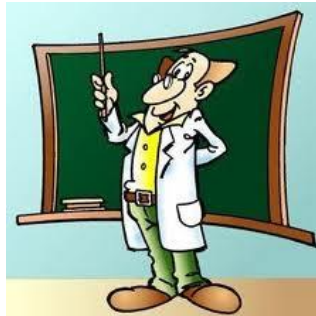


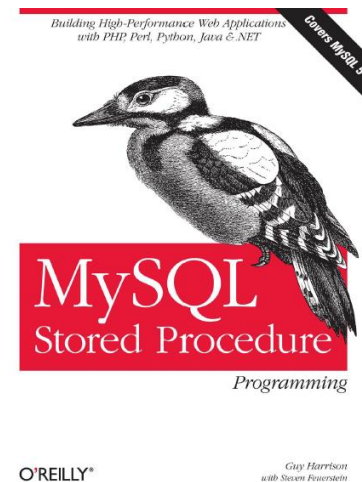
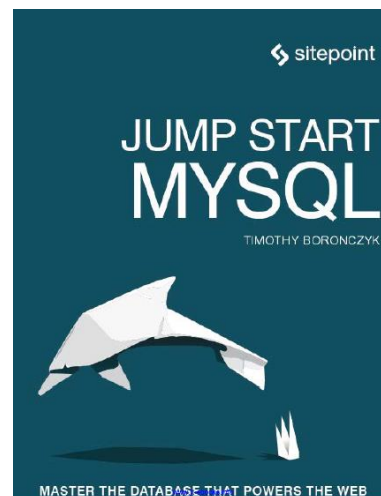
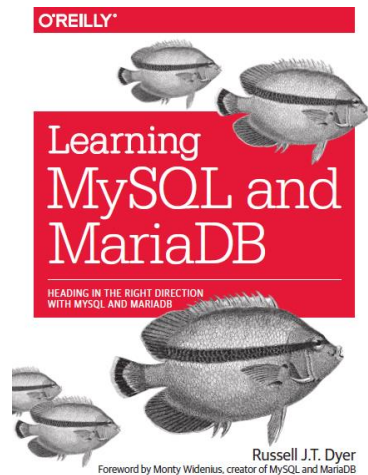
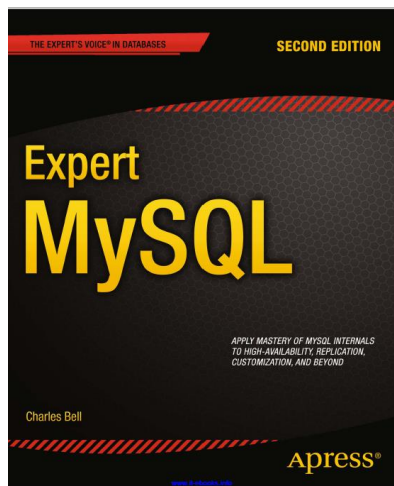


# Unidade 1 – Introdução



Prof. Aparecido V. de Freitas  
Doutor em Engenharia  
da Computação pela EPUSP  
[aparecidovfreitas@gmail.com](mailto:aparecidovfreitas@gmail.com)

# Bibliografia

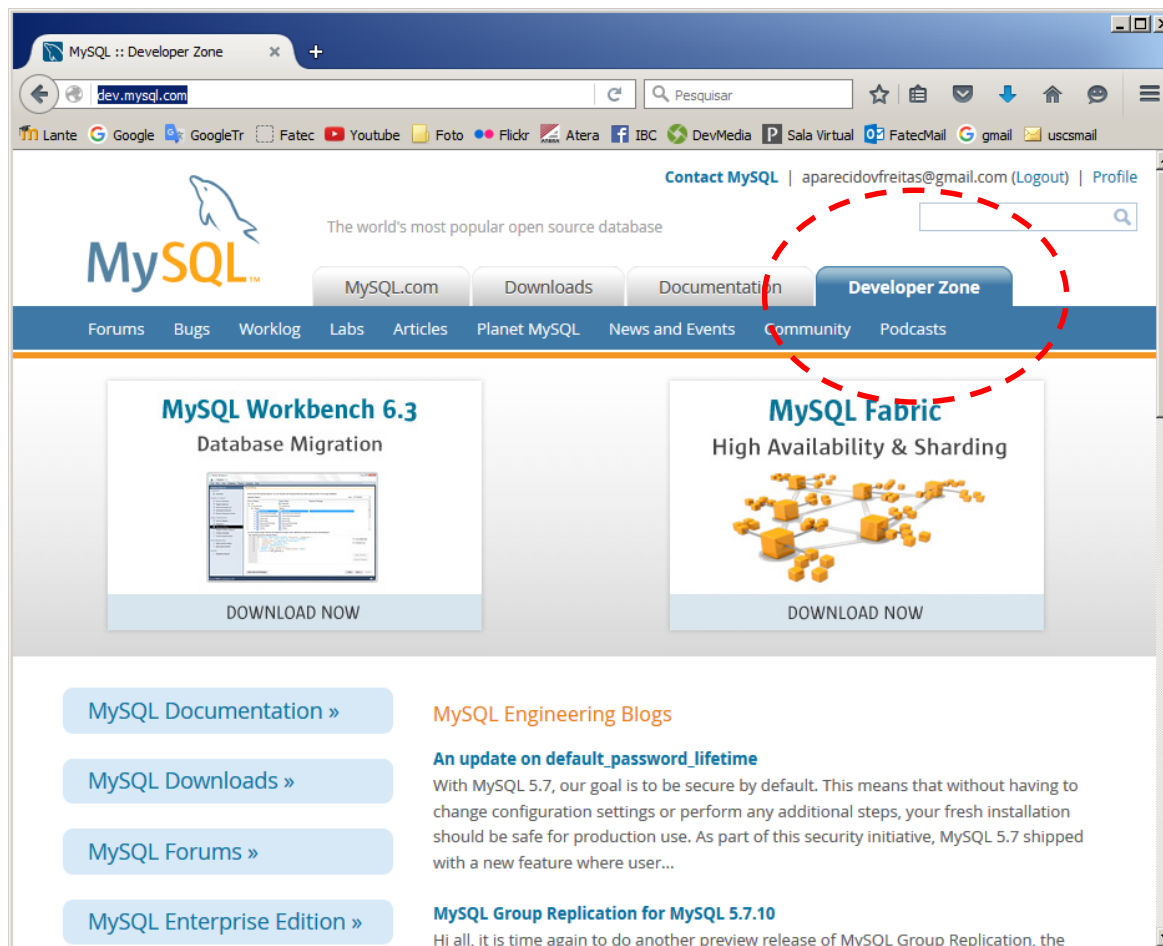


# MySQL – Características

- ◆ Grande utilização mundial;
- ◆ Bem conhecido pela sua aplicabilidade no desenvolvimento de aplicações WEB;
- ◆ DBMS consagrado pela sua eficiência;
- ◆ Adquirido pela Sun em 2008 e pela Oracle em 2009;
- ◆ Superou a marca de 10 milhões de instalações;
- ◆ Código fonte aberto;
- ◆ Versão atual: 5.7

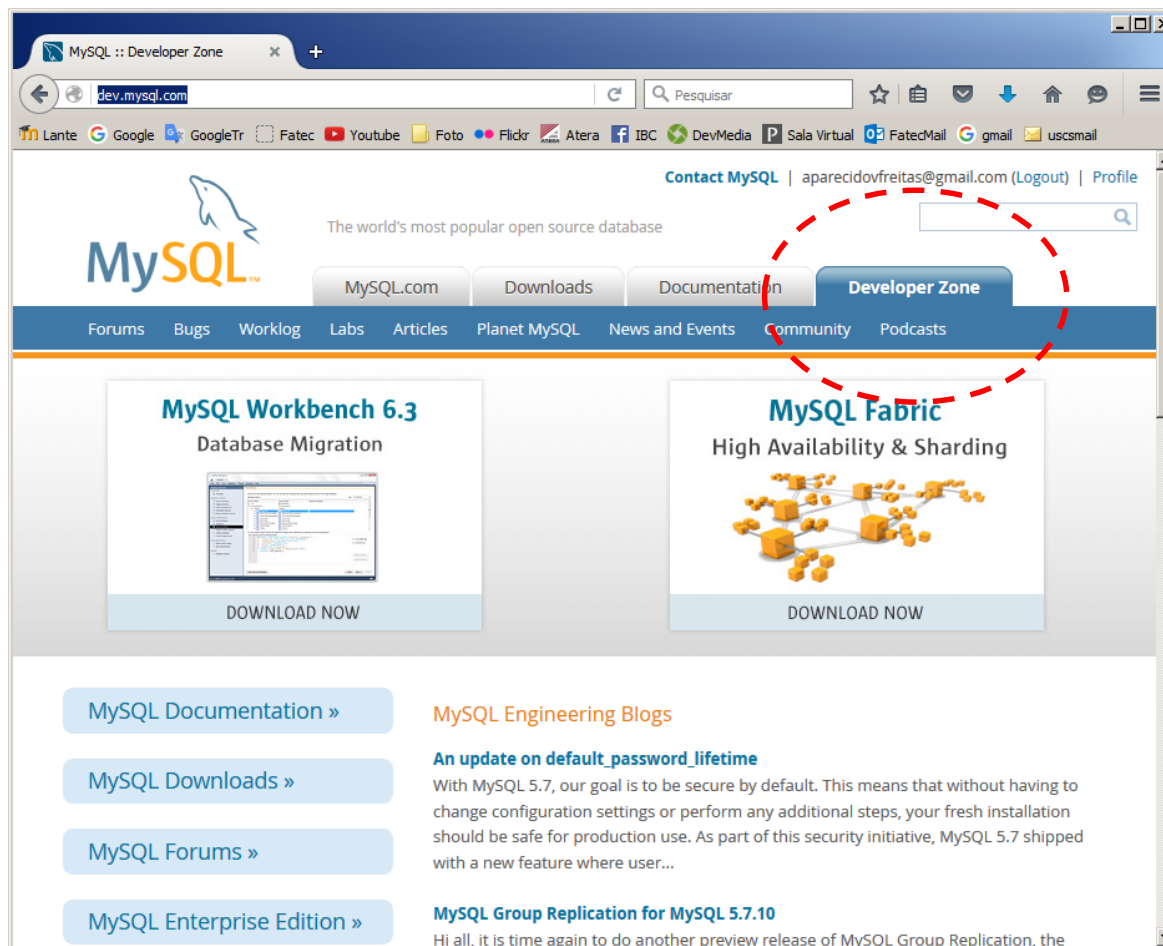
# MySQL – Documentação

- ◆ Versionamento disponível em [www.mysql.com](http://www.mysql.com)
- ◆ Desenvolvedores podem acessar documentações na aba “**Developer Zone**”



