
HUNT
Data Driven Web Hacking & Manual Testing
@jhaddix @swagnetow @FatihEgbatan @digitalwoot @_Sha128
@bugcrowd

Contribs

Motley crew at @bugcrowd

- → Security Engineering & SecOps groups
- → Bughunters, Pentesters, Code Analysis, ++
- → Burp Suite fans

The Problem(z)

1. Increasingly large and complicated Web Applications. Need manual testing. Lots of params.
2. Applications Assessment Training lacks “tribal knowledge” of vulnerability location
3. No in-tool workflow for web hacking methodologies

Current Solutions

1. Badass **hacker** who can eyeball and effectively find security bugs
   a. May or may not have a **methodology**
   b. Definitely has accrued **“tribal knowledge”**
   c. Bughunts and/or does consultant work

2. Dynamic Scanner
   a. Limited test cases (fuzzing)
   b. Cost prohibitive
   c. Limited in detection cases (dynamic pages, errors, etc)
   d. Complex sites are hard (auth)

Tribal knowledge
passive alerts

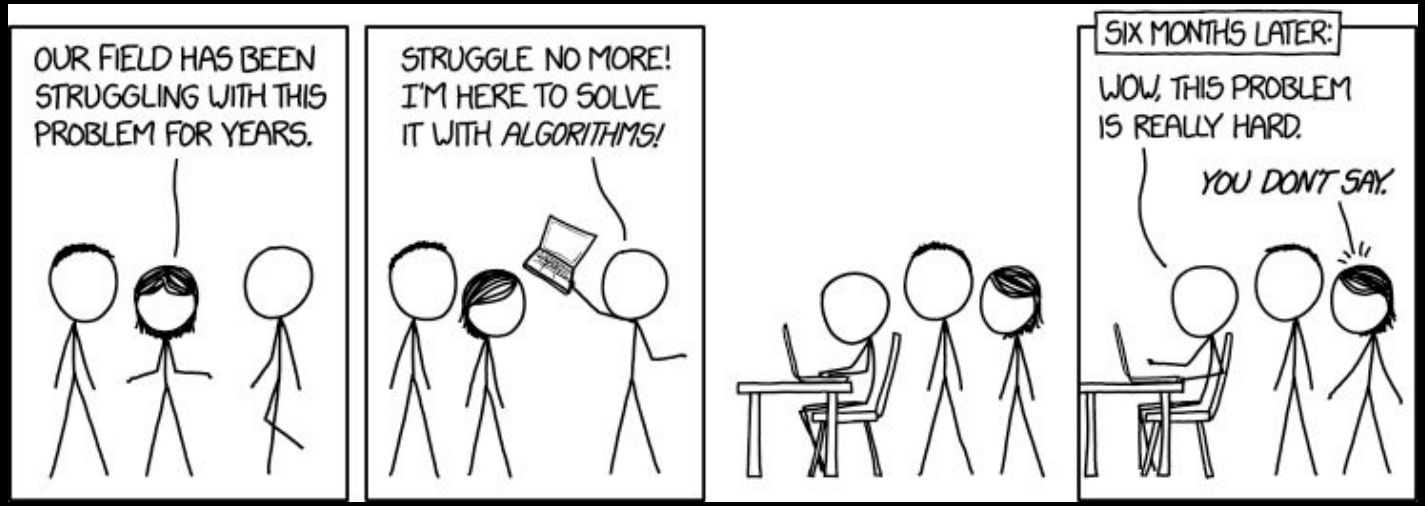
Methodology
in Burp

Manual testing
references in
Burp

HUNT

Level 1

Hunt Scanner



Tribal Knowledge & Bug Location

Coming up with bug location (tribal knowledge)

→ Bugcrowd data contains over 600+ bounties and disclosure programs:

- Programs x 2 web targets per bounty (average)
  - Ie. targets: www.defcon.org, forums.defcon.org, media.defcon.org
- 15 (average) parameters per application

→ 600 x 2 x 15 = ~18,000 parameters seen

Coming up with vuln location (data) pt. 2

→ ~18,000 parameters:

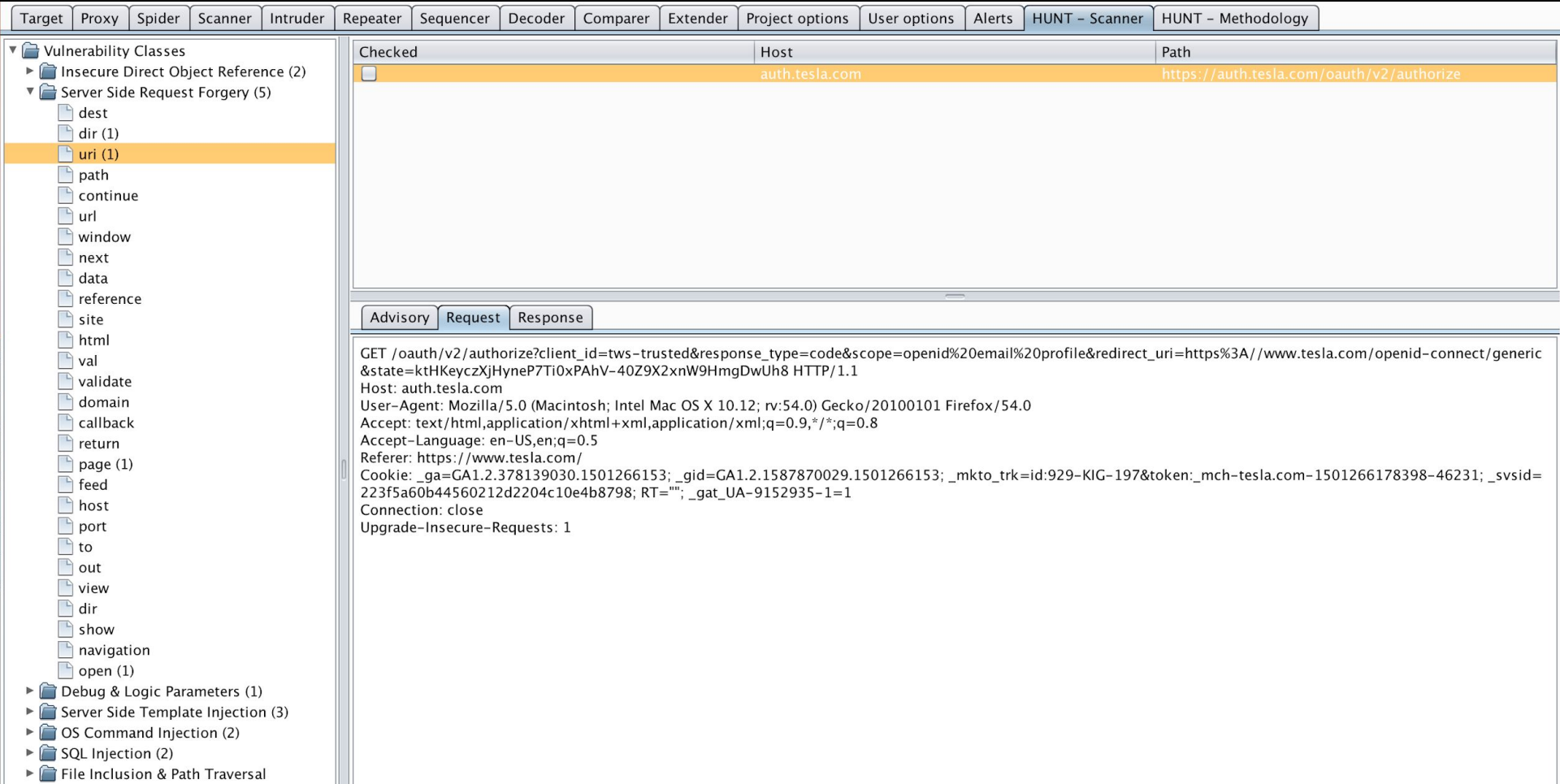
- Reduce to params with vulns on them
- Reduce to only Critical (P1's) and High (P2's) Severity bugs/vulns
- Sort by recurring instances
- Include top 5-10 reoccurring instances per vuln/bug category
- Review top 100 for possible permutations manually and/or with regex
- Manually add ancillary data (pentest/fuzzdb/seclists/++)

