asec.ahnlab.com /en/90080/

Trigona Rebranding Suspicions and Global Threats, and BlackNevas Ransomware Analysis

⋮ 9/9/2025

BlackNevas has been continuously launching ransomware attacks against companies in various industries and countries, including South Korea. This post provides a technical analysis on the characteristics, encryption methods, and reasons why BlackNevas encrypts files in a way that makes them impossible to decrypt. It is hoped that this post will provide insights for defending against similar threats in the future.

1. Overview

1.1. BlackNevas

The BlackNevas ransomware group first appeared in November 2024 and has since been continuously attacking various businesses and critical infrastructure organizations in Asia, North America, and Europe. Like other ransomware groups, BlackNevas encrypts files on infected systems, steals sensitive data from

affected companies, and threatens to leak the data if the ransom is not paid. The group's targets are spread across multiple regions, with a particular focus on the Asia-Pacific region (50%). Major targets include countries in Southeast Asia and East Asia such as Japan, Thailand, and Korea. In Europe, the group targets countries in Western Europe and the Baltic Sea region, including the UK, Italy, and Lithuania. In North America, the group has targeted Connecticut in the United States.

The BlackNevas ransomware does not officially operate under the Ransomware-as-a-Service (RaaS) model. They threaten victims by claiming that the breach of their data will be handed over to their own data leak site (DLS) and affiliated partners. The threat actors encrypt files using a combination of AES (symmetric key) and RSA (public key). The extension ".-encrypted" is added to the encrypted files.

The ransomware distributed by the BlackNevas group does not perform any additional network communication after encrypting files. The ransom note instructs victims to contact them via email or Telegram to decrypt the encrypted data.

