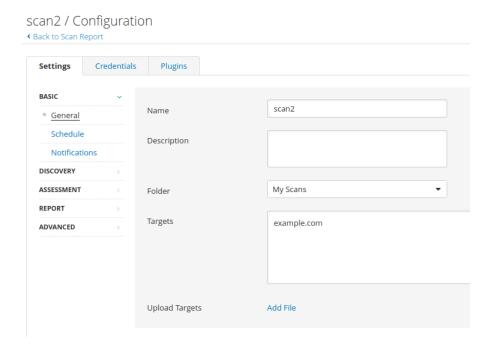
Response to feedback and request for assistance from the grader:

1. Managing Vulnerability Lifestyle – Appendix C

My Nessus results did not reveal a critical vulnerability. Please check my scan here:



- Do not ping the host
- Scanning Fragile devices is not allowed

scan2 / Configuration

◆ Back to Scan Report

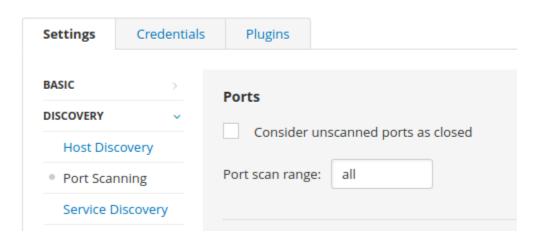
Settings	Credentials	Plugins
BASIC	>	Barrata Hart Bira
DISCOVERY	~	Remote Host Ping
Host Discove		Ping the remote host
Port Scannin	ng	
Service Disco	overy	Fragile Devices
ASSESSMENT		Scan Network Printers
REPORT	>	
ADVANCED	>	Scan Novell Netware hosts
		Scan Operational Technology devices



Scan all ports

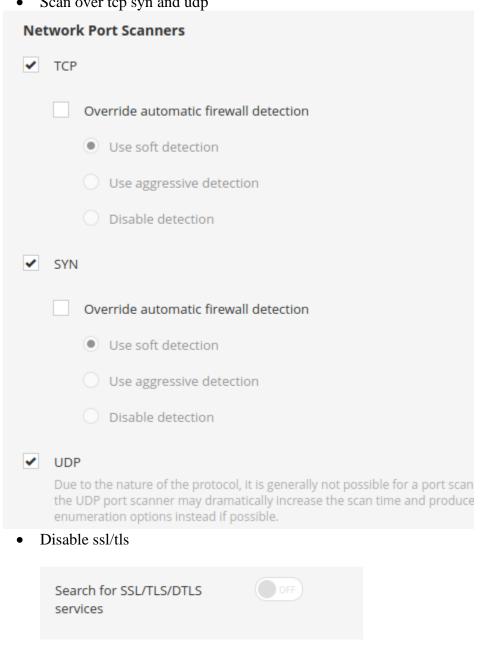
scan2 / Configuration

◆ Back to Scan Report



Local Port Enumerators
SSH (netstat)
WMI (netstat)
SNMP
Only run network port scanners if local port enumeration failed
Verify open TCP ports found by local port enumerators

