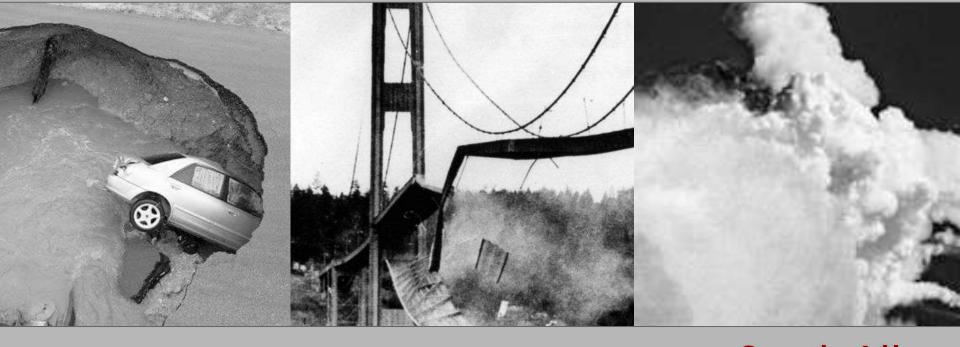
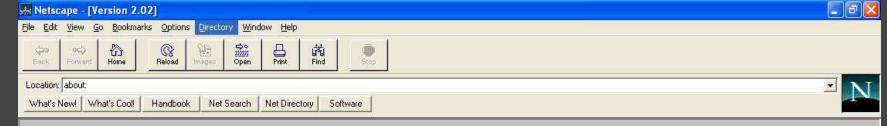
## A LANDSCAPE OF UNINTENDED CONSEQUENCES



Sarah Allen @ultrasaurus





#### Netscape Navigator (TM) Version 2.02

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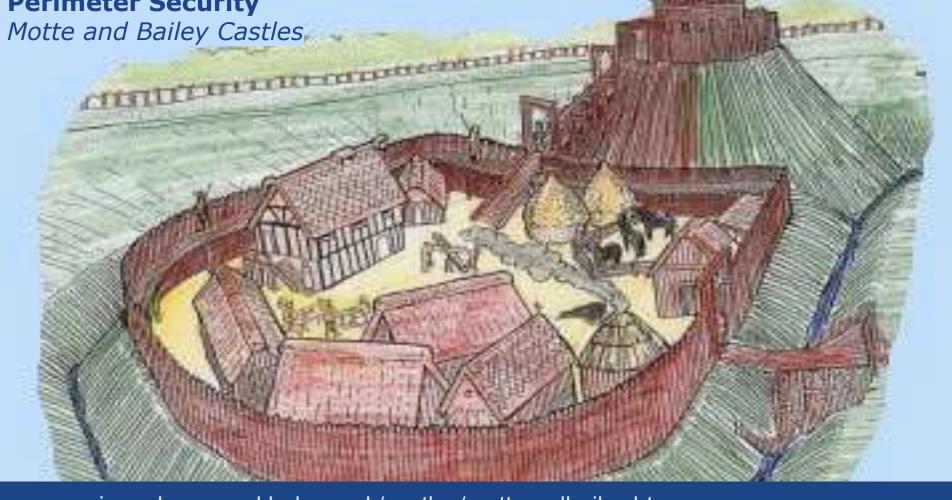
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www.primaryhomeworkhelp.co.uk/castles/motteandbailey.htm

#### **Director Commands Disabled for Shockwave**

Although the good news is that additional Net-related commands were added for shocked movies, the bad news is that other Director commands have been disabled.

Although a variety of commands have been disabled, most of them relate to data transmission. The primary reasons for disabling commands are to prevent the transfer of viruses and to block the capability to read information off of a user's hard drive and transfer that information back through the shocked movie to a Web site. Lingo, like virtually all other programming languages, can read, write, and delete files. Therefore, if certain capabilities were not disabled, the shocked movies, via Lingo, would have access to users' hard drives, where they could extract information (upload local files, including both data and programs), delete information (delete local files and programs or entire drives), or introduce information (alter files, add files, add viruses).

The following commands have been disabled in Director 4.0x and Director 5 shocked movies.

Table 29.1 shows Director-related commands that open, close, paste, print, and save files.

