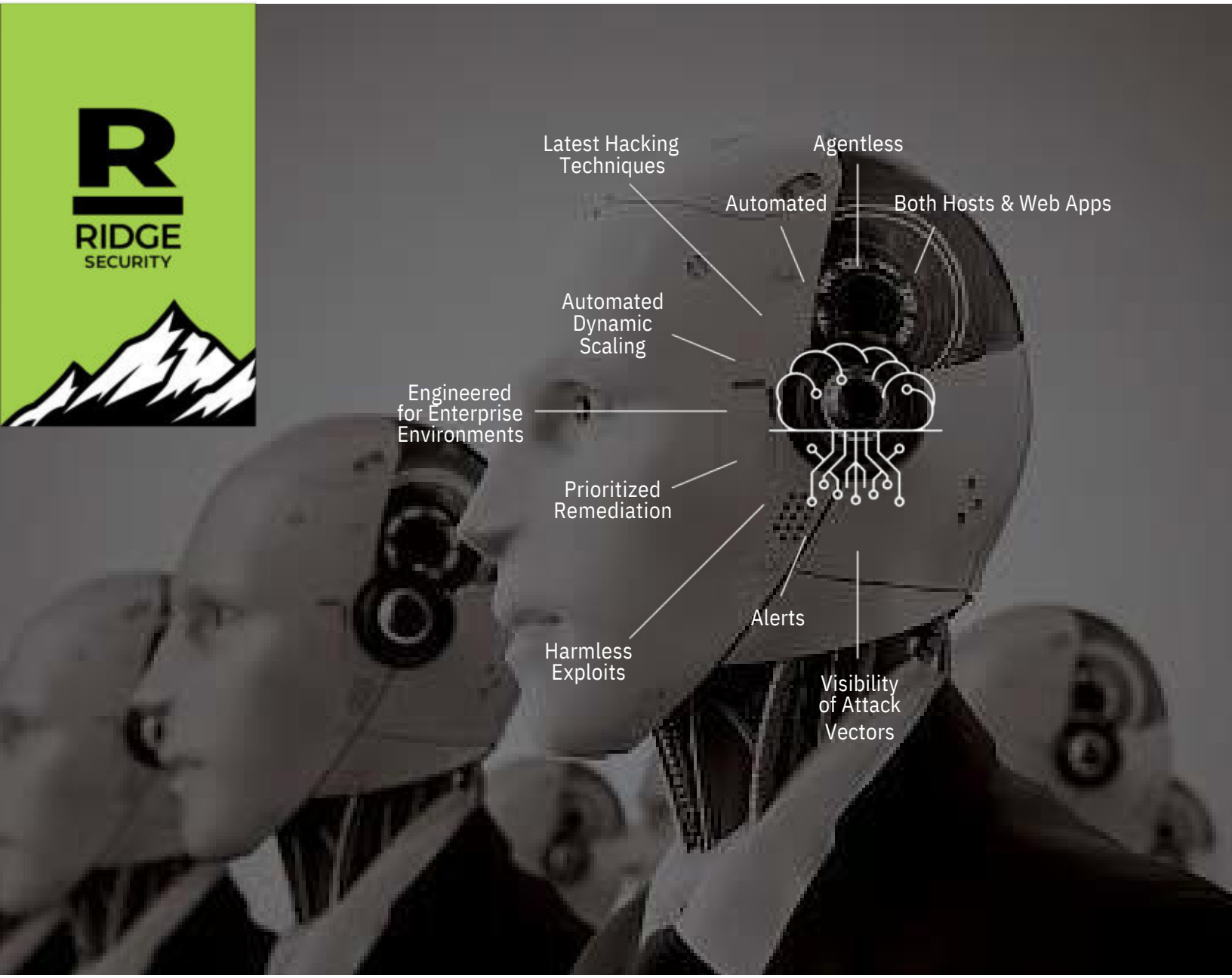
Continuous Threat Exposure Management Automation

RidgeBot® AI Agent for Continuous Security Validation



RidgeBot® automates the enterprise IT security validation process **100x faster** than a human tester

RidgeBot® is an AI agent designed for continuous security validation. It autonomously performs tests based on the goals set by your security team. RidgeBot® can discover attack surfaces, prioritize vulnerabilities based on exploitability, automate penetration testing, and emulate adversary attacks. This continuous process validates your organization's cybersecurity posture and offers remediation suggestions.

