

Sea and Vulnerabilities as Seen by Shodan

CELFOCUS HACKATHON - 17/06/2024

PORTUGAL EDITION

\$whoami

- ▶ Pedro Vieira
- ▶ Cyber Security Engineer
- ▶ Certified Ethical Hacker
- ▶ Degree at University of Minho



Disclaimer & Laws

Disclaimer

Boring but necessary

- ▶ Information in this presentation is intended for educational and awareness purposes only.
- ▶ **Live presentation.** Not a controlled environment and some contents may be inappropriate for some users.
- ▶ **I accept no responsibility** in any kind for the use, misuse, downloading, viewing in whatever way the links in this presentation.
- ▶ This presentation is **not related** to my work or employer.



Disclaimer

Avoid illegal activities

- ▶ Some links, websites, software or other items listed may or **may not be legal**, illegal, a felony, misdemeanor, or worse, in your country.
- ▶ Please make sure that you are **allowed** to browse the websites, download links and software **BEFORE USING!**
- ▶ Ignorance about laws or rules is **no excuse** for illegal activities or wrongdoing.
- ▶ Illegal activities may get you in **trouble or arrested**.
- ▶ Always check what is legal, and what laws apply.



Laws

Portuguese Law and Organizations

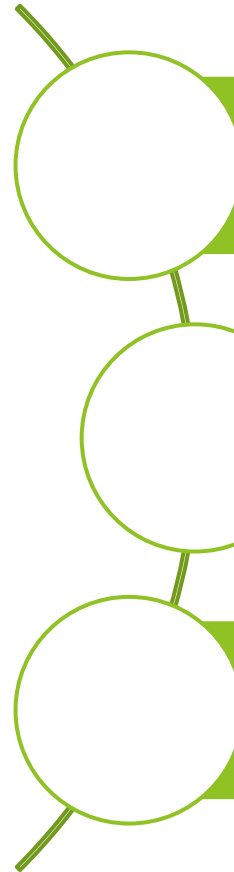
► Laws

- Diário República Eletrónico ([link](#))
- ANACOM ([link](#))

► Organizations

- CNCS - Centro Nacional de Cibersegurança ([link](#))
 - Incident Notification ([link](#))
 - CERT.PT ([link](#))
- Unidade Nacional de Combate ao Cibercrime e à Criminalidade Tecnológica (UNC3T) ([link](#))
- Ministério Público ([link](#))

