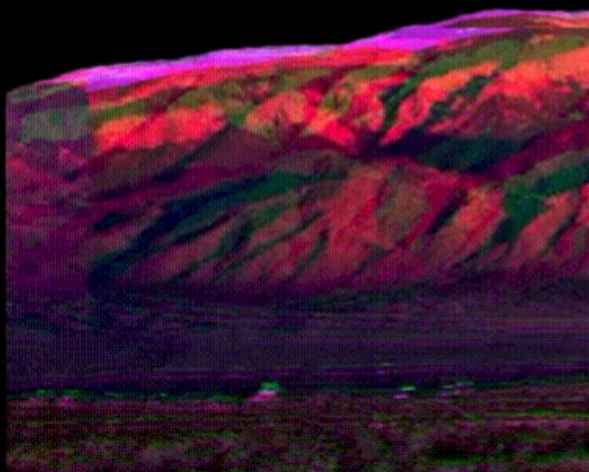


Notes about rogue cert paper...

BREAKPOINT

BAD



We are a non-profit founded in 20
combined experience focusing on

goal is to provide technical expertise and capabilities to at risk populations subjected to

Certificate Viewer: breakpointingbad.com

General Details

Issued To

Common Name (CN)	breakpointingbad.com
Organization (O)	<Not Part Of Certificate>
Organizational Unit (OU)	<Not Part Of Certificate>

Issued By

Common Name (CN)	R3
Organization (O)	Let's Encrypt
Organizational Unit (OU)	<Not Part Of Certificate>

Validity Period

Issued On	Thursday, December 22, 2022 at 10:57:13 PM
Expires On	Wednesday, March 22, 2023 at 10:57:12 PM

Fingerprints

SHA-256 Fingerprint	81 05 41 B0 19 8B 06 9C 90 20 7F B3 EE 60 2E AB BD 64 25 F9 D8 DE 87 7D FD 70 34 AC F9 F5 DE 92
SHA-1 Fingerprint	C1 95 59 2C 66 12 BC 36 71 7E 99 C9 60 98 12 0A B8 02 1D 47

General

Details

Issued To

Common Name (CN)	breakpointingbad.com
Organization (O)	<Not Part Of Certificate>
Organizational Unit (OU)	<Not Part Of Certificate>

Issued By

Common Name (CN)	R3
Organization (O)	Let's Encrypt
Organizational Unit (OU)	<Not Part Of Certificate>

Validity Period

Issued On	Thursday, December 22, 2022 at 10:57:13 PM
Expires On	Wednesday, March 22, 2023 at 10:57:12 PM

Fingerprints

SHA-256 Fingerprint	81 05 41 B0 19 8B 06 9C 90 20 7F B3 EE 60 2E AB BD 64 25 F9 D8 DE 87 7D FD 70 34 AC F9 F5 DE 92
SHA-1 Fingerprint	C1 95 59 2C 66 12 BC 36 71 7E 99 C9 60 98 12 0A B8 02 1D 47

Certificate Fields

▼ breakpointingbad.com

▼ Certificate

Version

Serial Number

Certificate Signature Algorithm

Issuer

▼ Validity

Not Before

Field Value

04:B5:2A:1D:FD:B3:AC:F1:34:37:27:94:9F:F5:A8:5A:12:E6

Export...

breakpointingbad.com

Certificate Fields

▼ breakpointingbad.com

▼ Certificate

Version

Serial Number

Certificate Signature Algorithm

Issuer

▼ Validity

Not Before

Field Value

PKCS #1 SHA-256 With RSA Encryption

Certificate Fields

▼ breakpointingbad.com

▼ Certificate

Version

Serial Number

Certificate Signature Algorithm

Issuer

▼ Validity

Not Before

Field Value

CN = R3

O = Let's Encrypt

C = US

Certificate Fields

Certificate Signature Algorithm

Issuer

▼ Validity

Not Before

Not After

Subject

▼ Subject Public Key Info

Subject Public Key Algorithm

Field Value

3/22/23, 10:57:12 PM MST

Export...

breakpointingbad.com

Certificate Fields

Certificate Signature Algorithm

Issuer

▼ Validity

Not Before

Not After

Subject

▼ Subject Public Key Info

Subject Public Key Algorithm

Field Value

CN = breakpointingbad.com

breakpointingbad.com

Certificate Fields

Not After

Subject

▼ Subject Public Key Info

Subject Public Key Algorithm

Subject's Public Key

▼ Extensions

Certificate Key Usage

Extended Key Usage

Field Value

Modulus (2048 bits):

DC DA F0 96 47 5C 62 91 27 27 AD B2 95 EE 3D 51
CF 26 EB EC 27 EE ED 2E 9F DA 1D BF 83 2F 12 F0
EA CC 96 5B 8C C1 3E A1 C6 46 90 4D E5 93 20 E1
5C 9B 62 BB 82 3A 7F 77 7C 85 CB 8C F3 0F B9 0D
38 24 9C 0D 39 8C FF F4 B5 AD 0A 94 75 AA F9 41

Export

Certificate Fields

▼ breakpointingbad.com

▼ Certificate

Version

Serial Number

Certificate Signature Algorithm

Issuer

▼ Validity

Not Before

Field Value

98 2F 52 F3 68 5E 6D BC 18 2C 93 42 8B C5 41 D1
40 B4 0F 53 D9 BD BA 22 F9 52 90 76 37 F0 C4 56
31 F8 8D C7 B8 21 3E FB 0F 83 B8 A7 CF F3 B4 A1

Public Exponent (17 bits):
01 00 01

Export...

