NETMANAGE**IT**

Intelligence Report

Analysis of TargetCompany's Attacks Against MS-SQL Servers (Mallox, BlueSky Ransomware)

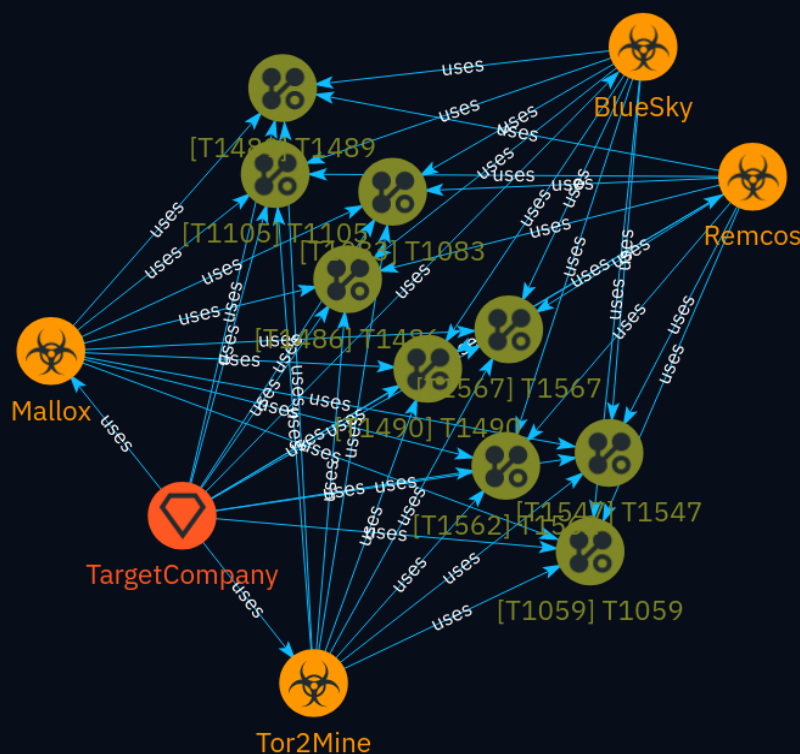# Table of contents

Overview

Entities

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Overview

Description

The report analyzes recent attacks by the TargetCompany ransomware group targeting poorly managed MS-SQL servers. The group initially installs Remcos RAT and a remote screen control malware for reconnaissance and lateral movement. Subsequently, the Mallox ransomware is deployed to encrypt the infected systems. The attacks are believed to be connected to previous campaigns involving the Tor2Mine CoinMiner and BlueSky ransomware.

Confidence

This value represents the confidence in the correctness of the data contained within this report.

100 / 100

Content

N/A

Intrusion-Set

Name
TargetCompany

Malware

Name
BlueSky

Name
Tor2Mine

Name
Mallox

Name
Remcos

Attack-Pattern

Name
T1490

ID
T1490

Description

Adversaries may delete or remove built-in data and turn off services designed to aid in the recovery of a corrupted system to prevent recovery.(Citation: Talos Olympic Destroyer 2018) (Citation: FireEye WannaCry 2017) This may deny access to available backups and recovery options. Operating systems may contain features that can help fix corrupted systems, such as a backup catalog, volume shadow copies, and automatic repair features. Adversaries may disable or delete system recovery features to augment the effects of [Data Destruction](https://attack.mitre.org/techniques/T1485) and [Data Encrypted for Impact] (https://attack.mitre.org/techniques/T1486).(Citation: Talos Olympic Destroyer 2018) (Citation: FireEye WannaCry 2017) Furthermore, adversaries may disable recovery notifications, then corrupt backups.(Citation: disable_notif_synology_ransom) A number of native Windows utilities have been used by adversaries to disable or delete system recovery features: * `vssadmin.exe` can be used to delete all volume shadow copies on a system - `vssadmin.exe delete shadows /all /quiet` * [Windows Management Instrumentation](https://attack.mitre.org/techniques/T1047) can be used to delete volume shadow copies - `wmic shadowcopy delete` * `wbadmin.exe` can be used to delete the Windows Backup Catalog - `wbadmin.exe delete catalog -quiet` * `bcdedit.exe` can be used to disable automatic Windows recovery features by modifying boot configuration data - `bcdedit.exe /set {default} bootstatuspolicy ignoreallfailures & bcdedit /set {default} recoveryenabled no` * `REAgentC.exe` can be used to disable Windows Recovery Environment (WinRE) repair/recovery options of an infected system * `diskshadow.exe` can be used to delete all volume shadow copies on a system - `diskshadow delete shadows

all` (Citation: Diskshadow) (Citation: Crytox Ransomware) On network devices, adversaries may leverage [Disk Wipe](https://attack.mitre.org/techniques/T1561) to delete backup firmware images and reformat the file system, then [System Shutdown/Reboot](https://attack.mitre.org/techniques/T1529) to reload the device. Together this activity may leave network devices completely inoperable and inhibit recovery operations. Adversaries may also delete "online" backups that are connected to their network – whether via network storage media or through folders that sync to cloud services.(Citation: ZDNet Ransomware Backups 2020) In cloud environments, adversaries may disable versioning and backup policies and delete snapshots, machine images, and prior versions of objects designed to be used in disaster recovery scenarios.(Citation: Dark Reading Code Spaces Cyber Attack) (Citation: Rhino Security Labs AWS S3 Ransomware)

