Security incident report

Background Situation

Several hours after the attack, multiple customers emailed yummyrecipesforme's helpdesk. They complained that the company's website had prompted them to download a file to access free recipes. The customers claimed that, after running the file, the address of the website changed and their personal computers began running more slowly.

In response to this incident, the website owner tries to log in to the admin panel but is unable to, so they reach out to the website hosting provider. You and other cybersecurity analysts are tasked with investigating this security event.

To address the incident, you create a sandbox environment to observe the suspicious website behavior. You run the network protocol analyzer tcpdump, then type in the URL for the website, yummyrecipesforme.com. As soon as the website loads, you are prompted to download an executable file to update your browser. You accept the download and allow the file to run. You then observe that your browser redirects you to a different URL, greatrecipesforme.com, which contains the malware.

The logs show the following process:

1. The browser initiates a DNS request: It requests the IP address of the yummyrecipesforme.com URL from the DNS server.
2. The DNS replies with the correct IP address.
3. The browser initiates an HTTP request: It requests the yummyrecipesforme.com webpage using the IP address sent by the DNS server.
4. The browser initiates the download of the malware.
5. The browser initiates a DNS request for greatrecipesforme.com.
6. The DNS server responds with the IP address for greatrecipesforme.com.
7. The browser initiates an HTTP request to the IP address for greatrecipesforme.com.

A senior analyst confirms that the website was compromised. The analyst checks the source code for the website. They notice that javascript code had been added to prompt website visitors to download an executable file. Analysis of the downloaded file found a script that redirects the visitors' browsers from yummyrecipesforme.com to greatrecipesforme.com.

The cybersecurity team reports that the web server was impacted by a brute force attack. The disgruntled baker was able to guess the password easily because the admin password was still set to the default password. Additionally, there were no controls in place to prevent a brute force attack.

Your job is to document the incident in detail, including identifying the network protocols used to establish the connection between the user and the website. You should also recommend a security action to take to prevent brute force attacks in the future.

TCP Dump Traffic examples :

14:18:32.192571 IP your.machine.52444 > dns.google.domain: 35084+ A? yummyrecipesforme.com. (24)
14:18:32.204388 IP dns.google.domain > your.machine.52444: 35084 1/0/0 A 203.0.113.22 (40)

14:18:36.786501 IP your.machine.36086 > yummyrecipesforme.com.http: Flags [S], seq 2873951608, win 65495, options [mss 65495,sackOK,TS val 3302576859 ecr 0,nop,wscale 7], length 0
14:18:36.786517 IP yummyrecipesforme.com.http > your.machine.36086: Flags [S.], seq 3984334959, ack 2873951609, win 65483, options [mss 65495,sackOK,TS val 3302576859 ecr 3302576859,nop,wscale 7], length 0
14:18:36.786529 IP your.machine.36086 > yummyrecipesforme.com.http: Flags [.], ack 1, win 512, options [nop,nop,TS val 3302576859 ecr 3302576859], length 0
14:18:36.786589 IP your.machine.36086 > yummyrecipesforme.com.http: Flags [P.], seq 1:74, ack 1, win 512, options [nop,nop,TS val 3302576859 ecr 3302576859], length 73: HTTP: GET / HTTP/1.1
14:18:36.786595 IP yummyrecipesforme.com.http > your.machine.36086: Flags [.], ack 74, win 512, options [nop,nop,TS val 3302576859 ecr 3302576859], length 0
...<a lot of traffic on the port 80>...

14:20:32.192571 IP your.machine.52444 > dns.google.domain: 21899+ A? greatrecipesforme.com. (24)
14:20:32.204388 IP dns.google.domain > your.machine.52444: 21899 1/0/0 A 192.0.2.17 (40)
14:25:29.576493 IP your.machine.56378 > greatrecipesforme.com.http: Flags [S], seq 1020702883, win 65495, options [mss 65495,sackOK,TS val 3302989649 ecr 0,nop,wscale 7], length 0
14:25:29.576510 IP greatrecipesforme.com.http > your.machine.56378: Flags [S.], seq 1993648018, ack 1020702884, win 65483, options [mss 65495,sackOK,TS val 3302989649 ecr 3302989649,nop,wscale 7], length 0
14:25:29.576524 IP your.machine.56378 > greatrecipesforme.com.http: Flags [.], ack 1, win 512, options [nop,nop,TS val 3302989649 ecr 3302989649], length 0
14:25:29.576590 IP your.machine.56378 > greatrecipesforme.com.http: Flags [P.], seq 1:74, ack 1, win 512, options [nop,nop,TS val 3302989649 ecr 3302989649], length 73: HTTP: GET / HTTP/1.1

14:25:29.576597 IP greatrecipesforme.com.http > your.machine.56378: Flags [.], ack 74, win 512, options [nop,nop,TS val 3302989649 ecr 3302989649], length 0
...<a lot of traffic on the port 80>...

Security Incident Report

Section 1: Identify the network protocol involved in the incident
The network protocol involved in the incident is HTTP. When a user opens a web page (in this case yummyrecipesforme.com), the user computer will send a request to the DNS server to resolve the domain name to IP address. DNS server then will return the exact IP address that user's computer then can contact to download the web page and show it in user's display/monitor

Section 2: Document the incident
The session is started when the user's computer sends a request to DNS server (dns.google.domain) to resolve the IP address of yummyrecipesforme.com. DNS server sends the IP address information back to the user's computer which has been accepted by the user's computer. After that several connections are established between the user's computer and yummyrecipesforme.com and finally the user's computer sends a GET request to the server to request for the content. After 2 minutes, there is traffic initiated to the DNS server again (dns.google.domain) but this time, users' computers ask to resolve the IP address against domain name greatrecipesforme.com. DNS server then responds with the IP address of that domain. Several connections happen between user's computer and greatrecipesforme.com and finally user's computer send a GET request to server to get the content from this server. This change of request can be an indication that something already happened in user's computer so it reinitiates connection to different domain that it originally connected to and need to be investigated further.

Section 3: Recommend one remediation for brute force attacks
Some of the recommendation to avoid brute force attacks : 1. Use strong password (combination of character, letter and number with certain length) 2. Rotate the password frequently 3. Use Multifactor Authentication (MFA) 4. Limit connectivity to the system for the one who really need access to it