GraphQLConf 2026

hosted by GraphQL Foundation

GraphQL Shield

CWE-aware defense in depth for GraphQL APIs in Go

14	7	3	1
CWEs	attacks	layers	line

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Open Source · Security

https://www.linkedin.com/in/ravisastryk/

https://github.com/ravisastryk/graphqlshield

THE PROBLEM

Every GraphQL request looks like this to your WAF:

```
POST  /graphql  HTTP/1.1
Content-Type: application/json

{ "query": "..." }
```

WAF

blind here

But hiding inside that opaque JSON body:

CWE-89

SQL Injection

```
filter: "1' OR '1'='1"
```

CWE-400

Depth-of-50 DoS

```
user.posts.comments...
```

CWE-200

Introspection leak

```
{ __schema { types {..} }
}
```

CWE-79

XSS in mutation

```
body: "<script>..."
```

CWE COVERAGE

14 vulnerability classes across 3 exploitation layers

Static analysis

CWE-400
Resource exhaustion (depth DoS)

CWE-200
Sensitive data exposure (introspection)

CWE-200
Sensitive field exposure

Runtime sanitization

CWE-89
SQL Injection

CWE-79
Cross-Site Scripting

CWE-78
Command Injection

CWE-22
Path Traversal

CWE-943
NoSQL Injection

CWE-601
Open Redirect

Resolver audit (CI)

CWE-327
Broken cryptographic algorithm

CWE-328
Weak hash (MD5, SHA-1)

CWE-798
Hardcoded credentials

CWE-321
Hardcoded cryptographic key

CWE-338
Insecure pseudo-random number

CWE-862
Missing authorization check

Runtime layer powered by go-safeinput · Audit layer powered by cryptoguard-go

HOW IT WORKS

Three layers. Zero config for the runtime checks.

Layer 1 — Static controls

stdlib · no deps

- Reject if query depth > MaxDepth(n) → CWE-400
- Block __schema / __type introspection → CWE-200
- Block named sensitive fields (password, ssn, …) → CWE-200

▼ pass

Layer 2 — Runtime variable sanitization

go-safeinput

- SQL injection patterns → CWE-89
- XSS / HTML injection → CWE-79 · Command injection → CWE-78
- Path traversal → CWE-22 · NoSQL operator injection → CWE-943

▼ pass

Layer 3 — Resolver source audit (run in CI)

cryptoguard-go

- MD5 / SHA-1 / DES / RC4 usage → CWE-327/328
- Hardcoded passwords, secrets, API keys → CWE-798/321
- math/rand instead of crypto/rand → CWE-338 · missing AuthZ → CWE-862

✓ gqlgen resolver executes

INTEGRATION

The entire integration is one new line.

BEFORE

```
gqlHandler := handler.NewDefaultServer(schema)

http.Handle("/graphql", gqlHandler)
```

```
$ go get github.com/ravisastryk/graphqlshield@latest
```