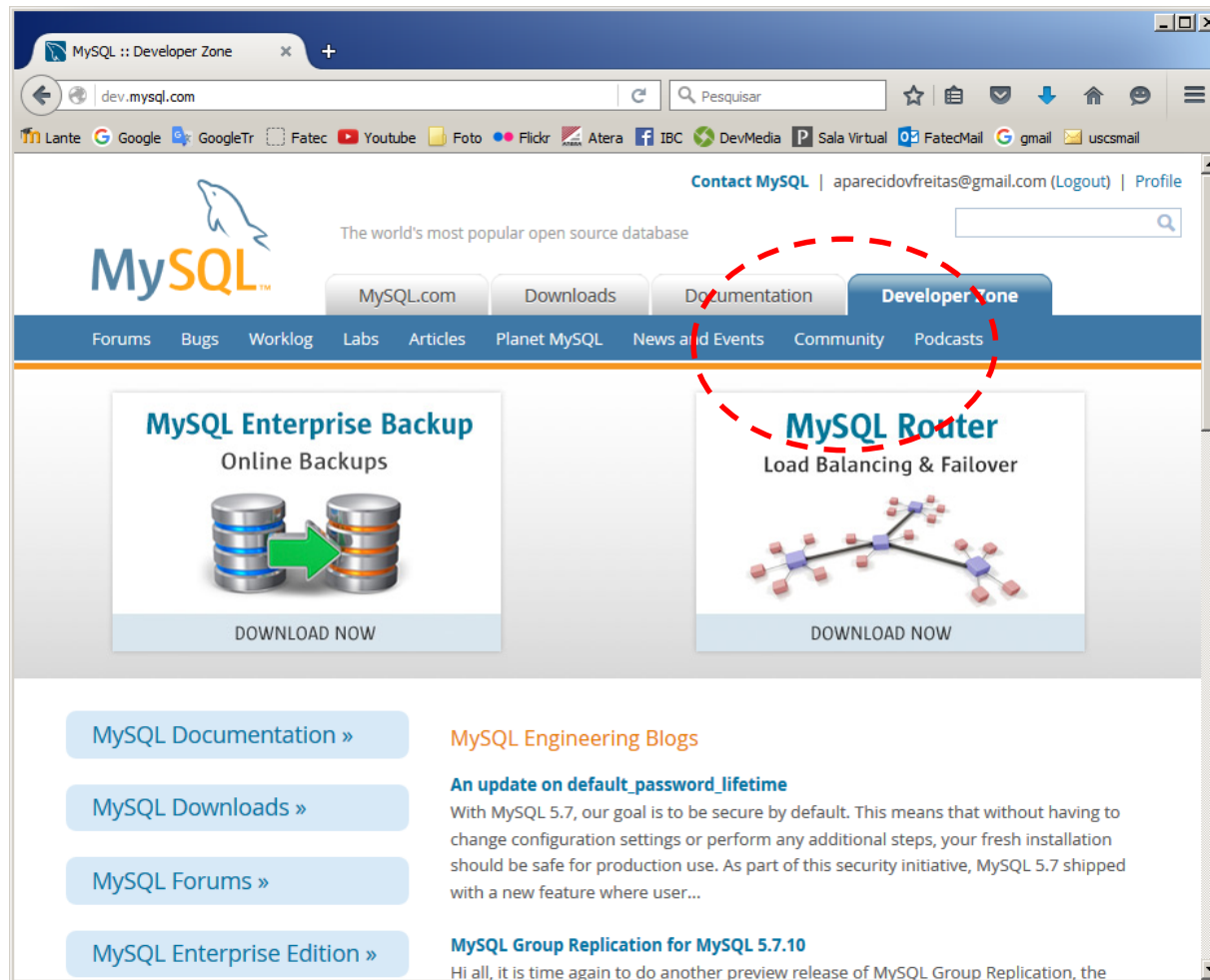
# MySQL – Área do Desenvolvedor

- ◆ Versionamento disponível em [www.mysql.com](http://www.mysql.com)
- ◆ Desenvolvedores podem acessar documentações na aba “**Developer Zone**”



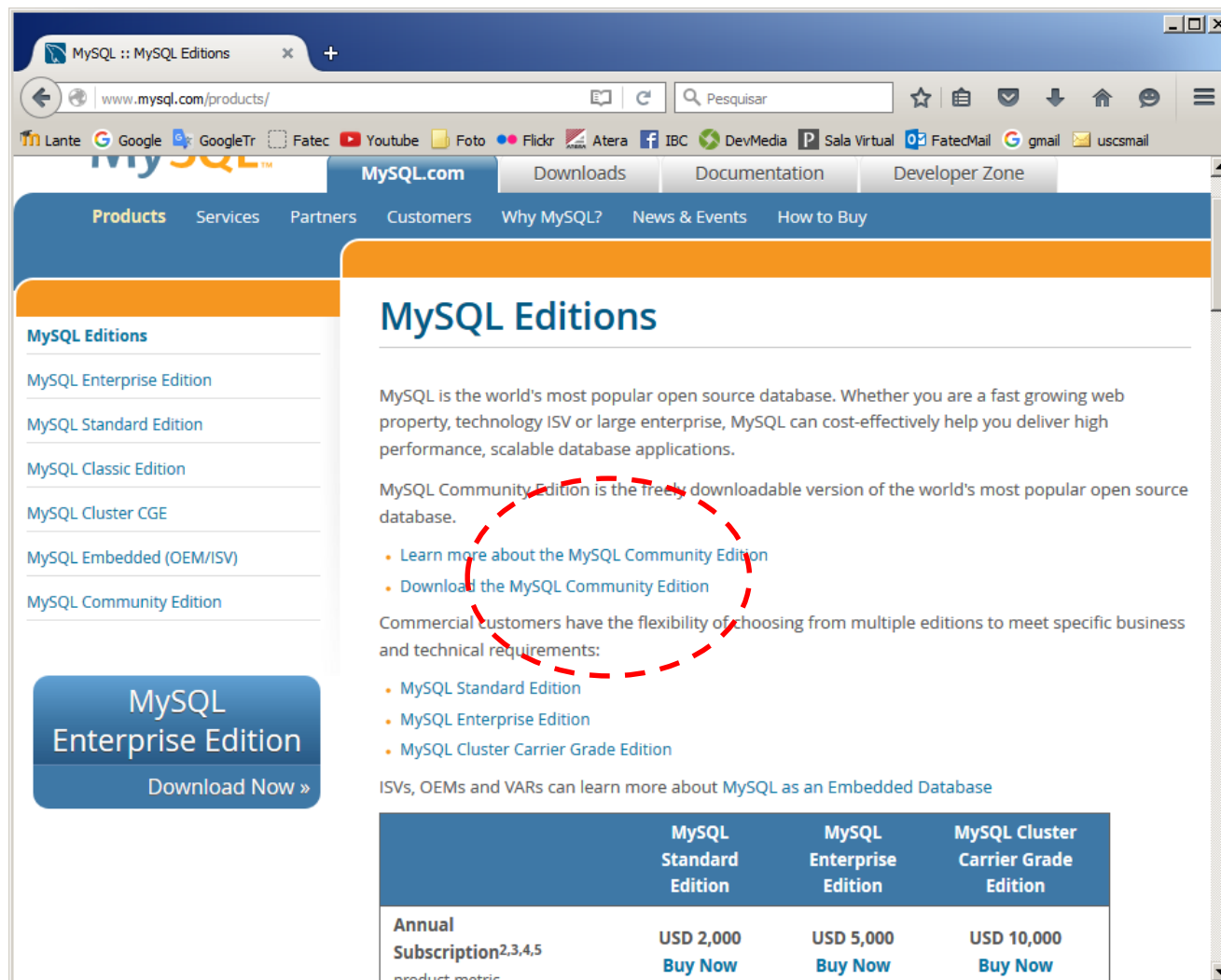
# MySQL – Área do Desenvolvedor

- Documentação disponível na opção “**Community**”



# MySQL – Produtos

- ◆ Há versões comerciais e também a versão Community (freeware)



**MySQL Editions**

- MySQL Enterprise Edition
- MySQL Standard Edition
- MySQL Classic Edition
- MySQL Cluster CGE
- MySQL Embedded (OEM/ISV)
- MySQL Community Edition

**MySQL Enterprise Edition**  
Download Now »

MySQL is the world's most popular open source database. Whether you are a fast growing web property, technology ISV or large enterprise, MySQL can cost-effectively help you deliver high performance, scalable database applications.