Exhibit A

HTTP GET Example


WHEN YOU SEE foo.php?id=1

Alerts


Target
Proxy
Spider
Scanner
Intruder
Repeater
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Decoder
Comparer
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Project options
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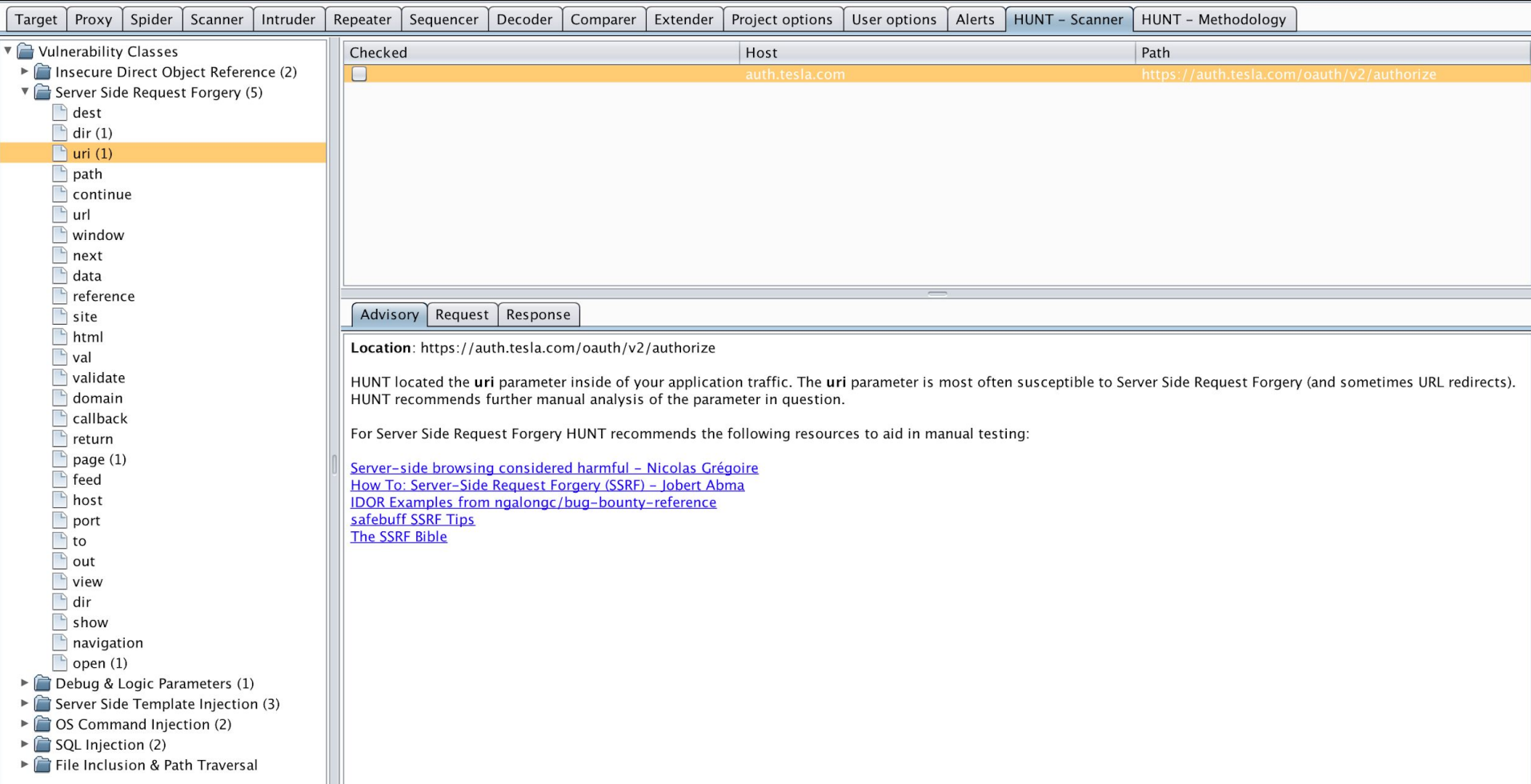
Alerts
HUNT - Scanner
HUNT - Methodology
Vulnerability Classes
Insecure Direct Object Reference (2)
Server Side Request Forgery (5)
dest
dir (1)
uri (1)
path
continue
url
window
next
data
reference
site
html
val
validate
domain
callback
return
page (1)
feed
host
port
to
out
view
dir
show
navigation
open (1)
Debug & Logic Parameters (1)
Server Side Template Injection (3)
OS Command Injection (2)
SQL Injection (2)
File Inclusion & Path Traversal
Checked
Host
Path
auth.tesla.com
https://auth.tesla.com/oauth/v2/authorize
Advisory
Request
Response
GET /oauth/v2/authorize?client_id=tws-trusted&response_type=code&scope=openid%20email%20profile&redirect_uri=https%3A//www.tesla.com/openid-connect/generic
&state=ktHKeyczXjHyneP7Ti0xPAhV-40Z9X2xnW9HmgDwUh8 HTTP/1.1
Host: auth.tesla.com
User-Agent: Mozilla/5.0 (Macintosh; Intel Mac OS X 10.12; rv:54.0) Gecko/20100101 Firefox/54.0
Accept: text/html,application/xhtml+xml,application/xml;q=0.9,*/*;q=0.8
Accept-Language: en-US,en;q=0.5
Referer: https://www.tesla.com/
Cookie: _ga=GA1.2.378139030.1501266153; _gid=GA1.2.1587870029.1501266153; _mkto_trk=id:929-KIG-197&token:_mch-tesla.com-1501266178398-46231; _svsid=
223f5a60b44560212d2204c10e4b8798; RT=""; _gat_UA-9152935-1=1
Connection: close
Upgrade-Insecure-Requests: 1

Advisory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to
out
view
dir
show
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Debug & Logic Parameters (1)
Server Side Template Injection (3)
OS Command Injection (2)
SQL Injection (2)
File Inclusion & Path Traversal
Checked
Host
Path
auth.tesla.com
https://auth.tesla.com/oauth/v2/authorize
Advisory
Request
Response
Location: https://auth.tesla.com/oauth/v2/authorize
HUNT located the uri parameter inside of your application traffic. The uri parameter is most often susceptible to Server Side Request Forgery (and sometimes URL redirects). HUNT recommends further manual analysis of the parameter in question.
For Server Side Request Forgery HUNT recommends the following resources to aid in manual testing:
Server-side browsing considered harmful - Nicolas Grégoire
How To: Server-Side Request Forgery (SSRF) - Jobert Abma
IDOR Examples from ngalongc/bug-bounty-reference
safebuff SSRF Tips
The SSRF Bible

