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CYBERSECURITY / 06.07.23 / The BlackBerry Research and Intelligence Team

Summary

The RomCom threat actor has been carefully following geopolitical events surrounding the war in Ukraine, targeting militaries, food supply chains, and IT companies. In RomCom's latest campaign, the BlackBerry Threat Research and Intelligence team observed RomCom targeting politicians in Ukraine who are working closely with Western countries, and a U.S.-based healthcare company providing humanitarian aid to the refugees fleeing from Ukraine and receiving medical assistance in the U.S.

This report is the first part of our research covering the details of RomCom's latest malicious campaign, while the second part will cover RomCom's behaviors, including detection engineering.

Brief MITRE ATT&CK® Information

Tactic	Technique
TA0043	T1598, T1598.002
TA0001	T1189
TA0002	T1559, T1218, T1204,

TA0005	T1027, T1140, T1036, T1564.001, T1112
T15007	T1057, T1083, T1082, T1217
TA0009	T1113
TA0010	T1041
TA0011	T1090, T1071, T1071.001, T1095, T1573.002, T1105
TA0040	T1486

Weaponization and Technical Overview

Weapons	Trojanized applications, x64 dll payloads
Attack Vector	Spear-phishing
Network Infrastructure	Cloned websites, C2 servers using self-signed SSL certificates
Targets	Politicians from Ukraine; U.S.-based Healthcare organizations

Technical Analysis

Context

In mid-March 2023, we noticed an uptick in telemetry related to our tracking of the operator behind the RomCom remote access trojan (RAT). This uptick encompassed the creation of several new domains and associated artifacts, one of which, “startleague[.]net”, was linked to a file correlating to the SHA256 – c94e889a6c9f4c37f34f75bf54e6d1b2cd7ee654cd397df348d46abe0b0f6ca3, and titled RemoteDesktopManager.2022.3.35.0.exe.

legitimate utility designed to help facilitate secure remote connectivity. It is compatible with many commonly used remote connection utilities and technologies such as Citrix, FTP, Apple Remote Desktop, TeamViewer, LogMeIn, Microsoft Remote Desktop (RDP), SSH Shell, and many more.

According to the developer's website:

"*Remote Desktop Manager is an application that integrates a comprehensive set of tools and managers to meet the needs of any IT team. It is designed to centralize remote connection technologies, credentials, and secure access to these resource*s. Most connections are established using either an external library or third-party software."

Attack Vector

Although it is unclear at this point what initial infection vector was used to kick off the execution chain, previous RomCom attacks used targeted phishing emails to point a victim to a cloned website hosting Trojanized versions of popular software. There is a high likelihood that this is the same in this case, as the tactics, techniques, and procedures (TTPs) align. We have confirmed that a cloned website was used to host a malicious specially crafted Installer for the Trojanized version of Devolutions Remote Desktop Manager, and that this malicious website was almost indistinguishable from the legitimate one.

The fake domain utilized a form of typosquatting to attempt to appear as close to the real one as possible. This kind of domain (ab)use is common in phishing attacks of all kinds, when threat actors set up online infrastructure with one thing in common: trying to fool the user into believing they are interacting with the real company or organization, by making their fake website look as much like the real one as possible. It is important to understand that just because a website has a company name you know and trust in the URL, that doesn't mean the site you are visiting is owned or operated by that company.

Real Domain	Fake Domain

Figure 1: Example of the real and fake Remote Desktop Manager websites side by side

As shown in Figure 2 below, the malicious file *"Installer.RemoteDesktopManager.2022.3.35.0.exe"* is hosted on the observed cloned/fake website.

Figure 2: rdp-devolutions[.]com malware URL

Weaponization

Once downloaded by the user, the Trojanized installer from the cloned website makes every attempt to appear legitimate. Statically, it is a 64-bit executable (.exe) which is signed by an in-date digital signature.

However, further analysis into the *legitimate* download of Devolutions RDM suggests the signing information does not corelate and is, in fact, issued by a completely different organization. The fraudulent certificate obtained from the malicious installer is shown below in Figure 3.

Figure 3: Digital Signature of the Trojanized Installer

select the destination path of where they'd like the file(s) to be installed.

Figure 4: Setup Installer for Trojanized DRDM

Unbeknownst to the victim, during this prompt, the malware has already begun its execution chain. The malware drops various components into a hidden path via C:\Users\Public\Libraries. (Further details can be found below in *Appendix 1: IoC's*.)

