

Advanced Security Test Report

Acronis Cyber Protect Cloud with Advanced Security + XDR Pack



SE LABS tested Acronis Cyber Protect Cloud with Advanced Security + XDR Pack against a range of hacking attacks designed to compromise systems and penetrate target networks in the same way as criminals and other attackers breach systems and networks.

Full chains of attack were used, meaning that testers behaved as real attackers, probing targets using a variety of tools, techniques and vectors before attempting to gain lower-level and more powerful access. Finally, the testers/attackers attempted to complete their missions, which might include stealing information, damaging systems and connecting to other systems on the network.

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SE Labs is ISO/IEC 27001 : 2022 certified and BS EN ISO 9001 : 2015 certified for The Provision of IT Security Product Testing.

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Introduction



CEO Simon Edwards

If you spot a detail in this report that you don't understand, or would like to discuss, please contact us. SE Labs uses current threat intelligence to make our tests as realistic as possible. To learn more about how we test, how we define 'threat intelligence' and how we use it to improve our tests please visit our website and follow us on LinkedIn.

Endpoint Detection and Response is more than anti-virus

Gain insights into cyber security testing through transparent threat intelligence.

An Endpoint Detection and Response (EDR) product goes beyond traditional antivirus software, which is why it requires more sophisticated testing. This involves testers mimicking real attackers and following every step of an attack.

While shortcuts might seem tempting, fully executing each phase of an attack is crucial to truly evaluate the effectiveness of EDR products.

Moreover, each step must reflect real-world scenarios; you can't just guess what cyber criminals might do and hope it's accurate. That's why SE Labs tracks the actual behaviour of cyber criminals and designs tests based on how attackers attempt to compromise their targets.

The cyber security industry refers to this sequence of steps as the 'attack chain.' The MITRE organization has documented these stages in its ATT&CK framework.

While this framework doesn't provide an exact blueprint for real-world attacks, it offers a structured guide that testers, security vendors, and customers (like you!) can use to conduct tests and interpret the results.

SE Labs' Advanced Security tests are based on real attacker behaviour, and we present our findings using a MITRE ATT&CK-style format.

You can see how the ATT&CK framework outlines each step of an attack and how we apply it to our testing in section **4. Threat Intelligence**, starting on page 12. This approach offers two key benefits: confidence that our tests are both realistic and relevant, and familiarity with the way cyber attacks are illustrated.

Executive Summary

SE Labs tested Acronis Cyber Protect Cloud with Advanced Security + XDR Pack against targeted attacks based on those perpetrated by the Gamaredon, Ember Bear, Evasive Panda and DPRK attacker groups.

We examined its abilities to:

- Detect the delivery of targeted attacks
- Track different elements of the attack chain ...
- ... including compromises beyond the endpoint, to the wider network
- Handle legitimate applications and other objects.

Legitimate files were used alongside the threats to measure any false positive detections or other sub-optimal interactions. Acronis Cyber Protect Cloud with Advanced Security + XDR Pack scored an impressive 100% Detection Accuracy Rating for detecting every element of each attack. It detected the delivery and initial executing of a wide variety of initial attack techniques. The product also detected all the subsequent malicious activities in the attack chain, tracking all of the hostile activities that occurred as the attacks progressed.

The product scored a 96% Legitimate Accuracy Rating. This bumped up its Total Accuracy Rating to 98%, thus achieving an AAA award for advanced security.

Executive Summary

| Acronis Cyber Protect Cloud with Advanced Security + XDR Pack | | | | | | |
|---|----------------|------------|--|--|--|--|
| | Accuracy Score | Rating (%) | | | | |
| Detection Accuracy | 680/680 | 100% | | | | |
| Legitimate Accuracy | 709/742 | 96% | | | | |
| Total Accuracy | 1,389/1,422 | 98% | | | | |

 Products highlighted in green were the most accurate, scoring 90 per cent or more for Total Accuracy. Those in orange scored less than 90 but 71 or more. Products shown in red scored less than 71 per cent.

For exact percentages, see 2. Total Accuracy Ratings on page 9.

Advanced Security Test Award

The following product wins the SE Labs award:



Acronis Cyber Protect Cloud with Advanced Security + XDR Pack

₽ SE LABS

1. How We Tested

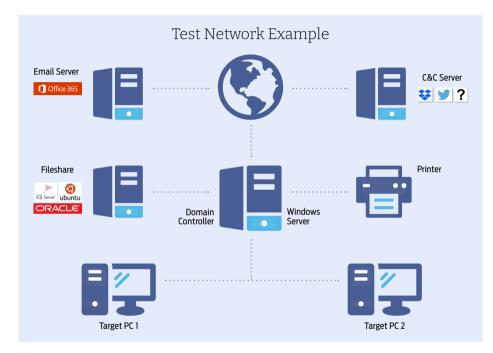
Testers can't assume that products will work a certain way, so running a realistic advanced security test means setting up real networks and hacking them in the same way that real adversaries behave.

In the diagram on the right you will see an example network that contains workstations, some basic infrastructure such as file servers and a domain controller, as well as cloud-based email and a malicious command and control (C&C) server, which may be a conventional computer or a service such as Dropbox, Twitter, Slack or something more imaginative.

As you will see in the **Threat Responses** section on page 7, attackers often jump from one compromised system to another in so-called 'lateral movement'. To allow products to detect this type of behaviour the network needs to be built realistically, with systems available, vulnerable and worth compromising.

It is possible to compromise devices such as enterprise printers and other so-called 'IoT' (internet of things) machines, which is why we've included a representative printer in the diagram.

The techniques that we choose for each test case are largely dictated by the real-world behaviour of online criminals. We observe their tactics and replicate what they do in this test. To see more



details about how the specific attackers behaved, and how we copied them, see **Attack Details** on page 8 and, for a really detailed drill down on the details, **4. Threat Intelligence** on pages 12-15 and **Appendix D: Attack Details** on pages 21-25 This example of a test network shows one possible topology and ways in which enterprises and criminals deploy resources

Threat Responses

Full Attack Chain: Testing Every Layer of Detection and Protection

Attackers start from a certain point and don't stop until they have either achieved their goal or have reached the end of their resources (which could be a deadline or the limit of their abilities). This means that, in a test, the tester needs to begin the attack from a realistic first position, such as sending a phishing email or setting up an infected website, and moving through many of the likely steps leading to actually stealing data or causing some other form of damage to the network.

If the test starts too far into the attack chain, such as executing malware on an endpoint, then many products will be denied opportunities to use the full extent of their protection and detection abilities. If the test concludes before any 'useful' damage or theft has been achieved, then similarly the product may be denied a chance to demonstrate its abilities in behavioural detection and so on.

Attack Stages

The illustration (below) shows typical stages of an attack. In a test, each of these should be attempted to determine the security solution's effectiveness. This test's results record detection and protection for each of these stages.

We measure how a product responds to the first stages of the attack with a detection and/or protection rating. Sometimes products allow threats to run yet still detect them. Other times they might allow the threat to run briefly before neutralising it. Ideally, they detect and block the threat before it has a chance to run. Products may delete threats or automatically contain them in a 'quarantine' or other safe holding mechanism for later analysis.