RidgeBot® provides a clearer picture of your security gaps. By increasing the frequency of penetration testing, risk-based vulnerability management, and training your defense team with effective exercises, RidgeBot® helps keep malicious attackers at bay. It assists your security team in overcoming knowledge and experience limitations, consistently performing at a top level.

RidgeBot® alleviates the shortage of security professionals by shifting from manual, labor-intensive testing to machine-assisted automation. This allows human security experts to focus their energy on researching new threats and technologies.

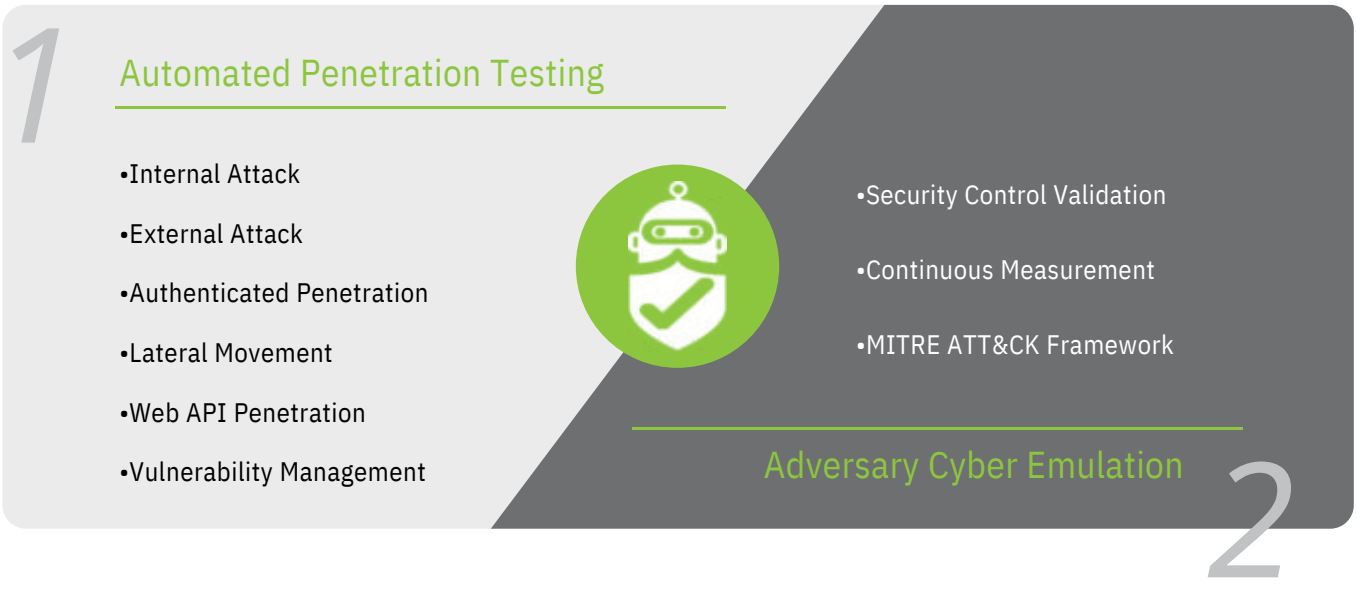
Challenges

Today's organizations are facing cyber security challenges from multiple angles. Security teams not only need to validate IT infrastructure has no exploitable vulnerabilities which may be leveraged by a hacker or a ransomware to compromise the mission critical data, but also need to verify the expensivee cyber defense solutions deployed can work as expected to detect and mitigate the most current attack techniques used by advanced persistent threats (APTs) and other malicious entities. Cyberattacks are increasingly sophisticated and forever on the rise, hackers are developing new exploits and attack methods every month, often using tools to launch attacks automatically. In response to cyber security threats, most organizations utilize security testing (a.k.a. penetration testing) for their computer systems, websites, applications and networks, try to find risk exposures before a hacker does. While security teams' internal pen testing expertise are limited and expensive, can't afford to do continuous security validation. Many organizations are looking for an automated penetration testing system to address this challenge in a more manageable and cost-effective manner.

RidgeBot's Solution and Key Benefit

RidgeBot® is a unified system that automates the penetration testing process and emulates adversary attacks to validate an organization's cybersecurity posture. It provides a clearer picture of your security gaps and keeps the windows of opportunity closed for malicious attackers by increasing the frequencies of penetration testing, risk-based vulnerability management and training your defense team with effective exercises. RidgeBot® assists security teams in overcoming knowledge and experience limitations and always performs at a consistent top-level. The shift from manual-based, labor-intensive testing to machine-assisted automation alleviates the current severe shortage of security professionals. It allows human security experts to let go of daily labor-intensive work and devote more energy to the research of new threats and new technologies.