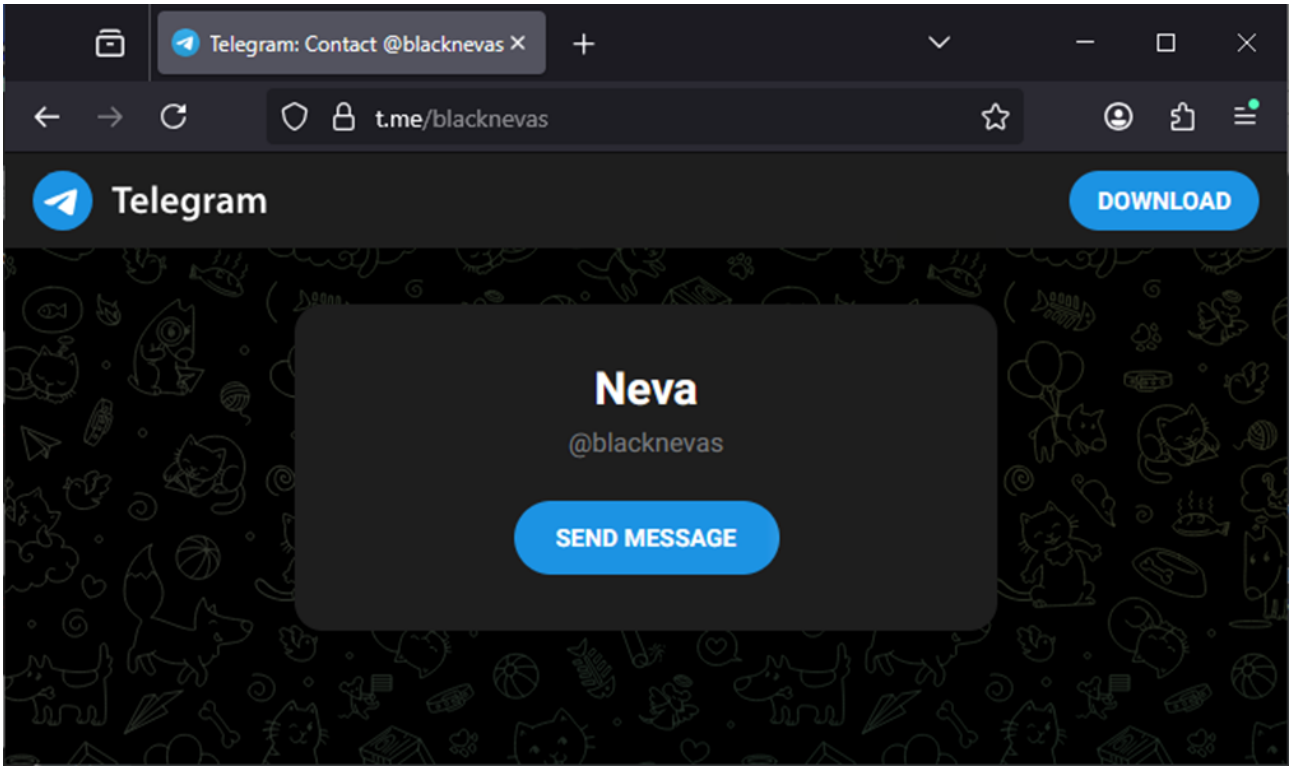


Figure 1. Threat actor's Telegram address within the ransom note

2. Analysis

2.1. Initial Routine

The BlackNevas ransomware did not include anti-debugging techniques or anti-sandbox evasion features. Instead, it supports multiple arguments, and the details of these arguments are shown in Table 1 below.

Argument	Behavior
/allow_system	Encrypts system path
/fast	Encrypts only 1% of the entire file size
/full	Encrypts entire file
/path	Specifies the encrypted path
/debug	Ouputs execution logs when encrypted
/stealth	Changes extension upon encryption and creates ransom note
/shdwn	Terminates system after file encryption

Table 1. Behavior according to the parameter value

As shown in Table 1, the BlackNevas ransomware outputs its execution history via the “/debug” argument, which also reveals the ransomware’s version information. Additionally, when neither the “/fast” nor “/full” argument is specified, only the first 10% of the file’s full size is encrypted from the beginning.

