Tips on Securing Drupal Sites

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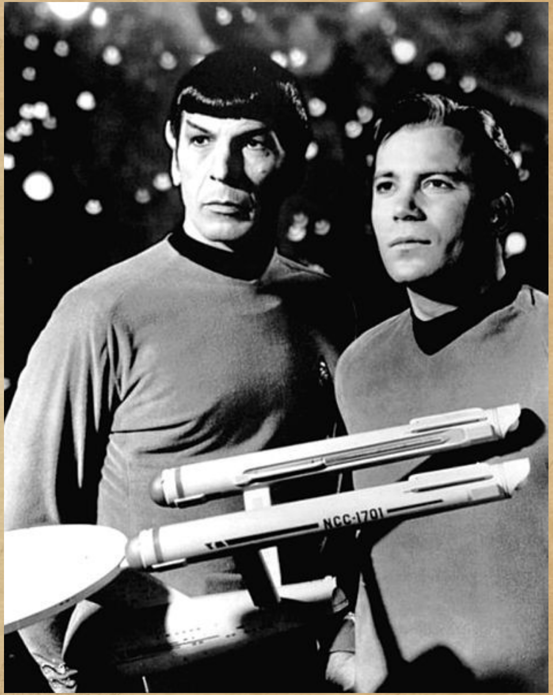
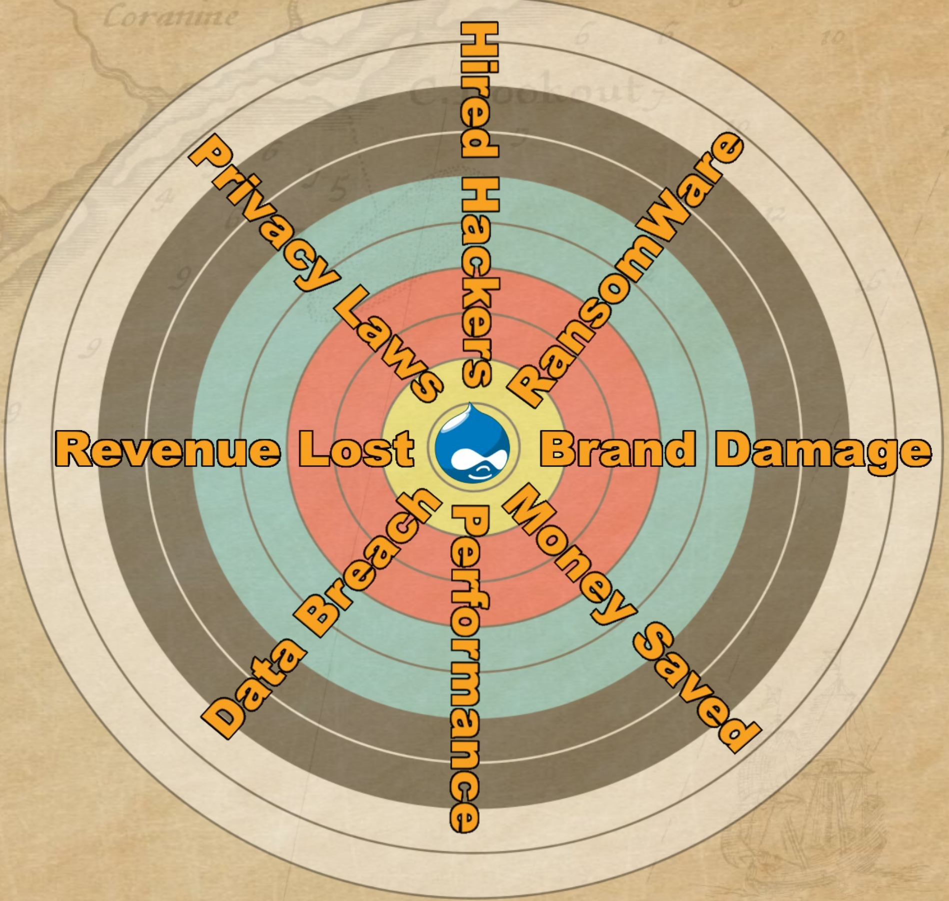
The information here is my own and not the views of my employer