MySQL Community Edition is the freely downloadable version of the world's most popular open source database.

- Learn more about the MySQL Community Edition
- Download the MySQL Community Edition

Commercial customers have the flexibility of choosing from multiple editions to meet specific business and technical requirements:

- MySQL Standard Edition
- MySQL Enterprise Edition
- MySQL Cluster Carrier Grade Edition

ISVs, OEMs and VARs can learn more about MySQL as an Embedded Database

	MySQL Standard Edition	MySQL Enterprise Edition	MySQL Cluster Carrier Grade Edition
Annual Subscription <sup>2,3,4,5</sup>	USD 2,000	USD 5,000	USD 10,000
	<a href="#">Buy Now</a>	<a href="#">Buy Now</a>	<a href="#">Buy Now</a>

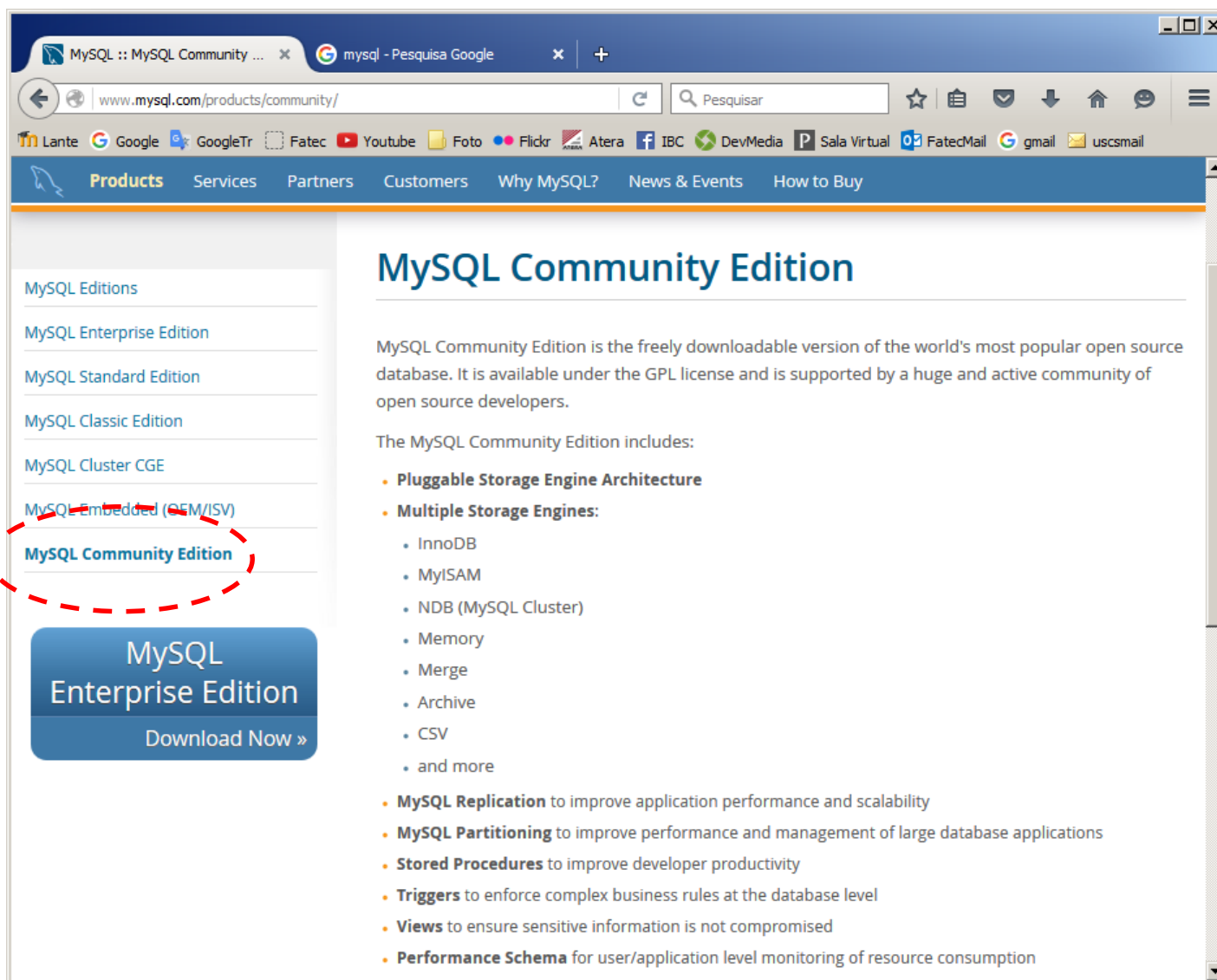
# MySQL – Community

- ◆ Disponível sob licença GPL – General Public Licence;
- ◆ MySQL surgiu através da MySQL AB (organização sem fins lucrativos) que desenvolveu MySQL como um projeto de código aberto de software livre;
- ◆ GPL baseia-se em 4 liberdades:
  - Liberdade 0 -> pode-se executar o programa para qualquer propósito
  - Liberdade 1 -> pode-se adaptar o programa às necessidades do usuário (acesso ao código fonte)
  - Liberdade 2 -> pode-se redistribuir cópias para ajuda ao próximo
  - Liberdade 3 -> pode-se aperfeiçoar o programa para benefício da comunidade (acesso ao código fonte)





# MySQL – Community



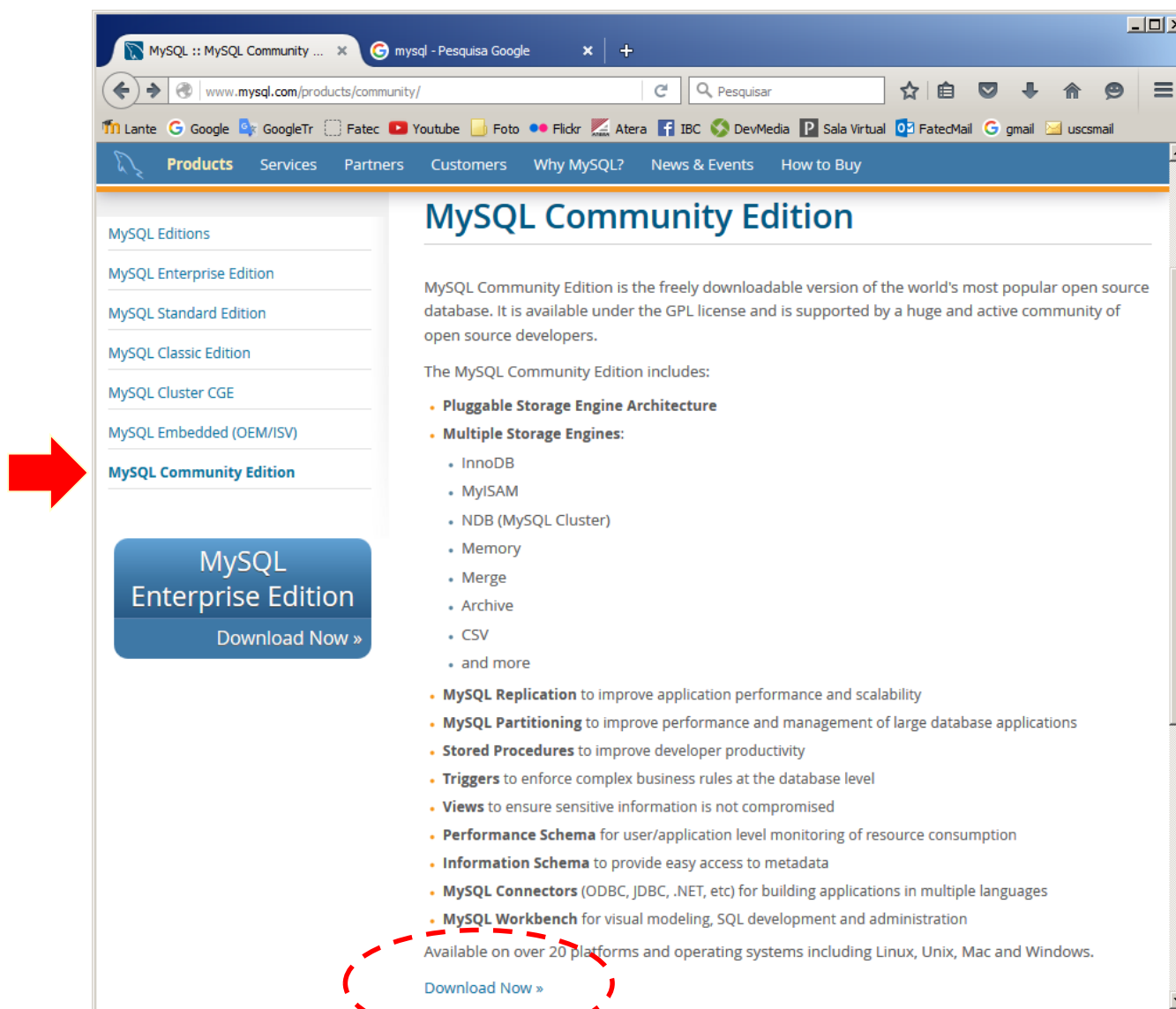
The screenshot shows the MySQL Community Edition download page. The browser address bar displays 'www.mysql.com/products/community/'. The page features a navigation menu with links: Products, Services, Partners, Customers, Why MySQL?, News & Events, and How to Buy. On the left sidebar, a list of MySQL Editions is shown, with 'MySQL Community Edition' highlighted by a red dashed circle. Below this list is a large blue button labeled 'MySQL Enterprise Edition Download Now »'. The main content area is titled 'MySQL Community Edition' and contains the following text:

MySQL Community Edition is the freely downloadable version of the world's most popular open source database. It is available under the GPL license and is supported by a huge and active community of open source developers.