Bug Location by bug/vuln class

Here be dragons

SQL Injection - http://acme.com/script?id=1

{regex + perm} id	{regex} select	{regex} report	{regex} role
{regex} update	{regex} query	{regex + perm} user	{regex + perm} name
{regex} sort	{regex} where	{regex + perm} search	{regex} params
{regex} process	{regex + perm} row	{regex + perm} view	{regex} table
{regex + perm} from	{regex + perm} sel	{regex} results	{regex} sleep
{regex} fetch	{regex + perm} order	{regex} keyword	{regex} count
{regex + perm} column	{regex} input	{regex + perm} key	
{regex + perm} code	{regex + perm} field	{regex} delete	{*type*} Custom headers
{regex} string	{regex} number	{regex + perm} filter	{*type*} JSON and XML services

File Includes / Dir Traversal

{regex + perm} file	{regex} location	{regex} locale	{regex + perm} path
{regex} display	{regex} load	{regex + perm} read	{regex} retrieve
{regex + perm} folder	{regex} style	{regex + perm} doc	{regex} document
{regex} root	{regex} pdf	{regex} pg	{regex} include
{regex} list	{regex} view	{regex} img	{regex} image

http://acme.com/script?load=//file

Server Side Request Forgery 

Many on the File Includes / Dir Traversal table			
{regex + perm} dest	{regex} redirect	{regex + perm} uri	{regex} path
{regex} continue	{regex + perm} url	{regex} window	{regex} next
{regex} data	{regex} reference	{regex + perm} site	{regex} html
{regex + perm} val	{regex} validate	{regex} domain	{regex} callback
{regex} return	{regex + perm} page	{regex} feed	{regex} host
{regex} port			

http://acme.com/script?uri=http://site

OS Command Injection

{regex} daemon	{regex + perm} upload	{regex + perm} dir
{regex} execute	{regex + perm} download	{regex + perm} log
{*type*} .cgi	{regex} ip	
{regex} cli	cmd	

http://acme.com/script?cmd=ls;%20cat%20/etc/passwd

Insecure Direct Object Reference 🔥🔥

{regex + perm} id	{regex + perm} **user**	
{regex + perm} account	{regex + perm} number	
{regex + perm} order	{regex + perm} no	
{regex + perm} doc	{regex + perm} key	
{regex + perm} email	{regex + perm} group	
{regex + perm} profile	{regex + perm} edit	REST numeric paths

http://acme.com/script?**user**=21856

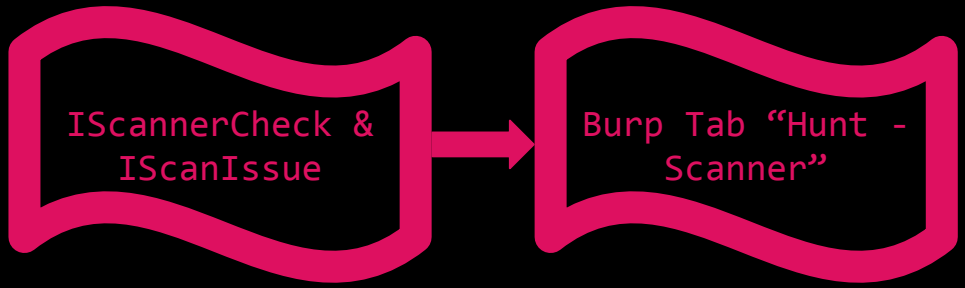
Server Side Template Injection & Logic / Debug

{regex + perm} template	content
preview	redirect
id	
view	
activity	
name	

http://acme.com/script?name={{2*3}}


```
"Debug & Logic Parameters": {
  "check_location": {
    "request": true,
    "response": false
  },
  "detail": "HUNT located the <b>$param$</b> parameter
  "enabled": true,
  "level": "Information",
  "name": "Debug",
  "params": [
    "access",
    "admin",
    "dbg",
    "debug",
    "edit",
    "grant",
    "test",
    "alter",
    "clone",
    "create",
    "delete",
    "disable",
    "enable",
    "exec",
    "execute",
    "load",
    "make",
    "modify",
    "rename",
    "reset",
    "shell",
    "toggle",
    "adm",
    "root",
    "cfg",
    "config"
  ]
 }
}
```

Scanner Burp Implementation (Python)



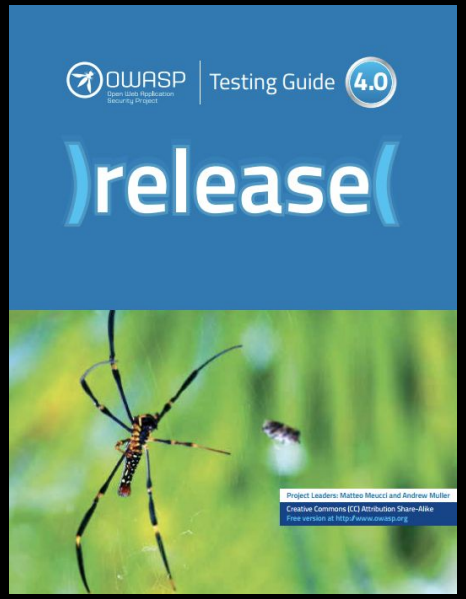

```
def doPassiveScan(self, request_response):
        raw_request = request_response.getRequest()
        raw_response = request_response.getResponse()
        request = self.helpers.analyzeRequest(raw_request)
        response = self.helpers.analyzeResponse(raw_response)

        parameters = request.getParameters()
        url = self.helpers.analyzeRequest(request_response).getUrl()
        vuln_parameters = self.issues.check_parameters(self.helpers,
parameters)

        is_not_empty = len(vuln_parameters) > 0

        if is_not_empty:
            self.issues.create_scanner_issues(self.view, self.callbacks,
self.helpers, vuln_parameters, request_response)

        # Do not show any Bugcrowd found issues in the Scanner window
        return []
```