• Scan over tcp syn and udp



• Scan for database related issues Databases

• Scan for Debian specific issues

Debian Local Security Checks

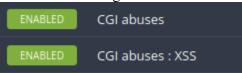
Scan for ubuntu specific issues

Ubuntu Local Security Checks

• Scan for firewall specific issues



• Scan for cgi related abuses



• Scan for webserver related issues



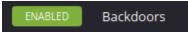
• Scan for remote shell possibilities



• Scan for default accounts



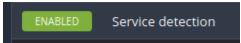
• Scan for backdoors



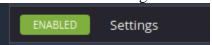
• Scan for dos



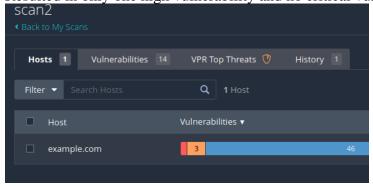
Scan for service



Scan for settings

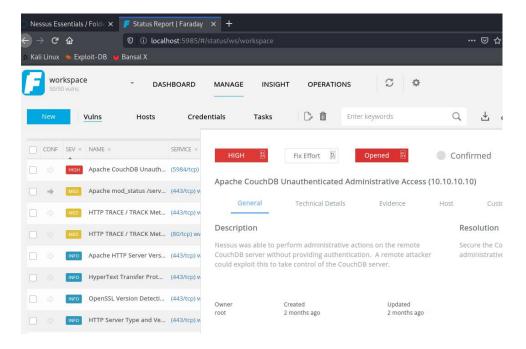


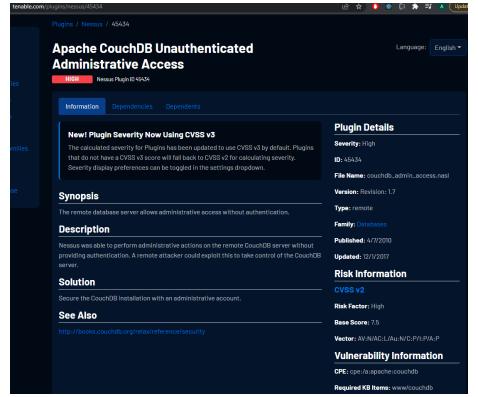
Resulted in only one high vulnerability and no critical vulnerabilities:



2. Managing Vulnerability Lifestyle – Appendix A

In the one high vulnerability I found, there was no related cvss source score or CVE, only CVSSv2 risk information on the tenable site:



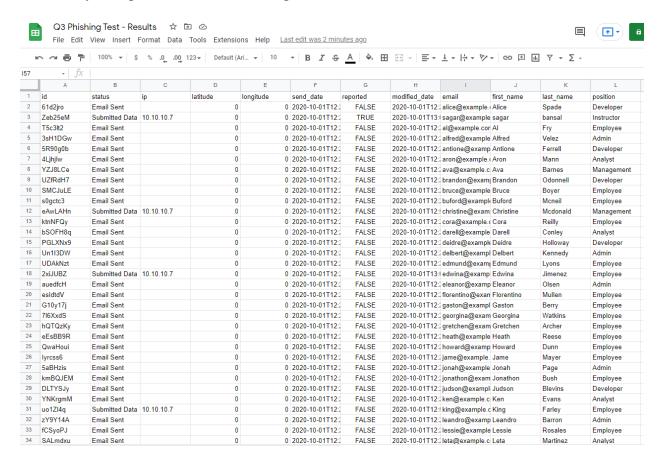


Where do I go from here to find the CVE?



3. Managing Security Awareness Programs – Appendix E

I've included an appendix with a screenshot of the csv results. However, it does not show usernames and passwords on the default export. Am I meant to create the document myself or is there a way to export the results with the passwords?



3. OSINT – Public Exposure Audit – Appendix E

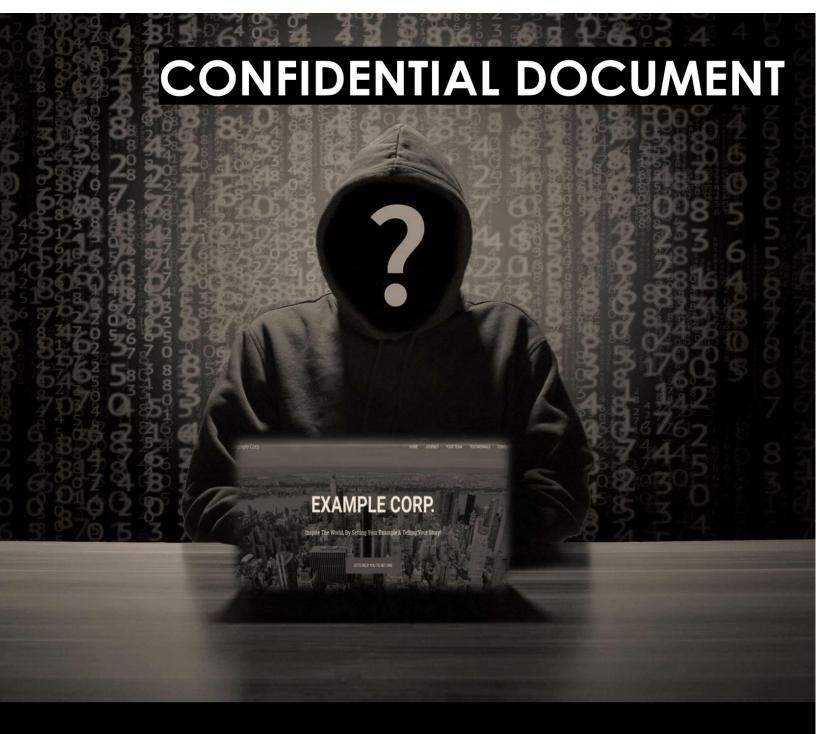
I've added the screenshots that were useful to me in uploading the backdoor.