Should the initial attack phase succeed, we then measure post-exploitation stages, which are represented by steps two through to seven below. We broadly categorise these stages as: Access (step 2); Action (step 3); Escalation (step 4); and Post-Escalation (steps 5-6).

In figure 1. you can see a typical attack running from start to end, through various 'hacking' activities. This can be classified as a fully successful breach.

In figure 2. a product or service has interfered with the attack, allowing it to succeed only as far as stage 3, after which it was detected and neutralised. The attacker was unable to progress through stages 4 onwards.

It is possible for an attack to run in a different order with, for example, the attacker attempting to connect to other systems without needing to escalate privileges. However, it is common for password theft (see step 5) to occur before using stolen credentials to move further through the network.

 Figure 1. A typical attack starts with an initial contact and progresses through various stages, including reconnaissance, stealing data and causing damage.
 Image: Content of the start of the s

Attack Details

When testing services against targeted attacks it is important to ensure that the attacks used are relevant. Anyone can run an attack randomly against someone else. It is the security vendor's challenge to identify common attack types and to protect against them. As testers, we need to generate threats that in some way relate to the real world.

All of the attacks used in this test are valid ways to compromise an organisation. Without any security in place, all would succeed in attacking the target. Outcomes would include systems infected with ransomware, remote access to networks and data theft.

But we didn't just sit down and brainstorm how we would attack different companies. Instead we used current threat intelligence to look at what the bad guys have been doing over the last few years and copied them quite closely. This way we can test the services' abilities to handle similar threats to those faced by global governments, financial institutions and national infrastructure.

The graphic on this page shows a summary of the attack groups that inspired the targeted attacks used in this test. If a service was able to detect

| Attacker/ APT Group | Method | Target | Details |
|------------------------|--|--------|--|
| Gamaredon Group | Gamaredon Group Spear phishing Attachment/ Template Injection | | Russian cyber espionage group targeting sensitive Ukranian public services. |
| Ember Bear | Supply Chain Compromise | | Russian cyber espionage group targeting critical global infrastructure. |
| Evasive Panda | Evasive Panda Supply Chain Compromise | | Chinese cyber espionage group targeting individuals and governments. |
| DPRK | External Remote Services | | Threat actor originating from the DPRK targeting financial and technology sectors. |



and protect against these then there's a good chance they are on track to blocking similar attacks in the real world. If they fail, then you might take their bold marketing claims about defeating hackers with a pinch of salt. For more details about each APT group please see **4. Threat Intelligence** on pages 12-15.

2. Total Accuracy Rating

This test examines the total insight a product has, or can provide, into a specific set of attacking actions. We've divided the attack chain into chunks of one or more related actions. To provide sufficient insight, a product must detect at least one action in each chunk.

If you look at the results tables in **Response Details** on page 11 you'll see that Delivery and Execution are grouped together into one chunk, while Action sits alone. Escalation and Post-Escalation (PE) Action are grouped, while Lateral Movement and Lateral Action are also grouped. This means that if the product detects either the threat being delivered or executed, it has coverage for that part of the attack. If it detects the action as well as the escalation of privileges and an action involved in lateral movement then it has what we consider to be complete insight, even if it doesn't detect some parts of some chunks (i.e. Lateral Movement, in this example).

Total Accuracy Rating

| | Acronis Cyber Protect Cloud with Advanced Security + XDR Pack | 1,389 98% |
|---|---|-------------|
| 0 | 711 | 1,422 |

• Total Accuracy Ratings combine protection and false positives.

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3. Response Details

In this test security products are exposed to attacks, which comprise multiple stages. The perfect product will detect all relevant elements of an attack. The term 'relevant' is important, because sometimes detecting one part of an attack means it's not necessary to detect another.

For example, in the table below certain stages of the attack chain have been grouped together. As mentioned in **2. Total Accuracy Ratings**, these groups are as follows:

Delivery/Execution (+10)

If the product detects either the delivery or execution of the initial attack stage then a detection for this stage is recorded.

Action (+10)

When the attack performs one or more actions, while remotely controlling the target, the product should detect at least one of those actions.

Privilege Escalation/Action (+10)

As the attack progresses there will likely be an attempt to escalate system privileges and to perform more powerful and insidious actions. If the product can detect either the escalation process itself, or any resulting actions, then a detection is recorded.

Lateral Movement/Action (+10)

The attacker may attempt to use the target as a launching system to other vulnerable systems.

If this attempt is discovered, or any subsequent action, a detection is reported.

The Detection Rating is calculated by adding points for each group in a threat chain that is detected. When at least one detection occurs in a single group, a 'group detection' is recorded and 10 points are awarded. Each test round contains one threat chain, which itself contains four groups (as shown below), meaning that complete visibility of each attack adds 40 points to the total value.

A product that detects the delivery of a threat, but nothing subsequently to that, wins only 10 points, while a product that detects delivery and action, but not privilege escalation or lateral behaviours, is rated at 20 for that test round.



Understanding Detection Groups

Elements of the attack chain are put into groups. For example, the Delivery and Execution stages of an attack are in the same group. Similarly, we group the Post Escalation stage with the Post Escalation Action (PE Action) stage. When we count detections we look to see at least one detection (tick) in each group. One or two detections in a group is a success.

In this example we have four test cases, which we call 'incidents'. In Incident No. 1 there was a detection recorded for the delivery of the threat and when it was executed. These two results count as one detection. In Incident No. 2 the threat delivery was not detected, but its execution was. This also counts as one detection.

When no detection is registered in any part of a group the result will be a 'miss'. In Incident 1. there was no detection when the attacker performed the 'Action' stage of the attack. This is a miss for the product. In fact, this product only detected two of the four Action stages, which is why the Response Details table shows '2' in the Action column.

Gamaredon

| Incident No: | Detection | Delivery | Execution | Action | Escalation | PE Action | Lateral Movement | Lateral Action |
|-----------------|--------------|----------|---|--------------|------------|---|---------------------|-------------------|
| 1 | \checkmark | 1 | Image: A set of the set of the | \checkmark | 1 | Image: A set of the set of the | 1 | 1 |
| 2 | \checkmark | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| 3 | \checkmark | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| 4 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |

Ember Bear

| Incident No: | Detection | Delivery | Execution | Action | Escalation | PE Action | Lateral Movement | Lateral Action |
|-----------------|--------------|----------|-----------|----------|------------|-----------|---------------------|-------------------|
| 5 | \checkmark | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| 6 | \checkmark | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| 7 | \checkmark | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| 8 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |

Response Details

| Attacker/ APT Group | Number of Incidents | Attacks Detected | Delivery/ Execution | Action | Privilege Escalation/ Action | Lateral Movement/ Action |
|------------------------|------------------------|---------------------|------------------------|--------|------------------------------------|--------------------------------|
| Gamaredon | 4 | 4 | 4 | 4 | 4 | 4 |
| Ember Bear | 4 | 4 | 4 | 4 | 4 | 4 |
| Evasive Panda | 4 | 4 | 4 | 4 | 3 | 4 |
| DPRK | 5 | 5 | 5 | 5 | 5 | 5 |
| TOTAL | 17 | 17 | 17 | 17 | 16 | 17 |

