

NETMANAGEIT

Intelligence Report

TeamTNT Operations Actively Enumerating Cloud Environments

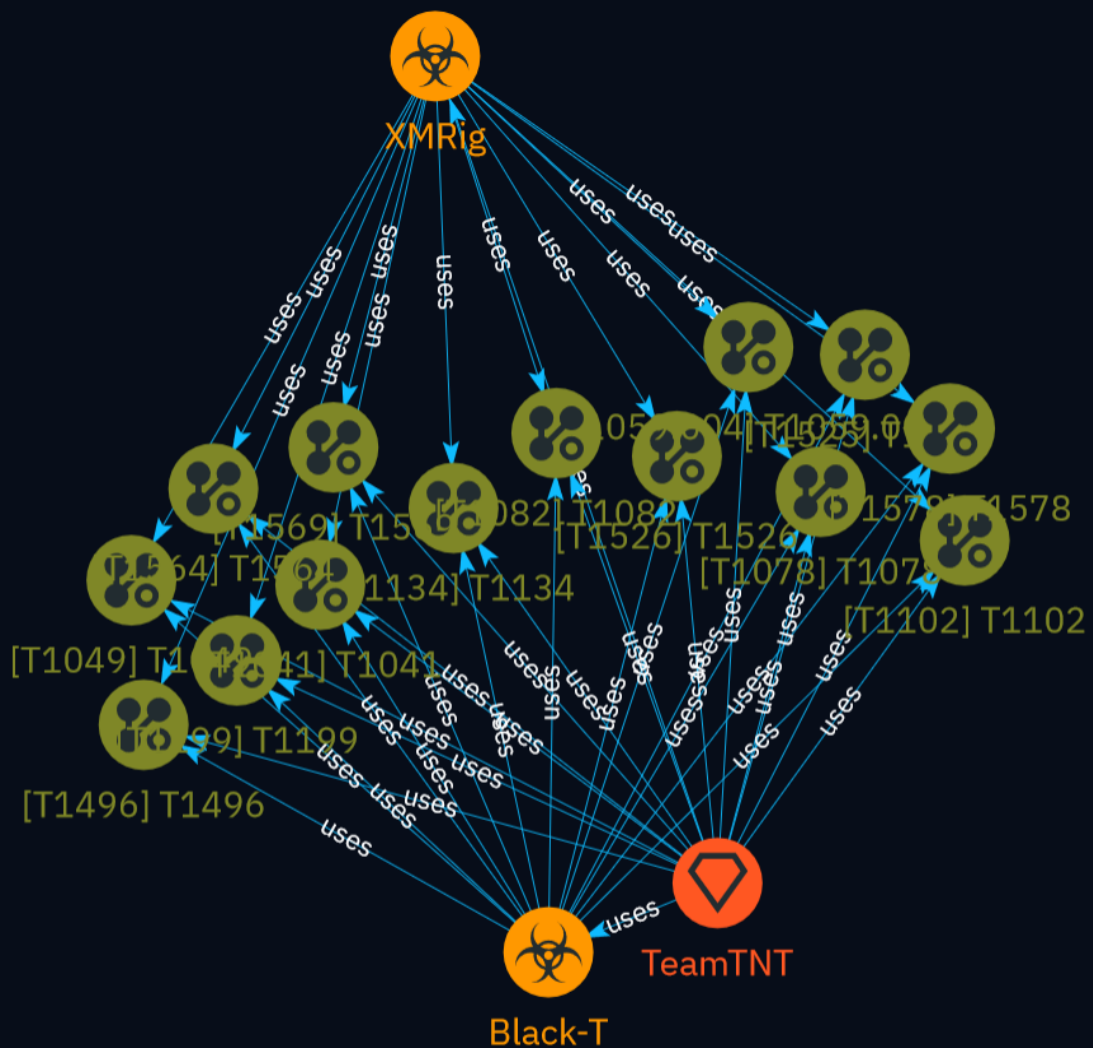


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Overview

Description

TeamTNT operations are now using compromised AWS credentials to enumerate AWS cloud environments, via the AWS platform's API. These actions attempt to identify all Identity and Access Management (IAM) permissions, Elastic Compute Cloud (EC2) instances, Simple Storage Service (S3) buckets, CloudTrail configurations and CloudFormation operations granted to the compromised AWS credential.