Could you give me a hint on how I'm supposed to use the information in the zone transfer and whois? I think this could be used to spoof emails from their domain but I'm unsure of how to use that in this project.

4. Auditing Systems & Applications – Appendix E

The CouchDB port doesn't seem to be accepting connections for me. Is this the correct usage of NetCat?

```
root@udacity:~# nc example.com 5984
example.com [10.10.10.10] 5984 (?) : Connection refused
root@udacity:~# []
```



Network Vulnerability Assessment Report

Quarter 3, 2021

Document Control

Document Version	Owner & Role	Status & comments		
v1.0	Andrew Pham - Security Analyst	Internal Draft (Restricted Scope)		

Legal Disclaimer

The content of this report is highly confidential and may include critical information on Example Corp systems, network, and applications. The report should be shared only with intended parties.

Although maximum effort has been applied to make this report accurate, Example Corp, Security Audit Team cannot be held responsible for inaccuracies or system changes after the report has been issued since new vulnerabilities may be found once the tests are completed.

Guidance should be taken from a Legal Counsel, CISO and Blue Team on how best to implement the recommendations.

All other information and the formats, methods, and reporting approaches is the intellectual property of Example Corp and is considered proprietary information and is provided for the purpose of internal use only.

Any copying, distribution, or use of any of the information set forth herein or in any attachments hereto form outside of Example Corp authorized representatives is strictly prohibited.



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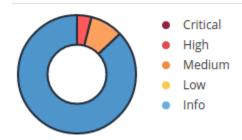
Docu	2				
Lega	3				
Tabl	4				
1.	10				
2.	10				
3.	Error! Bookmark not defined.				
4.	12				
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1. Executive Summary

An audit of Example Corp revealed no major vulnerabilities. The few vulnerability findings can be corrected with minor updates and only have minor confidentiality impacts. For context our assessment audited the company's website, example.com. We have found TODO critical vulnerabilities, TODO high vulnerabilities and TODO medium vulnerabilities. We also observed that there were some public exposures revealing security related information and we collected some credentials through phishing. We discovered a major problem with CouchDB allowing us to create a back door and gain access to the site. We propose that TODO

2. A Glance Through Target Security Posture

Vulnerabilities



Our Faraday automated scan revealed 1 high vulnerability and 2 medium level vulnerabilities. We imported these results into Nessus for tracking.

The high-level vulnerability appeared to allow for database admin control. Upon further investigation of the vulnerability, we believe it to be a false positive since we were unable to gain access to the control panel on the exploited URL.

The next two medium vulnerabilities exposed information on our server but provided no access to change that information. If those features are not actively needed for debugging, it's recommended to disable them.

An nMap test revealed an SSH and FTP server, attempting the developer credentials from the phishing was unsuccessful as well as default usernames and passwords. The nMap also revealed an us-srv server that has a known DDOS exploit via malformed request but we were unable to replicate the exploit.

OSINT revealed that the website is running on a stack with Ubuntu operating system, running an Apache webserver, with a WordPress content management system. OSINT revealed potential security vulnerabilities in file uploads, Apache webserver auth codes, and webserver firewalls.

In the phishing test we gained 10 sets of credentials from various employees.