Agenda

- 
- Vulnerability
 - Common Attack Vectors
 - Portuguese Landscape

Vulnerability

Definition and Statistics

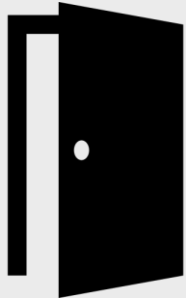

Vulnerability

Vulnerability vs incident

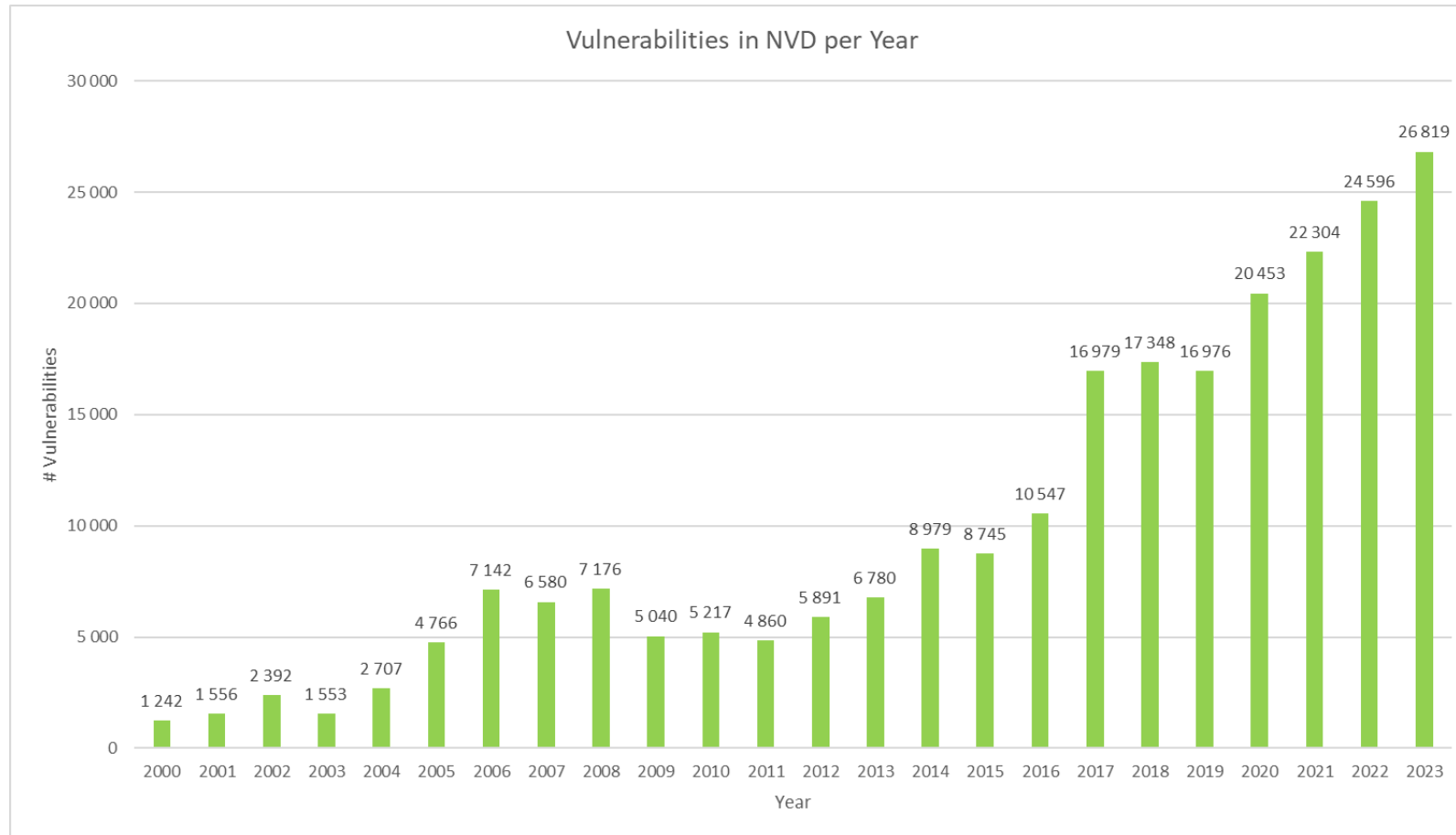
Vulnerability

"A weakness in the computational logic (e.g., code) found in software and hardware components that, when exploited, results in a negative impact to **confidentiality, integrity, or availability**."