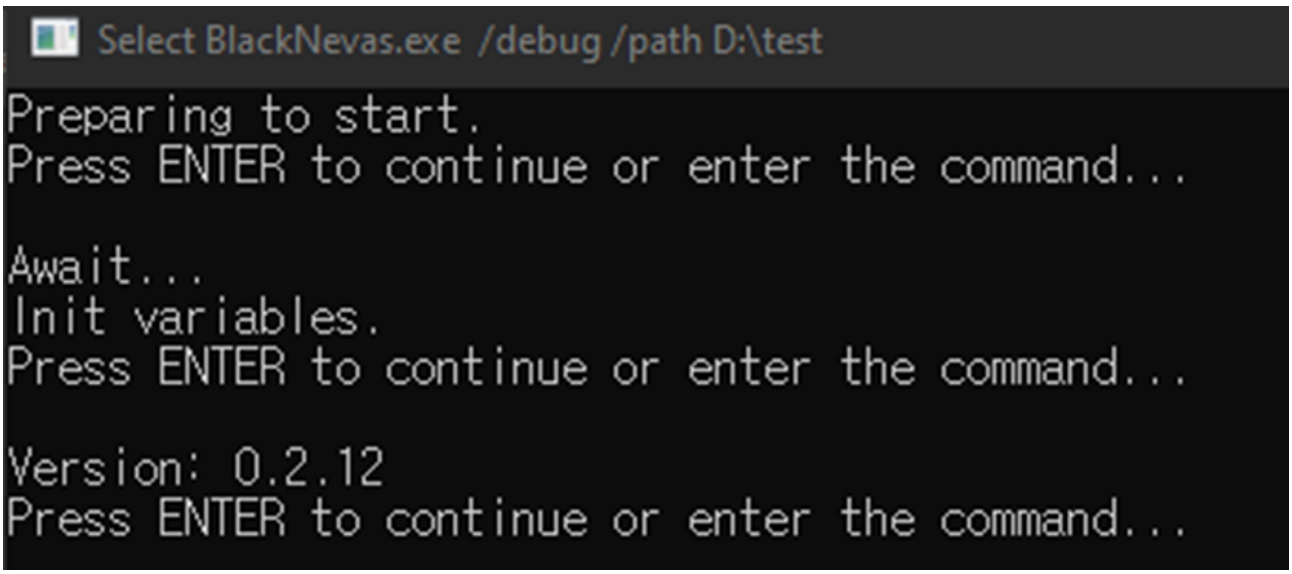
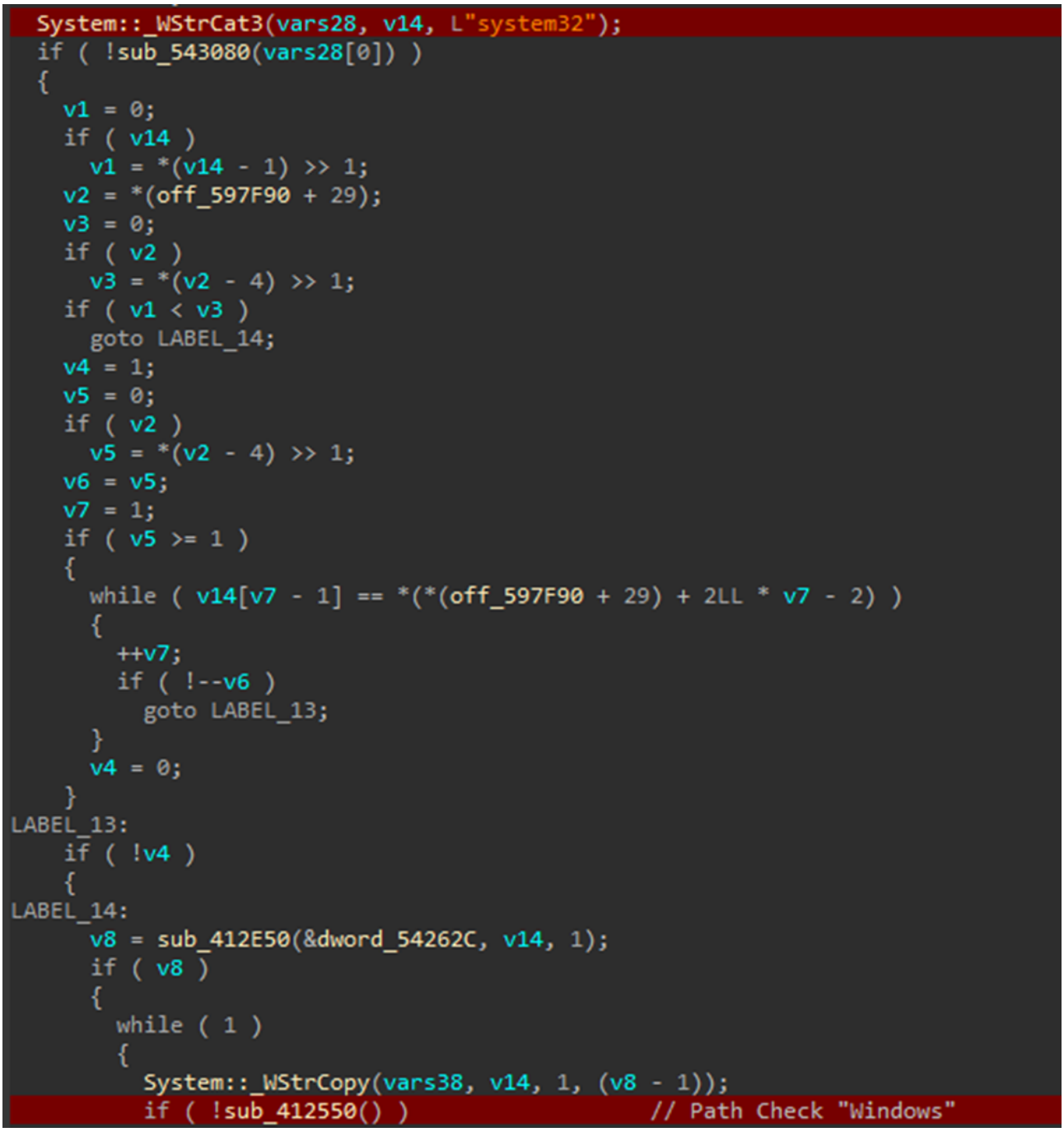