Using the OSINT and phishing credentials together we find

- 1. the WordPress admin panel, the URL was unchanged from the default, none of the "phished" credentials worked on the panel.
- 2. the secure app login, phished credentials worked on the login here



From the secure app login, we find an unlisted contact us page on the site. OSINT clues us in to attempt single file upload, content type file upload, and double extension file upload. Using BurpSuite to intercept and modify requests, we attempt these exploits to upload a backdoor but it does not accept the files even with modified headers. Php files with modified extensions are uploaded suggesting that there is no check for image content such as using mime content type, php getimagesize, or the fileinfo extension.

It is possible to run .php.jpg files using AddType or AddHandler in .htaccess to run all .png as .php; however planting the .htaccess file does not seem possible.

We were unable to exploit the file upload system using double extension, content type, single file, or null byte and therefore could not create a backdoor by executing PHP code. This secure app should still be enclosed within the firewall to prevent possible exploitation from chaining other vulnerabilities.

Recommendations:

- Disable HTTP Trace and mod_status
- 2. Change WordPress admin panel URL
- 3. Move /secureapp within the firewall
- 4. Add image content checking for file upload on secureapp's contact us form and ensure to prevent any code execution from the uploads folder

Overall Security Rating – Immediate action is required.



3. Testing Methodology

- 1. Automated scans
- 2. Manual audit of found vulnerabilities
- 3. Research into existing proof of concept exploits for vulnerabilities found
- 4. Research OSINT and Phishing Data
- 5. Attempt to chain vulnerabilities

4. Tools & Websites Used

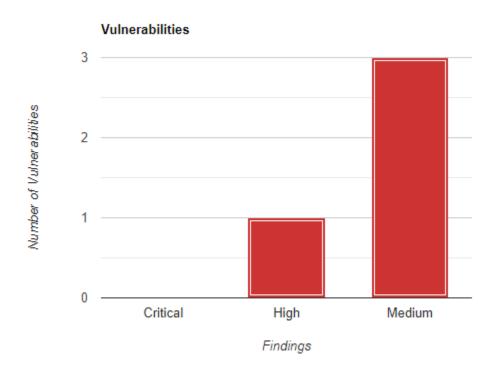
- Nessus
- Faraday
- Firefox
- Curl
- goPhish
- Nmap
- BurpSuite



Detailed Technical	Reports (Scope Limited)
---------------------------	-------------------------

example.com

This host contains 1 high and 3 medium vulnerabilities.



Total Findings	Critical	High	Medium
3	0	1	3



Finding X: Apache CouchDB Unauthenticated Administrative Access on port 5984 TCP- High

Vulnerability Description:

Nessus was able to perform administrative actions on the remote CouchDB server without providing authentication. A remote attacker could exploit this to take control of the CouchDB server.

Risk Information:

CVSS Score Source: Tenable

CVSS v2 Calculations

Risk Factor: High

Base Score: 7.5

Vector: AV:N/AC:L/Au:N/C:P/I:P/A:P

Exposure/Analysis:

Manual attempts at gaining access to "http://10.10.10.10:5984/_config" through the web browser failed. Vulnerability is unconfirmed, flagged as a false positive.

Recommendations:

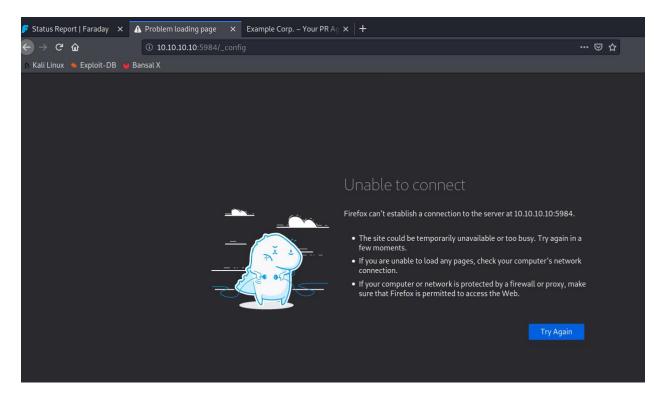
Secure the CouchDB installation with an administrative account if not done so already.