Security… the Final Frontier

- This is a semi-case study based on my experiences
- Not a Deep Dive
- Will be trying to walk the line between DevOps and Site Admin / Builders
- One size does not fit all. Pick the tips that can help you



Why you should care



Some Common Threat Vectors

- Server Attacks, e.g. DDoS, SSL attacks, nuisance probes
- Code Attacks, e.g. DrupalGeddon#, Contrib bugs, non-Drupal code, Server bugs
- User access attacks, e.g. Brute force, Social Eng., Phishing
- "Internal" attacks, e.g. Valid users, Shared Resource Attacks

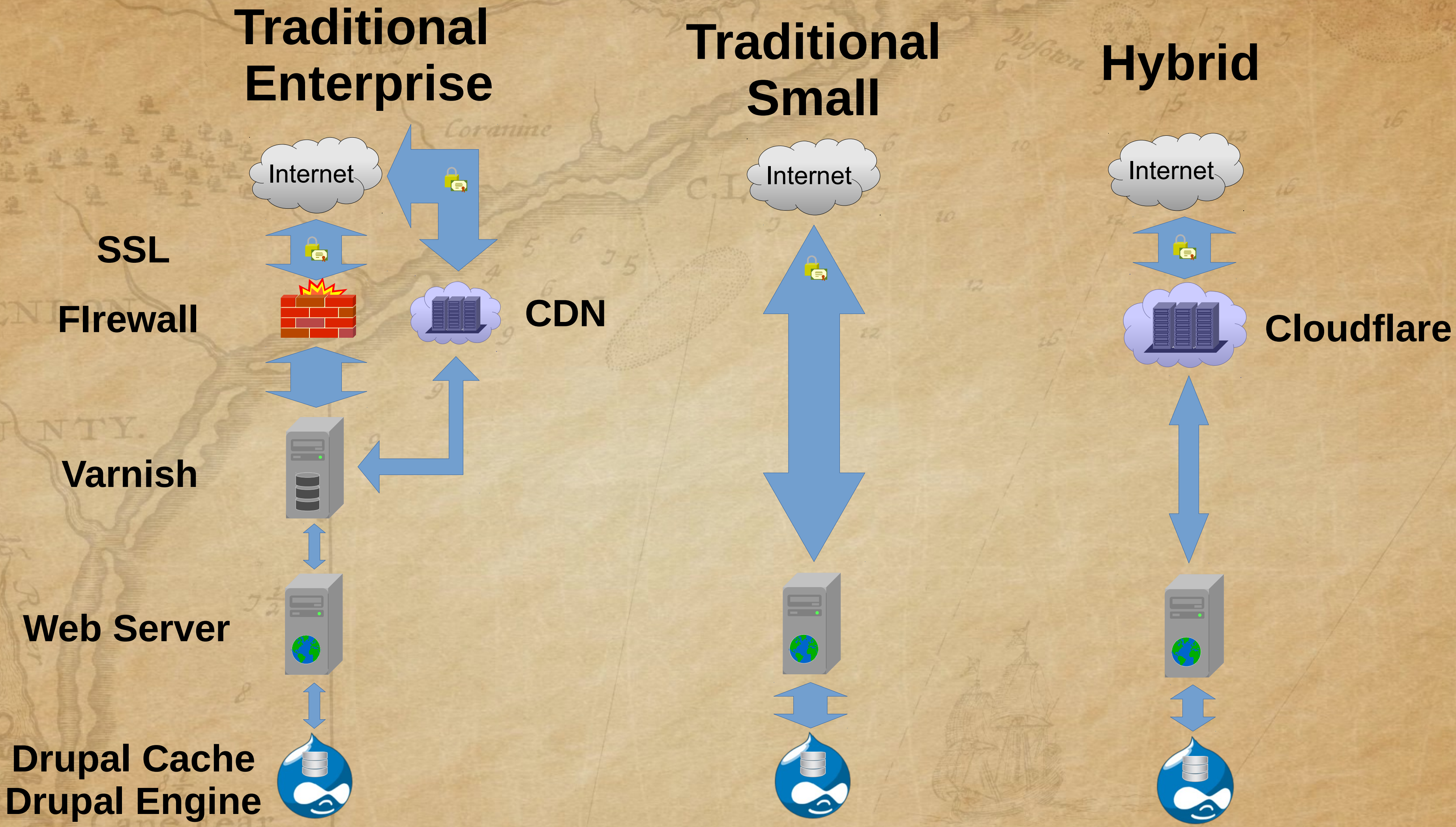
Server “Attacks”

