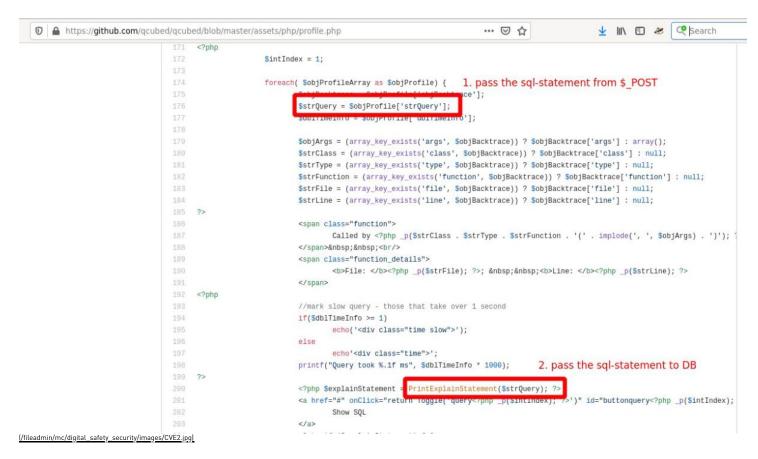Accessibility: Remote
Severity: Critical
Author: Wolfgang Hotwagner (AIT Austrian Institute of Technology)

SUMMARY

QCubed is a PHP Model-View-Controller Rappid Application Development framework. (https://github.com/qcubed/qcubed)

VULNERABILITY DESCRIPTION

A SQL injection vulnerability in qcubed (all versions including 3.1.1) in profile.php via the strQuery parameter allows an unauthenticated attacker to access the database by injecting SQL code via a crafted POST request.

strQuery parameter of the serialized array in profile.php could lead to a sql-injection:

[/fileadmin/mc/digital_safety_security/images/CVE2.jpg]

Inside the PrintExplainStatement()-function the query is passed to the ExplainStatement-method of the specific database-provider:

cubed/qcubed/blob/master/assets/php/profile.php   ⋯ ☑ ☆

```
 3
 4              //Exit gracefully if called directly or profiling data is missing.
 5              if ( !isset($_POST['intDatabaseIndex']) && !isset($_POST['strProfileData'])
 6                      exit('Nothing to profile. No Database Profiling data recived.');
 7
 8              if ( !isset($_POST['intDatabaseIndex']) || !isset($_POST['strProfileData'])
 9                      throw new Exception('Database Profiling data appears to have been co
10
11              $intDatabaseIndex = intval($_POST['intDatabaseIndex']);
12              $strReferrer = QApplication::HtmlEntities($_POST['strReferrer']);
13
14              $objProfileArray = unserialize(base64_decode($_POST['strProfileData']));
15              $objProfileArray = QType::Cast($objProfileArray, QType::ArrayType);
16              $intCount = count($objProfileArray);
17
18              function PrintExplainStatement($strOriginalQuery) {
19                      global $intDatabaseIndex;
20                      if (substr_count($strOriginalQuery, "AUTOCOMMIT=1") > 0) {
21                              return null;
22                      }
23                      $result = "";
24
25                      $objDb = QApplication::$Database[$intDatabaseIndex];
26                      $objDbResult = $objDb->ExplainStatement($strOriginalQuery);
27                      if (!$objDbResult) {
28                              return "";
29                      }
30
```

[/fileadmin/mc/digital_safety_security/images/CVE2_2.jpg]

The ExplainStatement is a method of the specific database-provider. We tested the sql-injection with postgres and mysql(i). This could be exploited with both databases. Let's see how it looks in the postgres-provider:

🛡 🔒 https://github.com/qcubed/qcubed/blob/master/includes/database/QPostgreSqlDatabase.class.php   ⋯ ☑ ☆

```
492                      }
493
494              public function ExplainStatement($sql) {
495                      return $this->Query("EXPLAIN " . $sql);
496              }
497      }
498
499      /**                                                    Postgres-Database
500       * Database exception class
```

[/fileadmin/mc/digital_safety_security/images/CVE2_3.jpg]

VENDOR CONTACT TIMELINE

| 2020-04-19 | 📞 Anrufen (tel:0043505500) | Contacting the vendor | ✉ E-Mail | 📍 Standorte (/ueber-das-ait/standorte-und-tochterunternehmen) |

[/fileadmin/mc/digital_safety_security/images/CVE2_4.jpg]

In ExecuteQuery it finally gets executed. Unfiltered:

[/fileadmin/mc/digital_safety_security/images/CVE2_5.jpg]

We were able to write proof-of concept exploit for mysql and postgres. Unfortunately with mysql we were not able to use a stacked-queries-payload and we had to exploit this vulnerability with a timebased approach.

VULNERABLE VERSIONS

All versions including 3.1.1 are affected.

TESTED VERSIONS

QCubed 3.1.1

IMPACT

An unauthenticated attacker could access the database remotely. In worst case scenarios an attacker might be able to execute code on the remote machine.

MITIGATION

A patch was delivered by QCubed that allows to disable the profile-functionality. (https://github.com/qcubed/qcubed/pull/1320/files)

2020-04-19	Vendor replied
2020-05-01	Vendor released a patch at Github
2021-02-15	Public disclosure

ADVISORY URL

https://www.ait.ac.at/ait-sa-20210215-02-unauthenticated-sql-injection-qcubed (https://www.ait.ac.at/ait-sa-20210215-02-unauthenticated-sql-injection-qcubed)

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