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XML static code analysis

Unique rules to find Bugs and Code Smells in your XML code

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Tags

Search by name...

Using clear-text protocols is security-sensitive
Security Hotspot

Receiving intents is security-sensitive
Security Hotspot

Restrict access to exported components with appropriate permissions
Vulnerability

"DefaultMessageListenerContainer" instances should not drop messages during restarts
Bug

"SingleConnectionFactory" instances should be set to "reconnectOnException"
Bug

Defining a single permission for read and write access of Content Providers is security-sensitive
Security Hotspot

Allowing application backup is security-sensitive
Security Hotspot

Requesting dangerous Android permissions is security-sensitive
Security Hotspot

Sections of code should not be commented out
Code Smell

Track uses of "FIXME" tags
Code Smell

Custom permissions should not be defined in the 'android.permission' namespace
Vulnerability

Having a permissive Cross-Origin Resource Sharing policy is security-sensitive
Security Hotspot

Using clear-text protocols is security-sensitive

Analyze your code

Security Hotspot Critical cwe owasp

Clear-text protocols such as `ftp`, `telnet` or non-secure `http` lack encryption of transported data, as well as the capability to build an authenticated connection. It means that an attacker able to sniff traffic from the network can read, modify or corrupt the transported content. These protocols are not secure as they expose applications to an extensive range of risks:

- Sensitive data exposure
- Traffic redirected to a malicious endpoint
- Malware infected software update or installer
- Execution of client side code
- Corruption of critical information

Even in the context of isolated networks like offline environments or segmented cloud environments, the insider threat exists. Thus, attacks involving communications being sniffed or tampered with can still happen.

For example, attackers could successfully compromise prior security layers by:

- Bypassing isolation mechanisms
- Compromising a component of the network
- Getting the credentials of an internal IAM account (either from a service account or an actual person)

In such cases, encrypting communications would decrease the chances of attackers to successfully leak data or steal credentials from other network components. By layering various security practices (segmentation and encryption, for example), the application will follow the *defense-in-depth* principle.

Note that using the `http` protocol is being deprecated by major web browsers.

In the past, it has led to the following vulnerabilities:

- CVE-2019-6169
- CVE-2019-12327
- CVE-2019-11065

Ask Yourself Whether

- Application data needs to be protected against falsifications or leaks when transiting over the network.
- Application data transits over a network that is considered untrusted.
- Compliance rules require the service to encrypt data in transit.
- Your application renders web pages with a relaxed mixed content policy.
- OS level protections against clear-text traffic are deactivated.

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

Recommended Secure Coding Practices

- Make application data transit over a secure, authenticated and encrypted protocol like TLS or SSH. Here are a few alternatives to the most common clear-text protocols:
  - Use`ssh` as an alternative to `telnet`
  - Use `sftp`, `scp` or `ftps` instead of `ftp`
  - Use `https` instead of `http`
  - Use `SMTP` over `SSL/TLS` or `SMTP` with `STARTTLS` instead of clear-text SMTP
- Enable encryption of cloud components communications whenever it's possible.
- Configure your application to block mixed content when rendering web pages.
- If available, enforce OS level deativation of all clear-text traffic

It is recommended to secure all transport channels (even local network) as it can take a single non secure connection to compromise an entire application or system.

Sensitive Code Example

```
<application
    android:usesCleartextTraffic="true"> <!-- Sensitive -->
</application>
```

For versions older than Android 9 (API level 28) `android:usesCleartextTraffic` is implicitely set to `true`

```
<application> <!-- Sensitive -->
</application>
```

Compliant Solution

```
<application
    android:usesCleartextTraffic="false">
</application>
```

See

- OWASP Top 10 2021 Category A2 - Cryptographic Failures
- OWASP Top 10 2017 Category A3 - Sensitive Data Exposure
- Mobile AppSec Verification Standard - Network Communication Requirements
- OWASP Mobile Top 10 2016 Category M3 - Insecure Communication
- MITRE, CWE-200 - Exposure of Sensitive Information to an Unauthorized Actor
- MITRE, CWE-319 - Cleartext Transmission of Sensitive Information
- Google, Moving towards more secure web
- Mozilla, Deprecating non secure http

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