- DDOS attacks
- Nuisance probes and general 404 requests
- Various non-search engine crawl bots
- SSL Vunerabilities

Server Attack Tips

- Trip wires and Problem id tools
- Layered Defenses
  - Use a CDN
  - Varnish or Nginx proxy
  - Htaccess rules
  - Drupal
- Secure HTTP Headers

- Golden Rule: Keep attackers from using precious Drupal resources.


Traditional Enterprise
Internet
SSL
Firewall
CDN
Varnish
Web Server
Drupal Cache
Drupal Engine
Traditional Small
Internet
Hybrid
Internet
Cloudflare

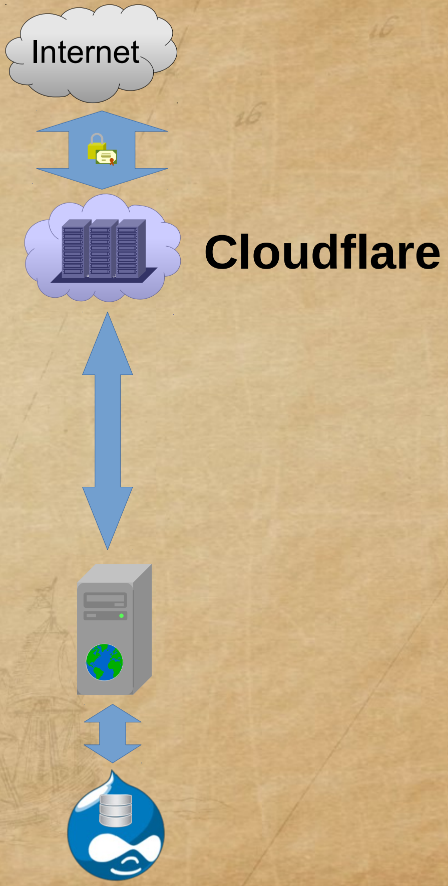
Trip Wires and Problem ID

- **Uptime Monitoring (Pingdom and the like/ use Post requests)**
  Disclaimer Pingdom is owned by SolarWinds
- **Disk Usage Monitoring (logs, site, and SQL database)**
- **CPU Monitoring**
- **404 / 403 Errors**
- **Log Analysis Tools (GoAccess.io)**
- **Grep and Pipes, e.g.**
  grep “14/Jul” access.log | grep -v <office ip>
- **https://www.abuseipdb.com/**

Cloudflare
Layered Defense In Minutes

- Low cost / high value
- Free SSL
- CDN lite with world wide proxy servers.
- World class protection against common hacks
- DDoS built in
- Page rules

- Requires control of your domain
- Another layer of cache to clear



Traditional Alternatives

- CDN like AWS Cloudfront or Verizon Edgecast
- Varnish or Nginx caching front end
- .htaccess rules
  - Deny unwanted crawlers
  - Block DdoS or nuisance URL requests
- Drupal
  - Configure cache properly
  - Use Fast 404

DDoS Response Example

:00 Notification from monitoring site was down

:10 Checks showed 100% CPU & lots of incoming requests

:12 Verified request spike by showing request/ min with:

```
cat access.log | cut -d[ -f2 | cut -d] -f1
| awk -F: '{print $2":"$3}' | sort -nk1 -
nk2 | uniq -c | awk '{ if ($1 > 10) print
$0}'
```

Requests	Time
26	05:08
14	05:09
11	05:10
399	05:11
162	05:12
160	05:13
146	05:14
177	05:15
178	05:16

DDoS Response Example

:20 Turned on CF “Under Attack” mode

:25 Requests back to < 50 per min

:30 Examined peak request time with:

```
cat access.log | grep "2018:05:11"
| cut -d' ' -f1 | sort | uniq -c |
sort
```

:60 Bad IPs segmented / CF returned to normal.

