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2025 Ransomware Emergency Kit

Quick-access guide to ransomware prevention and recovery

Contents

Undestanding the threat

- **Ransomware targets entire organizations**
- **Attacks aim to stop organizations from functioning**
- **Organizations of all sizes are at risk**

Modern ransomware attacks operate on a different scale to the viruses and malware of old. When planning how to prepare and respond, organizations should think about the potential impact on their business in the same way as they think about natural disasters.

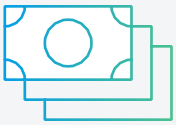
In a ransomware attack, criminal hackers break into a computer network and try to compromise the organization that owns it. They may steal company secrets and threaten to leak them, or encrypt the organization's files so it cannot function. Many ransomware gangs do both.

Attackers can spend days or even weeks inside a victim's network and demand huge cryptocurrency payments in return for decryption keys, or for destroying stolen data instead of leaking it.

2024 saw more ransom attacks than any previous year. The average ransomware payment in Q4 2024 was $550,000[1], while the average cost of a ransomware attack grew to $4.9 million[2]. 2024 also saw the highest ransom ever paid when an anonymous Fortune 50 company paid $75 million to the Dark Angels ransomware group.[3]

The target in a modern ransomware attack is an entire organization. All types of organizations have been attacked, including businesses of all sizes, hospitals, law enforcement agencies, governments, charities, and critical infrastructure.

$550K
The average ransom payment in Q4 2024.



$4.9M
The average cost of a ransomware attack.

$75M
The largest ransom payment ever made.

[1] Coveware, Will Law Enforcement success against ransomware continue in 2025?, https://www.coveware.com/blog/2025/1/31/q4-report
[2] IBM, Cost of a Data Breach Report 2024, https://www.ibm.com/reports/data-breach
[3] Zscaler, 2024 Ransomware Report, https://www.zscaler.com/resources/industry-reports/threatlabz-ransomware-report.pdf

Anatomy of a ransomware attack

Ransomware is typically deployed as the last act in a sophisticated infiltration of your network by criminal hackers. Every ransomware attack is different, but they often follow a predictable pattern, which can be broken down into five phases.

Breach

Attackers gain unauthorized access to one of your computers with malware; by phishing, guessing or finding a remote password; or through a software vulnerability. This can occur months before the attack phase.

The best way to stop a ransomware attack is to prevent the initial breach. This requires a mix of approaches including web protection, vulnerability assessment and patch management, RDP hardening, and user education.

Infiltration

Attackers work inside your network using Living Off the Land techniques to avoid detection. They will establish backdoors and steal data, and may try to disable security software and backups.

Structure your network to slow down attackers, and use monitoring tools like EDR to identify the suspicious behavior of hidden attackers.

Attack

Attackers run ransomware throughout your network, in the early hours of the morning or at the weekend. Critical business operations stop. Ransom notes explain how to negotiate with attackers.

Stopping attacks requires security software that can detect known malware, suspicious encryption, and zero-day threats, and can roll back damaged files.

Response

Attackers demand a ransom, which could be millions of dollars. They will issue deadlines and may threaten to leak sensitive data.

You must restore critical operations while talking to customers, suppliers, insurance, press, lawyers, law enforcement, and others. You will need offline backups and a plan.

Recovery

Whether the attack is successful or not, attackers may still be on your network, and lingering malware or artifacts could cause reinfection. Your willingness to pay a ransom will have been noted.

After restoring critical operations, you must discover what happened, expel the attackers, and deny them access. Then you must harden your network against a repeat attack.

Should you pay the ransom?

Most experts and government agencies do not recommend paying a ransom. Ransom payments incentivize further attacks and fund the continued development of ransomware, making everyone less secure. If you are thinking of paying the ransom you should consider the following carefully:

1. **Decryption often fails.**
   Ransomware gangs' decryption tools are poor quality and may lead to partially corrupted data. In May 2021, Colonial Pipeline paid a $4.4 million ransom. The decryption app it received was so slow it rebuilt systems from backups instead.[4]

2. **You are trusting criminals to keep their word.**
   When global law enforcement agencies disrupted the notorious LockBit ransomware gang in February 2024, they discovered the criminals had not deleted all the data belonging to victims who had paid a ransom.[5]

3. **The cost of recovery can dwarf the ransom.**
   Even if you pay the ransom, you will need an extensive clean-up operation, and upgraded protection to prevent future attacks. The cost in downtime, lost productivity, and recovery can dwarf the ransom.

4. **Paying leads to repeat attacks.**
   Attackers will note your willingness to pay, and that you were not prepared to withstand an attack. As many as 80% of ransom payers suffer a second attack.[6]

FBI

WARNING

The FBI does not support paying a ransom in response to a ransomware attack.
Paying a ransom doesn't guarantee you or your organization will get any data back.

