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# How Not To Get Hacked: The Web AppSec Cheat Sheet

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**https://pch.net/WebAppSec**

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# Agenda

- Introductions
- Items are pch.net/WebAppSec
- Each Item:
  - Overview
  - Example
  - Mitigation
- Interruptions welcome!

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# Why be secure?

"These [security] errors have been the cause of nearly every major type of cyber attack, including recent penetrations of Google, power systems, military systems, and millions of other attacks on small businesses and home users"

- csoonline.com about sans.org report

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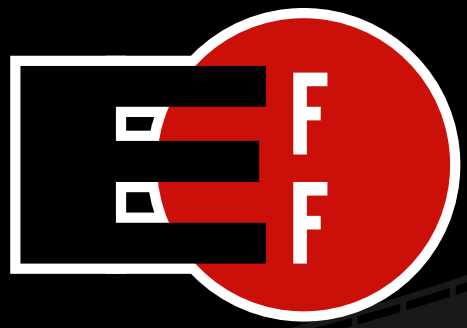
# Why be secure?



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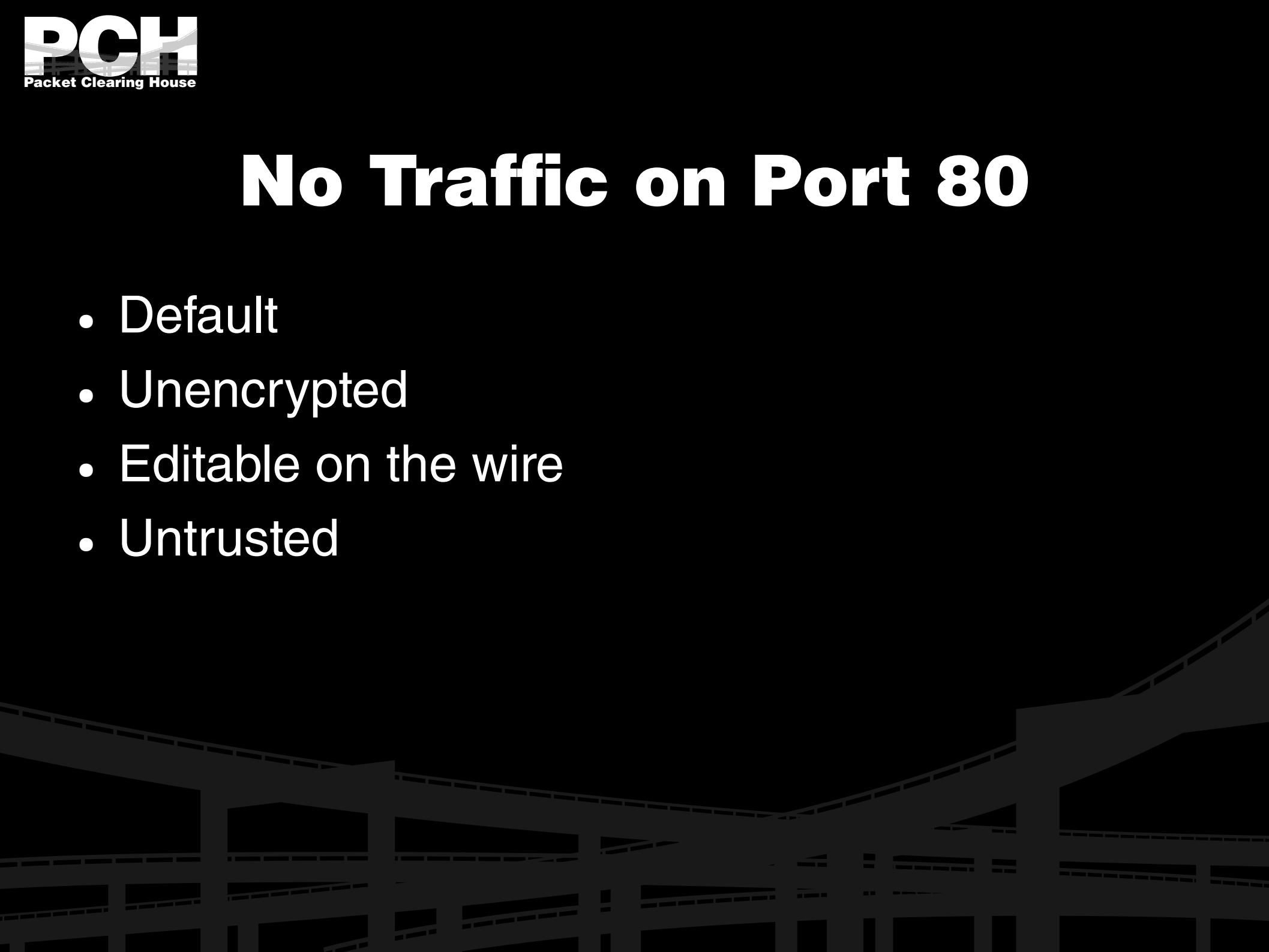
# No Traffic on Port 80