Figure 2. Version information output through the “/debug” argument

2.2. Preparation for Encryption

BlackNevas ransomware does not encrypt paths that are inaccessible during the encryption process or paths that contain the string “system32” or “windows”. All other accessible paths are subject to encryption. Typically, other ransomware operate based on a predefined list of paths to exclude from encryption. In contrast, BlackNevas ransomware features a characteristic in which it conditionally checks path strings at runtime to determine whether they should be excluded from encryption.



```
  System::_WStrCat3(vars28, v14, L"system32");
  if ( !sub_543080(vars28[0]) )
  {
    v1 = 0;
    if ( v14 )
      v1 = *(v14 - 1) >> 1;
    v2 = *(off_597F90 + 29);
    v3 = 0;
    if ( v2 )
      v3 = *(v2 - 4) >> 1;
    if ( v1 < v3 )
      goto LABEL_14;
    v4 = 1;
    v5 = 0;
    if ( v2 )
      v5 = *(v2 - 4) >> 1;
    v6 = v5;
    v7 = 1;
    if ( v5 >= 1 )
    {
      while ( v14[v7 - 1] == *(*(off_597F90 + 29) + 2LL * v7 - 2) )
      {
        ++v7;
        if ( !--v6 )
          goto LABEL_13;
      }
      v4 = 0;
    }
LABEL_13:
    if ( !v4 )
    {
LABEL_14:
      v8 = sub_412E50(&dword_54262C, v14, 1);
      if ( v8 )
      {
        while ( 1 )
        {
          System::_WStrCopy(vars38, v14, 1, (v8 - 1));
          if ( !sub_412550() )                  // Path Check "Windows"
```

Figure 3. Code to check the exclusion path of encryption

To prevent the system from being damaged by encrypting key files, specific extensions and files are excluded from encryption. The files excluded from encryption are “NTUSER.DAT” and the ransom note “how_to_decrypt.txt”, while the extensions excluded from encryption are shown in Table 2 below.

File extensions excluded from encryption
sys, dll, exe, log, bmp, vmem, vswp, vmxf, vmsd, scoreboard, nvram, vmss

Table 2. File extensions excluded from encryption

2.3. File Encryption

There are two types of file name changes when encrypting files: “random name.random name.-encrypted” and “trial-recovery.random name.random name.-encrypted”. The Table 3 below shows the extensions that include “trial-recovery” in the file name. In other cases, the file name is changed to the “random name.random name.-encrypted” format. As can be inferred from the file name, the type with the “trial-recovery” prefix is likely given to certain files as a demonstration to the victims to show that the files can actually be decrypted.

Extensions that use “trial-recovery” in the file name
doc, docx, hwp, jpg, pdf, png, rtf, txt

Table 3. Extensions that use “trial-recovery” in the filename

Once the check of the exclusion path, file, and extension is completed, it checks whether the file is already encrypted before encrypting it. Typically, most ransomware use the method of designating the extension of files that have already been encrypted as an exception extension to determine the infection status. However, BlackNevas ransomware does not use this method. Instead, it compares specific data values to determine whether a file has been encrypted.

As shown in Figure 4 below, the 8-byte value at the end of the original file before encryption is checked (highlighted in red) to determine if it is the “E” or “R” type. “E” refers to the type where the file extension is changed after encryption, and “R” refers to the type where the file name is changed to “trial-recovery”. The same 8-byte value at the end of the encrypted file is then checked, which indicates the size of the additional data added to the original file size.

Upon completion of the infection check, the file is encrypted using an AES symmetric key as mentioned in the overview. The generated AES key is then encrypted with an RSA public key and inserted at the end of the file. As a result, there are no clues left behind in the local environment that can be used to decrypt the file.