Table 29.1. Disabled Director-related commands.

| Command        | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|----------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| openResFile    | This Mac-only command opens a specific resource file. Because shocked movies might be played in Windows or another operating system, this command has been disabled to prevent errors.                                                                                                                                                                                                                                                                                                                                                                                             |
| closeResFile   | The counter command to the openResFile command closes a resource file that has been opened on a Mac. It has been disabled for the same reasons as the openResfile command.                                                                                                                                                                                                                                                                                                                                                                                                         |
| open window    | Director has the capability of playing a second movie inside of an opened Director movie. You can size this "windowed" movie from very small to large enough to occupy the entire screen size of the current movie.  Because the Windows version of Shockwave currently has problems with Director windows, and because Netscape supports only Director windows if the EMBED command is used, this feature has been disabled. Macromedia is working to resolve this problem.                                                                                                       |
| close window   | This command closes an open Director window, but because opening Director windows has been disabled, this command is also disabled.                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| importFileInto | Castmembers (the objects-graphics, scripts, videos, and so on) that are used in a Director movie are all referred to as castmembers. Most often, all castmembers are saved inside of the Director movie. The importFileInto command enables an external file to be loaded into a castmember position of a Director movie, either replacing one of the movie's castmembers or adding a new castmember to the movie. As already mentioned, to maintain system integrity, all I/O or data transfer functions have been disabled; importFileInto falls into this category and has been |







#### FutureSplash Player 1.1 Available

The 1.1 version of FutureSplash Player is now available. It adds support for Netscape LiveConnect and improved memory management on the Mac. Internet Explorer users got it automatically, Netscape users can upgrade now. Once you get it, try our new scripting demo.

#### FutureSplash Animator Is Shipping!

FutureSplash Animator is now available for Macintosh and Windows 95/NT.

Order your copy today.

Microsoft Network (MSN) goes on line with FutureSplash Animator!





+ "ActionScript"



+ RTMP (two way audio-video)

OKANBES APPLES. BANANAS CARROTS TELLINCE BEANS CANS APPLE SAUCE BEAN SOUR TONATO SOUP CEREALS BREAD NOODLES TELBON KINDS FRENCH BREAD COLD LOCKER NIIK







**Desperate Housewives** 

Commander in Chief

Desperate Housewive 0:02/43:08



Episode:

222





#### Common Vulnerabilities and Exposures 2001-2019

# 1172

## 2001-2019 CVE reports

1172 Flash Player

1999 Internet Explorer

2033 Chrome

2442 Firefox

## 2001-2019 CVE reports

1172 Flash Player

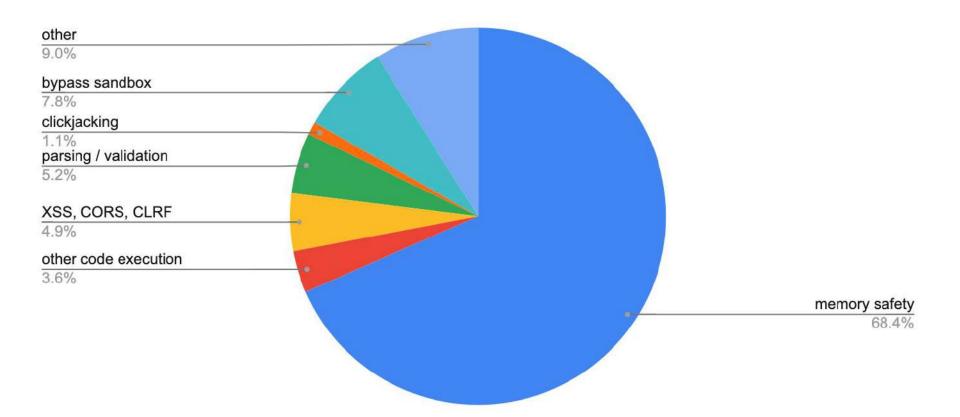
1999 Internet Explorer

2033 Chrome

2442 Firefox

## number is *not* significant indicator

## Flash Player CVEs



## Memory Safety CVEs

- 337 memory corruption
- 262 use after free
- 116 buffer overflow
- 35 integer overflow
- 17 out-of-bounds read
- 9 heap.overflow
- 8 null pointer dereference
- 5 double free
- 4 bounds checking
- 3 out of bounds memory read
- 3 improper memory access
- 2 out-of-bounds write
- 1 invalid pointer dereference