- Improve security test coverage and efficiency
- Reduce the cost of security validation
- Continuously protect the IT infrastructure
- Produce actionable and reliable results for different stakeholders



RidgeBot® brings **360-degree security validation** within reach of every organization

RidgeBot® Key Functions

Automated Penetration Testing Automated penetration testing replicates the actions of ethical hackers to identify and exploit vulnerabilities in your systems. RidgeBot follows a comprehensive process:

Asset Discovery—RidgeBot® automatically discovers all types of assets on your network, including devices, applications, and websites.

Vulnerability Scanning—It utilizes a rich knowledge base to identify potential vulnerabilities in your discovered assets.

Vulnerability Exploitation—RidgeBot® employs built-in attack techniques to launch ethical attacks against identified vulnerabilities. Successful exploits are documented for further analysis.

Reporting and Remediation—RidgeBot® provides a comprehensive report with risk assessments, remediation advice, and tools for patch verification.

Attack Surface Discovery— Utilizes smart crawling techniques and fingerprint algorithms to discover broad types of IT assets, including IPs, domains, hosts, operating systems, applications, websites, databases, and network/OT devices.

Vulnerability Detection—Employs a proprietary payload-based testing approach, a rich knowledge base of vulnerabilities and security breach events, and various risk modeling techniques.

Vulnerability Exploitation—Uses multi-engine technology to simulate real-world attacks with toolkits, collecting data for further analysis in a post-breach scenario.

Risk Prioritization—Automatically forms an analytical view, visualizes the kill chain, and displays a hacker's script. It shows hacking results like compromised object data and escalated privileges.

Adversary Cyber Emulation (ACE)

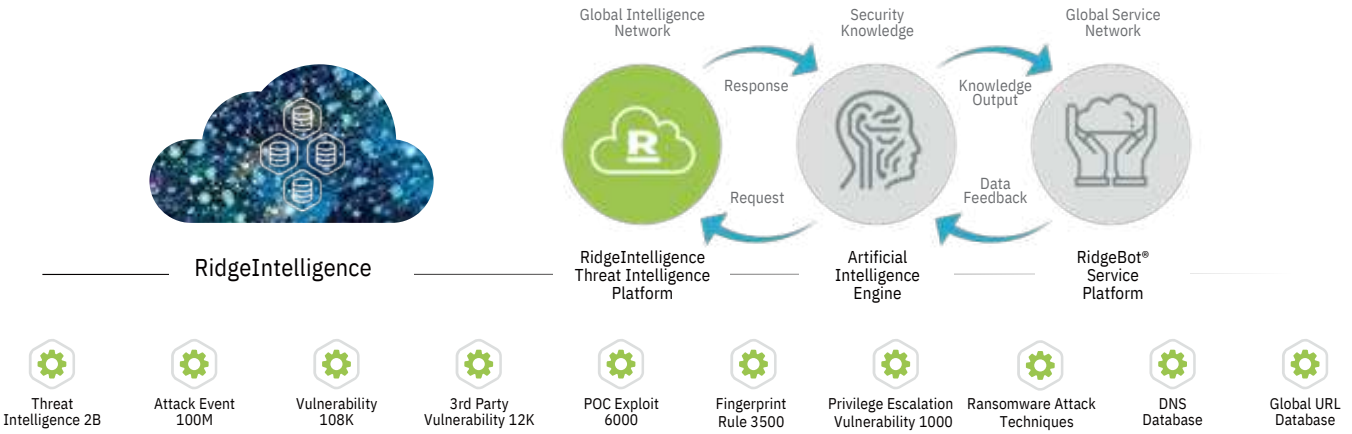
IT security controls are mechanisms used to prevent, detect and mitigate cyber threats and attacks. RidgeBot® ACE emulates the adversary by mimicking the likely attack paths and techniques to generates continuous assessment data to help identify security control failures, resolve structural weaknesses and enable security control optimization. RidgeBot® ACE has aligned itself with the MITRE ATT&CK framework and maps its assessment test scripts to MITRE ATT&CK tactics and techniques. This increases the visibility of potential attack vectors and improves the communica- tion of security control measurements.

Assets Management

RidgeBot® provides a centralized repository to manage enterprise IT assets for security validation, including asset IP addresses, hostnames, OS versions, open service ports, active applications with versions, website domain names, DNS resolution, and web server versions.