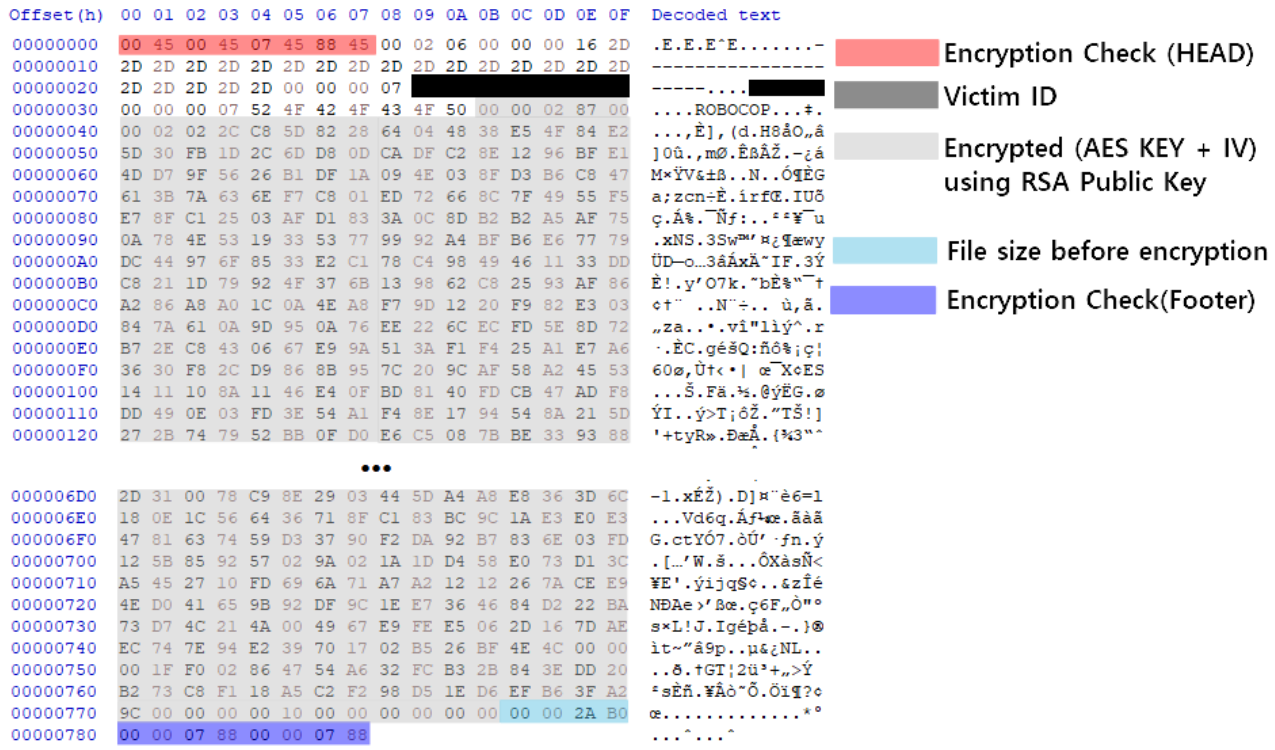


Figure 4. Data structure added after file encryption

2.4. Ransom Note

The following is a screen captured after being infected by BlackNevas ransomware. The desktop background has not been changed.

Figure 5. Test environment after encryption is complete and the desktop is changed

The ransom note is created under the name “how_to_decrypt.txt”. As the ransom note is created in all folders except for the exclusion folder, the ransom note is created in all folders present in the system. The note claims that the threat actor is a professional in file encryption and industrial espionage activities. It also includes a blackmail message threatening to leak the victim’s data to their partners, post it on a blog, or put it up for auction if a decryption negotiation is not made within 7 days.