- Default
- Unencrypted
- Editable on the wire
- Untrusted



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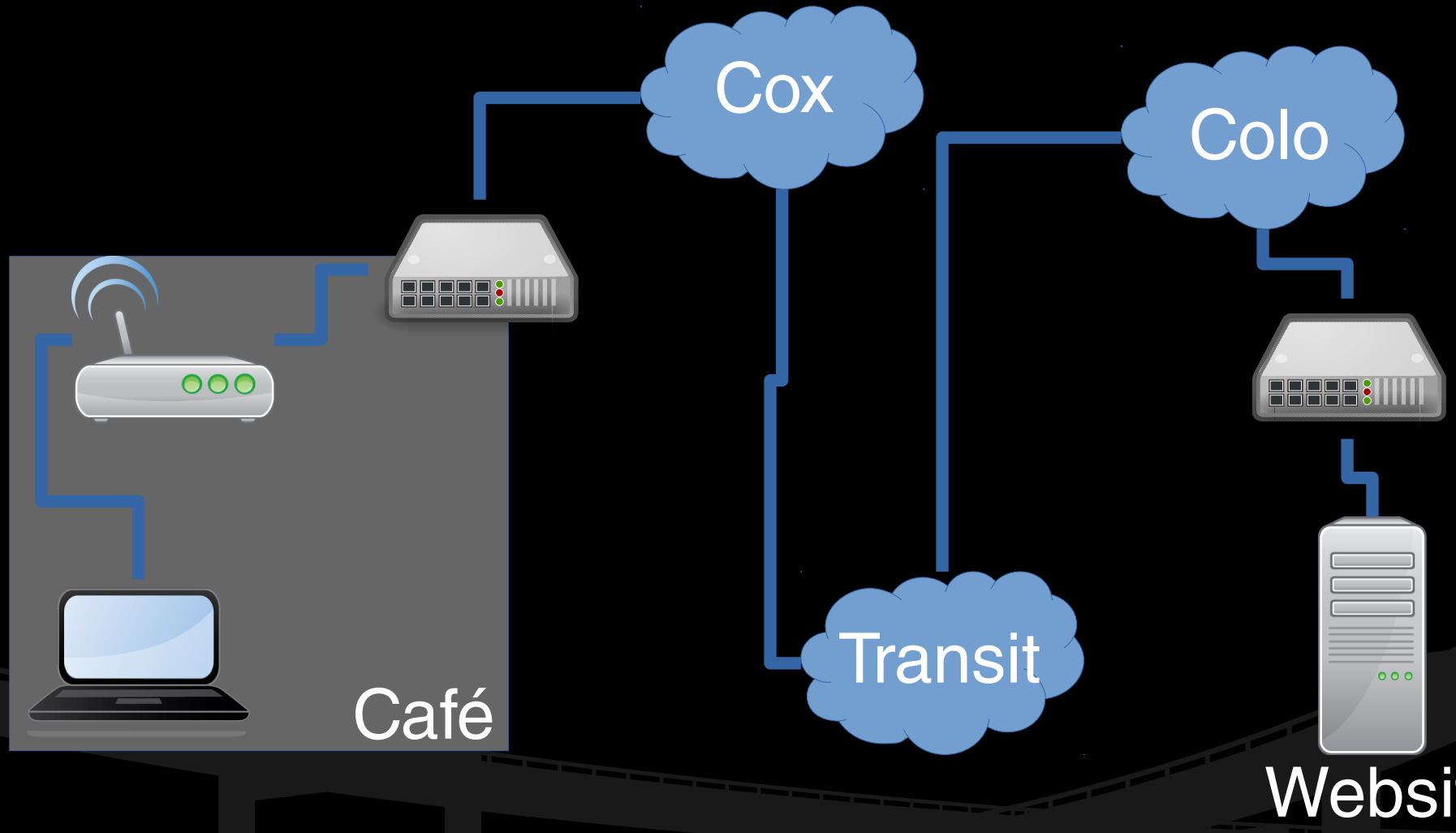
# No Traffic on Port 80