[4] Forbes, Here's Yet Another Reason Ransomware Victims Shouldn't Pay The Ransom, 2021, https://www.forbes.com/sites/leemathews/2021/05/29/heres-yet-another-reason-ransomware-victims-shouldnt-pay-the-ransom/
[5] National Crime Agency, International investigation disrupts the world's most harmful cyber crime group, https://www.nationalcrimeagency.gov.uk/news/nca-leads-international-investigation-targeting-worlds-most-harmful-ransomware-group
[6] Cybereason, Ransomware: The true cost to business, 2021, https://www.cybereason.com/ebook-ransomware-the-true-cost-to-business

Ransomware prevention checklist

What you should do:	Breach	Infiltration	Attack	Restoration	Recovery
Create an inventory of assets including hardware, software and data	✓	✓			
Audit your network for unknown computers and services	✓	✓			
Disable internet-facing systems, services, and ports you don't need	✓	✓			
Perform regular vulnerability scans	✓	✓			
Patch systems regularly, prioritizing the most vulnerable and critical	✓	✓			
Ensure systems are properly configured, and security features are enabled	✓	✓			
Harden remote access with MFA, password rate limits, and password lockouts	✓				
Deploy EDR software to all endpoints and servers	✓	✓	✓		
Provide staff with cybersecurity awareness training	✓	✓			
Implement a process for reporting and responding to suspicious activity	✓	✓	✓		
Document your network structure and data flows		✓			✓
Use network segmentation to subdivide your computer networks		✓			
Use least-privilege access for all systems and services	✓	✓			
Use allow listing to ensure that only authorized software can run		✓	✓		
Restrict the use of legitimate tools commonly used by attackers[7]		✓			
Harden domain controllers according to the latest best practice[8]		✓			
Monitor your network and endpoints 24/7 using MDR and SIEM		✓	✓		✓
Make regular, comprehensive backups, keeping at least one copy offline				✓	
Have a process for restoring computers from clean system images				✓	
Practice restoring systems from backups, so you know they work				✓	
Create an incident response plan[9] that aligns with regulations			✓	✓	
Create a critical asset list so you know what you need to restore first				✓	

[7] This is known as "living off the land." The Living Off The Land Binaries and Scrip (LOLBAS) project maintains a list of legitimate software used by attackers at https://lolbas-project.github.io/

[8] Domain controllers are a prime target for attackers. Microsoft maintains a guide to securing domain controllers against attack at https://docs.microsoft.com/ven-us/windows-server/identity/ad-ds/plan/security-best-practices/securing-domain-controllers-against-attack

[9] You can find a response plan template at https://github.com/counteractive/incident-response-plan-template/blob/master/playbooks/playbook-ransomware.md

Useful resources

CISA Ransomware Guide

The Cybersecurity and Infrastructure Security Agency (CISA) maintains a detailed Ransomware Guide.

Learn more

Among other things, it contains a very useful Ransomware Response Checklist. CISA also maintains a Ransomware Readiness Assessment tool.

Learn more

The anatomy of a Medusa ransomware attack: ThreatDown MDR team investigates

In early April 2024, a prominent service chain in the United States fell victim to a Medusa ransomware attack. This case study dissects the attack's framework, key indicators of compromise (IOCs), and steps the ThreatDown MDR team took to mitigate the infection.

Learn more

NIST Cybersecurity Framework

The National Institute of Standards and Technology (NIST) has published a comprehensive Cybersecurity Framework to help organizations better manage and reduce cybersecurity risk.

Learn more

Understanding ransomware reinfection: An MDR case study

Victims of ransomware are vulnerable to repeat attacks unless they discover how they were compromised and remove the backdoors, accounts, and tools their attackers used. This article details a real-life episode where MDR mitigated a resilient ransomware reinfection by the Royal ransomware gang.

Learn more

Stopping a targeted attack on a Managed Service Provider (MSP) with ThreatDown MDR

MSPs are a prime target for ransomware gangs. In late January 2024, the ThreatDown MDR team found and stopped a three-month long malware campaign against a Managed Service Provider (MSP) that made extensive use of Living Off the Land (LOTL) techniques to avoid detection.

Learn more

10-step ransomware recovery plan

If you are dealing with a ransomware incident you may be working under extreme pressure. Ransomware may still be encrypting files, attackers may have issued ultimatums, and your organization will be desperate to get up and running again. **Ask for help, prioritize your actions, communicate clearly, and take care of each other.** We recommend you take the following actions, in order:

1. **Contain the attack.**
   Isolate infected systems or networks to limit the impact of the attack. Your priority should be containing the attack but if you can do so while also preserving evidence by leaving affected systems turned on, do so.

2. **Establish the scope of the attack.**
   Understand what systems and what kind of data are affected, and prioritize critical systems for recovery.

3. **Communicate with stakeholders.**
   Stakeholders may include senior management, PR, your legal team, cyber-insurance providers, security vendors and law enforcement.

4. **Seek assistance.**
   Consider seeking expert assistance from local and national law enforcement, vendors or other third parties familiar with ransomware recovery.

5. **Preserve evidence.**
   With the help of law enforcement and third parties, try to preserve evidence from the attack if you can.

6. **Identify the ransomware being used.**
   This will help you discover if a decryptor is available, and it will inform the specifics of containment and clean up.

7. **Contain the breach.**
   Try to identify systems and accounts used in the initial breach, and any precursor malware or persistence mechanisms left by the attackers.

8. **Rebuild systems.**
   Use known good system images and backups to restore critical systems. Take care to segregate clean systems from affected systems.

9. **Reset, patch, upgrade.**
   Reset passwords, patch and upgrade software, and instigate any additional security checks necessary to prevent a recurrence of the attack.

10. **Document lessons learned.**
    Ransomware is constantly evolving. Use what you have learned from this attack to better prepare for the next one.

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