Requests	IP
10	42.120.X.X
10	42.120.X.X
1	103.22.X.X.
11	42.120.X.X
11	42.120.X.X
11	42.120.X.X
1	207.46.X.X
1	23.111.X.X
12	42.120.X.X
12	42.120.X.X

38 Ips from 42.120.x.x

Some Sample .htaccess rules

```
# Stop some bad web crawlers
 RewriteCond %{HTTP_USER_AGENT} AhrefsBot [NC,OR]
 RewriteCond %{HTTP_USER_AGENT} spbot [NC,OR]
 RewriteCond %{HTTP_USER_AGENT} DigExt [NC,OR]
 RewriteCond %{HTTP_USER_AGENT} Sogou [NC,OR]
 RewriteCond %{HTTP_USER_AGENT} MJ12 [NC,OR]
 RewriteCond %{HTTP_USER_AGENT} majestic12 [NC,OR]
 RewriteCond %{HTTP_USER_AGENT} 80legs [NC,OR]
 RewriteCond %{HTTP_USER_AGENT} SISTRIX [NC,OR]
 RewriteCond %{HTTP_USER_AGENT} HTTrack [NC,OR]
 RewriteCond %{HTTP_USER_AGENT} Semrush [NC,OR]
 RewriteCond %{HTTP_USER_AGENT} Ezooms [NC,OR]
 RewriteCond %{HTTP_USER_AGENT} CCBot [NC,OR]
 RewriteCond %{HTTP_USER_AGENT} Ahrefs [NC]
 RewriteRule !^robots\.txt$ - [F,L]
```

```
# Stop problem URLs from flooding Drupal Log.

RewriteRule ^/?autodiscover/autodiscover\.xml$ - [R=404,L,NC]
RewriteRule ^/?wp-login\.php - [R=404,L,NC]

RewriteCond %{REQUEST_METHOD} POST
RewriteRule (^|/)events/ - [F,L]

# Deny post to site index.

RewriteCond %{REQUEST_METHOD} POST
RewriteCond %{REQUEST_URI} ^/$
RewriteRule ^ - [F,L]
```

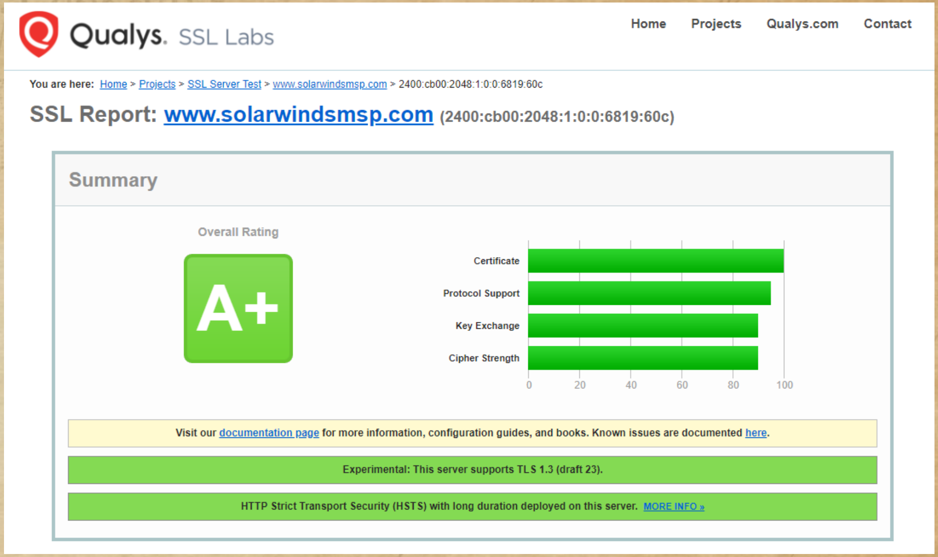
https://www.neting.it/multiple-urls-htaccess-redirect-checker.php