## Memory Safety CVEs

262 use after free

116 buffer overflow

35 integer overflow

17 out-of-bounds read

9 heap.overflow

8 null pointer dereference

5 double free

4 bounds checking

3 out of bounds memory read

3 improper memory access

2 out-of-bounds write

1 invalid pointer dereference

"allows remote attackers to execute arbitrary code via a crafted SWF file"

"allows remote attackers to execute arbitrary code via crafted streaming media"

"allows remote attackers to execute arbitrary code via a crafted font"

long a = (long)b;

## **Unexpected Context**

...allows remote attackers to cause victims to unknowingly click on a link or dialog via access control dialogs disguised as normal graphical elements, as demonstrated by hijacking the camera or microphone

Microsoft Excel allows user-assisted attackers to execute arbitrary javascript and redirect users to arbitrary sites via an Excel spreadsheet with an embedded Shockwave Flash Player ActiveX Object, which is automatically executed when the user opens the spreadsheet.

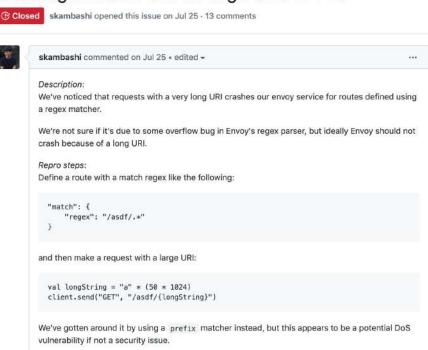
...spoof the address bar and possibly conduct phishing attacks by re-opening the window to a malicious Shockwave Flash application, then changing the window location back to a trusted URL while the Flash application is still loading

## Unexpected Context ⇒ Parsing / Validation

not properly validate malformed header overflow type confusion object confusion does not verify a member element's size wide characters untrusted input xml script interpret jar: URLs CRLF injection modify HTTP headers

## Recent vulnerabilities in URL parsing...

#### route regex match fails for large URIs #7728



https://github.com/envoyproxy/envoy/issues/7728

#### Recent vulnerabilities in URL parsing...

net/url: make Hostname and Port predictable for invalid Host values

When Host is not valid per RFC 3986, the behavior of Hostname and Port was wildly unpredictable, to the point that Host could have a suffix that didn't appear in neither Hostname nor Port.

This is a security issue when applications are applying checks to Host and expecting them to be meaningful for the contents of Hostname.

To reduce disruption, this change only aims to guarantee the following two security-relevant invariants.

- \* Host is either Hostname or [Hostname] with Port empty, or Hostname:Port or [Hostname]:Port.
- \* Port is only decimals.

The second invariant is the one that's most likely to cause disruption, but I believe it's important, as it's conceivable an application might do a suffix check on Host and expect it to be meaningful for the contents of Hostname (if the suffix is not a valid port).

https://go-review.googlesource.com/c/go/+/189258/

Your implementation is your API.

# (not your docs)

Your implementation is your API.