Name

T1486

ID

T1486

Description

Adversaries may encrypt data on target systems or on large numbers of systems in a network to interrupt availability to system and network resources. They can attempt to render stored data inaccessible by encrypting files or data on local and remote drives and withholding access to a decryption key. This may be done in order to extract monetary compensation from a victim in exchange for decryption or a decryption key (ransomware) or to render data permanently inaccessible in cases where the key is not saved or transmitted.(Citation: US-CERT Ransomware 2016)(Citation: FireEye WannaCry 2017)(Citation: US-CERT NotPetya 2017)(Citation: US-CERT SamSam 2018) In the case of ransomware, it is typical that common user files like Office documents, PDFs, images, videos, audio, text, and source code files will be encrypted (and often renamed and/or tagged with specific file markers). Adversaries may need to first employ other behaviors, such as [File and Directory Permissions Modification](https://attack.mitre.org/techniques/T1222) or [System Shutdown/Reboot](https://attack.mitre.org/techniques/T1529), in order to unlock and/or gain access to manipulate these files.(Citation: CarbonBlack Conti July 2020) In some cases, adversaries may encrypt critical system files, disk partitions, and the MBR.(Citation: US-CERT NotPetya 2017) To maximize impact on the target organization, malware designed for encrypting data may have worm-like features to propagate across a network by leveraging other attack techniques like [Valid Accounts](https://attack.mitre.org/techniques/T1078), [OS Credential Dumping](https://attack.mitre.org/techniques/T1003), and [SMB/Windows

Admin Shares](https://attack.mitre.org/techniques/T1021/002).(Citation: FireEye WannaCry 2017)(Citation: US-CERT NotPetya 2017) Encryption malware may also leverage [Internal Defacement](https://attack.mitre.org/techniques/T1491/001), such as changing victim wallpapers, or otherwise intimidate victims by sending ransom notes or other messages to connected printers (known as "print bombing").(Citation: NHS Digital Egregor Nov 2020) In cloud environments, storage objects within compromised accounts may also be encrypted. (Citation: Rhino S3 Ransomware Part 1)

Name

T1083

ID

T1083

Description

Adversaries may enumerate files and directories or may search in specific locations of a host or network share for certain information within a file system. Adversaries may use the information from [File and Directory Discovery](https://attack.mitre.org/techniques/T1083) during automated discovery to shape follow-on behaviors, including whether or not the adversary fully infects the target and/or attempts specific actions. Many command shell utilities can be used to obtain this information. Examples include `dir`, `tree`, `ls`, `find`, and `locate`.(Citation: Windows Commands JPCERT) Custom tools may also be used to gather file and directory information and interact with the [Native API](https://attack.mitre.org/techniques/T1106). Adversaries may also leverage a [Network Device CLI] (https://attack.mitre.org/techniques/T1059/008) on network devices to gather file and directory information (e.g. `dir`, `show flash`, and/or `nvram`).(Citation: US-CERT-TA18-106A) Some files and directories may require elevated or specific user permissions to access.

Name

T1059

ID

T1059

Description

Adversaries may abuse command and script interpreters to execute commands, scripts, or binaries. These interfaces and languages provide ways of interacting with computer systems and are a common feature across many different platforms. Most systems come with some built-in command-line interface and scripting capabilities, for example, macOS and Linux distributions include some flavor of [Unix Shell](https://attack.mitre.org/techniques/T1059/004) while Windows installations include the [Windows Command Shell](https://attack.mitre.org/techniques/T1059/003) and [PowerShell](https://attack.mitre.org/techniques/T1059/001). There are also cross-platform interpreters such as [Python](https://attack.mitre.org/techniques/T1059/006), as well as those commonly associated with client applications such as [JavaScript](https://attack.mitre.org/techniques/T1059/007) and [Visual Basic](https://attack.mitre.org/techniques/T1059/005). Adversaries may abuse these technologies in various ways as a means of executing arbitrary commands. Commands and scripts can be embedded in [Initial Access](https://attack.mitre.org/tactics/TA0001) payloads delivered to victims as lure documents or as secondary payloads downloaded from an existing C2. Adversaries may also execute commands through interactive terminals/shells, as well as utilize various [Remote Services](https://attack.mitre.org/techniques/T1021) in order to achieve remote Execution. (Citation: Powershell Remote Commands)(Citation: Cisco IOS Software Integrity Assurance - Command History)(Citation: Remote Shell Execution in Python)