National Vulnerability Database - <https://nvd.nist.gov/vuln>

Vulnerability	Incident
Open door 	Unauthorized access 

Vulnerability Statistics by Year

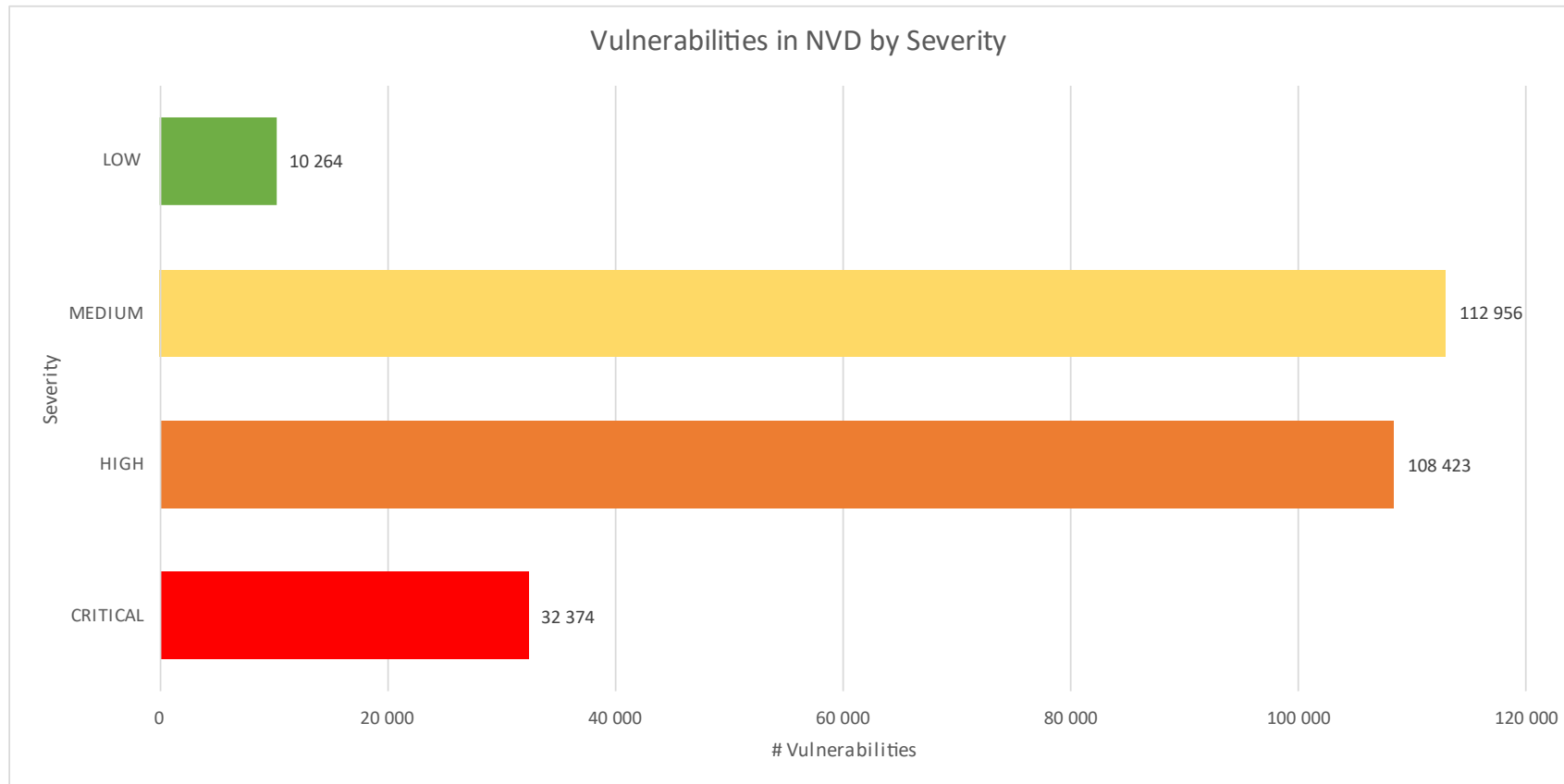


Total known vulnerabilities

283.154

Source NVD 14/03/2024

Vulnerability Statistics by Severity



CVSS v3.1 Ratings	
LOW	0.1 - 3.9
MEDIUM	4.0 - 6.9
HIGH	7.0 - 8.9
CRITICAL	9.0 - 10.0

Source NVD 14/03/2024

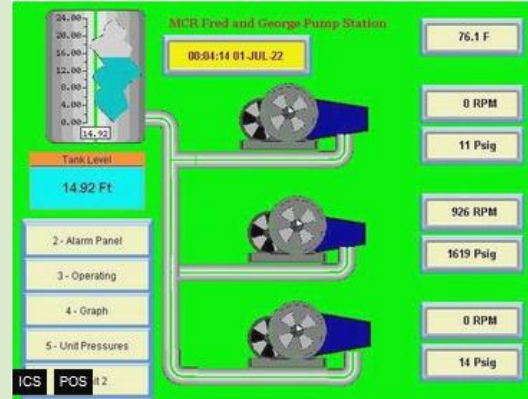
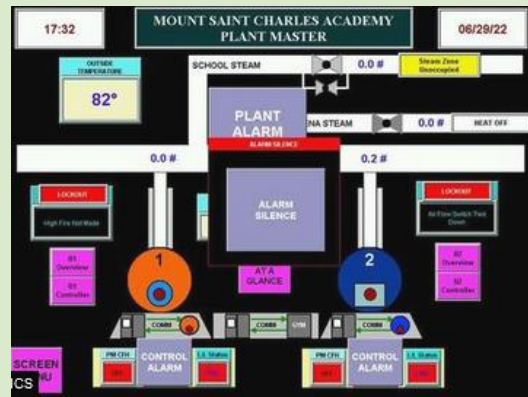
Vulnerability

Examples from Shodan.io

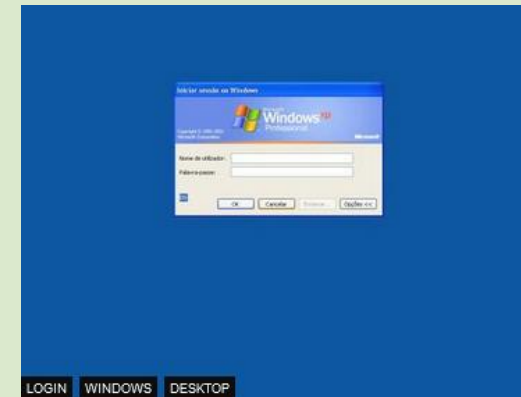
Default/No Password



Industrial Control Systems



Vulnerable Systems


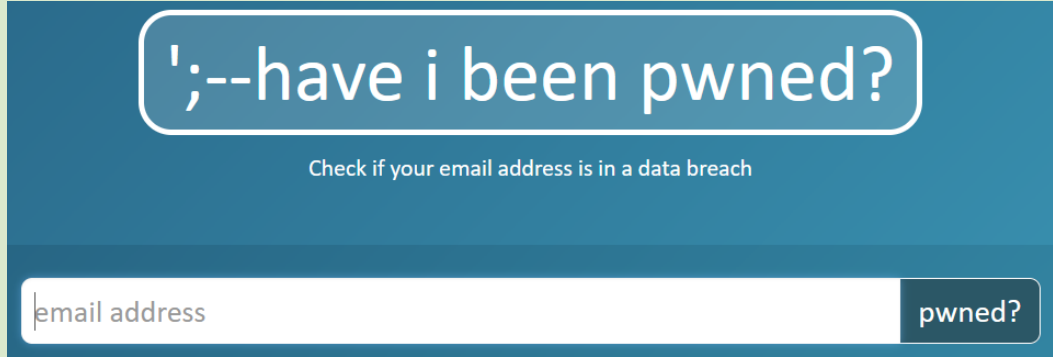


Common Attack Vectors

Easy-Peasy

Common Attack Vectors

Credentials

Insecure	Compromised/Leaked
<ul style="list-style-type: none">No passwordDefault credentials (admin/admin)Weak passwordsReused passwords 	<ul style="list-style-type: none">Hacked legitime sites leaked user information and credentialsMother of all breaches reveals 26 billion records 

Common Attack Vectors

Misconfiguration

Shared Folder - Authentication disabled

SMB Status:

Authentication: disabled

SMB Version: 2

Capabilities: raw-mode

Shares

Name	Type
projetos	Disk
arquivo	Disk
administrativo	Disk
software	Disk
contabilidade	Disk
pec-cladmara	Disk
pec-helio	Disk
pec-augusto	Disk
pec-sergio	Disk
pec-antunes	Disk
pec-fabiane	Disk
pec-eng1	Disk
pec-eng2	Disk
pec-eng3	Disk
pec-eng4	Disk
print\$	Disk
IPC\$	IPC

SMB Status:

Authentication: disabled

SMB Version: 2

Capabilities: raw-mode

Shares

Name	Type
Programas	Disk
FINANCEIRO	Disk
ADMINISTRATIVO	Disk
COMERCIAL	Disk
CONTABILIDADE	Disk
FATURAMENTO	Disk
FERNANDO	Disk
LABORATORIO	Disk
LOGISTICA	Disk
MARCOS	Disk
RH	Disk
Public	Disk
print\$	Disk
IPC\$	IPC

SMB Status:

Authentication: disabled

SMB Version: 2

Capabilities: raw-mode

Shares

Name	Type
Multimedia	Disk
Download	Disk
Web	Disk
Public	Disk
homes	Disk
Projetos	Disk
GuardDB	Disk
GuardRecording	Disk
GuardAutoSnap	Disk
Contabilidade	Disk
Admin	Disk
Container	Disk
Browser Station	Disk
QmailAgent	Disk
Madalena	Disk
Sara	Disk
Ines	Disk
HTProjetos	Disk
PAG	Disk
home	Disk
IPC\$	IPC

WordPress site - Configuration available

WordPress Setup Configuration File

Welcome to WordPress. Before getting started, we need some information on the database. You will need to know the following items before proceeding.

1. Database name
2. Database username
3. Database password
4. Database host
5. Table prefix (if you want to run more than one WordPress in a single database)

We're going to use this information to create a wp-config.php file. **If for any reason this automatic file creation doesn't work, don't worry. All this does is fill in the database information to a configuration file. You may also simply open wp-config-sample.php in a text editor, fill in your information, and save it as wp-config.php.** Need more help? [We got it.](#)

In all likelihood, these items were supplied to you by your Web Host. If you don't have this information, then you will need to contact them before you can continue. If you're all ready...

Let's go!

Common Attack Vectors

Software Vulnerabilities

Shared Folder - Remote Code Execution

Vulnerabilities

CVE-2020-0796 **10.0** A remote code execution vulnerability exists in the way that the Microsoft Server Message Block 3.11 (SMBv3) protocol handles certain requests. An attacker who successfully exploited the vulnerability could gain the ability to execute code on the target server or client.

SMB Status:

Authentication: disabled
SMB Version: 2
Capabilities: raw-mode

Shares

Name	Type	Comments

ADMIN\$	Disk	Admin remoto
C\$	Disk	Partilha predefinida
credTec	Disk	
D\$	Disk	Partilha predefinida
Executavel	Disk	
IPC\$	IPC	IPC remoto
passagem	Disk	
PHCSistema	Disk	
Users	Disk	
validacc	Disk	

Website - Several vulnerabilities

PLANO NACIONAL
DE FORMAÇÃO FINANCEIRA

TODOS CONIAM


PLANEAR O
ORÇAMENTO
FAMILIAR

FAZER
PAGAMENTOS

POUPAR E
INVESTIR



 **ETAPAS DA VIDA**

 **ESTUDAR**

 **COMEÇAR A TRABALHAR**

 **COMPRAR CARRO**

 **COMPRAR CASA**

 **CONSTITUIR FAMÍLIA**

Vulnerabilities

Note: the device may not be impacted by all of these issues. The vulnerabilities are implied based on the software and version.

CVE-2023-45802

5.9 When a HTTP/2 stream was reset (RST frame) by a client, there was a time window where the request's memory resources were not reclaimed immediately. Instead, de-allocation was deferred to connection close. A client could send new requests and resets, keeping the connection busy and open and causing the memory footprint to keep on growing. On connection close, all resources were reclaimed, but the process might run out of memory before that. This was found by the reporter during testing of CVE-2023-44487 (HTTP/2 Rapid Reset Exploit) with their own test client. During 'normal' HTTP/2 use, the probability to hit this bug is very low. The kept memory would not become noticeable before the connection closes or times out. Users are recommended to upgrade to version 2.4.58, which fixes the issue.

CVE-2023-31122

7.5 Out-of-bounds Read vulnerability in mod_macro of Apache HTTP Server. This issue affects Apache HTTP Server through 2.4.57.

CVE-2023-25690

9.8 Some mod_proxy configurations on Apache HTTP Server versions 2.4.0 through 2.4.55 allow a HTTP Request Smuggling attack. Configurations are affected when mod_proxy is enabled along with some form of RewriteRule or ProxyPassMatch in which a non-specific pattern matches some portion of the user-supplied request-target (URL) data and is then re-inserted into the proxied request-target using variable substitution. For example, something like: RewriteEngine On RewriteRule ^/here/^(.*) "http://example.com:8080/elsewhere?\${1}" [P] ProxyPassReverse /here/ http://example.com:8080/ Request splitting/smuggling could result in bypass of access controls in the proxy server, proxying unintended URLs to existing origin servers, and cache poisoning. Users are recommended to update to at least version 2.4.56 of Apache HTTP Server.