Higher Precision and More Discoveries with AI Brain

RidgeBot® has a powerful AI core with an expert knowledge base that guides its attack path selection. It launches iterative attacks based on learnings along the path, achieving comprehensive test coverage and deeper inspections.



RidgeBot® Deployments

On-Premise Deployment

For enterprise environment—deploy RidgeBot® on the customer's premise, provides the lower Risk of Infosec Data Leakage

Cloud Deployment

For Cloud and SMB customers—deploy RidgeBot® in the Cloud (AWS EC2, Microsoft Azure and Google Cloud), have better flexibility while minimize the initial CapEx investment

Penetration Testing Scenarios

Internal Attack: Launches attacks from inside the enterprise network with customer permission, focusing on exploiting vulnerabilities discovered on local networks and systems.

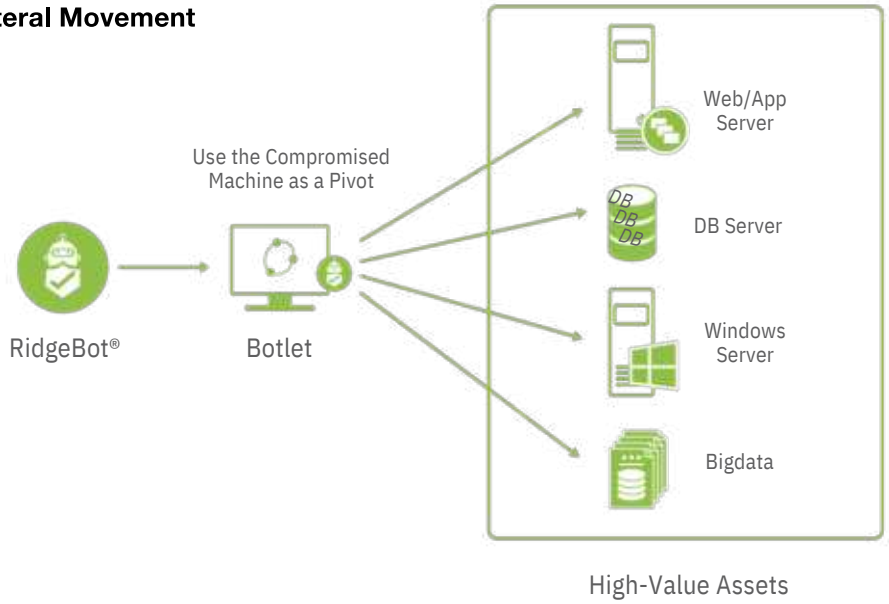
External Attack: Launches attacks from outside the enterprise network towards publicly accessible assets such as websites, file shares, or services hosted in public cloud/CDN.

Authenticated Penetration: Simulate attacks by an insider or an external attacker who has obtained some level of authenticated access. This is particularly valuable for identifying how far an attacker could penetrate or how much damage they could inflict, starting from a position of partial system access.

Web API Penetration Testing: Perform Swagger file-based Web API penetration testing to detect and validate vulnerabilities, including the OWASP Top 10 API security risks, hidden paths, and other issues. This helps organizations prevent horizontal privilege escalation.

Lateral Movement: Escalate privilege on a compromised asset and use the compromised asset as a pivot to launch attack toward adjacent networks; discover and exploit vulnerabilities on assets deeper in the network.

RidgeBot® Lateral Movement



Adversary Cyber Emulation (ACE) Methods

Agent-Based Attack Simulation: RidgeBot® uses agent-based Botlet to simulate adversary attacks. RidgeBot® Botlet can be deployed on multiple OS platforms and in different network segments to simulate real-world cyber threats continuously or on-demand.

Out-of-Box Assessment: RidgeBot® offers pre-built ACE assessment test templates, make it simple for all skill levels to assess the efficacy in different aspects of your security controls. The assessment tests are comprehensive and safe to launch in the production environment.

MITRE ATT&CK Framework Alignment: The MITRE ATT&CK framework is a globally accessible knowledge base of adversary tactics and techniques based on real-world observations. The ATT&CK knowledge base is used extensively by RidgeBot® to create meaningful and life-like assessment test scripts for its customers to challenge, assess and optimize their security controls.

RidgeBot® System Requirements

The RidgeBot® solution is a software package deployed on specified bare metal servers, virtual machines or in the Cloud. The RidgeBot® software package includes the RidgeIntelligence platform, the RidgeBrain engine, and RidgeBot® plugins. Software upgrades are provided through professional services. We recommend on-premise deployment for organizations to have complete control over test procedures, findings, and sensitive data involved.