Requires Go 1.26+

AFTER

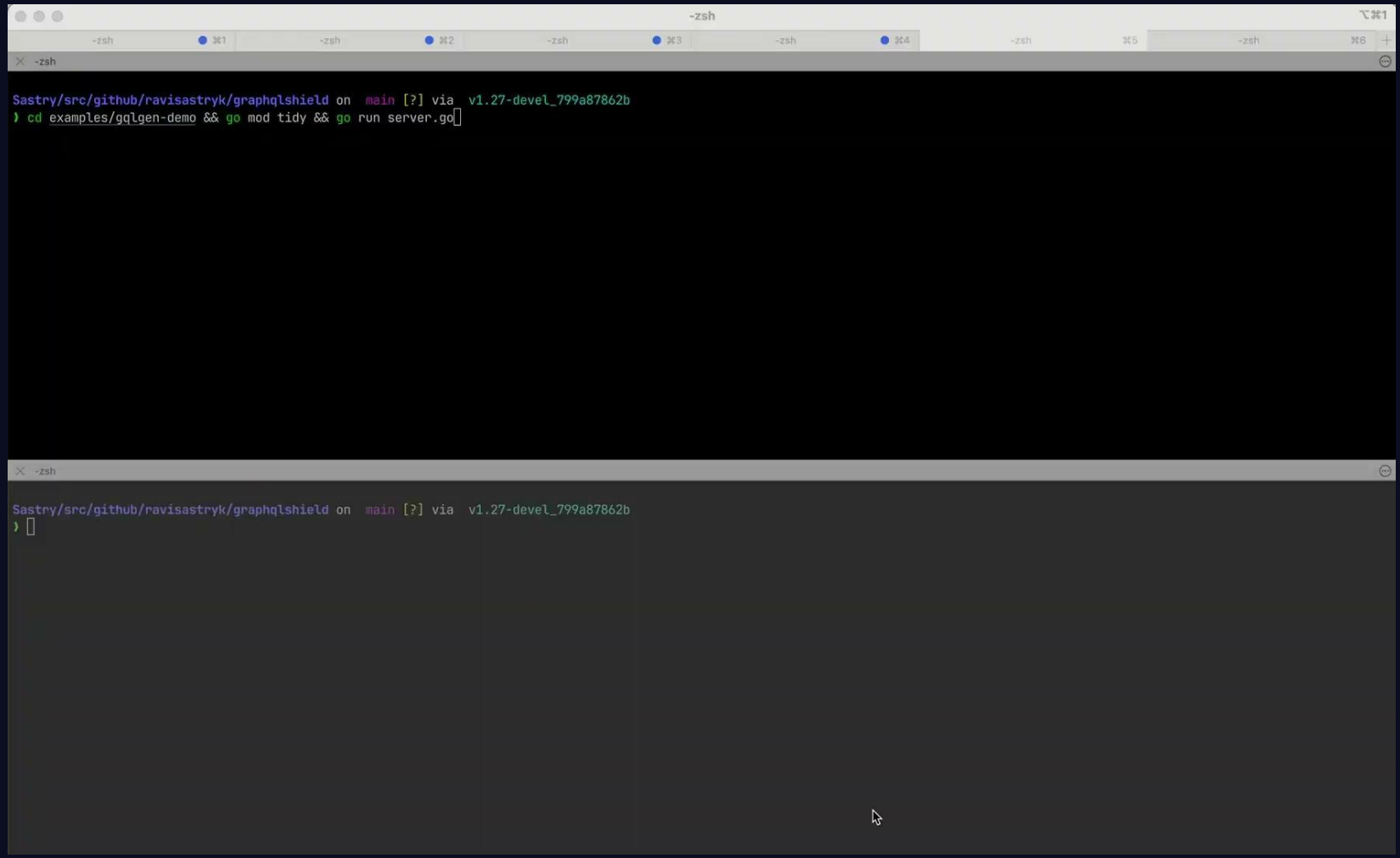
```
gqlHandler := handler.NewDefaultServer(schema)

s := shield.New(
  shield.WithMaxDepth(5),
  shield.WithBlockIntrospection(),
  shield.WithBlockSensitiveFields(
    "password", "ssn"),
)

http.Handle("/graphql", s.Wrap(gqlHandler))
```

← this is the only new line

Demo

8 vectors · real gqlgen server · sub-millisecond response

1 SQL Injection CWE-89 400	**2 XSS payload** CWE-79 400	**3 Command injection** CWE-78 400	**4 Path traversal** CWE-22 400
5 NoSQL injection CWE-943 400	**6 Depth DoS (depth 12)** CWE-400 400	**7 Introspection leak** CWE-200 403	**8 Legitimate register** clean 200


-zsh
-zsh
-zsh
Sastry/src/github/ravisastryk/graphqlshield on main [?] via v1.27-devel_799a87862b
❯ cd examples/gqlgen-demo && go mod tidy && go run server.go
-zsh
Sastry/src/github/ravisastryk/graphqlshield on main [?] via v1.27-devel_799a87862b
❯

ANALYSIS

The Go toolchain has a GraphQL-shaped hole.