The MySQL Community Edition includes:

- **Pluggable Storage Engine Architecture**
- **Multiple Storage Engines:**
  - InnoDB
  - MyISAM
  - NDB (MySQL Cluster)
  - Memory
  - Merge
  - Archive
  - CSV
  - and more
- **MySQL Replication** to improve application performance and scalability
- **MySQL Partitioning** to improve performance and management of large database applications
- **Stored Procedures** to improve developer productivity
- **Triggers** to enforce complex business rules at the database level
- **Views** to ensure sensitive information is not compromised
- **Performance Schema** for user/application level monitoring of resource consumption

# MySQL – Download e Instalação



MySQL :: MySQL Community ... x mysql - Pesquisa Google x +

www.mysql.com/products/community/ Pesquisar

Lante Google GoogleTr Fatec Youtube Foto Flickr Atera IBC DevMedia Sala Virtual FatecMail gmail uscsmail

Products Services Partners Customers Why MySQL? News & Events How to Buy

## MySQL Community Edition

MySQL Community Edition is the freely downloadable version of the world's most popular open source database. It is available under the GPL license and is supported by a huge and active community of open source developers.

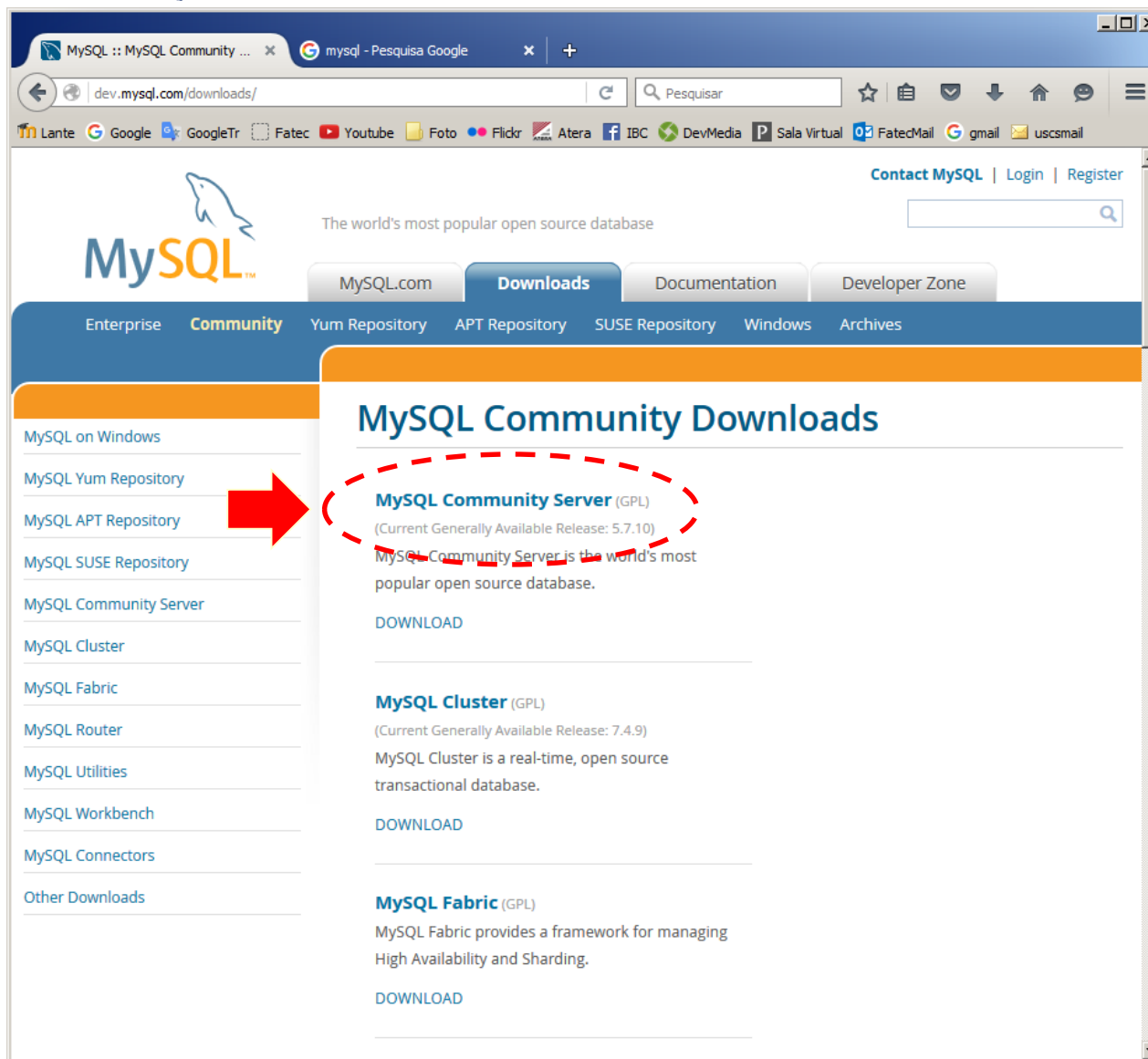
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- **Stored Procedures** to improve developer productivity
- **Triggers** to enforce complex business rules at the database level
- **Views** to ensure sensitive information is not compromised
- **Performance Schema** for user/application level monitoring of resource consumption
- **Information Schema** to provide easy access to metadata
- **MySQL Connectors** (ODBC, JDBC, .NET, etc) for building applications in multiple languages
- **MySQL Workbench** for visual modeling, SQL development and administration

Available on over 20 platforms and operating systems including Linux, Unix, Mac and Windows.

[Download Now »](#)

# MySQL – Download e Instalação



The screenshot shows the MySQL Community Downloads page in a web browser. The browser's address bar displays 'dev.mysql.com/downloads/'. The page features the MySQL logo and the tagline 'The world's most popular open source database'. A navigation bar includes links for 'MySQL.com', 'Downloads', 'Documentation', and 'Developer Zone'. Below this, a secondary navigation bar lists 'Enterprise', 'Community', 'Yum Repository', 'APT Repository', 'SUSE Repository', 'Windows', and 'Archives'. The 'Community' tab is selected, and a sidebar on the left lists various download options. A red arrow points from the 'MySQL Community Server' link in the sidebar to the main content area. The main content area is titled 'MySQL Community Downloads' and lists three products: 'MySQL Community Server (GPL)', 'MySQL Cluster (GPL)', and 'MySQL Fabric (GPL)'. The 'MySQL Community Server' entry is circled in red and includes the text '(Current Generally Available Release: 5.7.10)' and a description: 'MySQL Community Server is the world's most popular open source database.' Below each product name is a 'DOWNLOAD' link.

MySQL :: MySQL Community ... x mysql - Pesquisa Google x +

dev.mysql.com/downloads/ Pesquisar

Lante Google GoogleTr Fatec Youtube Foto Flickr Atera IBC DevMedia Sala Virtual FatedMail gmail uscsml

Contact MySQL | Login | Register

MySQL™

The world's most popular open source database

MySQL.com Downloads Documentation Developer Zone

Enterprise Community Yum Repository APT Repository SUSE Repository Windows Archives

## MySQL Community Downloads

MySQL on Windows

MySQL Yum Repository

MySQL APT Repository

MySQL SUSE Repository

MySQL Community Server

MySQL Cluster

MySQL Fabric

MySQL Router

MySQL Utilities

MySQL Workbench

MySQL Connectors

Other Downloads

**MySQL Community Server** (GPL)

(Current Generally Available Release: 5.7.10)

MySQL Community Server is the world's most popular open source database.

DOWNLOAD

**MySQL Cluster** (GPL)

(Current Generally Available Release: 7.4.9)

MySQL Cluster is a real-time, open source transactional database.