Detection Accuracy Rating Details

| Attacker/APT Group | Number of Incidents | Attacks Detected | Group Detections | Detection Rating |
|--------------------|---------------------|------------------|------------------|------------------|
| Gamaredon | 4 | 4 | 16 | 160 |
| Ember Bear | 4 | 4 | 16 | 160 |
| Evasive Panda | 4 | 4 | 15 | 160 |
| DPRK | 5 | 5 | 20 | 200 |
| TOTAL | 17 | 17 | 67 | 680 |

Evasive Panda

| Incident No: | Detection | Delivery | Execution | Action | Escalation | PE Action | Lateral Movement | Lateral Action |
|-----------------|--------------|----------|--|----------|------------|-----------|---------------------|-------------------|
| 9 | \checkmark | 1 | \checkmark | √ | 1 | 1 | 1 | 1 |
| 10 | \checkmark | 1 | Image: A second s | 1 | 1 | 1 | 1 | 1 |
| 11 | \checkmark | 1 | Image: A second s | 1 | 1 | 1 | 1 | 1 |
| 12 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |

DPRK

| Incident No: | Detection | Delivery | Execution | Action | Escalation | PE Action | Lateral Movement | Lateral Action |
|-----------------|--------------|----------|--|----------|------------|-----------|---------------------|--|
| 13 | \checkmark | 1 | \checkmark | √ | 1 | 1 | 1 | Image: A second s |
| 14 | \checkmark | 1 | Image: A second s | 1 | 1 | 1 | 1 | 1 |
| 15 | \checkmark | 1 | Image: A second s | 1 | 1 | 1 | 1 | 1 |
| 16 | \checkmark | 1 | Image: A set of the set of the | 1 | 1 | 1 | - | 1 |
| 17 | \checkmark | - | 1 | 1 | 1 | 1 | 1 | 1 |

Detection Accuracy Rating

| Acronis Cyl | per Protect Cloud wit | h Advanced Security + | XDR Pack | 680 100% |
|-------------|-----------------------|-----------------------|----------|------------|
| 0 | 170 | 340 | 510 | 680 |

• Detection Ratings are weighted to show that how products detect threats can be subtler than just 'win' or 'lose'.

Group Detections

We record detections in groups, as described above in Understanding Detection Groups. To get an overview of how a product handled the entire set of threats we then combine these detections into 'Group Detections'.

In a test with four incidents and four detection groups (Delivery/Execution; Action; Escalation/PE Action; and Lateral Movement/Lateral Action) the maximum score would be 16. This is because for each of the four threats a product that detects everything would score 4.

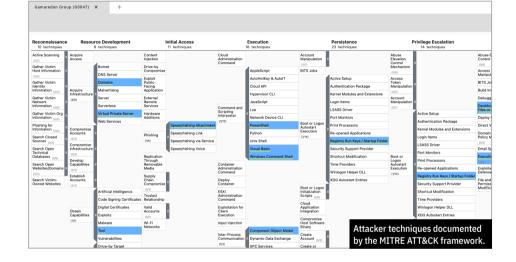
Our overall Detection Rating is based on the number of Detection Groups achieved.

4. Threat Intelligence

Gamaredon Group

Gamaredon Group has been active since at least 2013 and targets military, NGO, public services, and non-profit organisations.

Reference: https://attack.mitre.org/groups/G0047/



Example Gamaredon Group Attack

| Delivery | Execution | Action | Privilege Escalation | Post-Escalation | Lateral Movement | Lateral Action |
|------------------------------|---|------------------------------------|--|---|--------------------|--------------------------------------|
| | T1059.001 PowerShell | T1083 File and Directory Discovery | | T1036.005 Match Legitimate Name or Location | | T1119 Automated Collection |
| | T1059.003 Windows Command Shell | T1057 Process Discovery | | T1112 Modify Registry | | T1105 Data from Local System |
| T1566.001 | T204.001 Malicious Link | T1033 System Owner/User Discovery | T1548.002 Bypass | T1053.005 Scheduled Task | T1105 Ingress Tool | T1039 Data from Network Shared Drive |
| Spear phishing Attachment | T1047 Windows Management Instrumentation | T1082 System Information Discovery | User Account Control T1007 004 Compile After | | Transfer | T1041 Exfiltration Over C2 Channel |
| | | T1016.001 Internet Connection | | T1218.005 Mshta | | T1491.001 Internal Defacement |
| | T1559.001 Component Object Model | Discovery | | T1106 Native API | | 11491.001 Internal Delacement |

Ember Bear

Ember Bear has been active since at least 2020 and focused operations against Ukrainian government and telecommunication entities, alongside critical infrastructure in Europe and the Americas.

Reference: https://attack.mitre.org/groups/G1003/

| Ember Bear (G1003) X | + | | | | | |
|--|--------------------------------------|--|--|---|--|--|
| Reconnaissance | Resource Development 8 techniques | Initial Access | Execut 16 techn | | Persistence Pr 23 techniques | ivilege Escalation |
| Alexan and a second and a | Acquire | Context Context Context Pacing Pacing Pa | Conditional Condit | Accord A | Above Ab | Aboue Flowation Control Metchenism Marguardshife Marguardshife Birdis Abou Birdis Manguer Hoat Deducate Foreign Parks or information Deduction for the second Parks or information Deduction for the second Parks or information Deduction for the second Parks of the sec |
| | | | Scheduled Task/Job (1/5) | Registry | by the MITR | E ATT&CK framework. |

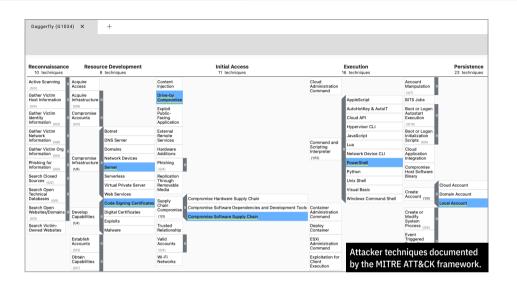
Example Ember Bear Attack

| Delivery | Execution | Action | Privilege Escalation | Post-Escalation | Lateral Movement | Lateral Action |
|--|--|---------------------------------|--|-----------------------------------|-----------------------------|--|
| | T1203 Exploitation for Client Execution | T1654 Log Enumeration | | T1053.005 Scheduled Task | T1550.002 Pass the Hash | T1560 Archive Collected Data |
| | T1505.003 Web Shell | T1046 Network Service Discovery | | T1562.001 Disable or Modify Tools | T1570 Lateral Tool Transfer | T1119 Automated Collection |
| | T1078.001 Default Accounts | T1018 Remote System Discovery | T1548.002 Bypass User Account Control | T1070.004 File Deletion | | T1005 Data from Local System |
| T1190 Exploit Public- Facing Application | T1095 Non-Application Layer Protocol | | | T1112 Modify Registry | | T1114 Email Collection |
| | T1571 Non-Standard Port | T1059.001 PowerShell | | | | T1125 Video Capture |
| | | | | T1003.001 LSASS Memory | | T1567.002 Exfiltration to Cloud Storage |
| | | | | | | T1561.002 Disk Structure Wipe |

Evasive Panda

Evasive Panda has been active since at least 2012, conducting campaigns against individuals and government institutions across Asia.