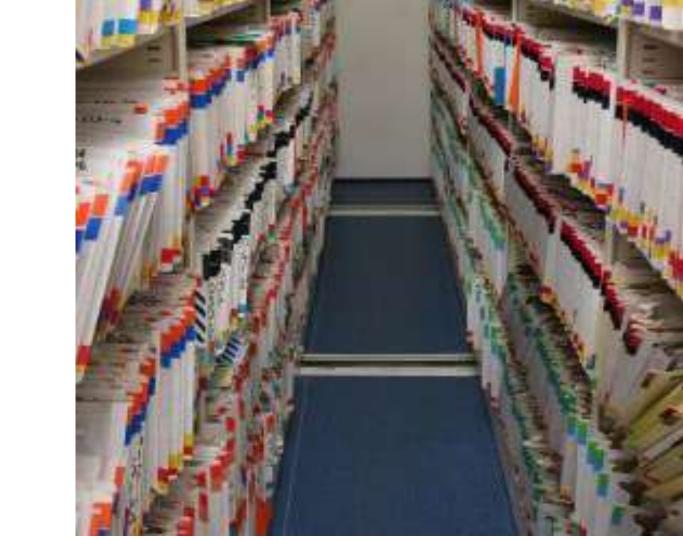
#### The dark ages

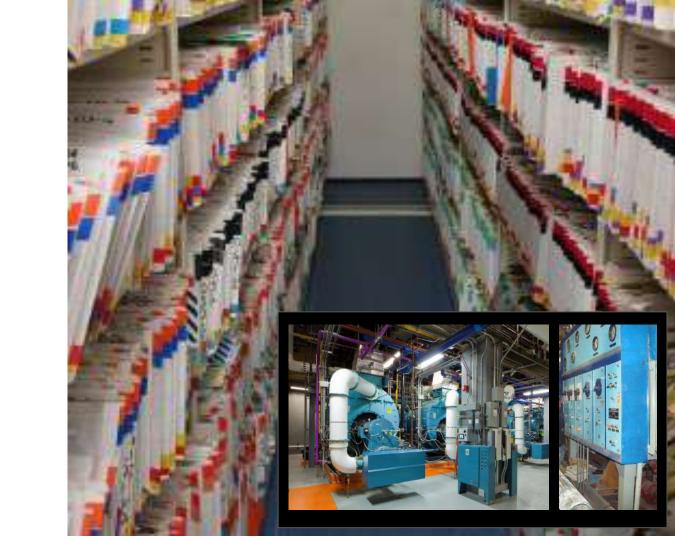
Web is for content

Physical networks

Perimeter security

HTTPS is expensive





































LOCATIONS HEALTH EQUICATION SATISTIC RESOURCES



FIND A PROVIDER

FIND A SPECIALITY

HEALTH EDUCATION

Exceptional Doctors

## Healthy You

#### **GREAT AMERICAN SMOKEOUT**



You Can Do It! We're Here to Help. Today is The Great American Smokeout. Click here to find out how we can help you or a loved one quit smoking today.

#### GIVE THE GIFT OF BEAUTY



A gift for a loved one or a present to yourself, take advantage of these holiday affers; Botox, Juvederm, Restylane and Radiesse 20% off. Click here to print off your coupon.

#### SIGN UP FOR E-NEWSLETTERS



Subscribe to our e-newsletter & receive... general health tips, special discounts and health & wellness class information.







MANAGE YOUR HEALTH CHLINE

Designing unique EHR interfaces for different hospitals, care settings, and specialties may improve EHR usability.

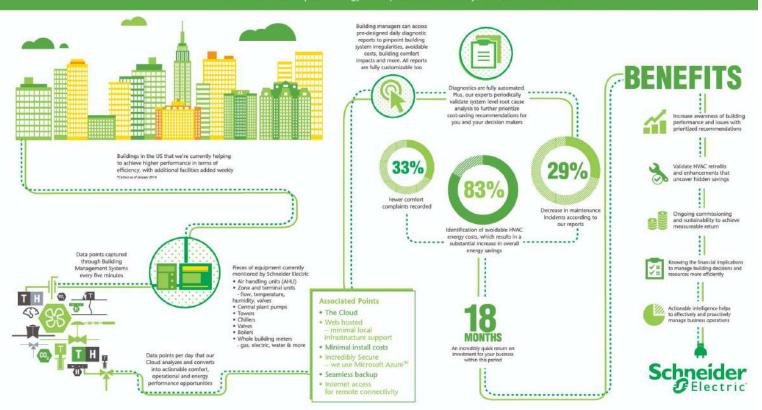


Source: Thinkstock

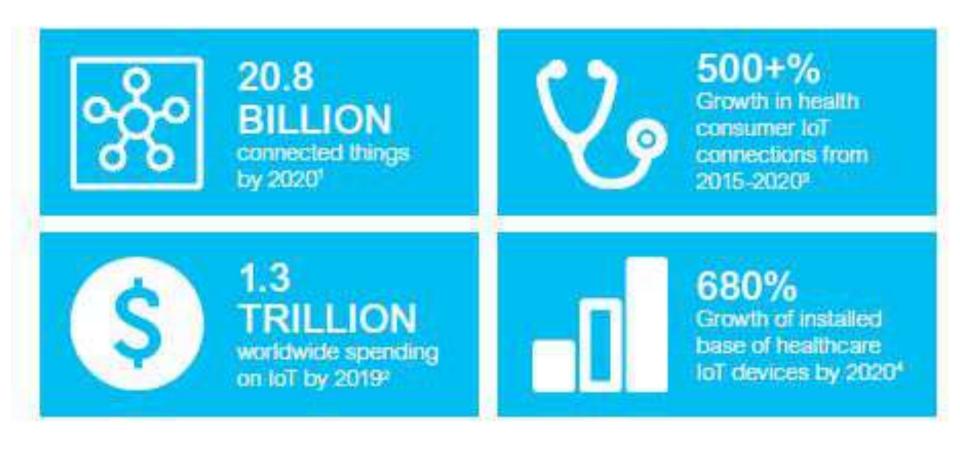
https://ehrintelligence.com/news/will-specializing-ehr-interfaces-solve-the-ehr-usability-problem