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# No Traffic on Port 80

- Setup SSL – Free!
- Redirect from port 80 → 443
- Apache:

```
RewriteEngine On

RewriteCond %{HTTPS} off

RewriteRule (.*) https://%
{HTTP_HOST}%{REQUEST_URI}
```

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# XSS Escaping

- Cross Site Scripting
- Renders JavaScript
- Steals cookies

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# XSS Escaping

```
<input name=search type=text value="<?php echo
$_GET['search']?>" />
```

```
<?php
$username = getUserFromDatabase();
print $username;
?>
```

samy is my hero (fastest virus ever)

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# XSS Escaping

- Never trust user input!
- Repeat: Never, EVER trust user input!
- `htmlspecialchars($_GET['search'], ENT_QUOTES, 'UTF-8')`

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# HTTPOnly Cookies
# Secure Cookies

- HTTPOnly – do not allow JS to access cookies
- Secure – Only accessible via SSL

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# HTTPOnly Cookies
# Secure Cookies

- See #3 about XSS ;)
- Firesheep – assume identity of any networks not using SSL and not using Secure cookies

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# HTTPOnly Cookies
# Secure Cookies

```
setcookie($name, $value, $expire,
$path, $domain, $secure, $httponly)
```

```
setcookie( ‘session’, $sessionId, 0,
‘/’, ‘www.example.com’, true, true);
```