Reference: https://attack.mitre.org/groups/G1034/



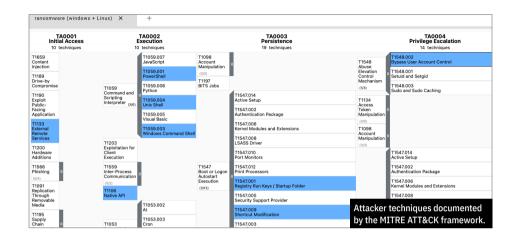
Example Evasive Panda Attack

| Delivery | Execution | Action | Privilege Escalation | Post-Escalation | Lateral Movement | Lateral Action |
|----------------|--------------------------|---|----------------------|--------------------------------------|------------------|---|
| | T1053.005 Scheduled Task | T1016 System Network Configuration Discovery | | T1112 Modify Registry | | T1140 Deobfuscate/Decode Files or Information |
| | T204.001 Malicious Link | T1082 System Information Discovery | | T1003.002 Security Account Manager | | T1056.001 Keylogging |
| | | T1083 File and Directory Discovery | | T1036.003 Rename System Utilities | T1021.004 SSH | T1560.002 Archive via Library |
| T1189 Drive-by | | T1070.004 File Deletion | | T1053.005 Scheduled Task | | T1119 Automated Collection |
| Compromise | | T1057 Process Discovery | | T1012 Query Registry | | |
| | T1071.001 Web Protocols | | | T1555.004 Windows Credential Manager | | T1115 Clipboard Data |
| | | T1518 Software Discovery | | T1106 Native API | | TIIIS CIIPDOard Data |
| | | | | T1087.001 Local Account | | |

DPRK

DPRK represent the common tactics and techniques attributed to groups originating from the Democratic People's Republic of Korea (North Korea). The main motive of these groups is financial and their main approach is to use Ransomware as a Service (RaaS), reducing the complexity for the attackers.

Reference: Attack Evaluations: https://attackevals.mitreengenuity.org/enterprise/er6/



Example DPRK Attack

| Delivery | Execution | Action | Privilege Escalation | Post-Escalation | Lateral Movement | Lateral Action |
|-----------------|--|---|---|---|---|------------------------------------|
| | T1059.003 Windows Command Shell | T1083 File and Directory Discovery | | T1053.005 Scheduled Task | | T1074.001 Local Data Staging |
| | T1036.005 Match Legitimate Name or Location | T1057 Process Discovery | | T1055.001 Dynamic-link Library Injection | y T1021.002 SMB/ Windows Admin Shares | T1119 Automated Collection |
| | T1218.010 Regsvr32 | T1033 System Owner/User Discovery | | T1555.003 Credentials from Web Browsers | | T1560 Archive Collected Data |
| T1133 External | T1571 Non-Standard Port | T1614 System Location Discovery | T1548.002 Bypass User Account Control | T1564.001 Hidden Files and Directories | | T1030 Data Transfer Size Limits |
| Remote Services | T1564.005 Hidden File System | T1614.001 System Language Discovery | | T1564.003 Hidden Window | | T1041 Exfiltration Over C2 Channel |
| | T1564 Hide Artifacts | | | T1543.003 Windows Service | | T1485 Data Destruction |
| | T1027.002 Software Packing | | | T1003.002 Security Account Manager | | T1486 Data Encrypted for Impact |
| | T1564.004 NTFS File Attributes | T1082 System Information Discovery | | T1055.012 Process Hollowing | | T1489 Service Stop |
| | | | | | | T1490 Inhibit System Recovery |
| | | | | | | T1491.001 Internal Defacement |

5. Legitimate Accuracy Rating

These ratings indicate how accurately the product classifies legitimate applications and URLs, while also taking into account the interactions that the product has with the user. Ideally a product will either not classify a legitimate object or will classify it as safe. In neither case should it bother the user.

We also take into account the prevalence (popularity) of the applications and websites used in this part of the test, applying stricter penalties for when products misclassify very popular software and sites.

Legitimate Accuracy Rating

| Acronis Cyber Protect Clou | ud with Advanced Security + XDR Pack | 709 96% | |
|--------------------------------|--|-----------|-----|
| 0 | 371 | | 74: |
| Legitimate Accuracy Ratings of | can indicate how well a vendor has tuned its detection engine. | | |

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6. Conclusion

The test exposed Acronis Cyber Protect Cloud with Advanced Security + XDR Pack to a diverse set of exploits, file-less attacks and malware attachments, comprising the widest range of threats in any currently available public test.

All of these attack types have been witnessed in real-world attacks over the previous few years. They are representative of a real and present threat to business networks the world over.

The threats used in this test are similar or identical to those used by the threat groups listed in **Attack Details** on page 8 and **4. Threat Intelligence** on pages 12-15.

It is important to note that while the test used the same type of attacks, new files were used. This exercised the tested product's abilities to detect and protect against certain approaches to attacking systems rather than simply detecting malicious files that have become well-known over the previous few years. The results are an indicator of future performance rather than just a compliance check that the product can detect old attacks.

Some of the attacks, for example, are based on those perpetrated by Advanced Persistent Threat (APT) groups that have been active for more than 10 years. Their choice of targets, however, indicate that these groups are very much invested in developing new attack techniques. This is evident in the sheer variety of initial delivery techniques that the test has had to replicate.

Acronis Cyber Protect Cloud with Advanced Security + XDR Pack detected all of the threats on a basic level, in that for each attack it detected at least some element of the attack chain. However, it earned its 100% Detection Accuracy Rating for its ability to detect all the threats in depth, capturing details as each threat proceeded down the attack chain from the initial introduction to the system through to executing and subsequent behaviour by the attacker.

For example, it was given full marks for two incidents despite missing the introduction of external remote services. This was because the product quickly issued a warning when these remote services started to perform several malicious actions.

In another incident, it missed the lateral movement of a threat from the initial target to another vulnerable system. Again, however, Acronis Cyber Protect Cloud with Advanced Security + XDR Pack was able to detect the series of lateral actions that the DPRK-based threat attempted to execute. As impressive as the product's performance was in terms of detecting threats, the most notable result of this test is the product's 96% Legitimate Accuracy Rating. That kind of result can pull down a 100% Threat Detection Rating because the response to warnings against false positives can be as taxing on scarce security resources as the mitigation of actual threats can be.

That's not a problem with the current version of Acronis Cyber Protect Cloud with Advanced Security + XDR Pack. Its excellent Total Accuracy Rating of 98% shows that its detection facility can distinguish between actual threats and benign objects. It deserves its AAA award for advanced security detection.

Appendices

Appendix A: Legitimate Interaction Ratings

It's crucial that security products not only detect threats but also correctly handle legitimate objects, such as files and URLs. Incorrectly labelling legitimate objects as being 'malware' or 'harmful' is a false positive (FP) result.