SSL Tools

- **Test your SSL Strength**
  https://www.ssllabs.com/ssltest/

- **Free SSL Certificates**
  https://letsencrypt.org/

- **SSL Server Config**
  https://mozilla.github.io/server-side-tls/ssl-config-generator/?hsts=no



You are here: Home > Projects > SSL Server Test > www.solarwindsmsp.com > 2400:cb00:2048:1:0:0:6819:60c

SSL Report: www.solarwindsmsp.com (2400:cb00:2048:1:0:0:6819:60c)

Summary

Overall Rating: A+

Certificate	100
Protocol Support	95
Key Exchange	90
Cipher Strength	90

Visit our documentation page for more information, configuration guides, and books. Known issues are documented here.

Experimental: This server supports TLS 1.3 (draft 23).

HTTP Strict Transport Security (HSTS) with long duration deployed on this server. MORE INFO »

Secure HTTP Headers

- Do Your Research on These
- Security Kit Module (seckit)
  - Content-Security-Policy https://wiki.mozilla.org/Security/CSP
  - X-XSS-Protection
  - X-Content-Type-Options
  - X-Frame-Options
  - Strict-Transport-Security
- Referrer-Policy
- https://securityheaders.com/

Code Attack Tips
Main Points

- Get Security updates and determine if they are Critical or not.
- Commit to Updating Critical Releases the same day they are released and non-Critical within a few days.
- Schedule reviews of the Update Report and related release notes. Update modules regularly.
- Keep the rest of the ‘stack’ updated

Code Attack Tips

Drupal Core

- Keep your code updated
- Subscribe to Drupal Security Alerts
  - Subscribe to the RSS Feed @ https://www.drupal.org/project/webmasters/issues/2965777
  - Follow Tweets by @drupalsecurity handle
  - all security announcements are posted to an email list. To subscribe to email: log in, go to your user profile page and subscribe to the security newsletter on the Edit » My newsletters tab.

Contrib Modules

- Use the core Update Reports module
- Read the release note / test before going to production
- Follow issues of any patches you use
- Check the status of any Dev releases you use
- If you use modules not covered by the security team, look closely at what they do.

Code Attack Tips

Custom Modules

- Use Drupal APIs, e.g. render arrays and twig.
- Sanitize Output
- Secure Database Queries
- Have Permissions on Admin routes
- Check Permissions when displaying content
- Schedule peer security/code reviews

https://www.drupal.org/docs/8/security

Code Attack Tips (cont.)

Server Software

- Keep the OS and tools up to date
- Keep PhP up to date
- Keep Apache (or Nginx) up to date
- Keep your SQL software up to date

If you control it, keep it updated. If you don't make sure the people who do also keep it updated.

User Attack Tips
Main Points

- Use Two Factor Authentication Everywhere You Can
- Protect Your Site Login Capability
- Implement Good User Management Practices
- Enforce Strong Password Practices

User Attack Tips
TFA

Quick Install

- Install and enable the modules: real_aes, key, encrypt, ga_login & tfa
- Create a random key in a file outside your web root with:

```
dd if=/dev/urandom bs=32 count=1 | base64 -i - > path/to/my/encrypt.key
```

- Visit the Keys module's configuration page and "Add Key"
  - Name your Key
  - Key type: "Encryption"
  - Provider: "File"
  - File location: `path/to/my/encrypt.key` as generated above.