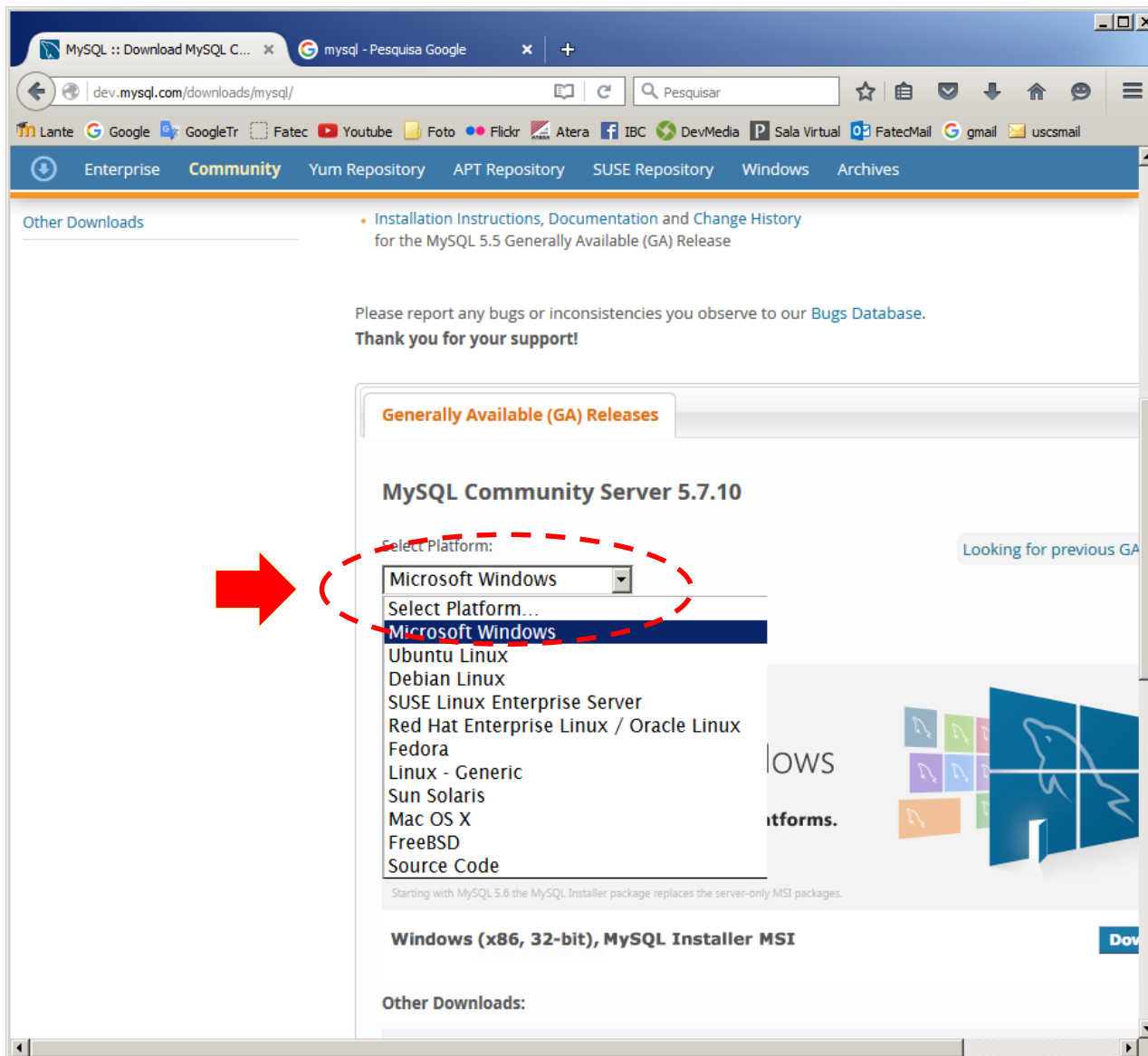
DOWNLOAD

**MySQL Fabric** (GPL)

MySQL Fabric provides a framework for managing High Availability and Sharding.

DOWNLOAD

# MySQL – Download e Instalação



MySQL :: Download MySQL C...

mysql - Pesquisa Google

dev.mysql.com/downloads/mysql/

Pesquisar

Enterprise Community Yum Repository APT Repository SUSE Repository Windows Archives

Other Downloads

- Installation Instructions, Documentation and Change History for the MySQL 5.5 Generally Available (GA) Release

Please report any bugs or inconsistencies you observe to our [Bugs Database](#).  
Thank you for your support!

**Generally Available (GA) Releases**

**MySQL Community Server 5.7.10**

Select Platform:

Microsoft Windows

Select Platform...

Microsoft Windows

Ubuntu Linux

Debian Linux

SUSE Linux Enterprise Server

Red Hat Enterprise Linux / Oracle Linux

Fedora

Linux - Generic

Sun Solaris

Mac OS X

FreeBSD

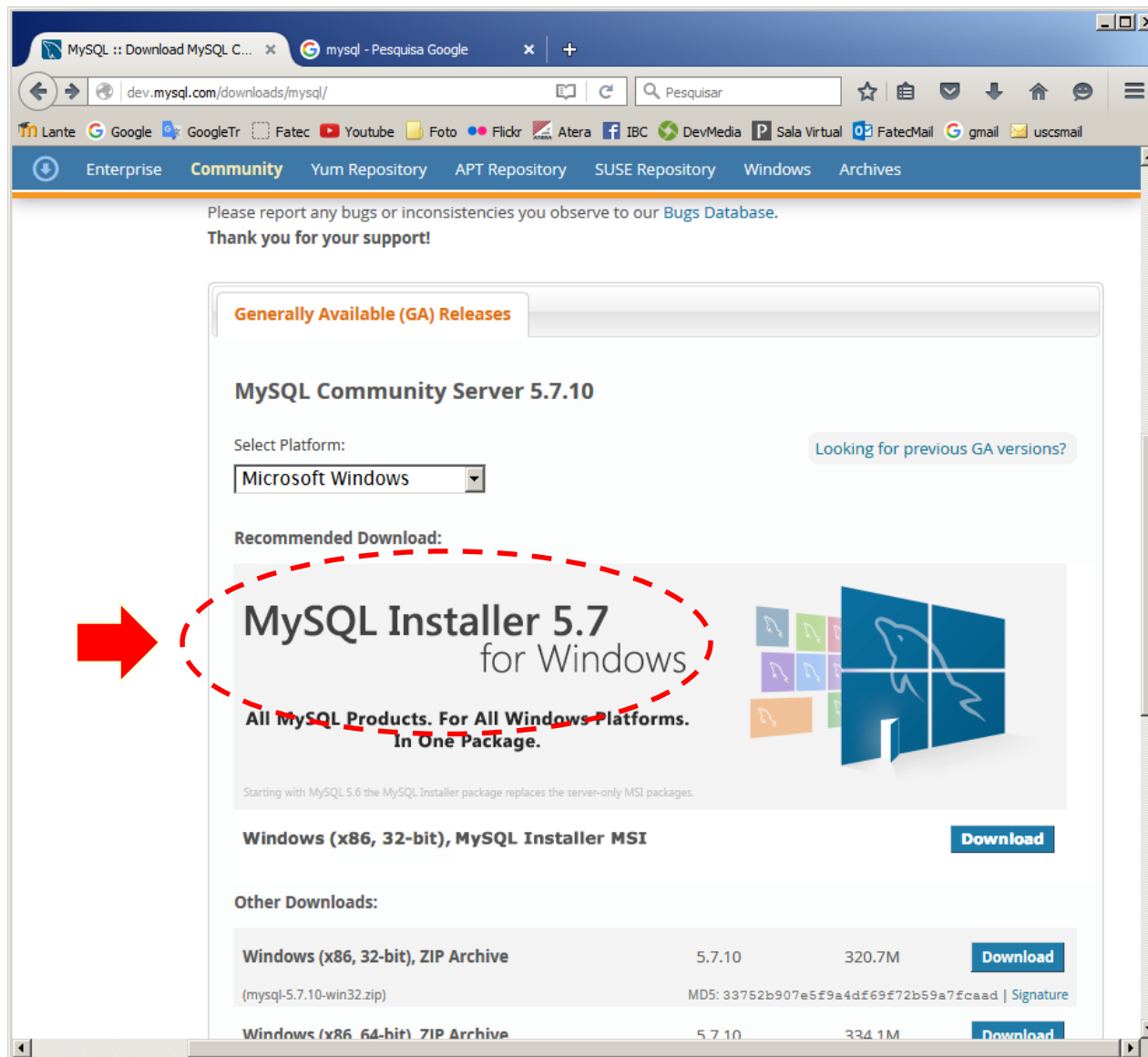
Source Code

Looking for previous GA

Windows (x86, 32-bit), MySQL Installer MSI

Other Downloads:

# MySQL – Download e Instalação



MySQL :: Download MySQL C... x mysql - Pesquisa Google x +

dev.mysql.com/downloads/mysql/ Pesquisar

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Enterprise **Community** Yum Repository APT Repository SUSE Repository Windows Archives

Please report any bugs or inconsistencies you observe to our [Bugs Database](#).  
Thank you for your support!

**Generally Available (GA) Releases**

**MySQL Community Server 5.7.10**

Select Platform:  
Microsoft Windows Looking for previous GA versions?

**Recommended Download:**

**MySQL Installer 5.7 for Windows**

All MySQL Products. For All Windows Platforms. In One Package.