Confidence

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

100 / 100

Content

N/A

Malware

Name

Black-T

Name

XMRig

Intrusion-Set

Name

TeamTNT

Description

[TeamTNT](<https://attack.mitre.org/groups/G0139>) is a threat group that has primarily targeted cloud and containerized environments. The group has been active since at least October 2019 and has mainly focused its efforts on leveraging cloud and container resources to deploy cryptocurrency miners in victim environments.(Citation: Palo Alto Black-T October 2020)(Citation: Lacework TeamTNT May 2021)(Citation: Intezer TeamTNT September 2020)(Citation: Cado Security TeamTNT Worm August 2020)(Citation: Unit 42 Hildegard Malware)(Citation: Trend Micro TeamTNT)(Citation: ATT TeamTNT Chimaera September 2020)(Citation: Aqua TeamTNT August 2020)(Citation: Intezer TeamTNT Explosion September 2021)

Attack-Pattern

Name

T1526

ID

T1526

Description

An adversary may attempt to enumerate the cloud services running on a system after gaining access. These methods can differ from platform-as-a-service (PaaS), to infrastructure-as-a-service (IaaS), or software-as-a-service (SaaS). Many services exist throughout the various cloud providers and can include Continuous Integration and Continuous Delivery (CI/CD), Lambda Functions, Azure AD, etc. They may also include security services, such as AWS GuardDuty and Microsoft Defender for Cloud, and logging services, such as AWS CloudTrail and Google Cloud Audit Logs. Adversaries may attempt to discover information about the services enabled throughout the environment. Azure tools and APIs, such as the Azure AD Graph API and Azure Resource Manager API, can enumerate resources and services, including applications, management groups, resources and policy definitions, and their relationships that are accessible by an identity.(Citation: Azure - Resource Manager API)(Citation: Azure AD Graph API) For example, Stormspotter is an open source tool for enumerating and constructing a graph for Azure resources and services, and Pacu is an open source AWS exploitation framework that supports several methods for discovering cloud services.(Citation: Azure - Stormspotter)(Citation: GitHub Pacu) Adversaries may use the information gained to shape follow-on behaviors, such as targeting data or credentials from enumerated services or evading identified defenses through [Disable or Modify Tools](<https://attack.mitre.org/techniques/T1562/001>) or [Disable or Modify Cloud Logs](<https://attack.mitre.org/techniques/T1562/008>).

Name

T1134

ID

T1134

Description

Adversaries may modify access tokens to operate under a different user or system security context to perform actions and bypass access controls. Windows uses access tokens to determine the ownership of a running process. A user can manipulate access tokens to make a running process appear as though it is the child of a different process or belongs to someone other than the user that started the process. When this occurs, the process also takes on the security context associated with the new token. An adversary can use built-in Windows API functions to copy access tokens from existing processes; this is known as token stealing. These token can then be applied to an existing process (i.e. [Token Impersonation/Theft](<https://attack.mitre.org/techniques/T1134/001>)) or used to spawn a new process (i.e. [Create Process with Token](<https://attack.mitre.org/techniques/T1134/002>)). An adversary must already be in a privileged user context (i.e. administrator) to steal a token. However, adversaries commonly use token stealing to elevate their security context from the administrator level to the SYSTEM level. An adversary can then use a token to authenticate to a remote system as the account for that token if the account has appropriate permissions on the remote system.(Citation: Pentestlab Token Manipulation) Any standard user can use the ``runas`` command, and the Windows API functions, to create impersonation tokens; it does not require access to an administrator account. There are also other mechanisms, such as Active Directory fields, that can be used to modify access tokens.

Name

T1569

ID

T1569

Description

Adversaries may abuse system services or daemons to execute commands or programs. Adversaries can execute malicious content by interacting with or creating services either locally or remotely. Many services are set to run at boot, which can aid in achieving persistence ([Create or Modify System Process](https://attack.mitre.org/techniques/T1543)), but adversaries can also abuse services for one-time or temporary execution.

Name

T1078

ID

T1078

Description

Adversaries may obtain and abuse credentials of existing accounts as a means of gaining Initial Access, Persistence, Privilege Escalation, or Defense Evasion. Compromised credentials may be used to bypass access controls placed on various resources on systems within the network and may even be used for persistent access to remote systems and externally available services, such as VPNs, Outlook Web Access, network devices, and remote desktop.(Citation: volexity_0day_sophos_FW) Compromised credentials may also grant an adversary increased privilege to specific systems or access to restricted areas of the network. Adversaries may choose not to use malware or tools in conjunction with the legitimate access those credentials provide to make it harder to detect their presence. In some cases, adversaries may abuse inactive accounts: for example, those belonging to individuals who are no longer part of an organization. Using these accounts may allow the adversary to evade detection, as the original account user will not be present to identify any anomalous activity taking place on their account.(Citation: CISA MFA PrintNightmare) The overlap of permissions for local, domain, and cloud accounts across a network of systems is of concern because the adversary may be able to pivot across accounts and systems to reach a high level of access (i.e., domain or enterprise administrator) to bypass access controls set within the enterprise.(Citation: TechNet Credential Theft)