CVE-2022-37436

5.3 Prior to Apache HTTP Server 2.4.55, a malicious backend can cause the response headers to be truncated early, resulting in some headers being incorporated into the response body. If the later headers have any security purpose, they will not be interpreted by the client.

CVE-2022-36760

9.0 Inconsistent Interpretation of HTTP Requests ('HTTP Request Smuggling') vulnerability in mod_proxy_ajp of Apache HTTP Server allows an attacker to smuggle requests to the AJP server it forwards requests to. This issue affects Apache HTTP Server Apache HTTP Server 2.4 version 2.4.54 and prior versions.

Common Attack Vectors


Malware - Ransomware

Redeemer Ransomware	Ransomwatch
<div><p>Redeemer Ransomware - Your Data Is Encrypted</p><p>88888888b. 888 888 Y88b 888 888 888 888 888 d88P.d88b. .d88888 .d88b. .d88b. 88888b.d88b. .d88b. 888d888 88888888P" d8P Y8b d88" 888 d8P Y8b d8P Y8b 888 "888 "88b d8P Y8b 888P" 888 T88b 88888888 888 888 88888888 888888888 888 888 888 88888888 888 888 T88b Y8b. Y88b 888 Y8b. Y8b. 888 888 888 Y8b. 888 888 T88b "Y8888 "Y8888 "Y8888 "Y8888 888 888 888 "Y8888 888</p><p>Made by Cerebrate Visit the official Redeemer Ransomware Tor website - redeemergd6gjtziuf5jgpkk6i3ybkhsldzjoyjaxivyZlnhvmzcad.onion</p><p>[Question 1] What happened to my computer? I cannot access my files and they have changed their extension? [Answer 1] Your files have been encrypted by Redeemer, a Darknet ransomware operation.</p><p>[Question 2] Is there any way to recover my files? [Answer 2] Yes, you can recover your files. This will however cost you money in Monero (XMR).</p><p>[Question 3] Is there any way to recover my files without paying? [Answer 3] Without paying for the proper decryption key, you will NEVER regain access to your files. Redeemer uses the most secure algorithms and a sophisticated encryption scheme which guarantees security. Ever since Redeemer was first released publicly (~May 2021) no one managed to crack the decryption or recover their files without paying.</p><p>OK</p></div>	<div><p>summary</p><p>may 4th, 2024</p><p>ransomwatch is currently crawling 382 sites belonging to 192 unique groups</p><p>⌚ there have been 31 posts within the last 24 hours</p><p>📅 there have been 64 posts within the month of may</p><p>📅 there have been 1286 posts within the last 90 days</p><p>📅 there have been 1712 posts within the year of 2024</p><p>🔍 there are currently 100 online hosts & 120 custom parsers.</p><p>📊 ransomwatch has been running for 2 years, 7 months and 28 days and indexed 11169 posts</p><p>all data (groups) and (posts) is available in JSON (updated hourly)</p><p>ransomwatch is fully open source. please consider sponsoring if you find it useful!</p></div>

Common Attack Vectors

Malware - Ransomware

Ransomwatch

 recent posts

last 200 posts

date	title	group
2024-05-04	firstmac.com.au	embargo
2024-05-04	mulfordconstruction.com	embargo
2024-05-04	bulldogbag.com	underground
2024-05-04	frenckengroup.com	underground
2024-05-04	synology.com	underground
2024-05-04	tpa-group.sk	underground
2024-05-04	Triathlon.group	underground
2024-05-04	awwg.com	underground
2024-05-04	kc.co.kr	underground
2024-05-04	Y. Hata & Co., Ltd.	underground
2024-05-04	Skender Construction	underground
2024-05-04	Creative Business Interiors	underground
2024-05-04	cochraneglobal.com	underground
2024-05-04	ikhomefinance.com	darkvault
2024-05-04	The Islamic Emirat of Afghanistan National Environmental Protection Agency <nepa.gov.af/df	ransomhub
2024-05-04	Accounting Professionals LLC, Price, Breazeale & #838; Chastang	everest
2024-05-04	Bitfinex	flocker
2024-05-04	SBC Global	flocker
2024-05-04	Rutgers University	flocker
2024-05-04	Coinmoma	flocker

NoMoreRansom

 / > NO MORE RANSOM

NEED HELP
unlocking your digital
life without paying
your attackers*?