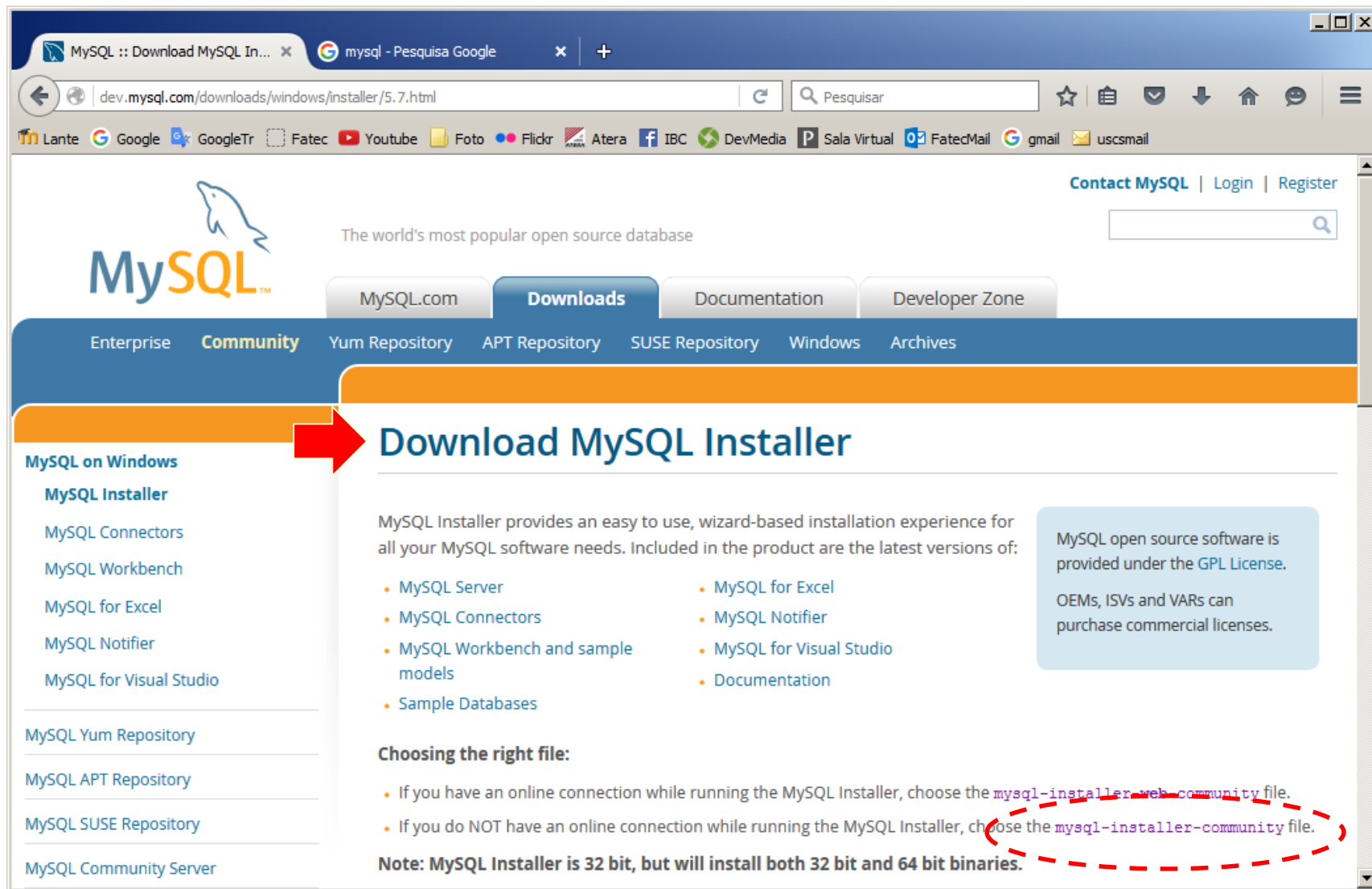
Starting with MySQL 5.6 the MySQL Installer package replaces the server-only MSI packages.

**Windows (x86, 32-bit), MySQL Installer MSI** **Download**

**Other Downloads:**

Download	Version	Size	Action
Windows (x86, 32-bit), ZIP Archive (mysql-5.7.10-win32.zip)	5.7.10	320.7M	<b>Download</b>
MD5: 33752b907e5f9a4df69f72b59a7fcaad   Signature			
Windows (x86, 64-bit), ZIP Archive	5.7.10	334.1M	<b>Download</b>

# MySQL – Download e Instalação



The screenshot shows the MySQL website's 'Downloads' section. A red arrow points from the 'MySQL on Windows' link in the left sidebar to the 'Download MySQL Installer' heading. The page lists various MySQL products for download, including the MySQL Installer, Connectors, Workbench, and others. A red dashed circle highlights the text 'mysql-installer-community file' in the 'Choosing the right file:' section.

**MySQL on Windows**

- MySQL Installer**
- MySQL Connectors
- MySQL Workbench
- MySQL for Excel
- MySQL Notifier
- MySQL for Visual Studio
- MySQL Yum Repository
- MySQL APT Repository
- MySQL SUSE Repository
- MySQL Community Server

## Download MySQL Installer

MySQL Installer provides an easy to use, wizard-based installation experience for all your MySQL software needs. Included in the product are the latest versions of:

- MySQL Server
- MySQL Connectors
- MySQL Workbench and sample models
- Sample Databases
- MySQL for Excel
- MySQL Notifier
- MySQL for Visual Studio
- Documentation

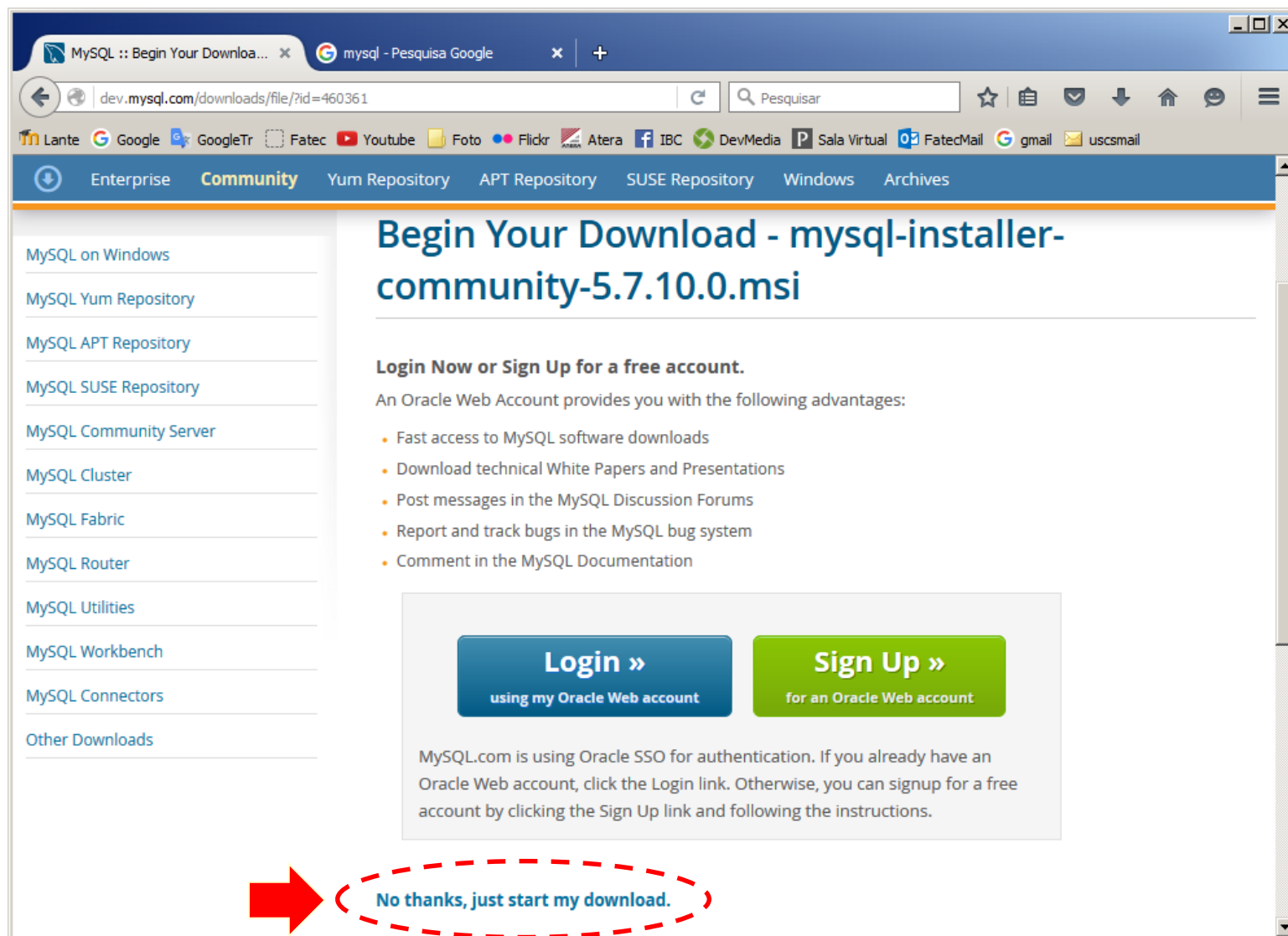
MySQL open source software is provided under the **GPL License**. OEMs, ISVs and VARs can purchase commercial licenses.

**Choosing the right file:**

- If you have an online connection while running the MySQL Installer, choose the **mysql-installer-web-community** file.
- If you do NOT have an online connection while running the MySQL Installer, choose the **mysql-installer-community** file.

**Note:** MySQL Installer is 32 bit, but will install both 32 bit and 64 bit binaries.

# MySQL – Download e Instalação



MySQL :: Begin Your Download - mysql-installer-community-5.7.10.0.msi

dev.mysql.com/downloads/file/?id=460361

Enterprise **Community** Yum Repository APT Repository SUSE Repository Windows Archives

MySQL on Windows  
MySQL Yum Repository  
MySQL APT Repository  
MySQL SUSE Repository  
MySQL Community Server  
MySQL Cluster  
MySQL Fabric  
MySQL Router  
MySQL Utilities  
MySQL Workbench  
MySQL Connectors  
Other Downloads

## Begin Your Download - mysql-installer-community-5.7.10.0.msi

**Login Now or Sign Up for a free account.**

An Oracle Web Account provides you with the following advantages:

- Fast access to MySQL software downloads
- Download technical White Papers and Presentations
- Post messages in the MySQL Discussion Forums
- Report and track bugs in the MySQL bug system
- Comment in the MySQL Documentation

