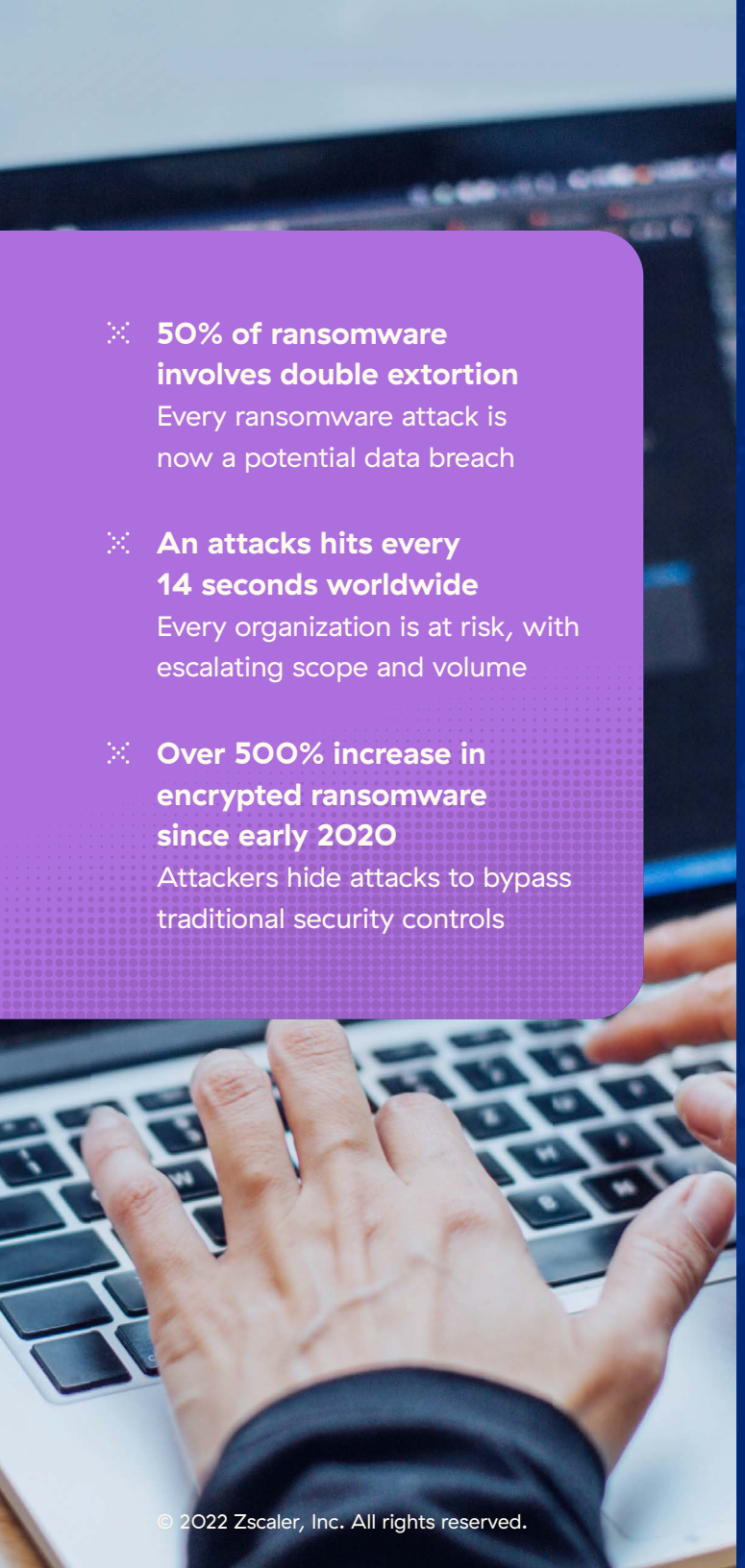
zscaler™

eBook

10 Ways a Zero Trust Architecture Protects Against Ransomware



- **50% of ransomware involves double extortion**
  Every ransomware attack is now a potential data breach
- **An attacks hits every 14 seconds worldwide**
  Every organization is at risk, with escalating scope and volume
- **Over 500% increase in encrypted ransomware since early 2020**
  Attackers hide attacks to bypass traditional security controls

Ransomware is the biggest threat to digital business

While ransomware has been around for decades, its prevalence has exploded in the last few years. These attacks used to be perpetrated by individuals; now, they're launched by networked groups of affiliates who buy and sell each other's specialized skills and toolkits. Attacks were once unfocused and one-dimensional; now, they use targeted, multilayered tactics that are much harder to defend against and command much higher ransoms. **Ransomware is expected to cause $42 billion in damages by the end of 2024.**[1]

Arguably, the most impactful trend in modern ransomware is the advent of double-extortion attacks, in which attackers steal data and threaten to publish it in addition to encrypting it. Roughly 50% of ransomware attacks now include attempts to exfiltrate data.