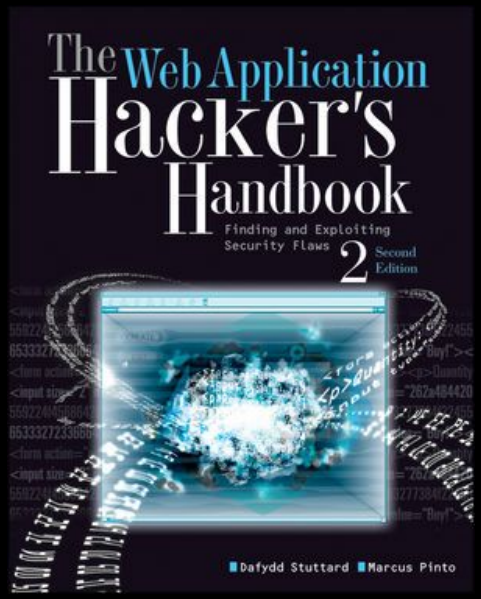
DEMO

Level 2

GUI Methodology

Methodologies

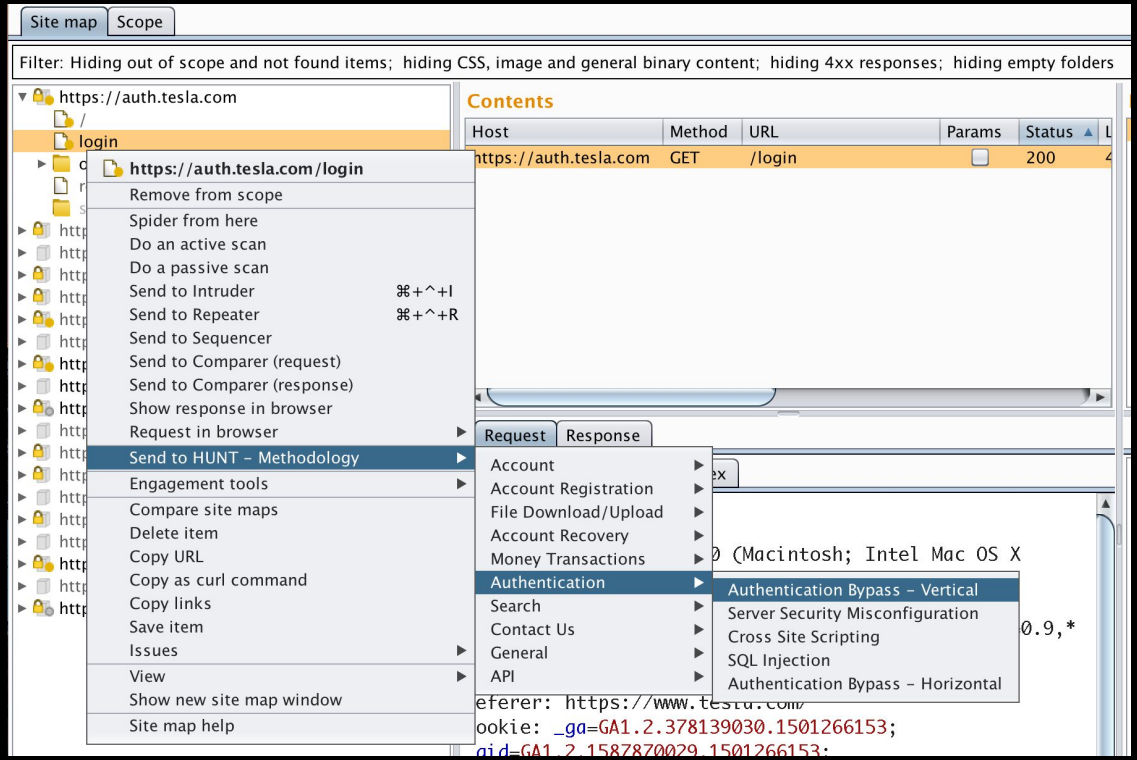




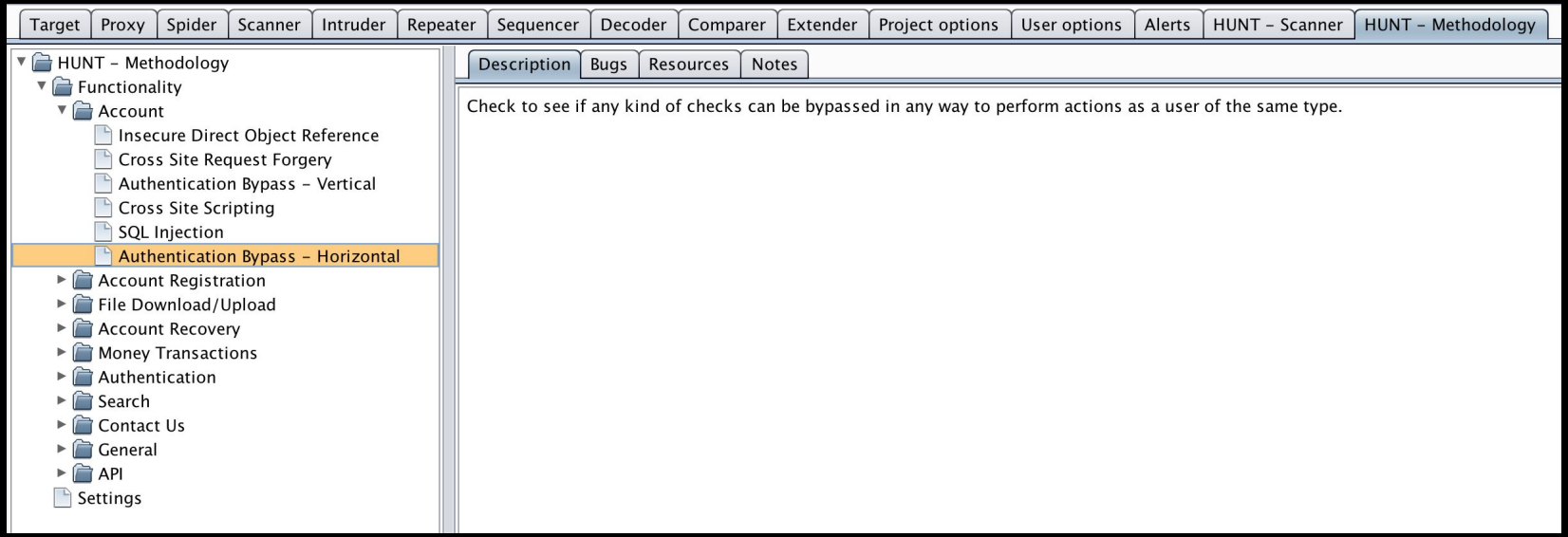
HIPAA

PCI

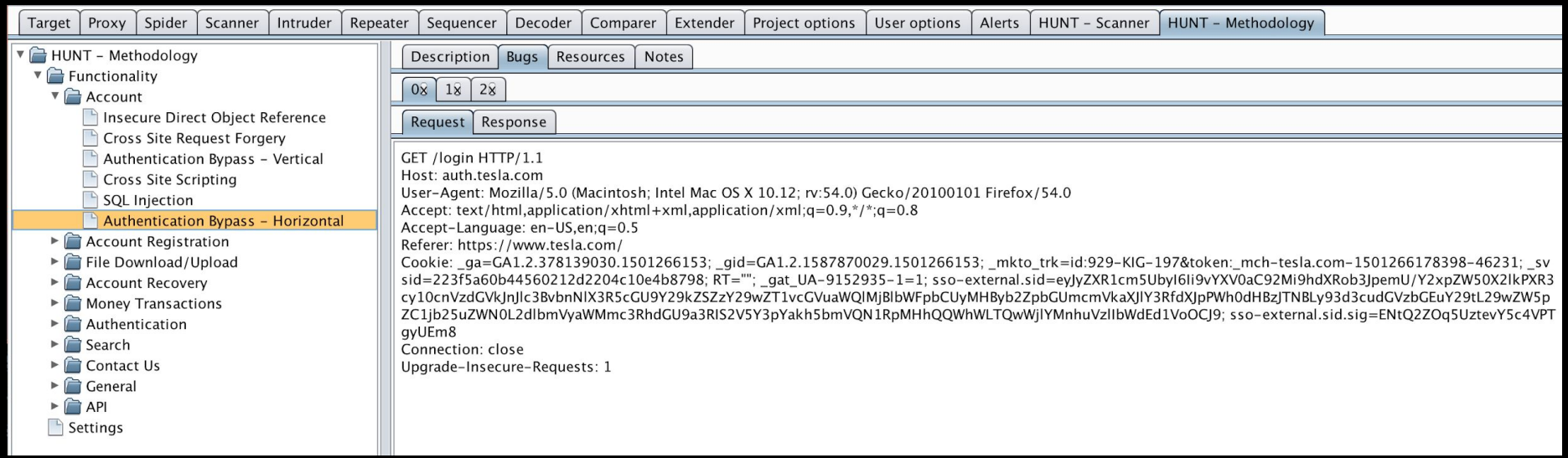
Right Click -> Send-To Methodology Section