**Login »**  
using my Oracle Web account

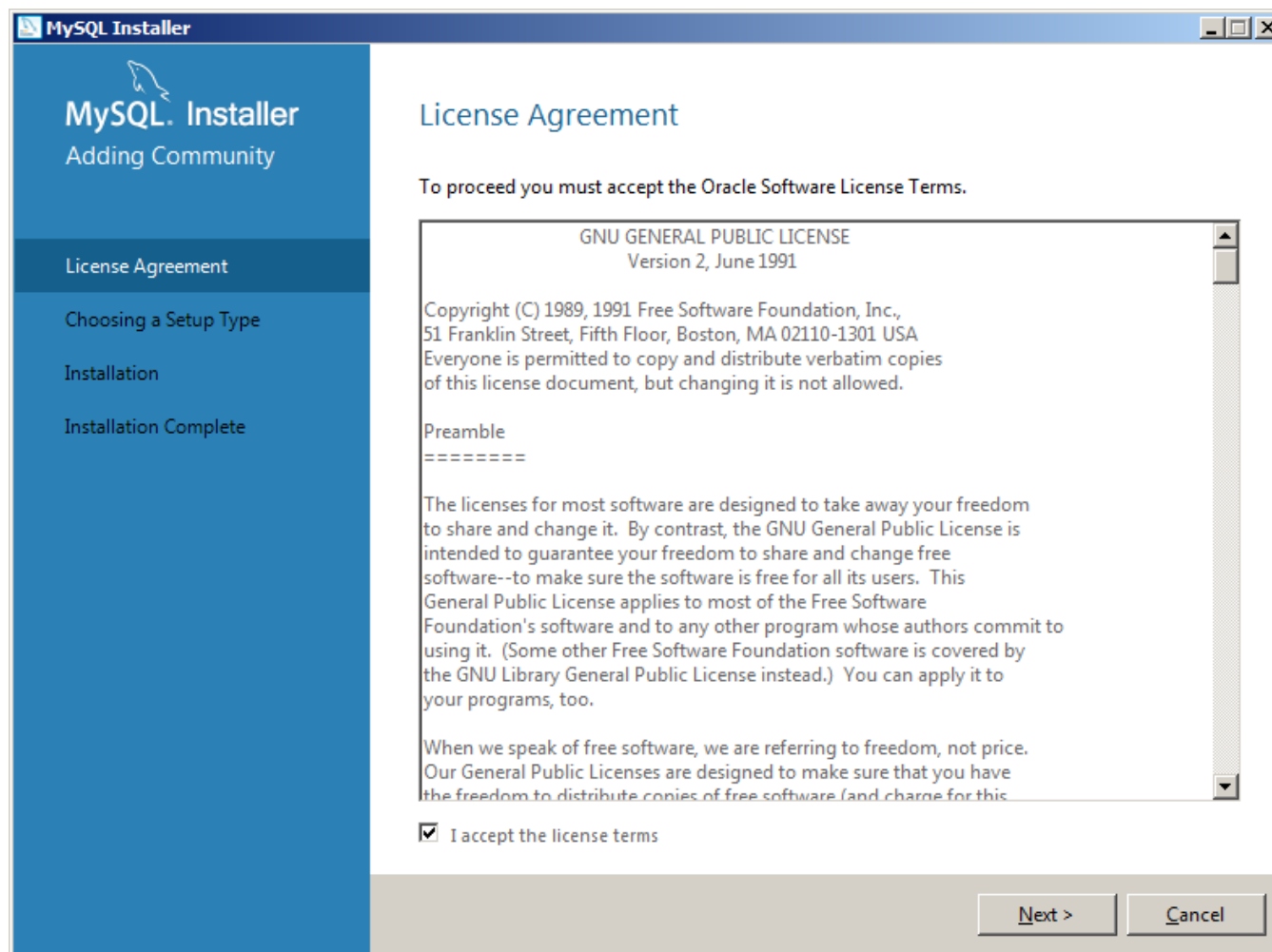
**Sign Up »**  
for an Oracle Web account

MySQL.com is using Oracle SSO for authentication. If you already have an Oracle Web account, click the Login link. Otherwise, you can signup for a free account by clicking the Sign Up link and following the instructions.

**No thanks, just start my download.**

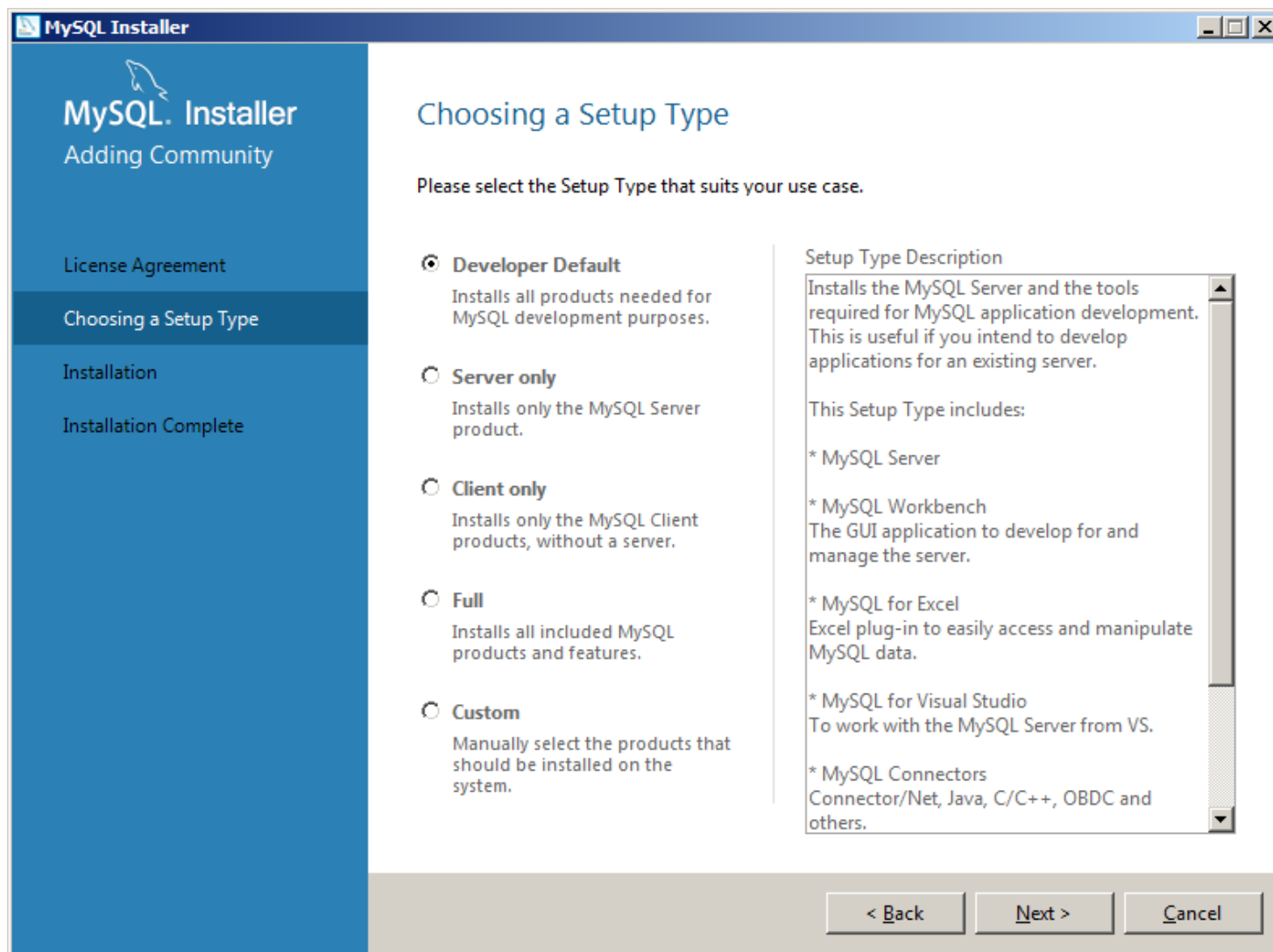


- ◆ Após o download do instalador MySQL, proceder à instalação;