Dropped binaries:

- ***update.conf***
- ***Installer.RemoteDesktopManager.2022.3.35.0.exe***
- ***netid4050320587.dll***
- ***prxyms4050320587.dll***
- *desktop.ini (already present)*
- *Recorded TV (already present)*

The core malicious binary related to RomCom is the file %*netid4050320587.dll0*%. This Dynamic-Link Library (.DLL) is executed via the Windows host process RunDLL32 in the background while the unsuspecting victim tries installing the fake software.

This malicious binary is executed, as seen in Figure 6, via: *"C:\Windows\System32\rundll32.exe C:\Users\Public\Libraries\netid4050320587.dll0,Main netid4050320587.dll0".*

Figure 6: Execution of the core RomCom DLL

The malicious dropper contains a legacy installer for the legitimate program to masquerade its purposes further. This installer is dropped both in C:\Users\User\AppData\Local\Temp\%js-TIDj8.tmp%\ and C:\Users\Public\Library\.

SHA256:
b1b015f3762b4b9bfce928401a3b13beee5fb70c989b97a03d57545fc00a1978

In addition to deploying and executing its payload of malware, this Installer will continue seemingly as intended, so the user is left none the wiser.

On execution (as of April 2023), the Installer for the fake Devolutions Remote Manager will fail its setup as it cannot send data to the real Devolutions server. When the Installer receives this error, the installation terminates.

Meanwhile, the malware has been stealthily deployed on the victim host by the decoy Installer and has begun to carry out its malicious activities.

Figure 7: Continuation of Trojanized installer

The function of the malicious files dropped is as follows:

made to its obfuscation to thwart static analysis.

- The application's core functionality remains relatively the same, enabling the threat actor full access to the victim's device.
- %prxyms1500330613.dll% – This is the RomCom Loader file. This file is used to execute RomCom via the command line.
- procsys.dll – This is a browser stealer, and steals browser data such as passwords, browsing history, and site cookies.
- update.conf – A small supporting configuration file for RomCom.

The full execution chain is described below in Figure 8.

Figure 8: Execution of Trojanized RomCom Installer

Networking

Upon successful installation, RomCom will enumerate the infected host and gather some basic host and user metadata, which is then sent to its command-and-control (C2) server – ***startleague[.]net*** – to "check in".

Figure 9: Request sent via the WinHTTP API

Additionally, this can be noted via the TCP Stream shown in Figure 10 below.

Figure 10: Wireshark capture of initial RomCom communication

If, for any reason, a connection attempt to its C2 is unsuccessful, the malware appears to have some redundancy. If its initial requests cannot be handled, it will attempt to connect via ICMP Requests instead.

Figure 11: Request sent via ICMP to RomCom's C2

Figure 12: ICMP Request to C2 Related to RomCom

Network Infrastructure

As mentioned previously, the purpose of the domain **rdp-devolutions[.]com** is to host RomCom's cloned website, both hosting and delivering a Trojanized/fake version of the Devolutions' Remote Desktop Manager software.

The domain was registered on **2023-03-09** and initially tied to the IP address **91[.]235[.]116[.]232** for the time period **2023-03-11 > 2023-03-30,** when it was updated to resolve to the IP address **74[.]119[.]239[.]234.**

Domain name	IP	ASN	Purpose
rdp-devolutions[.]com	74[.]119[.]239[.]234	AS51177 TIPZOR MEDIA SRL, RO	Malware hosting
startleague[.]net	46[.]246[.]98[.]15	AS42708 CLOUD HOSTING, SE	C2 server

The domain **startleague[.]net** was registered on **2022-12-19** and tied to the IP address **2[.]57[.]90[.]16.** This continued until **2023-01-30,** when it began resolving to the IP address **46[.]246[.]98[.]15.**

Figure 13: VirusTotal graph showing the network infrastructure

victims primarily based in Ukraine. This aligns with previously seen geolocations targeted by RomCom. We have also observed evidence of at least one target based in the United States.

The victims targeted are involved in several dissimilar industries such as Military and Healthcare, united by the common thread of Russia's invasion of Ukraine.

Figure 14: Geolocation of victims targeted in this RomCom campaign

Additional Findings

GOTO MEETING

Over the course of our investigations, a similar binary was observed containing a confirmed RomCom implant. This time it was deployed within a Trojanized installation of **"GoTo Meeting"**, a popular video conference software commonly used by a variety of enterprises, both large and small.

Following similar TTP's of previously observed samples of RomCom, the initial attack vector is a faked/cloned website that appears identical to the legitimate one. Below is an example of the cloned website for "GoTo Meeting".

Figure 15: Faked/cloned website of the video conferencing app "GoTo Meeting"

Like other samples of RomCom, it too hosts a Trojanized installer containing a legitimate binary related to the intended product/service, whilst also containing a RomCom implant that will execute during installation by the user.