There is one underlying strategy that maximizes an organization's chances at mitigating the damage a ransomware attack might cause: zero trust.

Zero trust is an approach to security that's based on the notion that a breach has already occurred. Architectures, access control policies, and monitoring and authentication tactics are put in place to mitigate the amount and severity of the damage an attacker can cause.

Here are 10 ways in which zero trust can help your organization defend against ransomware.

[1] *According to Cybersecurity Ventures, "Global Ransomware Damage Costs Predicted To Exceed $265 Billion By 2031."*

Understanding the ransomware attack sequence

In a ransomware attack, adversaries must complete a number of objectives in order to succeed. First, they need to gain entry into your environment by successfully infecting a system with a malicious ransomware payload. **The first step to stopping an attack, then, is to use preventive controls that reduce your vulnerabilities, minimize your attack surface, and allow you to block, control, and inspect traffic.**

Secondly, attackers do reconnaissance, locating high-value assets to steal and encrypt. To do this, they must be able to move laterally throughout the network. **The second step to stopping an attack and minimizing the damage an attacker can cause is to limit their ability to move laterally.**

In a double-extortion attack, attackers steal data and hold it hostage to increase their chances of success and the dollar amounts of their ransom demands. **The third step to defending against a ransomware attack is data loss prevention.**

Let's see how zero trust enables defense across the attack chain.

#1

By making applications invisible to attackers, a zero trust architecture minimizes the attack surface.

When application, user, and device identities are openly discoverable on the internet, it's like putting your most valuable information assets on public display. When these assets are visible, attackers are readily able to find and exploit vulnerabilities—such as unpatched web server software or a weak password that can be cracked in a brute force attack—giving them an immediate and strong foothold in your environment.

Leveraging a solution like Zscaler Private Access™ enables applications to connect to users instead of having users connect to applications. With this form of inside-out connectivity, all applications remain private and thus invisible to attackers. Extending this approach across all devices and applications in your environment makes it near-impossible for attackers to conduct reconnaissance there.

#2

In a zero trust architecture, all traffic—including encrypted traffic—is subject to deep and thorough inspection.

The vast majority of today's internet traffic leverages encryption, and malicious traffic is no exception. More than 90% of internet traffic is now encrypted, and encryption of ransomware is up more than 500% since the beginning of 2020. Security teams can no longer blindly assume that all SSL-encrypted traffic is safe.

However, now that inspecting all traffic, encrypted or not, is an essential part of a robust defensive strategy, architectures relying on next-gen firewalls and other perimeter-based defenses are no longer up to the task. It's simply impossible for even the most advanced on-premises security tools to inspect all SSL-encrypted traffic without introducing performance bottlenecks that get in the way of productivity. A proxy-based architecture in the cloud that was purpose-built to detect SSL-encrypted malware at scale will protect all of your traffic and eliminate blind spots.

#3

Zero trust strategies include controls to detect never-before-seen ransomware threats before they can cause harm.

Growing numbers of ransomware attacks are taking advantage of custom-crafted malware. To defend against this threat, you need to be able to detect and block novel threats. With cloud native sandboxing and AI-powered detection, you can rely on behavior analysis to discover previously unknown ransomware variants by quarantining and fully analyzing files before they're delivered to users or allowed to execute.

With a solution like the Zscaler Cloud Sandbox, you can define policies based on users, groups, and content types, giving you granular control over quarantine actions. Because this solution is part of the Zscaler Zero Trust Exchange™, you get near real-time file verdicts sourced from a global community, which minimizes user impact while maximizing malware detection accuracy.

#4

Zero trust simplifies access control policies, enhances visibility, and improves effectiveness.

Microsegmentation is a core zero trust concept. It involves restricting access to applications and resources so that attackers that breach one can't cause damage to others. In the legacy network-based approach to microsegmentation, firewalls enforced rules by examining network addresses. This approach required policies to be redefined and updated as applications moved and networks evolved. This was challenging enough in the on-premises data center, but the cloud's ephemerality has increased its complexity to the point that it's unmanageable.

