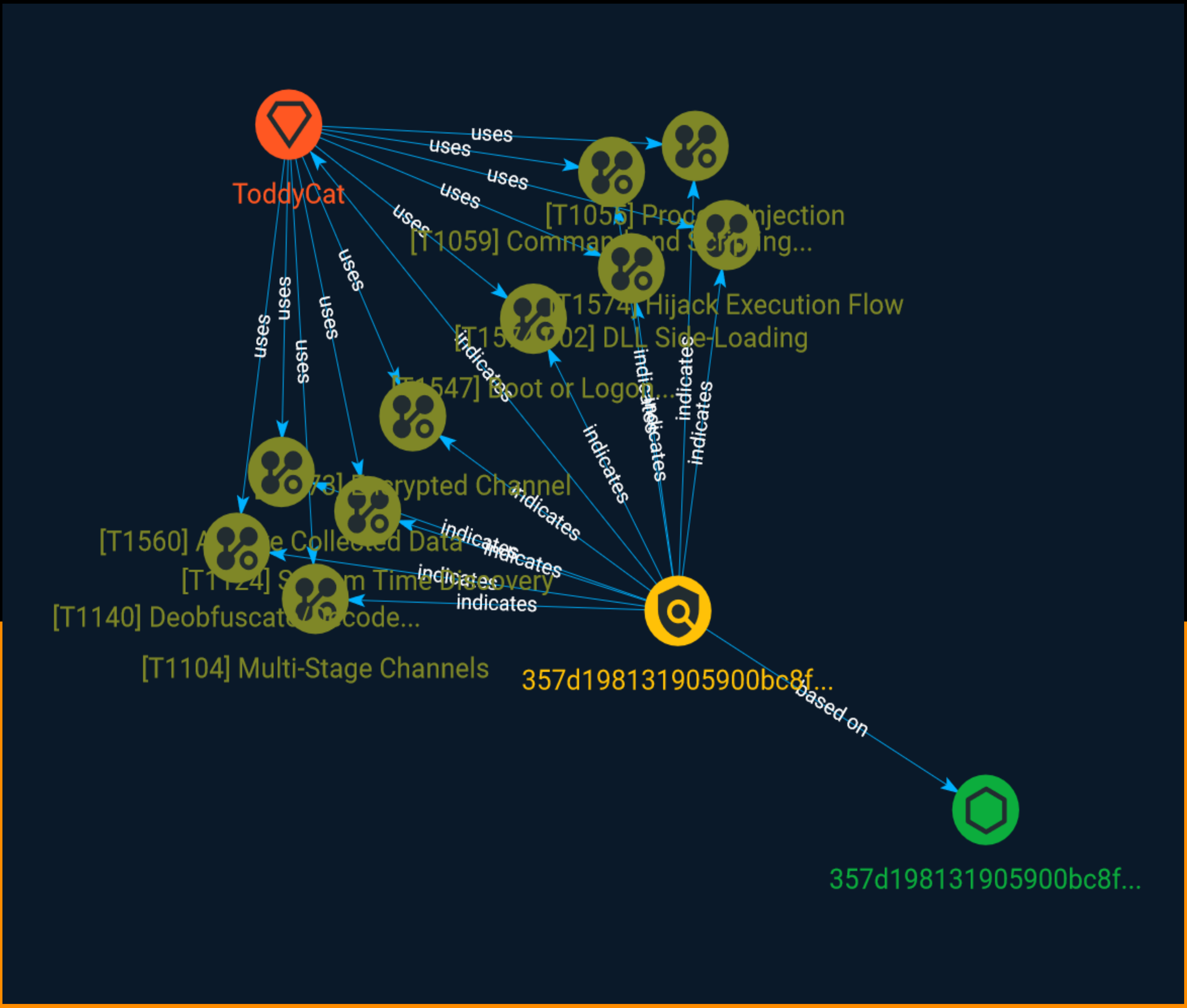
Oct 15 2023

NETMANAGEIT

Intelligence Report

ToddyCat: Keep calm and check logs



ToddyCat
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Overview

Description

During the last year, we discovered a new set of loaders developed from scratch and collected additional information about their post-exploitation activities. The discovered information allowed us to expand our knowledge of this group and obtain new information about the attacker's TTPs (Tactics, Techniques and Procedures). In this article, we'll describe their new toolset, the malware used to steal and exfiltrate data, and the techniques used by this group to move laterally and conduct espionage operations.

Confidence

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

15 / 100

Content

N/A

Attack-Pattern

Name
Boot or Logon Autostart Execution
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.
Name
System Time Discovery
ID
T1124

Description

An adversary may gather the system time and/or time zone from a local or remote system. The system time is set and stored by the Windows Time Service within a domain to maintain time synchronization between systems and services in an enterprise network. (Citation: MSDN System Time)(Citation: Technet Windows Time Service) System time information may be gathered in a number of ways, such as with [Net](https://attack.mitre.org/software/S0039) on Windows by performing `net time \\hostname` to gather the system time on a remote system. The victim's time zone may also be inferred from the current system time or gathered by using `w32tm /tz`.(Citation: Technet Windows Time Service) On network devices, [Network Device CLI](https://attack.mitre.org/techniques/T1059/008) commands such as `show clock detail` can be used to see the current time configuration.(Citation: show_clock_detail_cisco_cmd) This information could be useful for performing other techniques, such as executing a file with a [Scheduled Task/Job](https://attack.mitre.org/techniques/T1053)(Citation: RSA EU12 They're Inside), or to discover locality information based on time zone to assist in victim targeting (i.e. [System Location Discovery](https://attack.mitre.org/techniques/T1614)). Adversaries may also use knowledge of system time as part of a time bomb, or delaying execution until a specified date/time.(Citation: AnyRun TimeBomb)

Name

Process Injection

ID

T1055

Description

Adversaries may inject code into processes in order to evade process-based defenses as well as possibly elevate privileges. Process injection is a method of executing arbitrary code in the address space of a separate live process. Running code in the context of another process may allow access to the process's memory, system/network resources, and possibly elevated privileges. Execution via process injection may also evade detection from security products since the execution is masked under a legitimate process. There are many different ways to inject code into a process, many of which abuse legitimate functionalities. These implementations exist for every major OS but are typically platform specific. More sophisticated samples may perform multiple process injections to segment modules and further evade detection, utilizing named pipes or other inter-process communication (IPC) mechanisms as a communication channel.