Bare Metal Server Deployments	**Essential**	**Advanced**
Minimum Hardware Requirement	• Intel Xeon CPU with a minimum of 4 cores with Hyper-Threadin • 32 GB RAM • 1TB SSD • 1 Ethernet Interface Card	• Dual Intel Xeon CPUs with a minimum of 6 cores each • 64 GB RAM • 2 X 1TB SSD with RAID controller (RAID 1) • 1 Ethernet Interface Card
Concurrent Bots	16	32

Virtual Machine/Cloud Deployments	**Demonstration/Lab**	**Production**
Minimum Hardware Requirement	• 8 vCPU • 32G RAM • 100 GB Storage • 1 Virtual Network interface	• 8 vCPU • 64G RAM • 100 GB Storage • 1 Virtual Network interface
Concurrent Bots Supported	16	32
Supported Hypervisors and Cloud Platforms	• VMware Workstation 15 Pro or higher • VMware Fusion 11 Pro or higher VMware ESXi 7.0 or higher • Microsoft Windows/Hyper-V 2019 or higher • QEMU KVM 7.2 • Amazon AWS EC2 • Microsoft Azure • Google Cloud Platform	• VMware Workstation 15 Pro or higher • VMware Fusion 11 Pro or higher VMware ESXi 7.0 or higher • Microsoft Windows/Hyper-V 2019 or higher • QEMU KVM 7.2 • Amazon AWS EC2 • Microsoft Azure • Google Cloud Platform

RidgeBot® Key Features

Automation Assistance

• Object recognition: Through this function module, RidgeBot® automatically identify information such as asset types, data content types, record classification identifiers and then feed them to relevant modules, so that the entire attack process can continue to run without any manual intervention and achieve the automated process of security validation.

• Sandbox simulation: Using the sandbox technology, RidgeBot® simulates a variety of operating environments in the validation task, provides an automatic response to interactive scenarios during the attack, so that the automated process of security validation can be done.

• Embedded Fuzzing Engine: Generating dynamic payloads for vulnerability detection and exploitation.

Artificial Intelligence

• Decision brain: RidgeBot® is built in with many types of artificial intelligence decision- making algorithms to provide optimal decisions such as selection and ranking when executions are going down to branch attack paths.

• Expert system: RidgeBot's is embedded with an expert system. During the execution of the security validation, it can always reference "expert experience" for a better decision or a more effective path to penetrate the target system.

• Vector engine: The vector engine creates attack vectors and non-linear stitching which enable RidgeBot® to produce more efficient attack with high successful rate toward the targeted system.

Risk Analysis

• Topology portrait: Automatically generate a topology map from the information collected during the attack, label the risks identified in each part of the topology, and assist administrators in risk analysis and evaluation.

• Proactive situational awareness: Proactively poke the targeted system from multiple perspectives to form a multidi-mensional analysis view and the real-time graphic models; provide administrators a global view of the security landscape.

• Real time attack action visibility: Provide real time visibility to every single step of the attack, from discovery, scanning to exploit attempts for security team to further analyze.

Vulnerability Mining

• Weakness discovering: Identify possible weak links on the attack surface and check for vulnerabilities based on the intelligent decision system such as the expert models and RidgeBot® brains.

• Vulnerability scanning: Access and test the target system by using packet generated by an automatic tool and the payload provided by the attack compo-nent, vector engine etc., and the returned results are checked to determine whether there are vulnerabilities that can be exploited.

Vulnerability Exploitation

• Attack Vector Supported: Network attack: Explore network connected target machines, proactively discover and exploit security flaws on target machines to gain access.

• Attack Coverage Host Servers: (Windows, Linux, Unix, MacOS and others), Web Servers, Application Servers, Database Servers (Oracle, IBM DB2, MS SQL Server, MySQL, PostgreSQL and others), Virtualization Platforms, Network Equipment, IoT Devices and Bigdata.

• Local attack/Privilege Escalation: After gaining a lower privilege access on the target machine, exploit additional vulnerabilities from local to gain elevated privilege.

• Attack User Intervention Mode: Enable experienced pentesters to control the attacks of high impact penetration testing plugins, provide better risk control and attack visibility

• Web API Penetration Testing: Launch attack to test web application programming interfaces (APIs). Identify vulnerabilities: Detect weaknesses in API design, implementation, and configuration; Exploit vulnerabilities: Attempt to manipulate or exploit identified vulnerabilities.

• Lateral Movement: Gain control of a compromised asset and use it as a pivot to exploit other target machines on adjacent networks.