Steps to Reproduce

Note: vulnerability unconfirmed

1. Navigate to http://10.10.10.10:5984/_config





Finding X: HTTP TRACE / TRACK Methods Allowed on port 80 and 443 TCP— Medium

*technically counts as 2 vulnerabilities since it can be found on two separate ports

Vulnerability Description:

The remote web server supports the TRACE and/or TRACK methods. TRACE and TRACK are HTTP methods that are used to debug web server connections.

Risk Information:

Score Source: CVE-2004-2320

CVSS v3.1 Calculations

Risk Factor: Medium

Base Score: 5.3

Temporal Score: 4.6

Vector: CVSS:3.0/AV:N/AC:L/PR:N/UI:N/S:U/C:L/I:N/A:N

Temporal Vector: E:U/RL:O/RC:C

Exposure/Analysis:

Debugging features have been left on and were confirmed manually with curl TRACE. While this does not allow the attacker a point of entry, it gives them extra information about our systems that can be utilized with other exploits.

Recommendations:

Disable these HTTP methods.

Steps to Reproduce

1. Curl -v -X TRACE example.com

```
root@udacity:~/Downloads# curl -v -X TRACE http://example.com
    Trying 10.10.10.10:80 ...
* Connected to example.com (10.10.10.10) port 80 (#0)
> TRACE / HTTP/1.1
> Host: example.com
> User-Agent: curl/7.72.0
> Accept: */*
* Mark bundle as not supporting multiuse
< HTTP/1.1 200 OK
< Date: Thu, 30 Dec 2021 02:02:11 GMT
< Server: Apache/2.4.18 (Ubuntu) mod_fcgid/2.3.9 OpenSSL/1.0.2g
< Connection: close
< Transfer-Encoding: chunked
< Content-Type: message/http
TRACE / HTTP/1.1
Host: example.com
User-Agent: curl/7.72.0
Accept: */*
* Closing connection 0
```



Finding X: Apache mod_status /server-status Information Disclosure on port 443 TCP- Medium

Vulnerability Description:

A remote unauthenticated attacker can obtain an overview of the remote Apache web server's activity and performance by requesting the URL '/server-status'. This overview includes information such as current hosts and requests being processed, the number of workers idle and service requests, and CPU utilization.

Risk Information:

Score Source: Tenable

CVSS v3.1 Calculations

Risk Factor: Medium

Base Score: 5.3

Vector: CVSS:3.0/AV:N/AC:L/PR:N/UI:N/S:U/C:L/I:N/A:N

Exposure/Analysis:

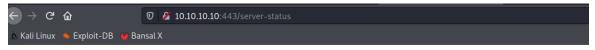
A vulnerability has been confirmed where the server's status is publicly accessible through the server status URL. While this information provides no access by itself, it does provide excess information to attackers to use with other exploits.

Recommendations:

Update Apache's configuration file(s) to either disable mod_status or restrict access to specific hosts.

Steps to Reproduce

http://10.10.10.10:443/server-status



Apache Server Status for 10.10.10.10 (via 10.10.10.10)

Server Version: Apache/2.4.18 (Ubuntu) mod_fcgid/2.3.9 OpenSSL/1.0.2g

Server MPM: prefork

Server Built: 2020-08-12T21:35:50

Current Time: Thursday, 30-Dec-2021 07:59:50 IST Restart Time: Wednesday, 29-Dec-2021 03:15:01 IST Parent Server Config. Generation: 1 Parent Server MPM Generation: 0 Server uptime: 1 day 4 hours 44 minutes 49 seconds

Server load: 0.00 0.00 0.00

Total accesses: 5794 - Total Traffic: 57.3 MB CPU Usage: u18.28 s28.86 cu0 cs0 - .0456% CPU load .056 requests/sec - 580 B/second - 10.1 kB/request

1 requests currently being processed, 9 idle workers

.....