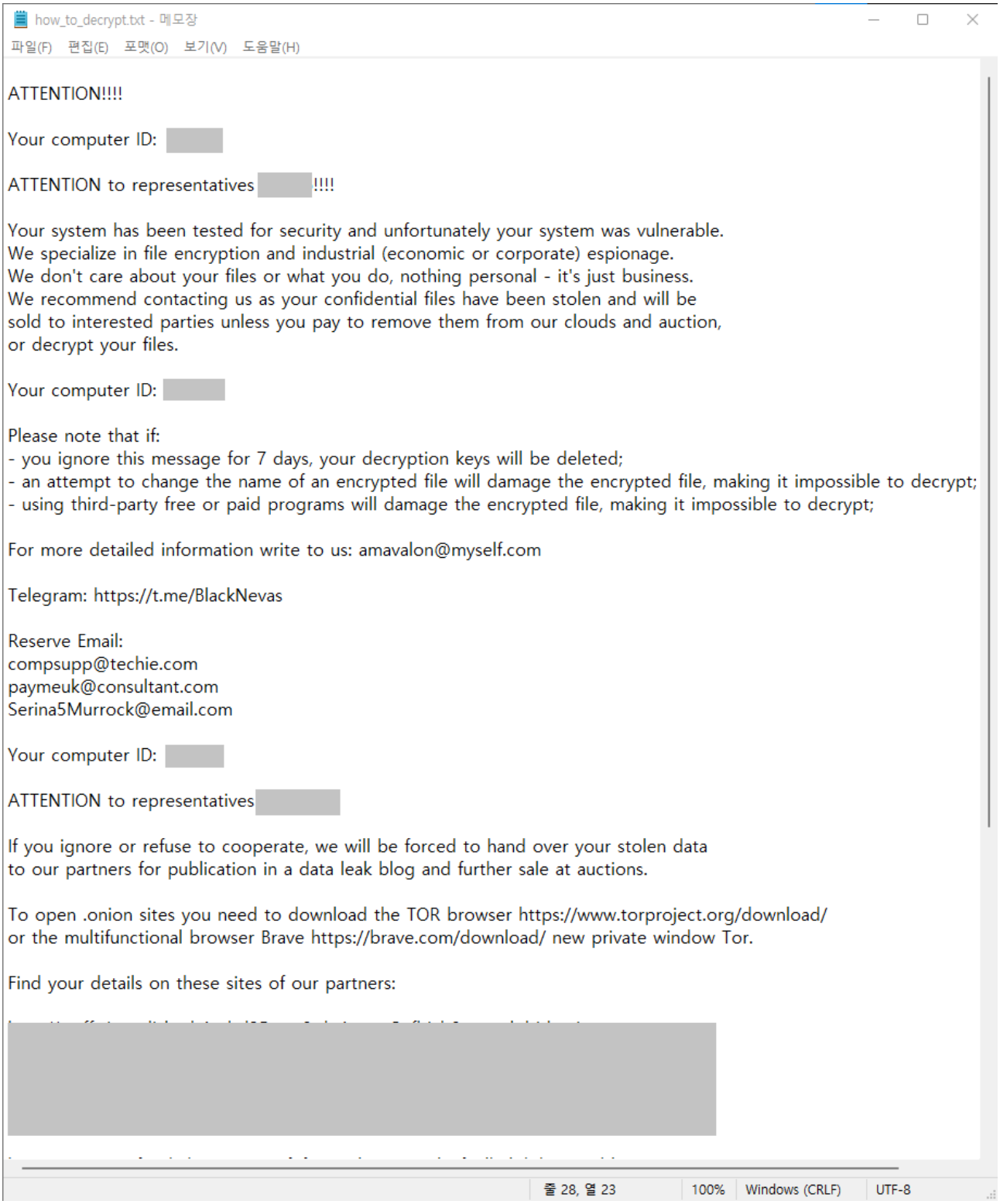


Figure 6. Ransom note (how_to_decrypt.txt)

3. Conclusion

The number of companies suffering ransomware attacks through the DLS of the BlackNevas group is on the rise. This group is distributed globally and has been particularly targeting the Asia-Pacific region (50%). The primary targets are countries in Southeast and East Asia, such as Japan, Thailand, and Korea. In Europe, the group has been targeting countries along the Baltic Sea, such as the UK, Italy, and Lithuania. In North America, the group has been targeting Connecticut in the US. As described in this report, the ransomware encrypts files using an AES symmetric key, and then encrypts the AES key with an RSA public key. Therefore, unless the RSA algorithm itself is broken, there is no possibility of decryption. For this reason, companies are strongly advised to strictly adhere to the following response guide to protect and stably operate their key assets.

4. AhnLab’s Response

The diagnostic names and engine dates of the AhnLab product groups are as follows:

4.1. V3

Ransomware/Win.Trigona.R585545 (2025.08.09.00)
Ransom/MDP.Decoy.M1171 (2016.07.15.02)

4.2. EDR

Ransom/EDR.Decoy.M2470 (2022.09.30.00)
Ransom/EDR.Event.M11760 (2024.06.19.02)

MD5

2374998cffb71f3714da2075461a884b

4a1864a95643b0211fa7ad81b676fe2e

9f877949b8cbbb3adfe07fd4411b9f26

f2547a80dd64dcd5cba164fe4558c2b6

Additional IOCs are available on AhnLab TIP.