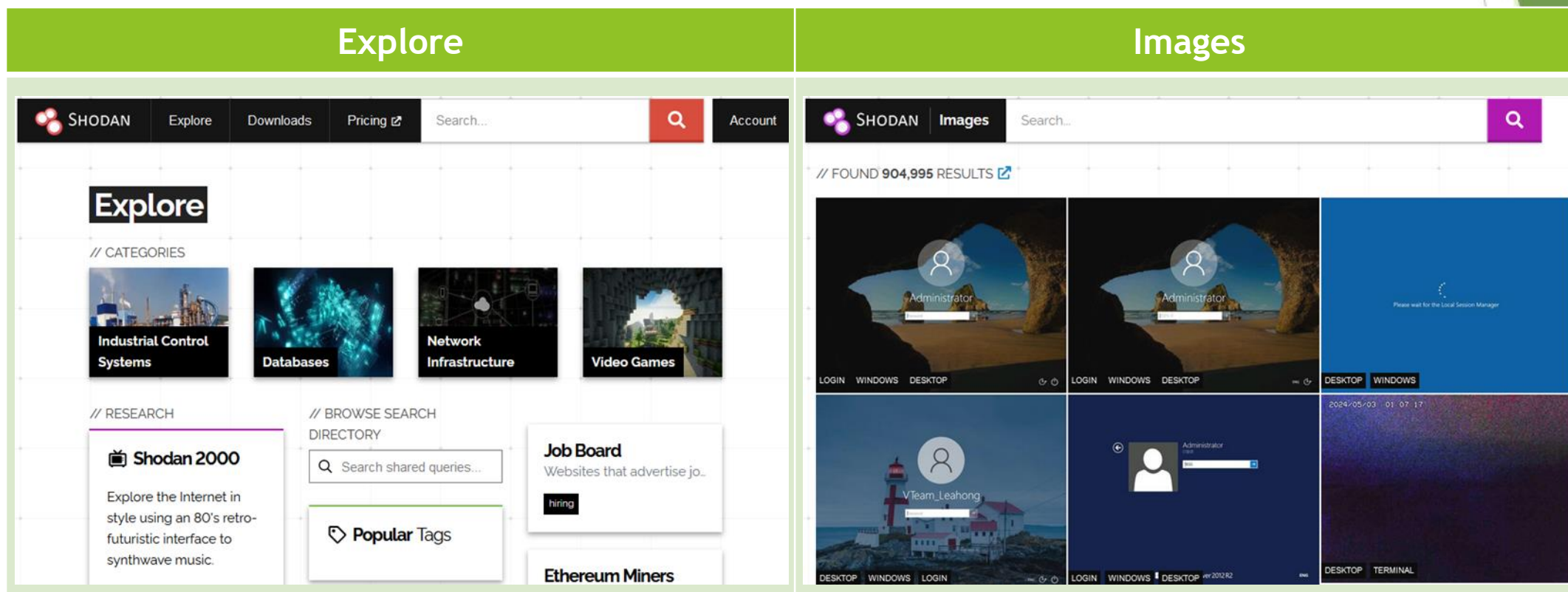
YES NO

At the moment, not every type of ransomware has a solution. Keep checking this website as new keys and applications are added when available.

Portuguese landscape

Portugal

Shodan.io - Search Engine for Internet Of Things

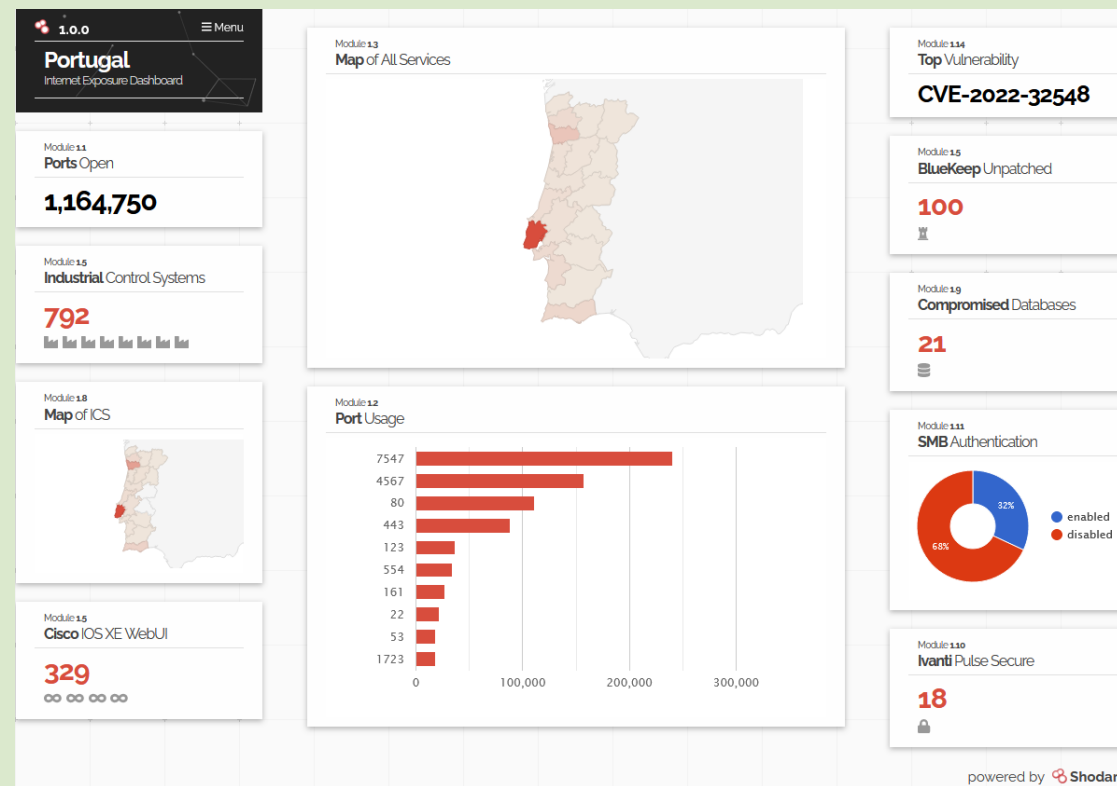


Shodan Queries ([link](#))