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# HSTS

- HTTP Strict Transport Security
- Port 80 just once
- Cached

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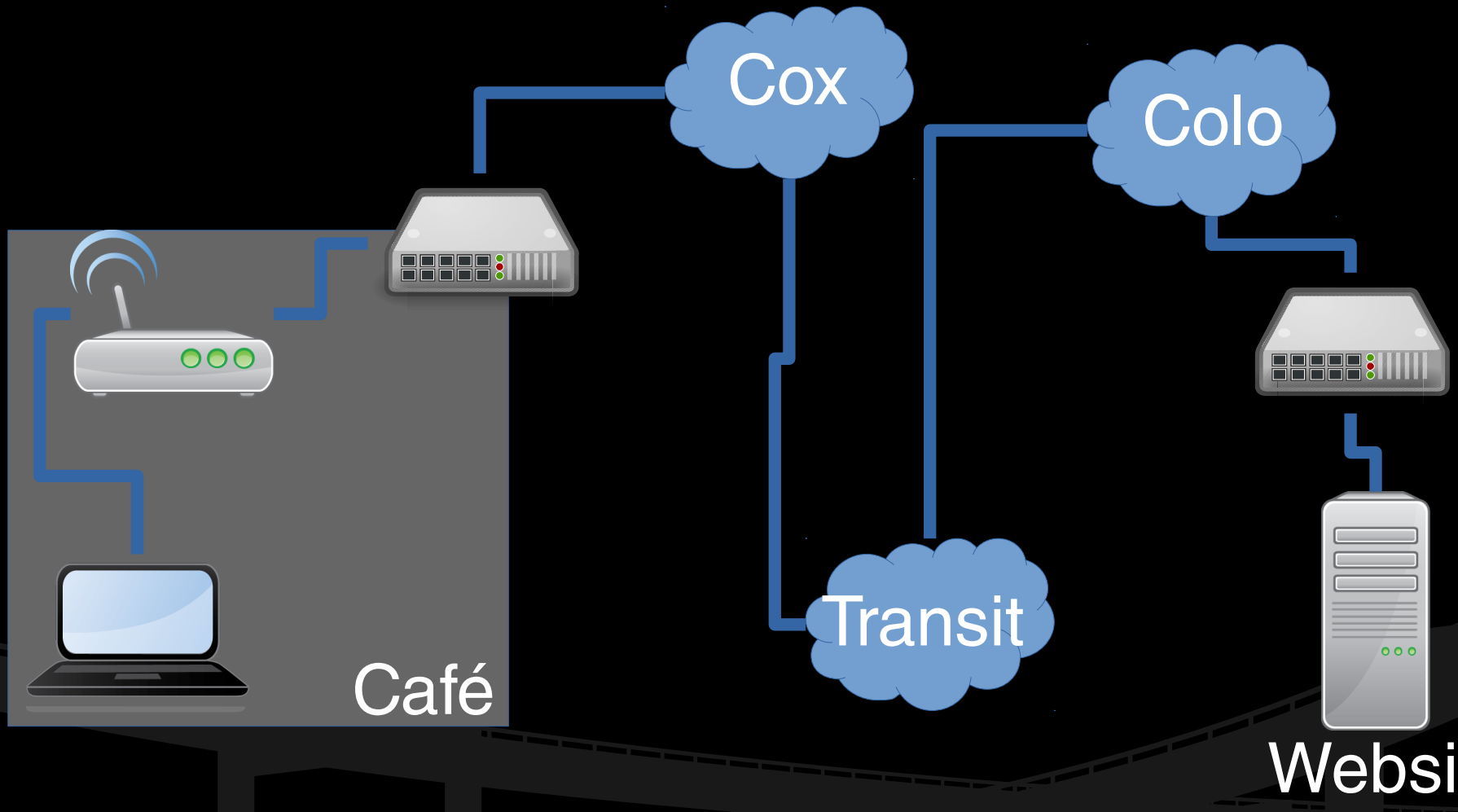
# HSTS



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# HSTS

- “Adding support for HSTS is the single most important improvement you can make for the TLS security of your web sites.” - SSL Labs
- Warning: Watch for sub-domains!
- Apache:

```
Header always set Strict-Transport-Security

“max-age=15768000”
```

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# bcrypt hashes

- Passwords are hashed in the DB
- MD5 is fast, *really* fast

```
md5('packetexchange')

6c6d701fe70651def644
beb954a5b18845065437
```

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# bcrypt hashes

- 200 Billion guesses a second

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# bcrypt hashes

```
password_hash(“packetexchange”,
PASSWORD_DEFAULT)

$2a$08$SXQElyv.pCN1q3FB4OtW4.TeS5hDT
jhINPIIAK8qFW2J3Vl0HiNNm
```