Name

T1496

ID

T1496

Description

Adversaries may leverage the resources of co-opted systems to complete resource-intensive tasks, which may impact system and/or hosted service availability. One common purpose for Resource Hijacking is to validate transactions of cryptocurrency networks and earn virtual currency. Adversaries may consume enough system resources to negatively impact and/or cause affected machines to become unresponsive.(Citation: Kaspersky Lazarus Under The Hood Blog 2017) Servers and cloud-based systems are common targets because of the high potential for available resources, but user endpoint systems may also be compromised and used for Resource Hijacking and cryptocurrency mining.(Citation: CloudSploit - Unused AWS Regions) Containerized environments may also be targeted due to the ease of deployment via exposed APIs and the potential for scaling mining activities by deploying or compromising multiple containers within an environment or cluster. (Citation: Unit 42 Hildegard Malware)(Citation: Trend Micro Exposed Docker APIs) Additionally, some cryptocurrency mining malware identify then kill off processes for competing malware to ensure it's not competing for resources.(Citation: Trend Micro War of Crypto Miners) Adversaries may also use malware that leverages a system's network bandwidth as part of a botnet in order to facilitate [Network Denial of Service](<https://attack.mitre.org/techniques/T1498>) campaigns and/or to seed malicious torrents.(Citation: GoBotKR) Alternatively, they may engage in proxyjacking by selling use of the victims' network bandwidth and IP address to proxyware services.(Citation: Sysdig Proxyjacking)

Name

T1059.004

ID

T1059.004

Description

Adversaries may abuse Unix shell commands and scripts for execution. Unix shells are the primary command prompt on Linux and macOS systems, though many variations of the Unix shell exist (e.g. sh, bash, zsh, etc.) depending on the specific OS or distribution. (Citation: DieNet Bash)(Citation: Apple ZShell) Unix shells can control every aspect of a system, with certain commands requiring elevated privileges. Unix shells also support scripts that enable sequential execution of commands as well as other typical programming operations such as conditionals and loops. Common uses of shell scripts include long or repetitive tasks, or the need to run the same set of commands on multiple systems. Adversaries may abuse Unix shells to execute various commands or payloads. Interactive shells may be accessed through command and control channels or during lateral movement such as with [SSH](https://attack.mitre.org/techniques/T1021/004). Adversaries may also leverage shell scripts to deliver and execute multiple commands on victims or as part of payloads used for persistence.

Name

T1199

ID

T1199

Description

Adversaries may breach or otherwise leverage organizations who have access to intended victims. Access through trusted third party relationship abuses an existing connection that may not be protected or receives less scrutiny than standard mechanisms of gaining access to a network. Organizations often grant elevated access to second or third-party external providers in order to allow them to manage internal systems as well as cloud-based environments. Some examples of these relationships include IT services contractors, managed security providers, infrastructure contractors (e.g. HVAC, elevators, physical security). The third-party provider's access may be intended to be limited to the infrastructure being maintained, but may exist on the same network as the rest of the enterprise. As such, [Valid Accounts](https://attack.mitre.org/techniques/T1078) used by the other party for access to internal network systems may be compromised and used. (Citation: CISA IT Service Providers) In Office 365 environments, organizations may grant Microsoft partners or resellers delegated administrator permissions. By compromising a partner or reseller account, an adversary may be able to leverage existing delegated administrator relationships or send new delegated administrator offers to clients in order

to gain administrative control over the victim tenant.(Citation: Office 365 Delegated Administration)

Name

T1041

ID

T1041

Description

Adversaries may steal data by exfiltrating it over an existing command and control channel. Stolen data is encoded into the normal communications channel using the same protocol as command and control communications.

Name

T1102

ID

T1102

Description

Adversaries may use an existing, legitimate external Web service as a means for relaying data to/from a compromised system. Popular websites and social media acting as a mechanism for C2 may give a significant amount of cover due to the likelihood that hosts within a network are already communicating with them prior to a compromise. Using common services, such as those offered by Google or Twitter, makes it easier for adversaries to hide in expected noise. Web service providers commonly use SSL/TLS encryption, giving adversaries an added level of protection. Use of Web services may also protect back-end C2 infrastructure from discovery through malware binary analysis while also enabling operational resiliency (since this infrastructure may be dynamically changed).