Details of this observed find are below:

Hash (sha-256)	a552b0b1c948e0ef4e51088f059c280a967ff40bf93ff9d62ebeb74e80f36fc5

File Size	21.02 MB (22041070 bytes)
Created	2022-06-30 12:11:22 UTC
Description	Trojanized installer containing RomCom RAT

WINSCP

Furthermore, at the beginning of May 2023, the Twitter user “@TLP_R3D” identified a “potential RomCom C2” infrastructure noted via this tweet. Upon analyzing the noted IoC’s, the BlackBerry Threat Research and Intelligence team confirmed that the samples in the attack chain indeed contained a RomCom payload.

Unlike previous samples of RomCom observed through our own investigations, this sample of RomCom masqueraded as the popular SSH file-transfer tool **“WinSCP”**, but it does not contain the RomCom payload itself.

Upon execution of WinSCP-5.21.8-Setup.exe, the malware will attempt to reach out to the noted IoC’s (below) to download and execute itself.

- hxxp://104.234.10.207:7931/itrdd/kcrs/file1[.]txt
- hxxp://104.234.10.207:7931/itrdd/kcrs/file2[.]txt

It was confirmed by BlackBerry that these two files contain both the RomCom loader and the RomCom RAT payload itself.

Hash (sha-256)	c118895776e75eaa291d2a5f54f1de4f48756aec28cebaa1bf6fd9beb5d36301
File name	WinSCP-5.21.8-Setup.exe
File Size	1.22 MB (1280048 bytes)
Created	2023-05-03 10:15:01 UTC

Timeline of RomCom Attacks

Below is a timeline of all known RomCom attacks to date, including the name of the software Trojanized to deliver the malware payload in each attack.

Figure 16: Timeline of known RomCom attacks

Conclusions

Since at least mid-2022, RomCom has been a persistent threat affecting largely Ukrainian-based organizations, including both Government and Military. As the conflict between Ukraine and Russian forces escalates in Eastern Europe, the world becomes increasingly polarized by their support of one side or the other, whether on the ground in Ukraine via the provision of military supplies, or on a country's own home turf via healthcare provided to those fleeing the conflict.

Following its observed Ukrainian-based targets, the RomCom group has been sighted by BlackBerry targeting other possibly pro-Ukrainian affiliated organizations – namely those based in the U.S. – in recent months. The last-observed campaigns target politicians in Ukraine, and a U.S.-based healthcare institution running a humanitarian aid program for refugees fleeing from Ukraine.

The threat actor behind the RomCom RAT appears to be actively interested in what Western countries are doing to support Ukraine, what Ukraine is doing, and who the refugees are receiving help from in the United States. If medical records stored electronically are stolen, it would be easy for the threat actor (and those they are affiliated with) to profile the patient and use that data in future war scenarios and in geopolitics in general. Even the extraction of partial information, such as name, sex, date of birth, and related data, poses a potential risk to that person and those who provide them with any type of aid in future.

future updates.

APPENDIX 1 – Indicators of Compromise (IoCs)

MAIN BINARY

Hash (sha-256)	6d3ab9e729bb03ae8ae3fcd824474c5052a165de6cb4c27334969a542c7b261d
File Name	Installer.RemoteDesktopManager.2022.3.35.0.exe
File Size	6.91 MB (7244272 bytes)
Created	2023-03-10 11:30:07 UTC
Details	Main Windows 64-bit (Signed Binary) contains installer and bundled RomCom malware

MAIN BINARY - DIGITAL CERTIFICATE

Name	Noray Consulting Ltd.
Serial Number	56 E1 49 7E FD DA B4 55 B2 35 E6 0C 3C 53 E7 F4
Name	SSL.com Timestamping Unit 2022
Serial Number	1A D6 08 A7 D6 34 B5 CD DE 97 CB A3 CC F0 D0 4B

MAIN BINARY - DROP FILES (%USERS%\PUBLIC\LIBRARIES)

Hash (sha-256)	c94e889a6c9f4c37f34f75bf54e6d1b2cd7ee654cd397df348d46abe0b0f6ca3

File Size	[illegible] MB ([illegible] bytes)
Created	2023-02-15 14:54:16 UTC
Description	Legitimate Devolutions RDM installer

Hash (sha-256)	0501d09a219131657c54dba71faf2b9d793e466f2c7fdf6b0b3c50ec5b866b2a
File Name	netid3231462335.dll0 netid3283347891.dll netid [0-9] .dll
File Size	2.57 MB (2696704 bytes)
Created	2023-03-10 10:56:58 UTC
Description	Core RomCom binary