In reality, genuine FPs are quite rare in good testing, with good products. In our experience it is unusual for a legitimate application to be classified as 'malware'. More often it will be classified as 'unknown', 'suspicious' or 'unwanted' (or other terms that mean much the same thing).

Interaction Ratings

We use a subtle system to rate a product's approach to legitimate objects. This takes into account how it classifies them and how it presents that information. Sometimes a product will pass the buck and demand that a user or administrator decide if something is safe or not. In such cases, the product may make a recommendation to allow or remove the object. In other cases the product will make no recommendation, which is possibly even less useful.

If a product reports that an application is safe, or doesn't recommend any action (such as to remove it), it has achieved an optimum result. Anything else is a Non-Optimal Classification/Action (NOCA).

A product may be configured with a policy to restrict certain objects according to the business' objectives. A recommendation to remove a legitimate application could be the correct result if it matches a policy. For example, a policy to refuse all Microsoft Office

| | Recommendation: None | Recommendation: Allow | Recommendation: Unclear | Recommendation: Remove | Action: Remove |
|----------------|-------------------------|--------------------------|----------------------------|---------------------------|-------------------|
| Safe | 2 | 1.5 | 1 | | |
| Unknown | 2 | 1 | 0.5 | 0 | -0.5 |
| Not Classified | 2 | 0.5 | 0 | -0.5 | -1 |
| Suspicious | 0.5 | 0 | -0.5 | -1 | -1.5 |
| Unwanted | 0 | -0.5 | 1 | -1.5 | -2 |
| Malicious | | | | 2 | -2 |

Legitimate Software Prevalence Rating Modifiers

| Very High Impact | 5 |
|------------------|---|
| High Impact | 4 |
| Medium Impact | 3 |
| Low Impact | 2 |
| Very Low Impact | 1 |

applications would recommend the removal of Microsoft Word. As long as the alert is clear that this is a policy decision and not a mistake then the product will not face a penalty.

For example, an acceptable alert would be: 'Word.exe is not permitted due to policy: NoMicrosoft', whereas an unacceptable alert would be: "Word.exe is a threat that should be removed (Trojan.XYZ)".

We think that measuring NOCAs is more useful than simply counting rarer FPs. The table below shows how we score different combinations of Classifications (the vertical axis) and Actions (the horizontal axis).

Prevalence Ratings

There is a significant difference between a product incorrectly alerting against a popular application like Microsoft Word and condemning a rare, obscure or outdated application such as Internet Explorer 6. One is very popular all over the world and its detection as malware (or something less serious, but still suspicious) is a big deal.

Conversely, the outdated web browser has not been in general use for years and in many cases should not be used in a business environment. Detecting this application as malware may be wrong (an FP) but the mistake is less impactful.

With this mind, we collected objects of varying popularity and sorted them into five separate categories, as follows:

- 1. Very High Impact
- 2. High Impact
- 3. Medium Impact
- 4. Low Impact
- 5. Very Low Impact

Incorrectly labelling any legitimate object invokes penalties, but classifying Microsoft Word as malware, and recommending its removal without providing any context, will bring far greater penalties

than doing the same for an ancient, unsupported web browser.

In order to calculate these relative penalties, we assign each impact category with a rating modifier, as shown in the table above.

Objects are obtained from original sources in most cases, avoiding third-party download sites. This is due to the risk of third parties modifying the legitimate objects and potentially adding problematic elements that could be a threat to an organisation. We remove adware and other less obviously legitimate objects from the test set.

We base the prevalence for each object on publicly available data sources.

Accuracy Ratings

We calculate legitimate interaction ratings by multiplying together the interaction and prevalence ratings for each object:

Accuracy Rating = Interaction Rating x Prevalence Rating If a product inspected one legitimate, Medium Impact application and gave no alert or recommendation, its Accuracy Rating would be calculated like this:

Accuracy Rating = 2 x 3 = 6

If it labelled the object as 'suspicious' its rating would be calculated like this:

Accuracy Rating = 0.5 x 3 = 1.5

This same calculation is made for each legitimate object in the test and the results are summed and used to populate the graph and table shown under **5. Legitimate Accuracy Rating** in this report.

Distribution of Impact Categories

In this test there was a range of objects with different levels of prevalence. The table below shows the frequencies:

Legitimate Software Category Frequency

| Prevalence Rating | Frequency |
|-------------------|-----------|
| Very High Impact | 32 |
| High Impact | 32 |
| Medium Impact | 17 |
| Low Impact | 12 |
| Very Low Impact | 7 |

Legitimate Interaction Rating

| [| Product | None (allowed) | None (allowed) |
|---|---|----------------|----------------|
| | Acronis Cyber Protect Cloud with Advanced Security + XDR Pack | 100 | 100% |

• Products that do not bother users and classify most applications correctly earn more points than those that ask questions and condemn legitimate applications.

Appendix B: Terms Used

Compromised The attack succeeded, resulting in malware running unhindered on the target. In the case of a targeted attack, the attacker was able to take remote control of the system and carry out a variety of tasks without hindrance.

Blocked The attack was prevented from making any changes to the target.

False Positive When a security product misclassifies a legitimate application or website as being malicious, it generates a 'false positive'.

Neutralised The exploit or malware payload ran on the target but was subsequently removed.

Complete Remediation If a security product removes all significant traces of an attack, it has achieved complete remediation.

Target The test system that is protected by a security product.

Threat A program or sequence of interactions with the target that is designed to take some level of unauthorised control of that target.

Update Security vendors provide information to their products in an effort to keep abreast of the latest threats. These updates may be downloaded in bulk as one or more files or requested individually and live over the internet.

Appendix C: FAQs

Q What is a partner organisation? Can I become one to gain access to the threat data used in your tests?

A Partner organisations benefit from our consultancy services after a test has been run. Partners may gain access to low-level data that can be useful in product improvement initiatives and have permission to use award logos, where appropriate, for marketing purposes. We do not share data on one partner with other partners. We do not partner with organisations that do not engage in our testing. We are a customer considering buying or changing our endpoint protection and/ or endpoint detection and response (EDR) product. Can you help?

Yes, we frequently run private testing for organisations that are considering changing their security products. Please contact us at **info@selabs.uk** for more information.

A full methodology for this test is available from our website.

- The test was conducted between 17th April and 15th May 2025.
- All products were configured according to each vendor's recommendations, when such recommendations were provided.
- Targeted attacks were selected and verified by SE Labs.
- Malicious emails, URLs, attachments and legitimate messages were independently located and verified by SE Labs.
- Malicious and legitimate data was provided to partner organisations once the test was complete.