Name
Encrypted Channel
ID
T1573
Description
Adversaries may employ a known encryption algorithm to conceal command and control traffic rather than relying on any inherent protections provided by a communication protocol. Despite the use of a secure algorithm, these implementations may be vulnerable to reverse engineering if secret keys are encoded and/or generated within malware samples/configuration files.
Name
Archive Collected Data
ID
T1560
Description
An adversary may compress and/or encrypt data that is collected prior to exfiltration. Compressing the data can help to obfuscate the collected data and minimize the amount of data sent over the network. Encryption can be used to hide information that is being exfiltrated from detection or make exfiltration less conspicuous upon inspection by a defender. Both compression and encryption are done prior to exfiltration, and can be performed using a utility, 3rd party library, or custom method.
Name

Hijack Execution Flow

ID

T1574

Description

Adversaries may execute their own malicious payloads by hijacking the way operating systems run programs. Hijacking execution flow can be for the purposes of persistence, since this hijacked execution may reoccur over time. Adversaries may also use these mechanisms to elevate privileges or evade defenses, such as application control or other restrictions on execution. There are many ways an adversary may hijack the flow of execution, including by manipulating how the operating system locates programs to be executed. How the operating system locates libraries to be used by a program can also be intercepted. Locations where the operating system looks for programs/resources, such as file directories and in the case of Windows the Registry, could also be poisoned to include malicious payloads.

Name

Multi-Stage Channels

ID

T1104

Description

Adversaries may create multiple stages for command and control that are employed under different conditions or for certain functions. Use of multiple stages may obfuscate the command and control channel to make detection more difficult. Remote access tools will call back to the first-stage command and control server for instructions. The first stage may have automated capabilities to collect basic host information, update tools, and upload additional files. A second remote access tool (RAT) could be uploaded at that point to redirect the host to the second-stage command and control server. The second stage will likely be more fully featured and allow the adversary to interact with the system through a reverse shell and additional RAT features. The different stages will likely be hosted separately with no overlapping infrastructure. The loader may also have backup first-stage callbacks or [Fallback Channels](https://attack.mitre.org/techniques/T1008) in case the original first-stage communication path is discovered and blocked.

Name

Command and Scripting Interpreter

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

DLL Side-Loading

ID

T1574.002

Description

Adversaries may execute their own malicious payloads by side-loading DLLs. Similar to [DLL Search Order Hijacking](https://attack.mitre.org/techniques/T1574/001), side-loading involves hijacking which DLL a program loads. But rather than just planting the DLL within the search order of a program then waiting for the victim application to be invoked, adversaries may directly side-load their payloads by planting then invoking a legitimate application that executes their payload(s). Side-loading takes advantage of the DLL search order used by the loader by positioning both the victim application and malicious payload(s) alongside each other. Adversaries likely use side-loading as a means of masking actions they perform under a legitimate, trusted, and potentially elevated system or software process. Benign executables used to side-load payloads may not be flagged during delivery and/or execution. Adversary payloads may also be encrypted/packed or otherwise obfuscated until loaded into the memory of the trusted process.(Citation: FireEye DLL Side-Loading)

Name

Deobfuscate/Decode Files or Information

ID

T1140

Description

Adversaries may use [Obfuscated Files or Information](https://attack.mitre.org/techniques/T1027) to hide artifacts of an intrusion from analysis. They may require separate mechanisms to decode or deobfuscate that information depending on how they intend to use it. Methods for doing that include built-in functionality of malware or by using utilities present on the system. One such example is the use of [certutil](https://attack.mitre.org/software/S0160) to decode a remote access tool portable executable file that has been hidden inside a certificate file.(Citation: Malwarebytes Targeted Attack against Saudi Arabia) Another example is using the Windows `copy /b` command to reassemble binary fragments into a malicious payload.(Citation: Carbon Black Obfuscation Sept 2016) Sometimes a user's action may be required to open it for deobfuscation or decryption as part of [User Execution](https://attack.mitre.org/techniques/T1204). The user may also be required to input a password to open a password protected compressed/encrypted file that was provided by the adversary. (Citation: Volexity PowerDuke November 2016)

Indicator

Name
357d198131905900bc8fd308add72d9ef1f29e937622cac677d337bce3a81bc4
Description
ALF:Trojan:Win32/MeterLoad SHA256 of 97d0a47b595a20a3944919863a8163d1
Pattern Type
stix
Pattern
[file:hashes.'SHA-256' = '357d198131905900bc8fd308add72d9ef1f29e937622cac677d337bce3a81bc4']

Intrusion-Set

Name
ToddyCat

StixFile

Value
357d198131905900bc8fd308add72d9ef1f29e937622cac677d337bce3a81bc4

External References

- https://otx.alienvault.com/pulse/65284ed1bc395d88690d451a
- https://securelist.com/toddycat-keep-calm-and-check-logs/110696/