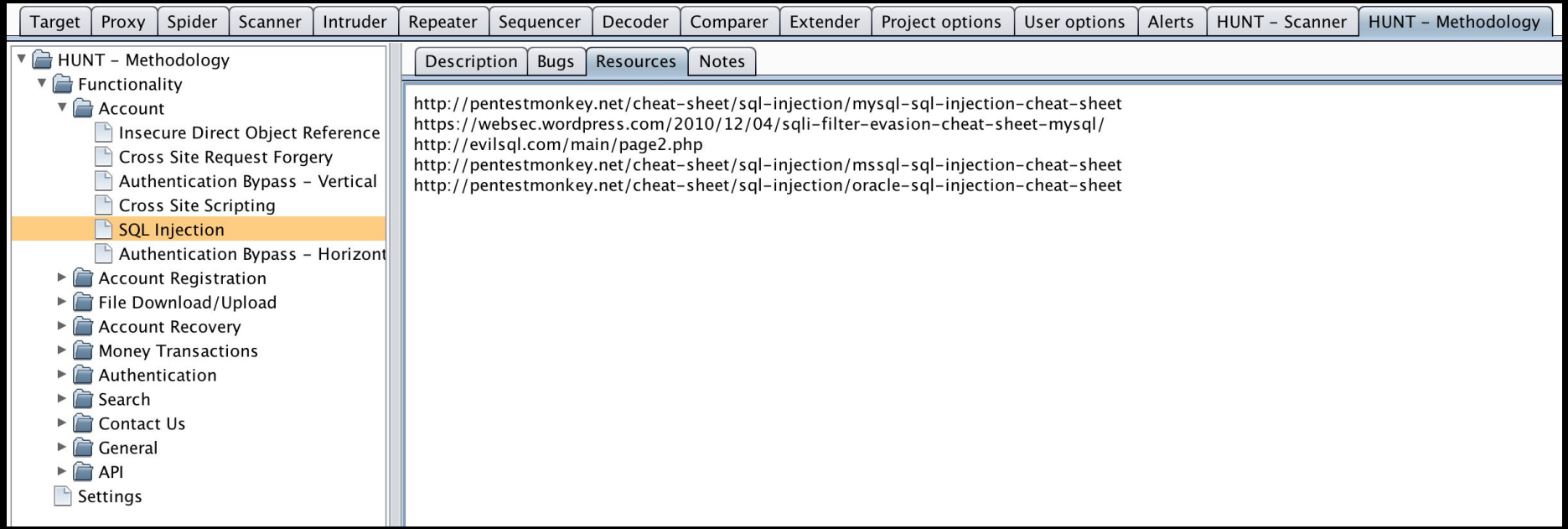
Description



Multiple Request/Response Tracking



Resources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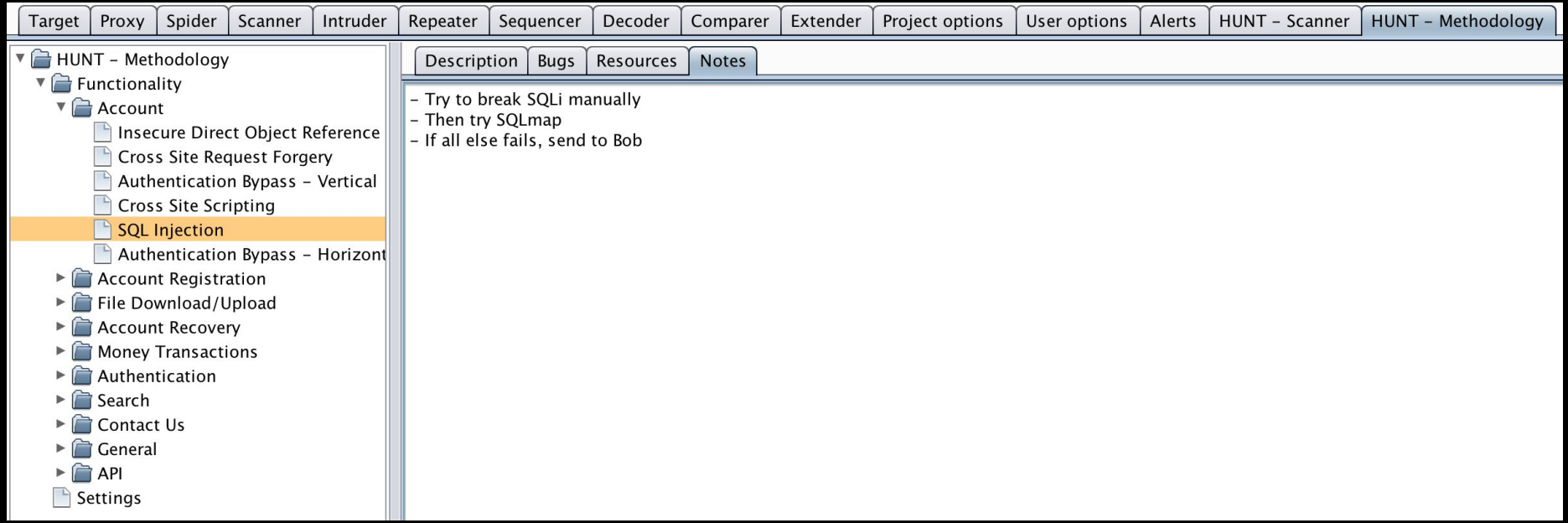
Authentication Bypass - Vertical
Cross Site Scripting
SQL Injection
Authentication Bypass - Horizont
Account Registration
File Download/Upload
Account Recovery
Money Transactions
Authentication
Search
Contact Us
General
API
Settings
Description
Bugs
Resources
Notes
http://pentestmonkey.net/cheat-sheet/sql-injection/mysql-sql-injection-cheat-sheet
https://websec.wordpress.com/2010/12/04/sqli-filter-evasion-cheat-sheet-mysql/
http://evilsql.com/main/page2.php
http://pentestmonkey.net/cheat-sheet/sql-injection/mssql-sql-injection-cheat-sheet
http://pentestmonkey.net/cheat-sheet/sql-injection/oracle-sql-injection-cheat-sheet