Name

T1049

ID

T1049

Description

Adversaries may attempt to get a listing of network connections to or from the compromised system they are currently accessing or from remote systems by querying for information over the network. An adversary who gains access to a system that is part of a cloud-based environment may map out Virtual Private Clouds or Virtual Networks in order to determine what systems and services are connected. The actions performed are likely the same types of discovery techniques depending on the operating system, but the resulting information may include details about the networked cloud environment relevant to the adversary's goals. Cloud providers may have different ways in which their virtual networks operate.(Citation: Amazon AWS VPC Guide)(Citation: Microsoft Azure Virtual Network Overview)(Citation: Google VPC Overview) Similarly, adversaries who gain access to network devices may also perform similar discovery activities to gather information about connected systems and services. Utilities and commands that acquire this information include [netstat](<https://attack.mitre.org/software/S0104>), "net use," and "net session" with [Net](<https://attack.mitre.org/software/S0039>). In Mac and Linux, [netstat](<https://attack.mitre.org/software/S0104>) and `lsof` can be used to list current connections. `who -a` and `w` can be used to show which users are currently logged in, similar to "net session". Additionally, built-in features native to network devices and [Network Device CLI](<https://attack.mitre.org/techniques/T1059/008>) may be used (e.g. `show ip sockets`, `show tcp brief`).(Citation: US-CERT-TA18-106A)

Name

T1525

ID

T1525

Description

Adversaries may implant cloud or container images with malicious code to establish persistence after gaining access to an environment. Amazon Web Services (AWS) Amazon Machine Images (AMIs), Google Cloud Platform (GCP) Images, and Azure Images as well as popular container runtimes such as Docker can be implanted or backdoored. Unlike [Upload Malware](https://attack.mitre.org/techniques/T1608/001), this technique focuses on adversaries implanting an image in a registry within a victim's environment. Depending on how the infrastructure is provisioned, this could provide persistent access if the infrastructure provisioning tool is instructed to always use the latest image.(Citation: Rhino Labs Cloud Image Backdoor Technique Sept 2019) A tool has been developed to facilitate planting backdoors in cloud container images.(Citation: Rhino Labs Cloud Backdoor September 2019) If an adversary has access to a compromised AWS instance, and permissions to list the available container images, they may implant a backdoor such as a [Web Shell](https://attack.mitre.org/techniques/T1505/003).(Citation: Rhino Labs Cloud Image Backdoor Technique Sept 2019)

Name

T1082

ID

T1082

Description

An adversary may attempt to get detailed information about the operating system and hardware, including version, patches, hotfixes, service packs, and architecture. Adversaries may use the information from [System Information Discovery](https://attack.mitre.org/techniques/T1082) during automated discovery to shape follow-on behaviors, including whether or not the adversary fully infects the target and/or attempts specific actions. Tools such as [Systeminfo](https://attack.mitre.org/software/S0096) can be used to gather detailed system information. If running with privileged access, a breakdown of system data can be gathered through the `systemsetup`` configuration tool on macOS. As an example, adversaries with user-level access can execute the `df -aH`` command to obtain currently mounted disks and associated freely available space. Adversaries may also leverage a [Network Device CLI](https://attack.mitre.org/techniques/T1059/008) on network devices to gather detailed system information (e.g. `show version``).(Citation: US-CERT-TA18-106A) [System Information Discovery](https://attack.mitre.org/techniques/T1082) combined with

information gathered from other forms of discovery and reconnaissance can drive payload development and concealment.(Citation: OSX.FairyTale)(Citation: 20 macOS Common Tools and Techniques) Infrastructure as a Service (IaaS) cloud providers such as AWS, GCP, and Azure allow access to instance and virtual machine information via APIs. Successful authenticated API calls can return data such as the operating system platform and status of a particular instance or the model view of a virtual machine.(Citation: Amazon Describe Instance)(Citation: Google Instances Resource)(Citation: Microsoft Virtual Machine API)

Name

T1564

ID

T1564

Description

Adversaries may attempt to hide artifacts associated with their behaviors to evade detection. Operating systems may have features to hide various artifacts, such as important system files and administrative task execution, to avoid disrupting user work environments and prevent users from changing files or features on the system. Adversaries may abuse these features to hide artifacts such as files, directories, user accounts, or other system activity to evade detection.(Citation: Sofacy Komplex Trojan) (Citation: Cybereason OSX Pirrit)(Citation: MalwareBytes ADS July 2015) Adversaries may also attempt to hide artifacts associated with malicious behavior by creating computing regions that are isolated from common security instrumentation, such as through the use of virtualization technology.(Citation: Sophos Ragnar May 2020)

Name

T1578

ID

T1578

Description

An adversary may attempt to modify a cloud account's compute service infrastructure to evade defenses. A modification to the compute service infrastructure can include the creation, deletion, or modification of one or more components such as compute instances, virtual machines, and snapshots. Permissions gained from the modification of infrastructure components may bypass restrictions that prevent access to existing infrastructure. Modifying infrastructure components may also allow an adversary to evade detection and remove evidence of their presence.(Citation: Mandiant M-Trends 2020)

External References

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- <https://unit42.paloaltonetworks.com/teamtnt-operations-cloud-environments/>
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- <https://otx.alienvault.com/pulse/60bdfb172c85862f931deced>