

































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Go static code analysis

Unique rules to find Bugs, Security Hotspots, and Code Smells in your GO code

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Tags

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Hard-coded credentials are security-sensitive

Security Hotspot

Cognitive Complexity of functions should not be too high

Code Smell

String literals should not be duplicated

Code Smell

Functions should not be empty

Code Smell

All branches in a conditional structure should not have exactly the same implementation

Bug

"=+" should not be used instead of "+="

Bug

Related "if/else if" statements should not have the same condition

Bug

Identical expressions should not be used on both sides of a binary operator

Bug

All code should be reachable

Bug

Variables should not be self-assigned

Bug

Functions should not have identical implementations

Code Smell

Two branches in a conditional structure should not have exactly the same implementation

Code Smell

Using hardcoded IP addresses is security-sensitive

Analyze your code

Security Hotspot Minor ? owasp

Hardcoding IP addresses is security-sensitive. It has led in the past to the following vulnerabilities:

- CVE-2006-5901
- CVE-2005-3725

Today's services have an ever-changing architecture due to their scaling and redundancy needs. It is a mistake to think that a service will always have the same IP address. When it does change, the hardcoded IP will have to be modified too. This will have an impact on the product development, delivery, and deployment:

- The developers will have to do a rapid fix every time this happens, instead of having an operation team change a configuration file.
- It misleads to use the same address in every environment (dev, sys, qa, prod).

Last but not least it has an effect on application security. Attackers might be able to decompile the code and thereby discover a potentially sensitive address. They can perform a Denial of Service attack on the service, try to get access to the system, or try to spoof the IP address to bypass security checks. Such attacks can always be possible, but in the case of a hardcoded IP address solving the issue will take more time, which will increase an attack's impact.

Ask Yourself Whether

The disclosed IP address is sensitive, e.g.:

- Can give information to an attacker about the network topology.
- It's a personal (assigned to an identifiable person) IP address.

There is a risk if you answered yes to any of these questions.

Recommended Secure Coding Practices

Don't hard-code the IP address in the source code, instead make it configurable with environment variables, configuration files, or a similar approach. Alternatively, if confidentially is not required a domain name can be used since it allows to change the destination quickly without having to rebuild the software.

Sensitive Code Example











```
var (
    ip    = "192.168.12.42"
    port = 3333
)

SocketClient(ip, port)
```

Compliant Solution

```
config, err := ReadConfig("properties.ini")

ip := config["ip"]
```

"switch" statements should not have too many "case" clauses  Code Smell
Track uses of "FIXME" tags  Code Smell
Redundant pairs of parentheses should be removed  Code Smell
Nested blocks of code should not be left empty  Code Smell
Functions should not have too many parameters  Code Smell
Using hardcoded IP addresses is security-sensitive  Security Hotspot
Multi-line comments should not be empty  Code Smell
Boolean checks should not be inverted  Code Smell
Local variable and function parameter names should comply with a naming convention  Code Smell
Boolean literals should not be redundant  Code Smell

```
port := config["ip"]

SocketClient(ip, port)
```

Exceptions

No issue is reported for the following cases because they are not considered sensitive:

- Loopback addresses 127.0.0.0/8 in CIDR notation (from 127.0.0.0 to 127.255.255.255)
- Broadcast address 255.255.255.255
- Non routable address 0.0.0.0
- Strings of the form 2.5.<number>.<number> as they often match Object Identifiers (OID).

See

- [OWASP Top 10 2021 Category A1](#) - Broken Access Control
- [OWASP Top 10 2017 Category A3](#) - Sensitive Data Exposure

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