Name

T1105

ID

T1105

Description

Adversaries may transfer tools or other files from an external system into a compromised environment. Tools or files may be copied from an external adversary-controlled system to the victim network through the command and control channel or through alternate protocols such as [ftp](https://attack.mitre.org/software/S0095). Once present, adversaries may also transfer/spread tools between victim devices within a compromised environment (i.e. [Lateral Tool Transfer](https://attack.mitre.org/techniques/T1570)). On Windows, adversaries may use various utilities to download tools, such as `copy`, `finger`, [certutil](https://attack.mitre.org/software/S0160), and [PowerShell](https://attack.mitre.org/

techniques/T1059/001) commands such as `IEX(New-Object Net.WebClient).downloadString()` and `Invoke-WebRequest`. On Linux and macOS systems, a variety of utilities also exist, such as `curl`, `scp`, `sftp`, `tftp`, `rsync`, `finger`, and `wget`. (Citation: t1105_lolbas) Adversaries may also abuse installers and package managers, such as `yum` or `winget`, to download tools to victim hosts. Adversaries have also abused file application features, such as the Windows `search-ms` protocol handler, to deliver malicious files to victims through remote file searches invoked by [User Execution](https://attack.mitre.org/techniques/T1204) (typically after interacting with [Phishing](https://attack.mitre.org/techniques/T1566) lures).(Citation: T1105: Trellix_search-ms) Files can also be transferred using various [Web Service](https://attack.mitre.org/techniques/T1102)s as well as native or otherwise present tools on the victim system.(Citation: PTSecurity Cobalt Dec 2016) In some cases, adversaries may be able to leverage services that sync between a web-based and an on-premises client, such as Dropbox or OneDrive, to transfer files onto victim systems. For example, by compromising a cloud account and logging into the service's web portal, an adversary may be able to trigger an automatic syncing process that transfers the file onto the victim's machine.(Citation: Dropbox Malware Sync)

Name

T1567

ID

T1567

Description

Adversaries may use an existing, legitimate external Web service to exfiltrate data rather than their primary command and control channel. Popular Web services acting as an exfiltration mechanism may give a significant amount of cover due to the likelihood that hosts within a network are already communicating with them prior to compromise. Firewall rules may also already exist to permit traffic to these services. Web service providers also commonly use SSL/TLS encryption, giving adversaries an added level of protection.

Name

T1562

ID

T1562

Description

Adversaries may maliciously modify components of a victim environment in order to hinder or disable defensive mechanisms. This not only involves impairing preventative defenses, such as firewalls and anti-virus, but also detection capabilities that defenders can use to audit activity and identify malicious behavior. This may also span both native defenses as well as supplemental capabilities installed by users and administrators. Adversaries may also impair routine operations that contribute to defensive hygiene, such as blocking users from logging out of a computer or stopping it from being shut down. These restrictions can further enable malicious operations as well as the continued propagation of incidents.(Citation: Emotet shutdown) Adversaries could also target event aggregation and analysis mechanisms, or otherwise disrupt these procedures by altering other system components.

Name

T1489

ID

T1489

Description

Adversaries may stop or disable services on a system to render those services unavailable to legitimate users. Stopping critical services or processes can inhibit or stop response to an incident or aid in the adversary's overall objectives to cause damage to the environment.(Citation: Talos Olympic Destroyer 2018)(Citation: Novetta Blockbuster) Adversaries may accomplish this by disabling individual services of high importance to an organization, such as `MSExchangeIS`, which will make Exchange content inaccessible (Citation: Novetta Blockbuster). In some cases, adversaries may stop or disable many or all services to render systems unusable.(Citation: Talos Olympic Destroyer 2018) Services or processes may not allow for modification of their data stores while running. Adversaries may stop services or processes in order to conduct [Data Destruction](https://attack.mitre.org/techniques/T1485) or [Data Encrypted for Impact](https://attack.mitre.org/

techniques/T1486) on the data stores of services like Exchange and SQL Server.(Citation: SecureWorks WannaCry Analysis)

Name
T1547

ID
T1547

Description

Adversaries may configure system settings to automatically execute a program during system boot or logon to maintain persistence or gain higher-level privileges on compromised systems. Operating systems may have mechanisms for automatically running a program on system boot or account logon.(Citation: Microsoft Run Key)(Citation: MSDN Authentication Packages)(Citation: Microsoft TimeProvider)(Citation: Cylance Reg Persistence Sept 2013)(Citation: Linux Kernel Programming) These mechanisms may include automatically executing programs that are placed in specially designated directories or are referenced by repositories that store configuration information, such as the Windows Registry. An adversary may achieve the same goal by modifying or extending features of the kernel. Since some boot or logon autostart programs run with higher privileges, an adversary may leverage these to elevate privileges.

Attack-Pattern

External References

- https://asec.ahnlab.com/en/64921/

- https://otx.alienvault.com/pulse/66339e1490af98ce9b7d690a