Scoreboard Key:

- "" Waiting for Connection, "s" Starting up, "R" Reading Request, "W" Sending Reply, "K" Keepalive (read), "p" DNS Lookup, "c" Closing connection, "L" Logging, "G" Gracefully finishing, "I" Idle cleanup of worker, "." Open slot with no current process

Srv	PID	Acc	M	CPU	SS	Req	Conn	Child	Slot	Client	VHost	Request
0-0	30682	0/598/598	_	6.16	588	0	0.0	6.19	6.19	127.0.0.1	infra.example.com:8081	GET /server-status HTTP/1.1
1-0	30683	0/631/631	W	7.47	0	0	0.0	6.58	6.58	10.10.10.7	'infra.example.com:443	GET /server-status HTTP/1.1
2-0	11914	0/235/580	_	2.22	889	0	0.0	2.32	5.66	127.0.0.1	infra.example.com:8081	GET /server-status HTTP/1.1
3-0	11915	0/207/494	_	2.23	1188	0	0.0	2.24	4.93	127.0.0.1	infra.example.com:8081	GET /server-status HTTP/1.1
4-0	30686	0/643/643	_	6.58	1789	0	0.0	6.39	6.39	127.0.0.1	infra.example.com:8081	GET /server-status HTTP/1.1
5-0	9489	0/646/646	_	5.98	2089	0	0.0	5.97	5.97	127.0.0.1	infra.example.com:8081	GET /server-status HTTP/1.1
6-0	9547	0/389/639	_	3.37	2004	0	0.0	3.22	5.87	10.10.10.7	'infra.example.com:443	GET /server-status HTTP/1.1



Appendixes

Appendix A: Vulnerability Score Analysis – CVSS 3.0

1. CVE-2004-2320

https://example.com

Final Vector:

AV:N/AC:L/PR:N/UI:N/S:U/C:L/I:N/A:N/E:U/RL:O/RC:C/CR:L/IR:L/AR:L/MAV:N/MAC:X/MPR:N/MUI:N/MS:U/MC:L/MI:N/MA:N

Adjusted Scores:

CVSS Base Score: 5.3 Impact Subscore: 1.4

Exploitability Subscore: 3.9 CVSS Temporal Score: 4.6 CVSS Environmental Score: 4.0 Modified Impact Subscore: 0.7

Overall CVSS Score: 4.0 Risk Rating – Low

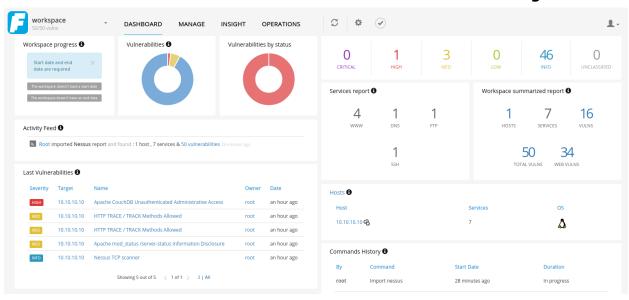


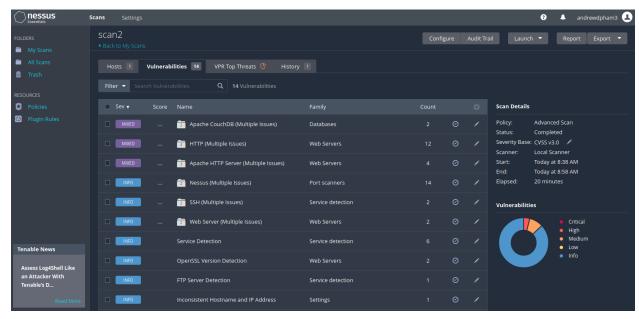
Appendix B: Modified Exploit Code For CVE-XXXX-XXXXX

Only one vulnerability had a CVE number and no exploit code was found.