Appendix D: Attack Details

Gamaredon Group

| Incident No. | Delivery | Execution | Action | Privilege Escalation | Post-Escalation | Lateral Movement | Lateral Action | |
|--------------|------------------------------|---|---|--|---|----------------------------------|--------------------------------------|--|
| | T1 | T1059.001 PowerShell | T1083 File and Directory Discovery | | T1053.005 Scheduled Task | | T1113 Screen Capture | |
| | T1566.001 | T1059.005 Visual Basic | T1057 Process Discovery | | T1547.001 Registry Run Keys / Startup Folder | | T1119 Automated Collection | |
| 1 | Spear phishing | T1059.003 Windows Command Shell | T1033 System Owner/User Discovery | T1548.002 Bypass User Account Control | T1565.003 Hidden Windows | T1534 Internal Spear phishing | T1105 Data from Local System | |
| 1 | Attachment | T1204.002 Malicious File | T1082 System Information Discovery | Account control | TAEKO OOA Disabla saMadifa | priisining | | |
| | | T1568 Dynamic Resolution | T1047 Windows Management | | T1562.001 Disable or Modify Tools | | T1041 Exfiltration Over C2 Channel | |
| | | T1027.010 Command Obfuscation | Instrumentation | | | | | |
| | | T1059.001 PowerShell | T1083 File and Directory Discovery | | T1036.005 Match Legitimate Name or Location | | T1119 Automated Collection | |
| | | T1059.003 Windows Command Shell | T1057 Process Discovery | | T1112 Modify Registry | | T1105 Data from Local System | |
| \cap | T1566.001 Spear phishing | T204.001 Malicious Link | T1033 System Owner/User Discovery | T1548.002 Bypass User | T1053.005 Scheduled Task | T1105 Ingress Tool | T1039 Data from Network Shared Drive | |
| 2 | Attachment | T1047 Windows Management Instrumentation | T1082 System Information Discovery | Account Control | T1027.004 Compile After Delivery | Transfer | T1041 Exfiltration Over C2 Channel | |
| | | T1559.001 Component Object Model | T1016.001 Internet Connection Discovery | | T1218.005 Mshta | | | |
| | | 11339.001 Component Object Hoder | Tiolo.ool internet connection biscovery | | T1106 Native API | | 11491.001 Internat Delacement | |
| | | T1027 Obfuscated Files or Information | T1083 File and Directory Discovery | T 1218.011 Rundll32 | T1547.001 Registry Run Keys / Startup Folder | T1021.005 VNC | T1119 Automated Collection | |
| | | T1071.001 Web Protocols | T1057 Process Discovery | | T1140 Deobfuscate/Decode Files or Information | | T1105 Data from Local System | |
| \sim | T1566.001 | T1102 Web Services | T1033 System Owner/User Discovery | | T1565.003 Hidden Windows | | T1020 Automated Exfiltration | |
| 3 | Spear phishing Attachment | T1001 Data Obfuscation | T1082 System Information Discovery | | T1562.001 Disable or Modify Tools | | T1491.001 Internal Defacement | |
| | | T1137 Office Application Startup | T1016.001 Internet Connection Discovery | | T1070.004 File Deletion | | | |
| | | T1027.001 Binary Padding T1204.002 Malicious File | T1120 Peripheral Device Discovery | | | | T1561.001 Disk Content Wipe | |
| | | T1059.001 PowerShell | T1083 File and Directory Discovery | | T1547.001 Registry Run Keys / Startup Folder | | T1119 Automated Collection | |
| | | T1059.005 Visual Basic | T1057 Process Discovery | | T1140 Deobfuscate/Decode Files or Information | | T1105 Data from Local System | |
| | T1566.001 | T1059.003 Windows Command Shell | T1033 System Owner/User Discovery | | T1565.003 Hidden Windows |] | T1039 Data from Network Shared Drive | |
| 4 | Spear phishing Attachment | T1568 Dynamic Resolution | T1082 System Information Discovery | T1548.002 Bypass User Account Control | T1562.001 Disable or Modify Tools | T1534 Internal Spear phishing | T1025 Data from Removable Media | |
| | | T1568.001 Fast Flux DNS | T1016.001 Internet Connection Discovery | | T1070.004 File Deletion | | T1020 Automated Exfiltration | |
| | | T204.001 Malicious Link | T1120 Peripheral Device Discovery | | T1036.005 Match Legitimate Name or Location | | T1041 Exfiltration Over C2 Channel | |
| | | | | | T1112 Modify Registry | | T1561.001 Disk Content Wipe | |

Ember Bear

| Incident No. | Delivery | Execution | Action | Privilege Escalation | Post-Escalation | Lateral Movement | Lateral Action |
|--------------|---|---|---------------------------------|--|--|---|--|
| | | T1203 Exploitation for Client Execution | T1654 Log Enumeration | | T1053.005 Scheduled Task | T1550.002 Pass the Hash | T1560 Archive Collected Data |
| | | T1505.003 Web Shell | T1046 Network Service Discovery | | T1562.001 Disable or Modify Tools | | T1119 Automated Collection |
| _ | | T1078.001 Default Accounts | T1018 Remote System Discovery | | T1070.004 File Deletion | | T1005 Data from Local System |
| 5 | T1190 Exploit Public- Facing Application | T1095 Non-Application Layer Protocol | | T1548.002 Bypass User Account Control | T1112 Modify Registry | T1570 Lateral Tool | T1114 Email Collection |
| | - den Brippieddon | | | | | Transfer | T1125 Video Capture |
| | | T1571 Non-Standard Port | T1059.001 PowerShell | | T1003.001 LSASS Memory | | T1567.002 Exfiltration to Cloud Storage |
| | | | | | | | T1561.002 Disk Structure Wipe |
| | | T1505.003 Web Shell | T1654 Log Enumeration | | T1562.001 Disable or Modify Tools | T1021 Remote Service | T1560 Archive Collected Data |
| | | T1078.001 Default Accounts | T1046 Network Service Discovery | | T1070.004 File Deletion | | T1119 Automated Collection |
| , | | T1095 Non-Application Layer Protocol | T1018 Remote System Discovery | | T1036.005 Match Legitimate Name or Location | | T1005 Data from Local System |
| 6 | T1133 External Remote Services | T1571 Non-Standard Port | | T1548.002 Bypass User Account Control | T1003.004 LSA Secrets | T1570 Lateral Tool | T1114 Email Collection |
| 0 | | | | osci necouni control | | Transfer | T1125 Video Capture |
| | | T1572 Protocol Tunneling | T1059.001 PowerShell | | T1110.003 Password Spraying | | T1567.002 Exfiltration to Cloud Storage |
| | | | | | | | T1561.002 Disk Structure Wipe |
| | | T1078.001 Default Accounts | T1654 Log Enumeration | | T1036 Masquerading | T1047 Windows Management Instrumental T1570 Lateral Tool Transfer | T1560 Archive Collected Data |
| | | T1095 Non-Application Layer Protocol | T1046 Network Service Discovery | 1 | T1110 Brute Force | | T1119 Automated Collection |
| | T1195 Supply Chain | T1571 Non-Standard Port | T1018 Remote System Discovery | T1548.002 Bypass | T1003 OS Credential Dumping | | T1005 Data from Local System |
| / | Compromise | T1572 Protocol Tunneling | | User Account Control | T1003.002 Security Account Manager | | T1114 Email Collection |
| | | | T1059.001 PowerShell | | | | T1125 Video Capture |
| | | T1071.004 DNS | | | | | T1567.002 Exfiltration to Cloud Storage |
| | | | | | | | T1561.002 Disk Structure Wipe |
| | | T1095 Non-Application Layer Protocol | T1654 Log Enumeration | | T1053.005 Scheduled Task | T1550.002 Pass the Hash | T1560 Archive Collected Data |
| | | T1571 Non-Standard Port | T1046 Network Service Discovery | 1 | T1562.001 Disable or Modify Tools | | T1119 Automated Collection |
| | | T1572 Protocol Tunneling | T1018 Remote System Discovery | | T1070.004 File Deletion | | T1005 Data from Local System |
| | | T1071.004 DNS | | | T1036 Masquerading | | T1114 Email Collection |
| Q | T1190 Exploit Public- Facing Application | | | T1548.002 Bypass User Account Control | T1110 Brute Force | | T1125 Video Capture |
| 0 | r acing Application | | T1059.001 PowerShell | | T1552.001 Credentials in Files | T1570 Lateral Tool Transfer | T1567.002 Exfiltration to Cloud Storage |
| | | T1090.003 Multi-hop Proxy | | | T1003.004 LSA Secrets | | T1561.002 Disk Structure Wipe |