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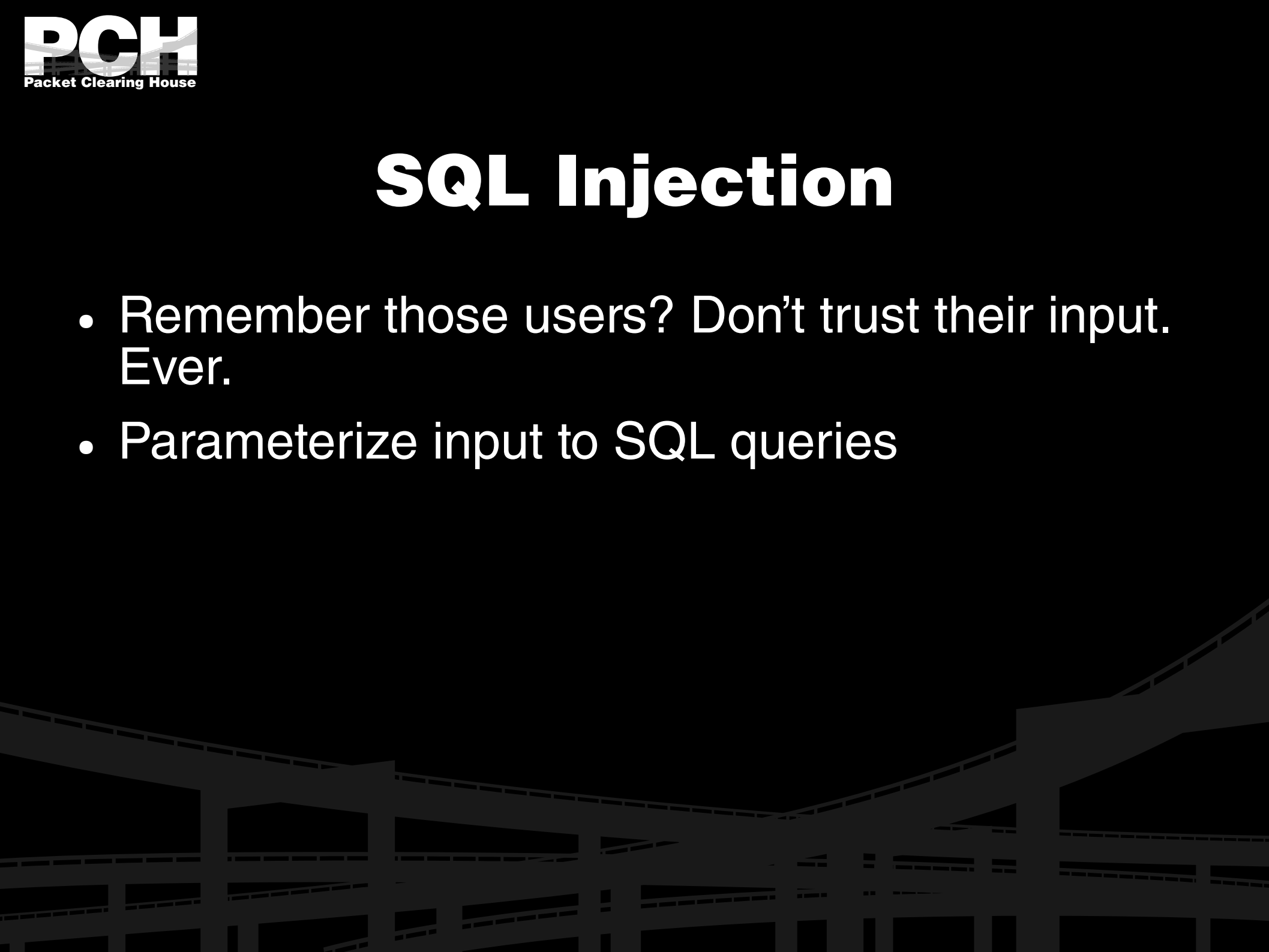
# SQL Injection

- Remember those users? Don’t trust their input. Ever.
- Parameterize input to SQL queries



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# SQL Injection

```
<input name=search type=text />

$stmt = $dbh->prepare("SELECT * FROM
content where text like '%" .
$_GET['search'] . '%");

$stmt->execute();
```

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# SQL Injection

```
<input name=search type=text />

$stmt = $dbh->prepare("SELECT * FROM
content where text like :search");

$stmt->execute(
  array(':search' => $_GET['search'])
);
```

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# Thanks!

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https://pch.net/WebAppSec

Thanks to the resources at
Open Web Application Security Project's site (OWASP)

Inspired off my own blog post