Appendix C: Screenshots For Nessus & Faraday



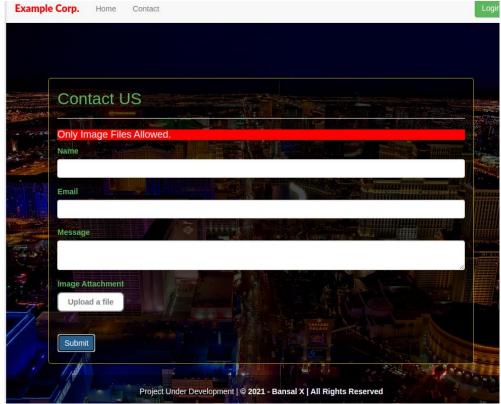




Appendix D: Screenshots Of Exploited Web App

Index of /secureapp/uploads



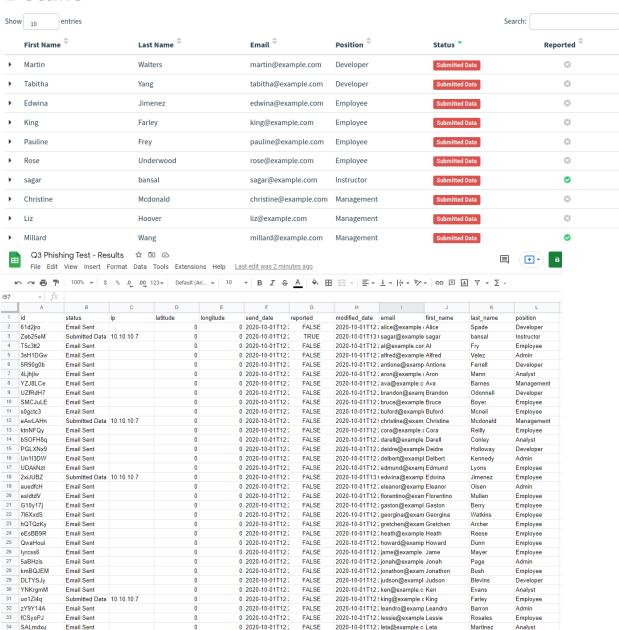




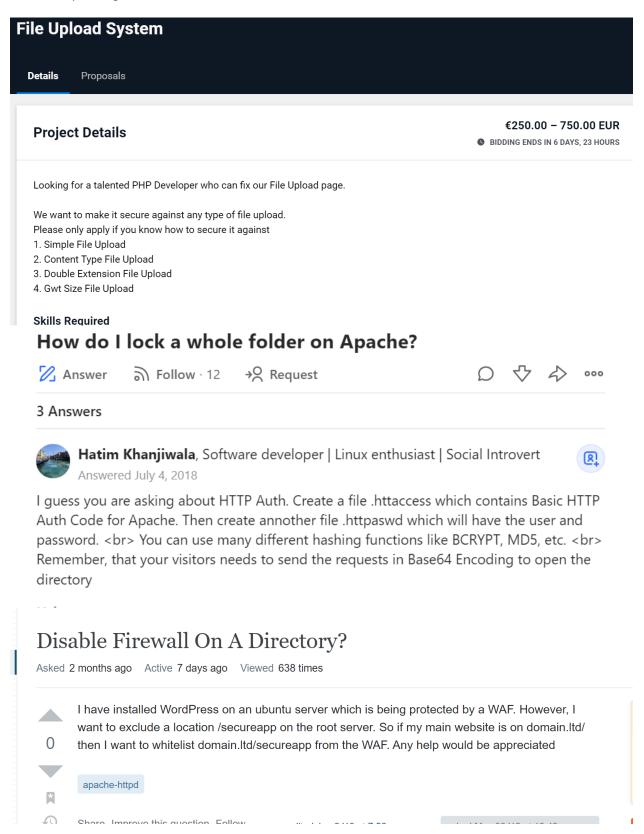
Appendix E: OSINT / Phishing Results Data Used



Details



OSINT for uploading backdoor file:





Appendix F: Nmap Found Services

```
root@udacity:~/Desktop# nmap example.com -p-
Starting Nmap 7.91 ( https://nmap.org ) at 2021-12-30 10:41 IST
Nmap scan report for example.com (10.10.10.10)
Host is up (0.00052s latency).
Not shown: 65528 filtered ports
PORT STATE SERVICE
21/tcp open ftp
22/tcp open ssh
53/tcp open domain
80/tcp open http
443/tcp open http
5984/tcp closed couchdb
8083/tcp open us-srv
MAC Address: 08:00:27:5C:99:0E (Oracle VirtualBox virtual NIC)
```