Evasive Panda

| Incident No. | Delivery | Execution | Action | Privilege Escalation | Post-Escalation | Lateral Movement | Lateral Action |
|----------------|------------------------------|--|---|--|---|-------------------------|--|
| | | T1053.005 Scheduled Task | T1016 System Network Configuration Discovery | | T1112 Modify Registry | | T1140 Deobfuscate/Decode Files or Information |
| | | T204.001 Malicious Link | T1082 System Information Discovery | _ | T1003.002 Security Account Manager |] | T1056.001 Keylogging |
| _ | T1189 | | T1083 File and Directory Discovery | | T1036.003 Rename System Utilities | | T1560.002 Archive via Library |
| Q | Drive-by | | T1070.004 File Deletion | T1548.002 Bypass User Account Control | T1053.005 Scheduled Task | T1021.004 SSH | T1119 Automated Collection |
| | Compromise | T1071.001 Web Protocols | T1057 Process Discovery | | T1012 Query Registry | | |
| | | TIUTI.UUI WED Protocols | | | T1555.004 Windows Credential Manager | | T1115 Clipboard Data |
| | | | T1518 Software Discovery | | T1106 Native API | | TIIIS CIPDUARU Data |
| | | | | | T1087.001 Local Account | | |
| | | T1053.005 Scheduled Task | T1016 System Network Configuration Discovery | T1548.002 Bypass User Account Control | T1555.004 Windows Credential Manager | | T1056.001 Keylogging |
| | | T204.001 Malicious Link | T1082 System Information Discovery | | T1569.002 Service Execution | | T1560.002 Archive via Library |
| 10 | T1195.002 | T1071.001 Web Protocols | T1083 File and Directory Discovery | | T1555.003 Credentials from Web Browsers | T1021.002 SMB/ | T1119 Automated Collection |
| | Compromise | | T1070.004 File Deletion | | T1539 Steal Web Session Cookie | Windows Admin | T1115 Clipboard Data |
| ΤU | Software Supply Chain | | T1057 Process Discovery | T1218.011 Rundll32 | T1562.004 Disable or Modify System Firewall | Shares | T1123 Audio Capture |
| | | T1027 Obfuscated Files or Information | | | T1036.005 Match Legitimate Name or Location | | T1025 Data from Removable Media |
| | | | T1033 System Owner/User Discovery | | T1087.001 Local Account | | T1074.001 Local Data Staging |
| | | | | | T1105 Ingress Tool Transfer | | T1114.001 Local Email Collection |
| | | T1095 Non-Application Layer Protocol | T1016 System Network Configuration Discovery | _ | T1112 Modify Registry | T1021.004 SSH | T1115 Clipboard Data |
| | | T1569.002 Service Execution | T1082 System Information Discovery | | T1003.002 Security Account Manager | | T1123 Audio Capture |
| | | T1543.003 Windows Service | T1083 File and Directory Discovery | | T1036.004 Masquerade Task or Service | | T1025 Data from Removable Media |
| 11 | T1608.004 | T1571 Non-Standard Port | T1070.004 File Deletion | T1548.002 Bypass User Account Control | T1055.001 Dynamic-link Library Injection | | T1074.001 Local Data Staging |
| | Drive-by Target | T1059.001 PowerShell | | Account Control | T1620 Reflective Code Loading | | T1114.001 Local Email Collection |
| | | | T1057 Process Discover | | T1053.005 Scheduled Task | | T1113 Screen Capture |
| | | T1027.009 Embedded Payloads | 11057 Process Discover | | T1087.001 Local Account | | T1041 Exfiltration Over C2 Channel |
| | | | | | 11087.001 EOCAl ACCOUNT | | T1005 Data from Local System |
| | T1189 Drive-by Compromise | T204.001 Malicious Link | T1016 System Network Configuration Discovery | | T1053.005 Scheduled Task | | T1140 Deobfuscate/Decode Files or Information |
| | | T1571 Non-Standard Port | T1082 System Information Discovery | | T1036.003 Rename System Utilities | | T1056.001 Keylogging |
| | | T1572 Protocol Tunneling | T1083 File and Directory Discovery | | T1218.011 Rundll32 | | T1560.002 Archive via Library |
| | | | T1070.004 File Deletion | | T1012 Query Registry | T1021.002 SMB/ | T1119 Automated Collection |
| 10 | | | T1057 Process Discovery | T1548.002 Bypass User | T1555.004 Windows Credential Manager | Windows Admin Shares | T1115 Clipboard Data |
| $\perp \angle$ | T1588.003 Code Signing | | | Account Control | T1562.004 Disable or Modify System Firewall | | T1123 Audio Capture |
| | Certificates | T1102 Web Service | | | T1569.002 Service Execution | | T1025 Data from Removable Media |
| | | 11102 WED BEI VICE | T1049 System Network Connections | | T1555.003 Credentials from Web Browsers | | T1074.001 Local Data Staging |
| | | | Discovery | | | | T1114.001 Local Email Collection |
| | | | | | T1539 Steal Web Session Cookie | | T1020 Automated Exfiltration |
| | | | | | | | T1567.002 Exfiltration to Cloud Storag |