Notes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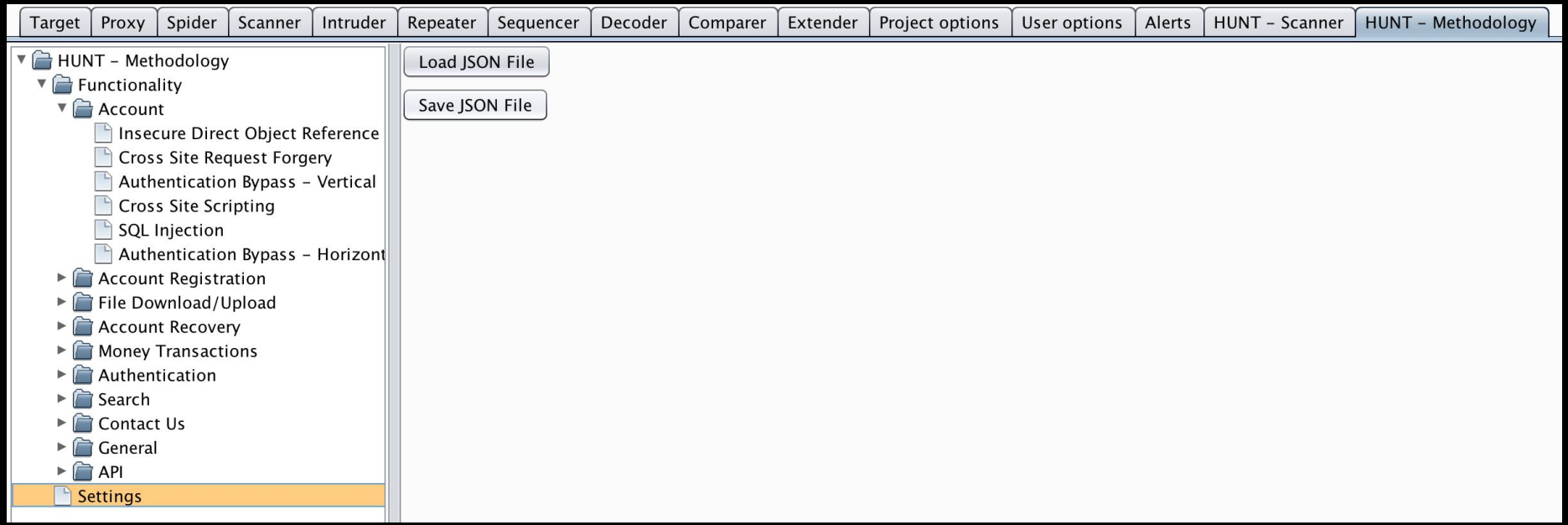
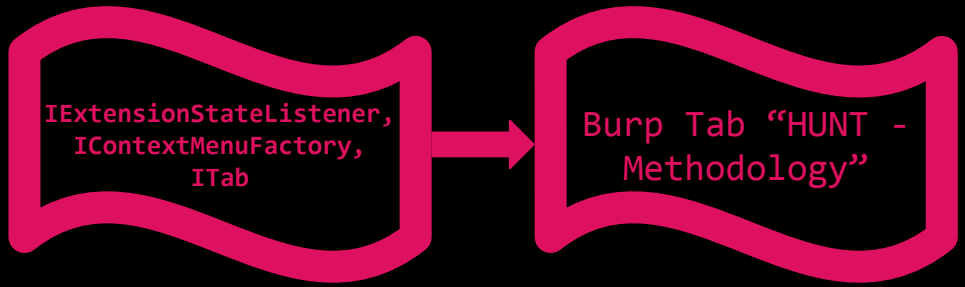
Notes
- Try to break SQLi manually
- Then try SQLmap
- If all else fails, send to Bob

Save/Load JSON File



Methodology Burp Implementation (Python)

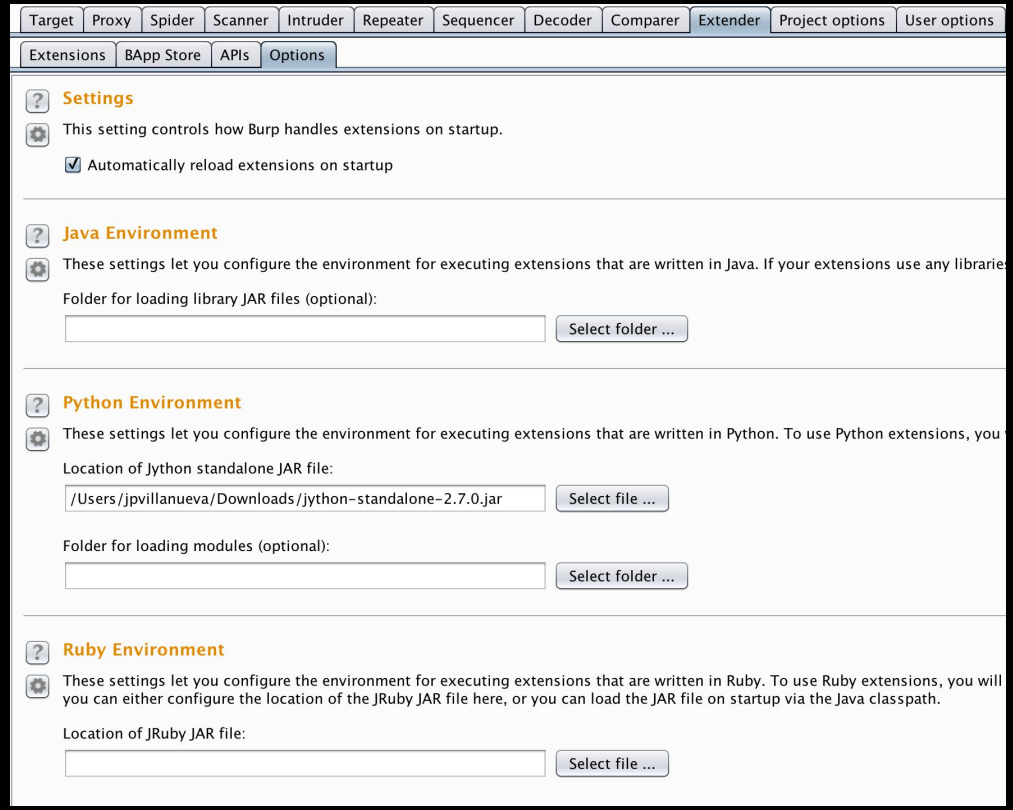



```
def createMenuItems(self, invocation):
        # Do not create a menu item unless getting a context menu from the proxy history or
scanner results
        is_proxy_history = invocation.getInvocationContext() ==
invocation.CONTEXT_PROXY_HISTORY
        is_scanner_results = invocation.getInvocationContext() ==
invocation.CONTEXT_SCANNER_RESULTS
        is_correct_context = is_proxy_history or is_scanner_results

        if not is_correct_context:
            return

        request_response = invocation.getSelectedMessages()[0]

        functionality = self.checklist["Functionality"]

        # Create the menu item for the Burp context menu
        bugcatcher_menu = JMenu("Send to HUNT - Methodology")

        for functionality_name in functionality:
            vulns = functionality[functionality_name]["vulns"]
            menu_vuln = JMenu(functionality_name)

            # Create a menu item and an action listener per vulnerability
            # class on each functionality
            for vuln_name in vulns:
                item_vuln = JMenuItem(vuln_name)
                menu_action_listener = MenuActionListener(self.view, self.callbacks,
request_response, functionality_name, vuln_name)
                item_vuln.addActionListener(menu_action_listener)
                menu_vuln.add(item_vuln)

            bugcatcher_menu.add(menu_vuln)

        burp_menu = []
        burp_menu.append(bugcatcher_menu)

        return burp_menu
```