Portugal

Shodan.io - Search Engine for Internet Of Things

Internet Exposure Observatory



Portugal

Shodan.io - Search Engine for Internet Of Things

Top in Portugal - CVE-2022-32548

⚠ Vulnerabilities

CVE-2022-32548 10.0 Unauthenticated Remote Code Execution in a Wide Range of DrayTek Vigor Routers

TOTAL RESULTS

3,322

TOP CITIES

Lisbon	991
Leiria	181
Porto	114
Braga	95
Rio Maior	83

[More...](#)

EternalBlue - MS17-010 - CVE-2017-0144

⚠ Vulnerabilities

MS17-010

8.1 This security update resolves vulnerabilities in Microsoft Windows. The most severe of the vulnerabilities could allow remote code execution if an attacker sends specially crafted messages to a Microsoft Server Message Block 1.0 (SMBv1) server. This security update is rated Critical for all supported releases of Microsoft Windows.

TOTAL RESULTS

6

TOP CITIES

Lisbon	2
Braga	1
Porto	1
Silves	1
Évora	1

[More...](#)

Portugal

Shodan.io - Search Engine for Internet Of Things

Heartbleed - CVE-2014-0160

Vulnerabilities

CVE-2014-0160 5.0 The (1) TLS and (2) DTLS implementations in OpenSSL 1.0.1 before 1.0.1g do not properly handle Heartbeat Extension packets, which allows remote attackers to obtain sensitive information from process memory via crafted packets that trigger a buffer over-read, as demonstrated by reading private keys, related to d1_both.c and t1_lib.c, aka the Heartbleed bug.

TOTAL RESULTS

311

TOP CITIES

Lisbon	146
Coimbra	20
Porto	12
Rio Maior	8
Torres Vedras	7

[More...](#)

SMBGhost - CVE-2020-0796

Vulnerabilities

CVE-2020-0796 10.0 A remote code execution vulnerability exists in the way that the Microsoft Server Message Block 3.11 (SMBv3) protocol handles certain requests. An attacker who successfully exploited the vulnerability could gain the ability to execute code on the target server or client.

TOTAL RESULTS

554

TOP CITIES

Lisbon	263
Porto	29
Braga	13
Guimarães	8
Montijo	8

[More...](#)

Portugal

Shodan.io - Search Engine for Internet Of Things

BlueKeep - CVE-2019-0708

Vulnerabilities

CVE-2019-0708 10.0 A remote code execution vulnerability exists in Remote Desktop Services formerly known as Terminal Services when an unauthenticated attacker connects to the target system using RDP and sends specially crafted requests, aka 'Remote Desktop Services Remote Code Execution Vulnerability'.

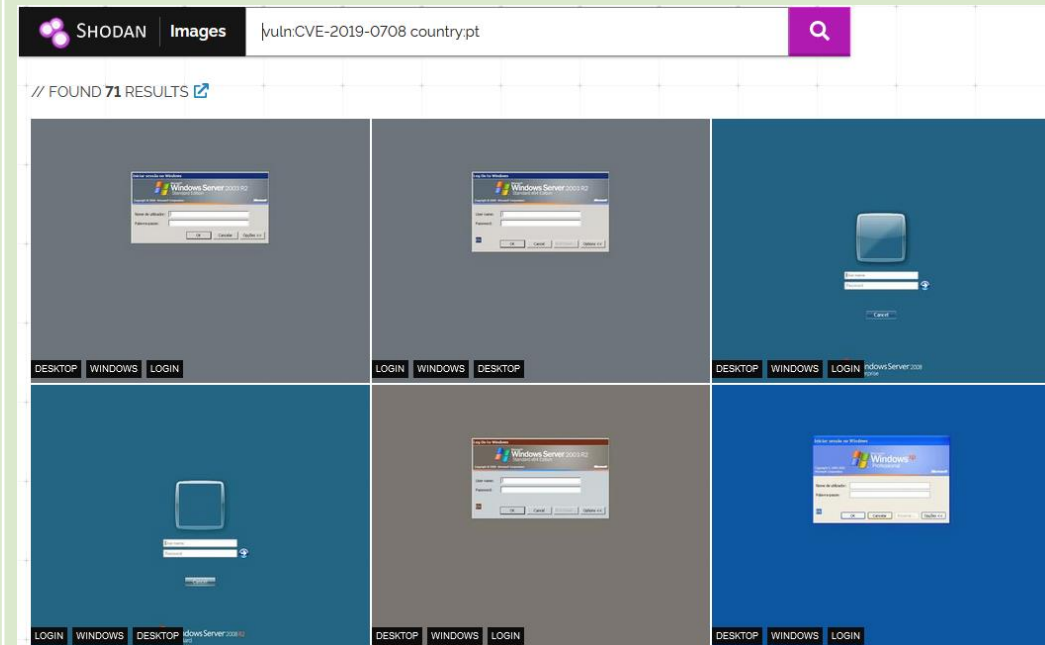
TOTAL RESULTS

99

TOP CITIES

Lisbon	30
Porto	11
Braga	5
Leiria	3
Espinho	2

[More...](#)