Proxy architectures greatly reduce the complexity involved in implementing microsegmentation while providing more robust protection for workloads. Because policies and permissions are managed on the basis of resource identities, they're independent of the underlying network infrastructure and can automatically adapt —no matter how dynamic the network's architecture is or how rapidly business requirements change. This also simplifies management—you can protect a segment with just a few identity-based policies instead of hundreds of address-based rules.

#5

A zero trust architecture protects users and devices wherever they are.

When the COVID-19 pandemic made supporting remote work a must for organizations across industries, many turned to virtual private networks (VPNs) or remote desktop protocol (RDP) to enable employees working from home to connect to corporate networks and resources. Unfortunately, ransomware operators quickly followed in these organizations' footsteps, launching a new wave of RDP- and VPN-based attacks. In fact, a VPN was exploited in the now-infamous Colonial Pipeline attack that halted the transport of nearly half the fuel supply in the eastern US.

In a zero trust-based approach to securing remote users, every connection gets identical protection, regardless of where users are located. Adding a lightweight endpoint agent, Zscaler Client Connector, to every remote user's device gives them access to all the security, policy enforcement, and access controls available through the Zscaler Zero Trust Exchange. And because Zscaler is distributed across 150 data centers around the world, users always get a fast connection through a nearby data center, eliminating the inconvenience of VPN latency.

#6

A true zero trust architecture makes it impossible for attackers to move laterally across your network.

Far too many security teams continue to rely on legacy firewall–based network segmentation to keep malicious traffic out of corporate networks. These strategies are not only complex to deploy and manage, but they still leave internal resources exposed. If attackers successfully breach an application or firewall, they still have opportunity to move laterally across the environment—which allows attackers to encrypt and steal much more data than they could otherwise.

A true zero trust approach connects a user directly to the application that they need in a 1:1 segment, without ever exposing the network. Security teams can use a proxy architecture to continuously authenticate users and connect them directly to applications rather than trusting traffic from an internal network or subnet, eliminating the biggest digital risk that today's businesses face. And best of all, a proxy works no matter where your users, devices, or applications reside, providing secure connectivity both on–premises and off.

#7

A zero trust architecture keeps attackers from exploiting workloads.

In a zero trust architecture, security policies are enforced in accordance with the identity of the workloads that are attempting to communicate with one another. These identities are constantly being verified; workloads that are unverified are blocked from communicating with others. This means they can't interact with malicious remote command-and-control servers or with internal hosts, users, applications, and data.

A platform like the Zscaler Zero Trust Exchange automatically ensures that all traffic—regardless of where it originates—will adhere to all corporate policies when accessing your resources. It will apply these policies in an entirely uniform fashion, no matter if the resources in question are internal, external, or third-party SaaS. This is a much simpler approach to network microsegmentation than multilayered policy enforcement, but it's also more effective.

#8

Zero trust includes proactive strategies to beat adversaries at their own game.

Today's ransomware operators are sophisticated foes who are capable of bypassing initial prevention. Thus, a key aspect of zero trust is employing strategies to find and isolate attacks before they can cause damage. As the world's only zero trust platform that integrates deception capabilities, Zscaler Deception™ uses advanced deception tactics to lure, detect, and intercept attackers, no matter how advanced or targeted their strategies are.

This proactive approach to defense involves populating your IT environment with decoys, such as fake endpoints, directories, databases, files, and user paths. These decoys mimic high-value production assets, but they remain hidden from real users. Their sole purpose is to alert your security team to the presence of an adversary when they're touched. As there is no legitimate traffic to the decoys, alerts are extremely high-fidelity, providing solid evidence of a threat or breach that rises above the noise of other detection systems. This gives your security team an advantage, allowing them to disrupt adversaries' playbooks and mitigate damage.

#9

Zero trust architectures provide comprehensive protection against data loss.

The increasing prevalence of double-extortion ransomware attack strategies has made it necessary to consider every ransomware attack a data breach. Measures that prevent exfiltration and publication of your sensitive data will go a long way when it comes to mitigating the most devastating consequences of a ransomware attack.

Using a cloud access security broker (CASB) solution enables you to enforce granular controls over your cloud applications, protecting data at rest within SaaS platforms and preventing accidental oversharing as well as malicious acuity. An added benefit is that you'll enjoy enhanced visibility your cloud applications, making it easy to identify vulnerabilities, misconfigurations, and shadow IT—the use of unsanctioned cloud apps. With data loss prevention (DLP) capabilities, you'll be able to block data exfiltration automatically, curtailing the double-extortion threat.