DPRK

| Incident No. | Delivery | Execution | Action | Privilege Escalation | Post-Escalation | Lateral Movement | Lateral Action |
|--------------|--|--|--|--|---|--|--|
| 13 | | T1059.003 Windows Command Shell | T1083 File and Directory Discovery | T1548.002 Bypass User Account Control | T1053.005 Scheduled Task | T1021.002 SMB/ Windows Admin Shares | T1074.001 Local Data Staging |
| | T1133 External Remote Services | T1036.005 Match Legitimate Name or Location | T1057 Process Discovery | | T1055.001 Dynamic-link Library Injection | | T1119 Automated Collection |
| | | T1218.010 Regsvr32 | T1033 System Owner/User Discovery | | T1555.003 Credentials from Web Browsers | | T1560 Archive Collected Data |
| | | T1571 Non-Standard Port | T1614 System Location Discovery | | T1564.001 Hidden Files and Directories | | T1030 Data Transfer Size Limits |
| | | T1564.005 Hidden File System | T1614.001 System Language Discovery | | T1564.003 Hidden Window | | T1041 Exfiltration Over C2 Channel |
| | | T1564 Hide Artifacts | T1082 System Information Discovery | | T1543.003 Windows Service | | T1485 Data Destruction |
| | | T1027.002 Software Packing | | | T1003.002 Security Account Manager | | T1486 Data Encrypted for Impact |
| | | T1564.004 NTFS File Attributes | | | T1055.012 Process Hollowing | | T1489 Service Stop |
| | | | | | | | T1490 Inhibit System Recovery |
| | | | | | | | T1491.001 Internal Defacement |
| | T1133 External Remote Services | T1059.003 Windows Command Shell | T1083 File and Directory Discovery | T1548.002 Bypass User Account Control | T1070.004 File Deletion | T1080 Taint Shared Content | T1074 Data Staged |
| | | T1059.001 PowerShell | T1057 Process Discovery | | T1547.004 Winlogon Helper DLL | T1072 Software Deployment Tools | T1119 Automated Collection |
| | | T1036.004 Masquerade Task or Service | T1082 System Information Discovery | | T1055.001 Dynamic-link Library Injection | | T1560.001 Archive via Utility |
| 11 | | T1036.008 Masquerade File Type | T1016 System Network Configuration Discovery | | T1562.002 Disable Windows Event Logging | | T1048.001 Exfiltration Over Symmetric Encrypted Non-C2 Protocol |
| \top | | T1027.002 Software Packing | T1007 System Service Discovery | | T1562.004 Disable or Modify System Firewall | | T1485 Data Destruction |
| | | T1027.008 Stripped Payloads | T1069 Permission Groups Discovery | | | | T1486 Data Encrypted for Impact |
| | | T1071.001 Web Protocols | | | | | T1489 Service Stop |
| | | T1569.002 Service Execution | | | | | T1490 Inhibit System Recovery |
| | | 11369.002 Service Execution | | | | | T1491.001 Internal Defacement |
| | T1133 External Remote Services | T1059.004 Unix Shell | T1083 File and Directory Discovery | N/A | T1070.001 Clear Windows Event Logs | _ | T1048.003 Exfiltration Over Unencrypted Non-C2 Protocol |
| | | T1095 Non-Application Layer Protocol | T1057 Process Discovery | | T1070.004 File Deletion | | T1074 Data Staged |
| | | T1571 Non-Standard Port | T1033 System Owner/User Discovery | | T1552.003 Bash History | | T1119 Automated Collection |
| | | T1564.005 Hidden File System | T1007 System Service Discovery | | | T1021.002 SMB/ Windows Admin Shares | T1020 Automated Exfiltration |
| | | T1564 Hide Artifacts | T1016.002 Wi-Fi Discovery | | T1562.006 Indicator Blocking | | T1048 Exfiltration Over Alternative Protocol |
| 15 | | T1219 Remote Access Software | T1069.002 Domain Groups | | | | T1485 Data Destruction |
| ΤU | | | T1069 Permission Groups Discovery | | | | T1486 Data Encrypted for Impact |
| | | | cess Software T1016.001 Internet Connection Discovery | | | | T1489 Service Stop |
| | | | | | | | T1490 Inhibit System Recovery |
| | | | | | | | T 1491.001 Internal Defacement |
| | | | | | | | T1490 Inhibit System Recovery |
| | | | | | | | T1491.001 Internal Defacement |

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| Incident No. | Delivery | Execution | Action | Privilege Escalation | Post-Escalation | Lateral Movement | Lateral Action |
|--------------|--|-----------------------------------|--|--|--|---------------------------------------|---|
| 16 | T1133 External Remote Services | T1059.003 Windows Command Shell | T1083 File and Directory Discovery | T1546.012 Image File Execution Options Injection | T1562.002 Disable Windows Event Logging | T1570 Lateral Tool Transfer | T1074 Data Staged |
| | | T1622 Debugger Evasion | T1057 Process Discovery | | T1562.004 Disable or Modify System Firewall | T1072 Software Deployment Tools | T1119 Automated Collection |
| | | T1480 Execution Guardrails | T1497.001 System Checks | | T1055.001 Dynamic-link Library Injection | | T1560.001 Archive via Utility |
| | | T1218.011 Rundll32 | T1497 Virtualization/Sandbox Evasion | | T1552.002 Credentials in Registry | | T1030 Data Transfer Size Limits |
| | | | T1518.001 Security Software Discovery | TIIIZ Moaity Registry | T1003.002 Security Account Manager | | T1048.002 Exfiltration Over Asymmetric Encrypted Non-C2 Protocol |
| | | T1071.002 File Transfer Protocols | T1518 Software Discovery | | T1003.001 LSASS Memory | | T1485 Data Destruction |
| | | | T1016.002 Wi-Fi Discovery | | T1003.004 LSA Secrets | | T1486 Data Encrypted for Impact |
| | | | | | T1055.012 Process Hollowing | | T1489 Service Stop |
| | | | | | | | T1490 Inhibit System Recovery |
| | | | | | | | T1491.001 Internal Defacement |
| 17 | T1133 External Remote Services | T1059.003 Windows Command Shell | T1083 File and Directory Discovery | T1546.012 Image File Execution Options Injection | T1564.001 Hidden Files and Directories | T1072 Software Deployment Tools | T1074 Data Staged |
| | | T1059.001 PowerShell | T1057 Process Discovery | | T1003.002 Security Account Manager | | T1039 Data from Network Shared Drive |
| | | T1218.007 Msiexec | T1033 System Owner/User Discovery | | T1003.001 LSASS Memory | | T1074.002 Remote Data Staging |
| | | T1106 Native API | T1135 Network Share Discovery | | T1003.004 LSA Secrets | | T1560.003 Archive via Custom Method |
| | | T1620 Reflective Code Loading | T1018 Remote System Discovery | | T1003.005 Cached Domain Credentials | | T1041 Exfiltration Over C2 Channel |
| | | T1480.001 Environmental Keying | T1497.002 User Activity Based Checks | | T1552.001 Credentials In Files | | T1485 Data Destruction |
| | | | T1497.003 Time Based Evasion | | T1555.003 Credentials from Web Browsers | | T1486 Data Encrypted for Impact |
| | | | T1007 System Service Discovery | | T1055.002 Portable Executable Injection | | T1489 Service Stop |
| | | | T1016.001 Internet Connection Discovery | | T1037.001 Logon Script (Windows) | | T1490 Inhibit System Recovery |
| | | | T1069.002 Domain Groups | | T1564.003 Hidden Window | | |
| | | | T1482 Domain Trust Discovery | | | | T1491.001 Internal Defacement |
| | | | T1069.001 Local Group | | | | |

Appendix E: Product Version

The table below shows the service's name as it was being marketed at the time of the test.

| Vendor | Product | Build Version (start) | Build Version (end) |
|---------|---|-----------------------|---------------------|
| Acronis | Cyber Protect Cloud with Advanced Security + XDR Pack | 25.03 | 25.03 |

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