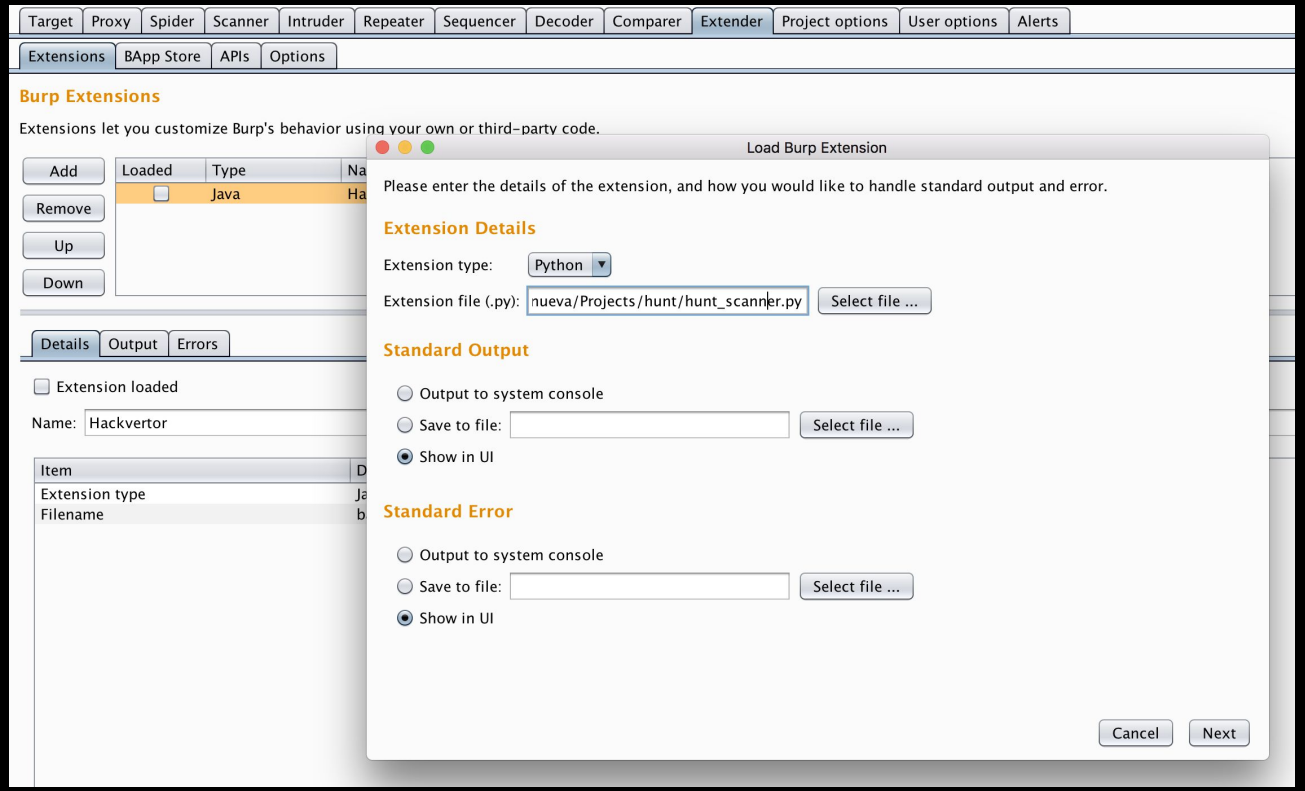
DEMO

Plugin Installation

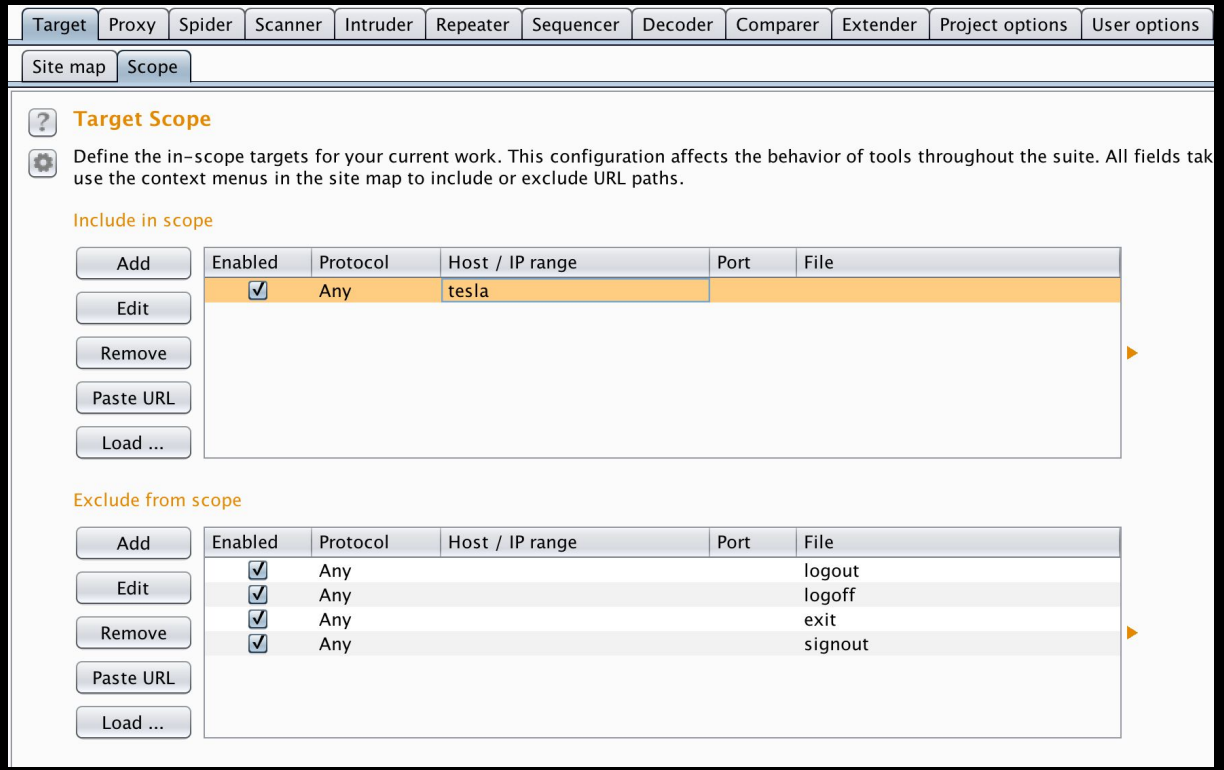
Installation - Jython



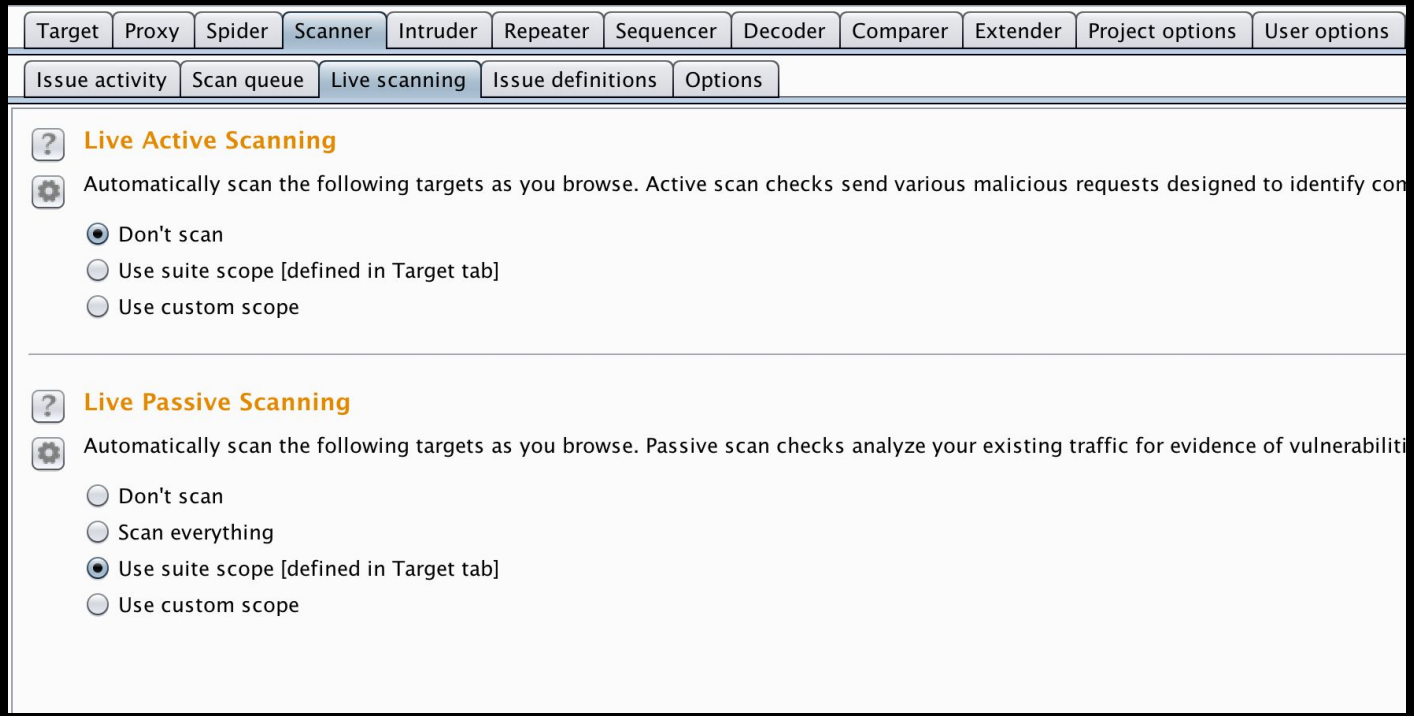
Installation - Plugin



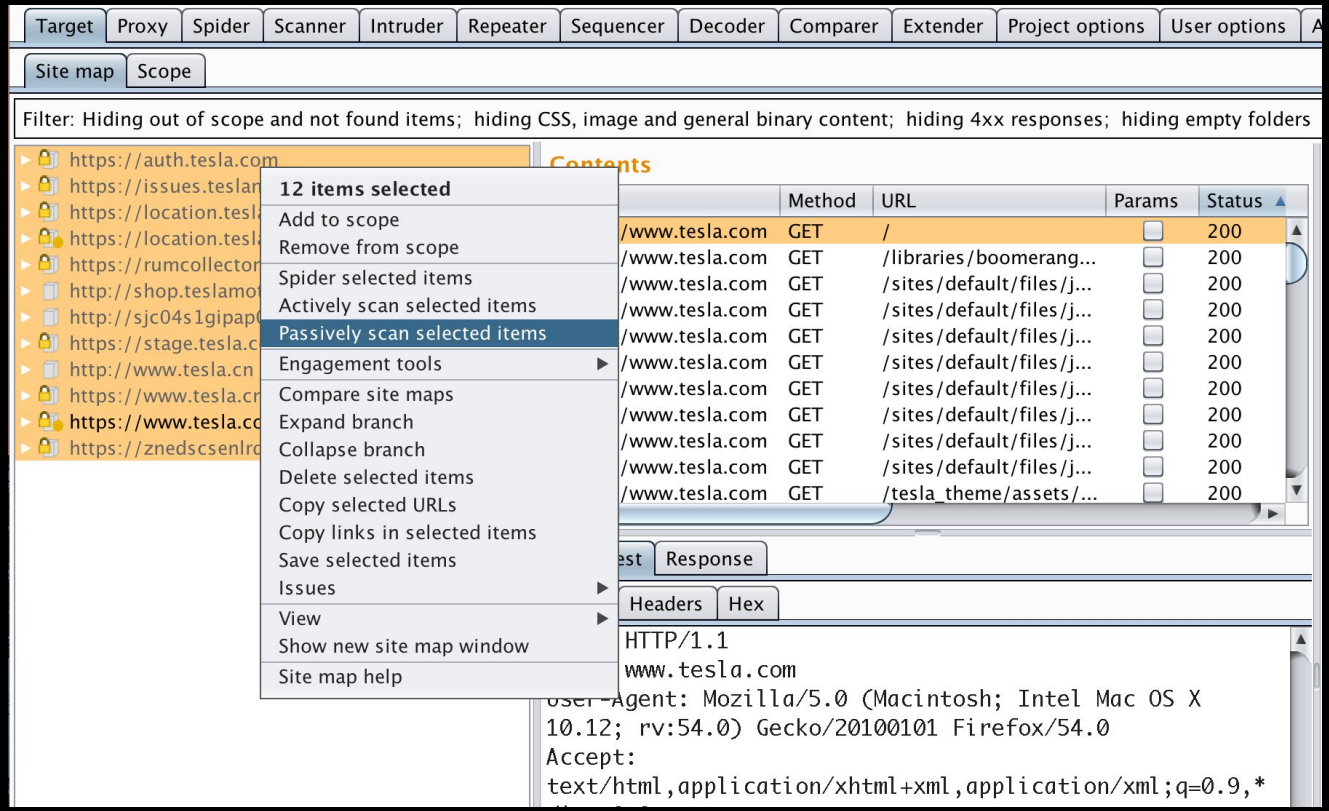
Setting Target Scope



Setting Passive Scanner Scope



Running the Passive Scanner



Extensibility

Scanner Extensibility

Creating new issue checks are as simple as adding to the JSON file.

```
{
  "issues": {
    "OS Command Injection": {
      "check_location": {
        "request": true,
        "response": false
      },
      "detail": "HUNT located the <b>$param$</b> parameter inside of your application traffic. The <b>$param$</b> parameter is most often susceptible to OS Command Injection. HUNT recommends further manual analysis of the parameter in question.<br><br>For OS Command Injection HUNT recommends the following resources to aid in manual testing:",
      "level": "Information",
      "name": "Possible OS Command Injection",
      "params": [
        "daemon",
        "upload",
        "dir",
        "execute",
        "download",
        "sexyparam"
      ]
    }
}
```

Methodology Extensibility

Creating new methodologies are as simple as adding to the JSON file.

```
{
  "checklist": {
    "Settings": "",
    "Functionality": {
      "SEXY METHODOLOGY SECTION": {
        "description": "SWAG",
        "tests": {
          "Authentication Bypass - Vertical": {
            "description": "Check to see if the login sequence can be
bypassed in any way to get higher level permissions.",
            "resources": [],
            "bugs": [],
            "notes": ""
          }
        }
      }
    }
  }
}
```

DEMO

The Future

- More built-in methodologies
  - PCI, HIPAA, CREST, OWASP, PTES
- Port to ZAP?
- More scanner checks/vulnerability classes
- More resources
- Dynamic JSON structure support
- Perfect GUI lol
- REST Support
- Full Burp helpers (right click, search, highlight, etc)
- Resource/File name analysis (Instead of params)
- Alerts on content types (XML, JSON, Multipart-form)
- Response analysis alerts (errors ++)

Thanks!

Questions?

www.github.com/bugcrowd/HUNT

@jhaddix @swagnetow @FatihEgbatan @digitalwoot @_Sha128

@bugcrowd