Portugal

Shodan.io - Search Engine for Internet Of Things

Shared Folders

TOTAL RESULTS

4,261

TOP CITIES

Lisbon	518
Porto	154
Braga	102
Vila Nova de Gaia	86
Coimbra	85

[More...](#)

Shares Name	Type	Comments
Web	Shares	
Public	Name	Type
homes		
SCAN	Multimedia	
SERVER	Download	
Multimedia	Web	
Recordings	Public	
home	homes	
MBPT	TESTE	
PLOUTOS	JOAO	
TGS	DUDA	
MIRUS	SEGMENTO_POPULAR	
USB	SOFTWARE	
IPC\$	home	
	IPC\$	

Shares Name	Type	Comments
ADMIN\$	Disk	Remote Admin
C\$	Disk	Default Share
IPC\$		
Printer		

Shares Name	Type	Comments
Root		
winrest		
IPC\$		

Shares Name	Type	Comments
IPC\$	IPC	IPC Service ("
Carlos	Disk	Carlos Pessoal
TTT	Disk	Todo Tipo Terre
SAIG	Disk	SAIG
Zonesoft	Disk	Clientes Zoneso
FTP	Disk	FTP
Clientes_Sage	Disk	Clientes Sage
Clientes_XD	Disk	Clientes XD
XD Extreme	Disk	XD Extreme
video	Disk	System default
photo	Disk	System default
music	Disk	System default
admin	Disk	...

Shares Name	Type	Comments
Home		
Public		
Web		
PHST		
Administrativa		
IPC\$		

Portugal

Shodan.io - Search Engine for Internet Of Things

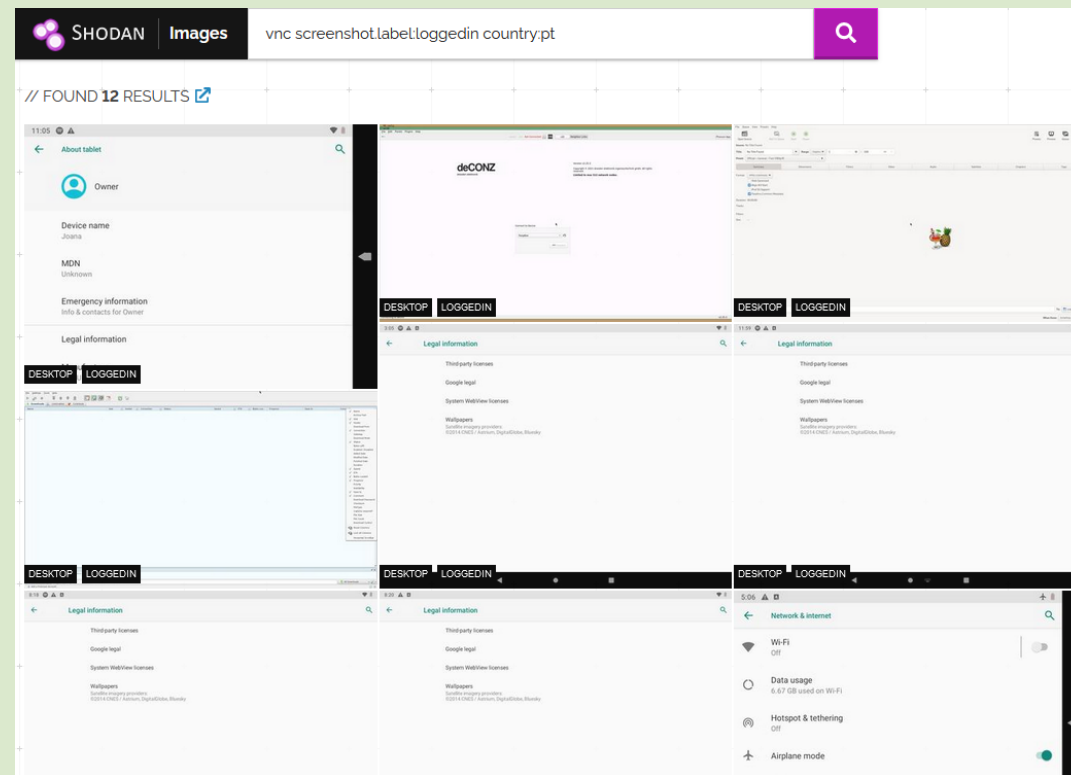
Logged In Remote Access

TOTAL RESULTS

12

TOP CITIES

Porto	8
Lisbon	2
Cacém	1
Vila Nova de Gaia	1



THANK YOU

Q&A