Tool	Depth DoS	Injection	Introspect.	Secrets	GraphQL-aware
GraphQL Go(graphql-go)	✗	✗	✗	✗	✓
gqlgen	✓	✗	✗	✗	✓
gosec + go-safeinput	✗	✓	✗	✓	✗
WAF / API Gateway	✗	~	✗	✗	✗
GraphQLShield ✦	✓	✓	✓	✓	✓

~ = partial / HTTP-layer only

Credits: GraphQL · gqlgen · go-safeinput · cryptoguard-go · gosec · Go community ❤️

GET STARTED

One command. Full coverage.

```
$ go get github.com/ravisastryk/graphqlshield@latest
```

⭐

Star the repo

github.com/ravisastryk/graphqlshield

📖

Read the docs

pkg.go.dev/
github.com/ravisastryk/graphqlshield

⚡

Run attacks.sh

See 7 attack vectors blocked in < 1s

🔀

Contribute

PRs welcome!!!
new CWE rules especially

Standing on the shoulders of giants:

GraphQL | gqlgen | go-safeinput | cryptoguard-go | gosec | Go community ❤️

MOTIVATION - gqlgenn

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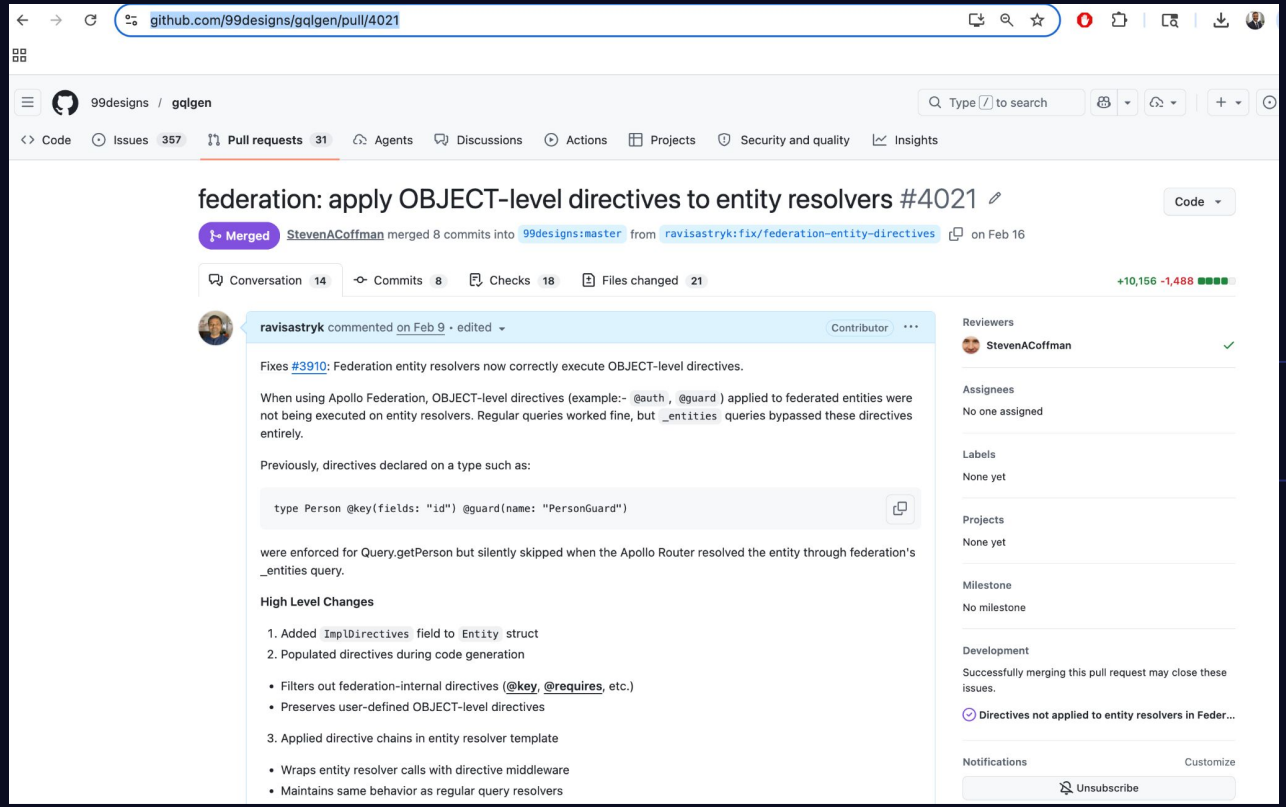

https://github.com/99designs/gqlgen/pull/4021

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“Your GraphQL API deserves a shield, not wishful thinking.”

```
go get github.com/ravisastryk/graphqlshield@latest
```

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