Certificate Hierarchy

▼ Builtin Object Token:ISRG Root X1

▼ R3

breakpointingbad.com

Certificate Fields

Subject's Public Key

▼ Extensions

Certificate Key Usage

Extended Key Usage

Certificate Basic Constraints

Certificate Subject Key ID

Certification Authority Key ID

Authority Information Access

Field Value

Critical
Is not a Certification Authority

▼ R3

breakpointingbad.com

Certificate Fields

Certificate Subject Alternative Name

Certificate Policies

OID.1.3.6.1.4.1.11129.2.4.2

Certificate Signature Algorithm

Certificate Signature Value

▼ Fingerprints

SHA-256 Fingerprint

SHA-1 Fingerprint

Field Value

81 05 41 B0 19 8B 06 9C 90 20 7F B3 EE 60 2E AB
BD 64 25 F9 D8 DE 87 7D FD 70 34 AC F9 F5 DE 92

Export

Certificate Viewer: breakpointingbad.com



General

Details

Certificate Hierarchy

▼ Builtin Object Token:ISRG Root X1

▼ R3

breakpointingbad.com

Certificate Fields

▼ R3

▼ Certificate

Version

Serial Number

Certificate Signature Algorithm

Issuer

▼ Validity

Not Before

Field Value

CN = ISRG Root X1
O = Internet Security Research Group
C = US

Export...

▼ R3

breakpointingbad.com

Certificate Fields

▼ R3

▼ Certificate

Version

Serial Number

Certificate Signature Algorithm

Issuer

▼ Validity

Not Before

Field Value

CN = ISRG Root X1

O = Internet Security Research Group

C = US

Export...

▼ Builtin Object Token:ISRG Root X1

▼ R3

breakpointingbad.com

Certificate Fields

Subject's Public Key

▼ Extensions

Certificate Key Usage

Extended Key Usage

Certificate Basic Constraints

Certificate Subject Key ID

Certification Authority Key ID

Authority Information Access

CRL Distribution Points

Field Value

Critical

Is a Certification Authority

Maximum number of intermediate CAs: 0

Certificate Hierarchy

▼ Builtin Object Token:ISRG Root X1

▼ R3

breakpointingbad.com

Certificate Fields

▼ Builtin Object Token:ISRG Root X1

▼ Certificate

Version

Serial Number

Certificate Signature Algorithm

Issuer

▼ Validity

Not Before

Field Value

CN = ISRG Root X1

O = Internet Security Research Group

C = US

Certificate Hierarchy

▼ Builtin Object Token:ISRG Root X1

▼ R3

breakpointingbad.com

Certificate Fields

Subject's Public Key

▼ Extensions

Certificate Key Usage

Certificate Basic Constraints

Certificate Subject Key ID

Certificate Signature Algorithm

Certificate Signature Value

▼ Fingerprints

Field Value

Critical

Is a Certification Authority

Maximum number of intermediate CAs: unlimited

Export...



Privacy and security



Appearance



Search engine



Default browser



On startup



Languages



Downloads



Accessibility



System



Reset settings



Extensions 



About Chromium

org-GlobalSign nv-sa

org-GoDaddy.com, Inc.

org-Google Trust Services LLC

org-Government Root Certification Authority

org-GUANG DONG CERTIFICATE AUTHORITY CO.,LTD.

org-Hellenic Academic and Research Institutions Cert. Authority

org-Hongkong Post

org-IdenTrust

org-Internet Security Research Group

org-IZENPE S.A.

org-Japan Certification Services, Inc.

org-Krajowa Izba Rozliczeniowa S.A.

org-LuxTrust S.A.

<https://www.win.tue.nl/hashclash/rogue-ca/>



Creating an intermediate CA



<https://www.win.tue.nl/hashclash/rogue-ca/downloads/md5-collisions-1.0.pdf>

serial number	chosen prefix (difference)	rogue CA cert
validity period		
real cert domain name		rogue CA RSA key
		rogue CA X.509 extensions ← CA bit!
real cert RSA key	collision bits (computed)	Netscape Comment Extension (contents ignored by browsers)
X.509 extensions	identical bytes (copied from real cert)	
signature		signature