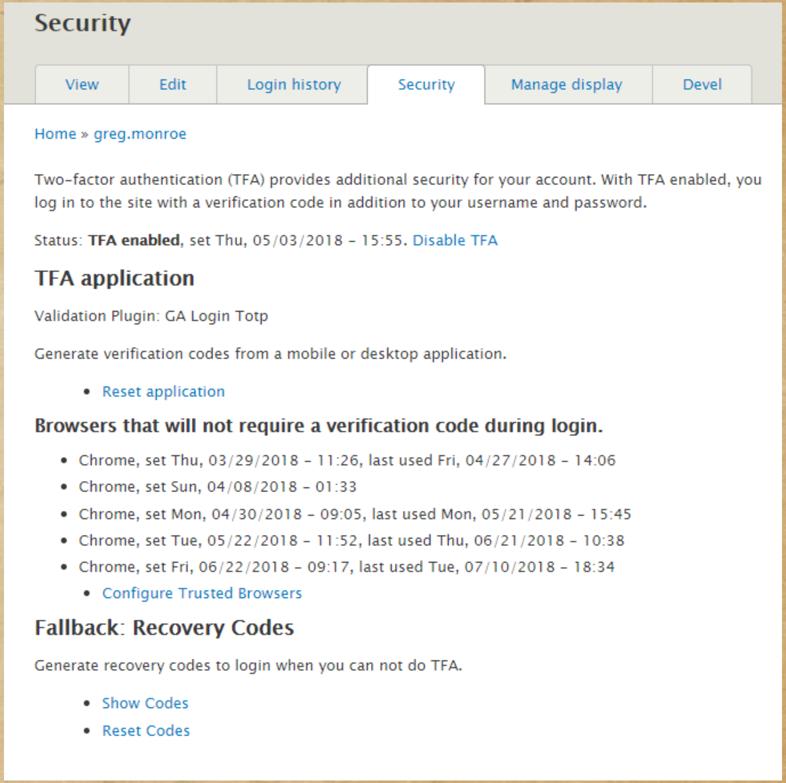
User Attack Tips TFA(cont.)

- Visit the Encrypt module's configuration page and "Add Encryption Profile"
  - Label your Encryption Profile
  - Encryption method: "Authenticated AES (Real AES)"
  - Encryption Key: Select the Key you created in the previous step.
- Visit the TFA module's configuration page.
  - Enable TFA
  - Select your desired Validation Plugin(s).
  - Encryption Profile: Select the Encryption Profile you created in the previous step.
  - Adjust other settings as desired.
- Grant "Set up TFA for account" to "Authenticated user"
  - Consider granting "Require TFA process" for some roles

User Attack Tips TFA(cont.)

User Setup

- Need either Google Authenticator or Authy
- Login to the site
- Go to your user profile
- Select the Security Tab
- Follow the instructions there



Home » greg.monroe

Two-factor authentication (TFA) provides additional security for your account. With TFA enabled, you log in to the site with a verification code in addition to your username and password.

Status: **TFA enabled**, set Thu, 05/03/2018 - 15:55. Disable TFA

TFA application

Validation Plugin: GA Login Totp

Generate verification codes from a mobile or desktop application.

- Reset application

Browsers that will not require a verification code during login.