#10

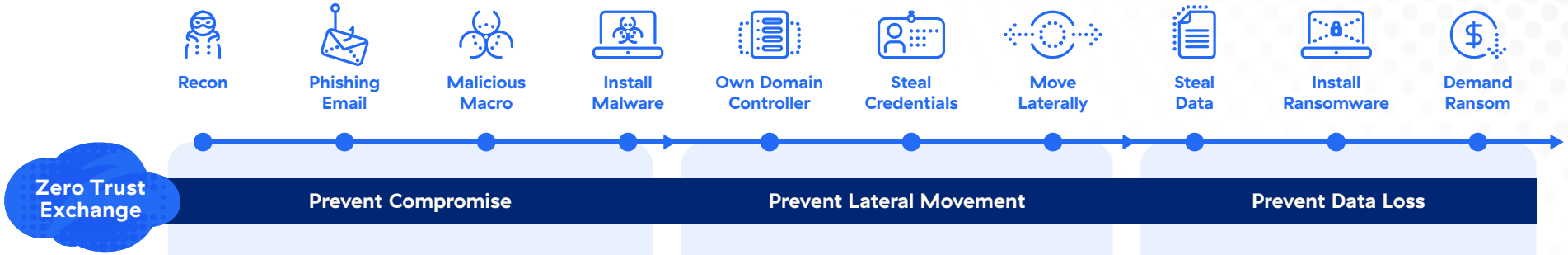
With full inline inspection of all outbound traffic, a zero trust architecture enables you to bring data theft to a halt.

If bad actors hide malware in SSL–encrypted inbound traffic, they can make use of the same strategy—leveraging encryption—to conceal the fact that they're exfiltrating sensitive and valuable corporate data. Being able to inspect SSL–encrypted traffic is critical to preventing data loss and identifying zero–day data exfiltration vulnerabilities.

A zero trust architecture–based solution such as the Zscaler Zero Trust Exchange ensures that every connection in your environment will be verified and secured individually, regardless of whether it's inbound or outbound. With a cloud–native proxy architecture, it's possible to perform SSL inspection at scale without impacting performance or incurring excessive costs. This eliminates the security gaps that ransomware operators have exploited to launch devastating double–extortion attacks.

Operationalize zero trust to protect against ransomware

The Zero Trust Exchange offers the most comprehensive defense against the full sequence of steps that attackers must take to succeed. See how Zscaler uses zero trust to deliver unmatched protection for your organization.



Block threats before they reach you

Attack Surface Eliminated
Private apps are invisible to the internet, can't be discovered and attacked

Inline Content Inspection (SSL)
Proprietary proxy architecture, sophisticated content inspection engine with AL-powered cloud-effect

Secure Public Cloud Data
Fix misconfigurations to prevent unauthorized access to cloud resources

Stop the spread of infection (LAN/WAN)

User to App Segmentation
Connects an authenticated user and device to an authorized app without bringing the user on the network

Workload to Workload Segmentation
Uses software identity to allow or block workload communications in hybrid and multicloud environments

Deception
Uses decoys to detect and stop lateral movement of active in-network threats that have already bypassed existing defenses

Prevent data loss to the internet

Inline Content Inspection (SSL)
Proprietary proxy architecture with inline DLP policies for users, servers, workloads, IoT and OT systems

Innovative Data Classification Engine
With advanced exact data match and document fingerprinting capabilities

Secure SaaS Data (CASB)
Prevent oversharing and discover sensitive data at rest

Stopping modern attacks requires modern security.

Safeguard your enterprise with the industry's most comprehensive ransomware defense.

Learn More

zscaler™ | Experience your world, secured.™

About Zscaler
Zscaler (NASDAQ: ZS) accelerates digital transformation so that customers can be more agile, efficient, resilient, and secure. The Zscaler Zero Trust Exchange protects thousands of customers from cyberattacks and data loss by securely connecting users, devices, and applications in any location. Distributed across more than 150 data centers globally, the SASE–based Zero Trust Exchange is the world's largest inline cloud security platform. Learn more at **zscaler.com** or follow us on Twitter **@zscaler**.

+1 408.533.0288 Zscaler, Inc. (HQ) • 120 Holger Way • San Jose, CA 95134 zscaler.com