Hash (sha-256)	65778e3afc448f89680e8de9791500d21a22e2279759d8d93e2ece2bc8dae04d
File Name	prxyms3231462335.dll
File Size	2.54 MB (2660864 bytes)
Created	2023-03-10 10:57:01 UTC
Description	RomCom Loader

(sha-256)	
File Name	procsys.dll
File Size	3.67 MB (3848704 bytes)
Created	2023-03-23 04:16:43 UTC
Description	Additional infostealer

GOTO MEETING OPENER DROP FILES (%USERS%\PUBLIC\LIBRARIES)

Hash (sha-256)	3b26e27031a00a32f3616de5179a003951a9c92381cd8ec552d39f7285ff42ee
File Name	MSI420A.tmp
File Size	20.88 MB (21899264 bytes)
Created	2023-02-15 06:04:43 UTC
Description	RomCom RAT Dropper created by GoTo Meeting opener

Hash (sha-256)	3e293680e0f78e404fccb1ed6daa0b49d3f6ea71c81dbaa53092b7dd32e81a0d
File Name	netid [0-9] .dll
File Size	5.02 MB (5266432 bytes)
Created	2023-02-14 13:59:54 UTC
Description	Core RomCom binary

File Name	prxyms[0-9] .dll
File Size	4.97 MB (5215744 bytes)
Created	2023-02-14 13:58:54 UTC
Description	Loader RomCom binary

Hash (sha-256)	e7914f823ed0763c7a03c3cfdbcf9344e1da93597733ac22fe3d31a5a4e179aa
File Name	winipfile[0-9] .dll
File Size	5.41 MB (5676544 bytes)
Created	2023-02-14 14:00:20 UTC
Description	RomCom binary

WINSCP-5.21 DROP FILES (%USERS%\PUBLIC\LIBRARIES)

Hash (sha-256)	a5dae9b7ff88276f699eece44eb4b183f1b1de6bef9e159c417ba621a949f744
File Name	bnert.dll0
File Size	390.00 KB (399360 bytes)
Created	2023-05-03 10:01:38 UTC
Description	RomCom binary

(sha-256)	
File Name	xlmtdm.dll
File Size	185.50 KB (189952 bytes)
Created	2023-05-03 10:04:11 UTC
Description	RomCom loader

NETWORKING

Domain	rdp-devolutions[.]com
IP	74[.]119[.]239[.]234
Domain	startleague[.]net
IP	46[.]246[.]98[.]15
IP	104[.]234[.]10[.]207:7931

APPENDIX 2 – Applied Countermeasures

Sigma Rules

Available upon request – see below.

Yara Rules

Available upon request – see below.

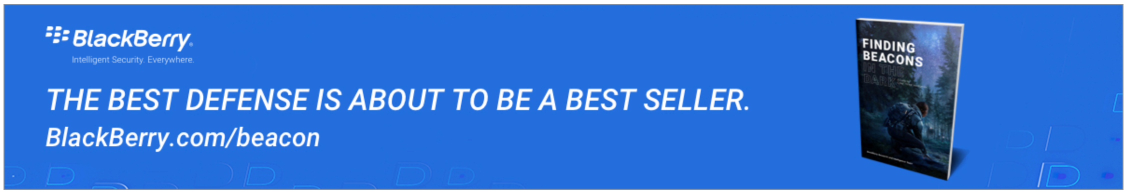
APPENDIX 3 – Detailed MITRE ATT&CK® Mapping

Tactic	Technique	Sub-Technique Name/ Context

*Disclaimer: The private version of this report is available upon request. It includes, but is not limited to, the complete and contextual MITRE ATT&CK® mapping, MITRE D3FEND™ countermeasures, Attack Flow by MITRE, and other threat detection content for tooling, network traffic, complete IoCs list, and system behavior. Please email us at **cti@blackberry.com** for more information.*

Related Reading

- RomCom Threat Actor Abuses KeePass and SolarWinds to Target Ukraine and Potentially the United Kingdom
- Unattributed RomCom Threat Actor Spoofing Popular Apps Now Hits Ukrainian Militaries
- Industroyer2 Malware Takes Aim at Ukraine Infrastructure
- HeaderTip Backdoor Shows Attackers from China Preying on Ukraine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About The BlackBerry Research and Intelligence Team

The BlackBerry Research and Intelligence team is a highly experienced threat research group specializing in a wide range of cybersecurity disciplines, conducting continuous threat hunting to provide comprehensive insights into emerging threats. We analyze and address various attack vectors, leveraging our deep expertise in the cyberthreat landscape to develop proactive strategies that safeguard against adversaries.

edge research and innovative solutions.