#### **BUILDING ANALYTICS**

Drive results to improve energy and operational efficiency, and tenant comfort



https://blog.se.com/building-management/2014/10/27/can-physical-environment-big-data-make-big-difference-hospital/



https://blog.se.com/building-management/2017/09/27/four-digital-hospital-trends-leverage-iot/

#### The dark ages

Web is for content

Physical networks

Perimeter security

HTTPS is expensive

#### The modern era

PII + finance + real-world

Bot armies

Supply chain attacks

Cloud native

Ubiquitous crypto





Humans make errors.

#### The world is changing.



Malicious Code Injection Strikes Again as npm Foils \$13M Cryptocurrency Theft

June 07, 2019 By Derek Weeks



Motherboard

## How 1.5 Million Connected Camera Were Hijacked to Make an Unprecedented Botnet

As many predicted, hackers are starting to use your Internet of Things to launch cyberattacks.

Fundamentals are the same.

# **Vulnerabilities**

opportunity.

create



♠ Facility Manager Cost Saving/Best Practice Quick Reads ■ RSS Feed



#### Target Settles HVAC Data Breach for \$18.5 Million



UNITED STATES ▼

DIGITAL MAGAZINE

NEWSLETTERS

**EVENTS & AWARDS PROGRAMS** 







Home > Security

**FEATURE** 

### 11 Steps Attackers Took to Crack Target

Aorato, a specialist in Active Directory monitoring and protection, delivers a step-by-step report on how attackers used the stolen credentials of an HVAC vendor to steal the data of 70 million customers and 40 million credit cards and debit cards from the retailer.

https://www.cio.com/article/2600345/11-steps-attackers-took-to-crack-target.html

#### 8 vulnerabilities

- 1. Install malware that steals credentials
- 2. Exploit a web application vulnerability
- 3. Steal access token from domain admins
- 4. Run code to find computers on the network
  5.SQL database ⇒ 70M PII
  6.PoS, custom malware ⇒ 40M credit cards
- 7. Create network share for stolen data
- 8. Exfiltrate data via FTP ⇒ success

The initial penetration point is not the story, because eventually *you have to assume you're going to get breached...*You cannot assume otherwise. You have to be prepared and have an incident response plan for what to do when you are breached. The real problem arises when malware is able to enable an attacker to penetrate deeper into the network."

Tal Be'ery, Aorato Lead Researcher

#### Plot to steal cryptocurrency foiled by npm security

#### Popular pattern

- 1. publish a "useful" package
- 2. waiting until in use by the target,
- 3. update to include malicious code..

It now seems clear that the bug was created intentionally to target Komodo's version of Agama wallet. A hacker spent several months making useful contributions...before inserting the bug. Eventually, the hacker added malicious code to an update of a module that Komodo's Agama was already using.

komodoplatform.com/update-agama-vulnerability

#### What's new today?

What's new today?

Scale

Everything is connected

Real-world targets

Secure is a verb, not an adjective.

Secure is a verb, not an adjective.

Anything that can happen, will.

Secure is a verb, not an adjective.

Anything that can happen, will.

Don't create new parser or new crypto, unless you need to.

Secure is a verb, not an adjective.

Anything that can happen, will.

Don't create new parser or new crypto, unless you need to. Invent *new* things!

Lessons learned (practical tips)

Tools for testing, monitoring.

Lessons learned (practical tips)

Tools for testing, monitoring.

Memory safe languages / features

Lessons learned (practical tips)

Tools for testing, monitoring.

Memory safe languages / features

Contribute to open source dependencies

#### Checklists are an anti-pattern.

#### Checklists are an anti-pattern.



#### Checklists are an anti-pattern.



github.com/cncf/sig-security



before-you-ship.18f.gov/security



bestpractices.coreinfrastructure.org

@ultrasaurus