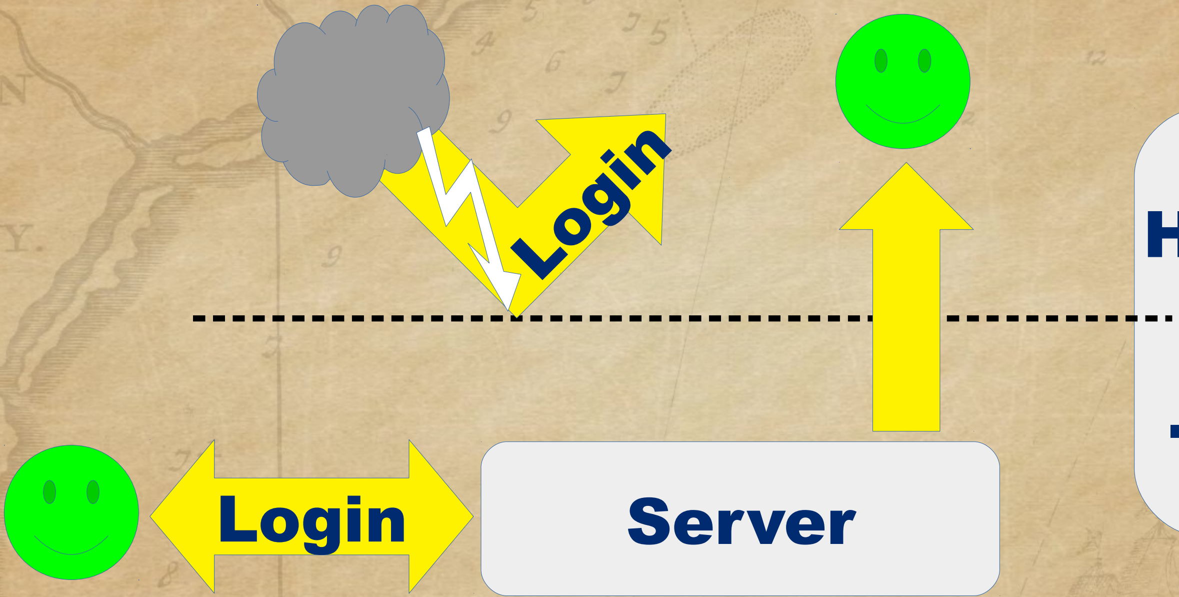
- Chrome, set Thu, 03/29/2018 - 11:26, last used Fri, 04/27/2018 - 14:06
- Chrome, set Sun, 04/08/2018 - 01:33
- Chrome, set Mon, 04/30/2018 - 09:05, last used Mon, 05/21/2018 - 15:45
- Chrome, set Tue, 05/22/2018 - 11:52, last used Thu, 06/21/2018 - 10:38
- Chrome, set Fri, 06/22/2018 - 09:17, last used Tue, 07/10/2018 - 18:34
  - Configure Trusted Browsers

Fallback: Recovery Codes

Generate recovery codes to login when you can not do TFA.

- Show Codes
- Reset Codes

User Attack Tips
Protected Logins



Firewall
Host Name
IP
.htaccess
Module

User Attack Tips
Protected Logins

- **Set up an 'edit' host name that with the same IP as your site, e.g. secret.example.com => www.example.com.**
- **Allow this host name access to the site (settings.php trusted host patterns)**
- **Modify the .htaccess rules to only allow access to /user, /admin, /devel, and node/*/* URLs from the edit host**
- **Require login to edit site using require_login and require_login_by_site**

See http://drupal.org/project/require_login_by_site for details

User Attack Tips
Login Management

- GUARDR Distro (www.drupal.org/project/guardr)
- Monitor Login Access (login_report)
- Block account after 5 invalid attempts (login_security)
- Login Screen should have an authorized only notice (modal block)
- Limit number of concurrent sessions (session_limit)
- Automatically log users out after a period of inactivity (autologout)

User Attack Tips
Strong Passwords

Define strong Rules and enforce them with the password_policy module (use Dev version)

- **Passwords must be at least 8 characters in length.**
- **Passwords must contain characters from three of the following four categories:**
  - **English uppercase characters (A through Z).**
  - **English lowercase characters (a through z).**
  - **Base 10 digits (0 through 9).**
  - **Non-alphabetic characters (for example, !, $, #, %).**
- **Password history: users should not be able to re-use the last five (5) passwords**
- **Password age: Passwords must be changed every 90 days.**

Internal Attacks

- Limit Permissions
- Peer Review
- Disable users who have not accessed site for 30 days (user_expire)
- Don’t use shared accounts
- Protect your data, limit access to any bulk download tools.
- Monitor logs for unusual activity

Security Plans Overview

This is not a set it up and forget it process… security takes vigilance.

- **Basic Rules**
  - **Define area's of responsibility**
  - **Define who is responsible for these**
  - **Define an audit plan for the area**
  - **Define response plans for the areas**
  - **Where needed, defined who audits that the area's plan is being done**

Questions?

?

And Thank You

Google: Slideshare CGMonroe DCA Security

Drupal.org/u/cgmonroe