•Application Security Testing: Support Dynamic Application Security Testing (DAST) Support Authenticated Web Penetration Testing with built-in web login sequence recorder and proxy mode.

• Brute Force Weak Password: Dedicated security validation scenario for and OS, application and database weak taking credential exploit.

• Automatic SQL injection testing Automates the process of detecting.

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• Customizable pentest plugins: User customizable application fingerprint, attack vector, vulnerability detection payload, vulnerability exploitation payload (scripts and rules) as well as remediation suggestions.

Vulnerability Validation

• Risk validation: Validate whether the vulnerability is exploitable in user's real environment by using proof-of-concept payload generated by RidgeBot® knowledge base and auto-exploitation engine. Proof of a successful exploitation is provided for validated risks, includes privilege obtained, screenshots, shell terminal, file manager, database name or database table name etc.

• Kill-Chain Visualization: Visualize the full attack path with attack sequence information, including target machine information, attack surface exposure, vulnerability discovered and vulnerability exploited.

• Risk Assessment: Provide real-time risk assessment for IT assets being tested, including health score rating and vulnerability details & risk analysis.

• Patch validation test: Retest after patch is installed to verify whether the vulnerability has been fixed.

Adversary Cyber Emulation

• RidgeBot® Botlet supports both 32-bit and 64-bit Windows and Linux platforms.

Task Management

• Task scheduling: Support 1) Run Now, 2) Run Once, 3) Weekly (Daily), 4) Monthly task scheduling.

• Support multiple runs within a weekly/monthly task cycle.

• Assessment test scripts are mapped to Threat Groups and MITRE ATT&CK and Techniques.

• Support scheduled pause for penetration testing tasks to minimize business disruption during a penetration testing.

• Stealth control: 4-tier penetration testing flow control to control the traffic volume being sent to the target machines and minimize the impact to test targets.

Asset Management

• A centralized repository to manage tested host and web targets, active applications/ services, OS and application versions, as well as domain names and DNS resolutions.

• Botlet installation and status.

• Configure integration connectors.

Reporting and 3rd Party System Integration

• Professional Report: Provide professional security validation test reports with detailed asset information, vulnerability and risk data, assessment test results, mitigation suggestions, and historical trend.

• Multi-language Reports: Support English, Spanish, Portuguese, Japanese Italian and Korean reports. The customer can select a preferred language before generating the reports.

• OWASP Top-10 Compliance Reports: Support 2017 and 2021 versions of OWASP Top-10 definition. Dedicated OWASP Top-10 report templates for web penetration testing tasks.

• Support scanning: result validation for Qualys, Tenable, Nessus Pro and Rapid7 Nexpose VA scanners with 3rd-party security management platform. Support Token-based.

• DevSecOps Integration: Support Jira Software, ServiceNow and GitLab for issue tracking

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• MSSP Co-branding Reports: Support report customization, and allow a MSSP (Managed Security Service Provider) user to add its company logo on testing authentication for API communication.

• System Integration: Support RESTful API and CEF-compliant syslog messages, easy to integrate.

• Vulnerability Scanner Integration: seamlessly integrates with third-party vulnerability scanners such as Qualys, Tenable and Rapid7 to validate the Vuln result and accurate risk identification.

System Administration

• Support online and offline software updates.

• Support user role-base access control for security validation tasks and reports.

• Support Modern IM integration, allowing it to connect with IM systems like Slack. This enables timely notifications to be posted to channels, keeping users informed about system updates and tasks.

• Support multi-Language UI, customer can select the language - English, Japanese, Spanish and Portuguese.

• Support local management console for system administration and service recovery.

• Support two-factor authentication (2FA) for web user login.

• Support OpenVPN for enterprise Intranet or virtual private cloud (VPC) access.

• Support http/https proxy and SOCKS5 proxy for communication with license server and Jira/GitLab server.

About Ridge Security Technology

Ridge Security is a leader in exposure management and is dedicated to developing innovative cybersecurity solutions designed to protect organizations from advanced cyber threats. Ridge Security's products incorporate advanced artificial intelligence to deliver comprehensive security validation. With a focus on automation, intelligence, and actionable insights, Ridge Security enables security teams to proactively defend against and respond to evolving cyber challenges.

Contact Ridge Security to learn more:

sales@ridgesecurity.ai

ridgesecurity.ai/contact-us

Ridge Security Technology Inc.
www.ridgesecurity.ai

@RidgeSecurityAI
www.linkedin.com/company/ridge-security