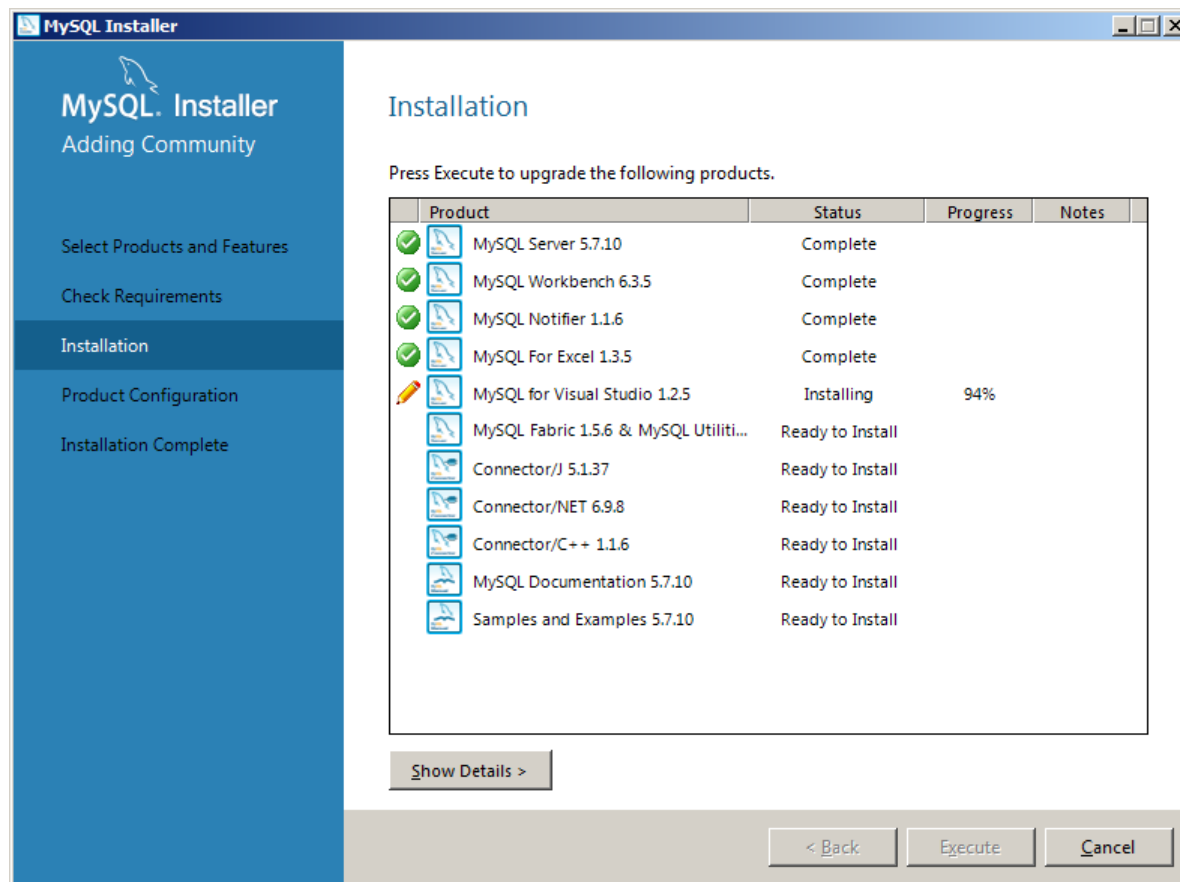




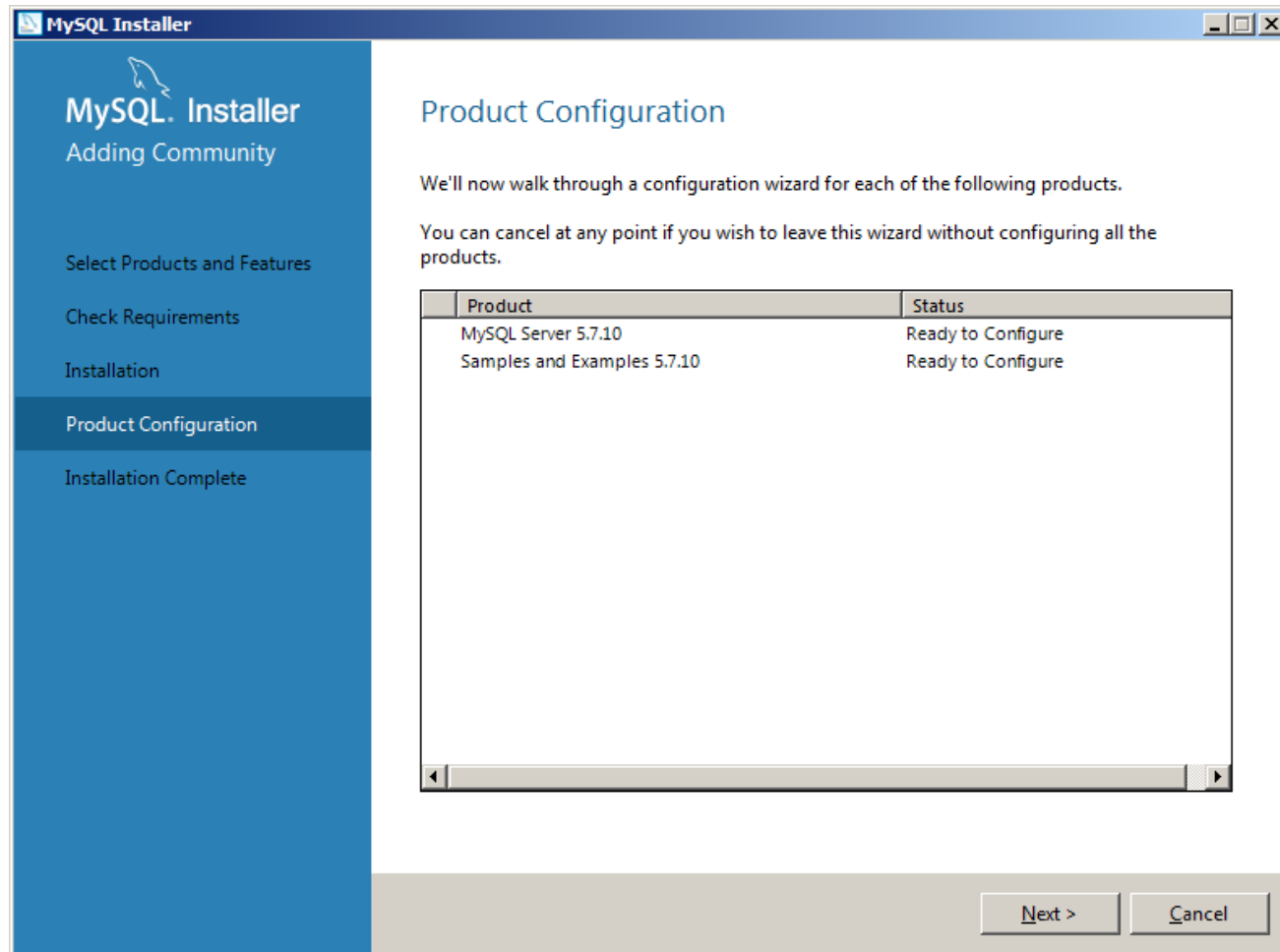
# MySQL – Instalação



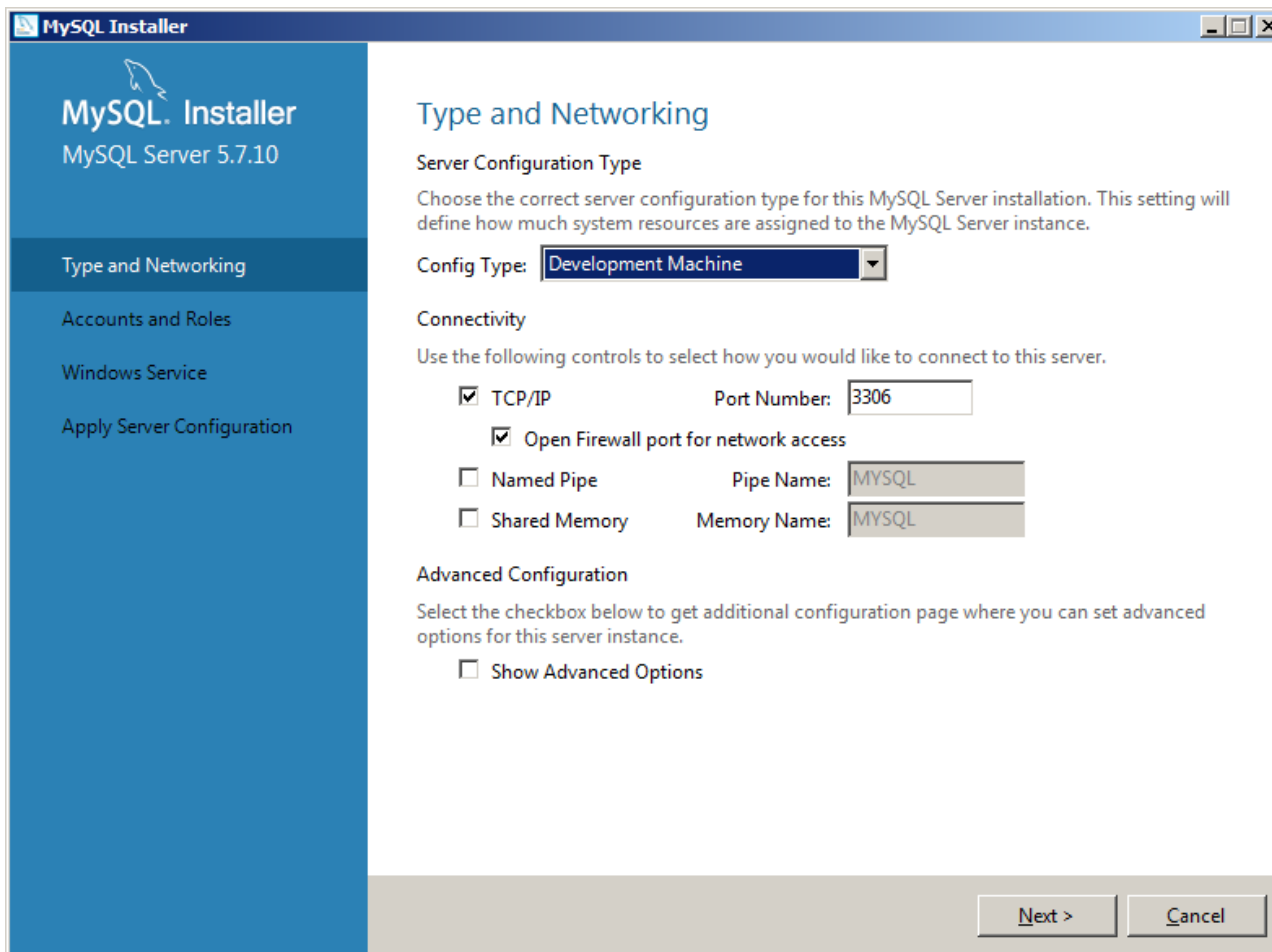
# MySQL – Instalação



# MySQL – Instalação



# MySQL – Instalação



**MySQL Installer**

MySQL Server 5.7.10

Type and Networking

Accounts and Roles

Windows Service

Apply Server Configuration

### Type and Networking

Server Configuration Type

Choose the correct server configuration type for this MySQL Server installation. This setting will define how much system resources are assigned to the MySQL Server instance.

Config Type: **Development Machine**

Connectivity

Use the following controls to select how you would like to connect to this server.

☒ TCP/IP Port Number: **3306**

☒ Open Firewall port for network access

☐ Named Pipe Pipe Name: **MYSQL**

☐ Shared Memory Memory Name: **MYSQL**

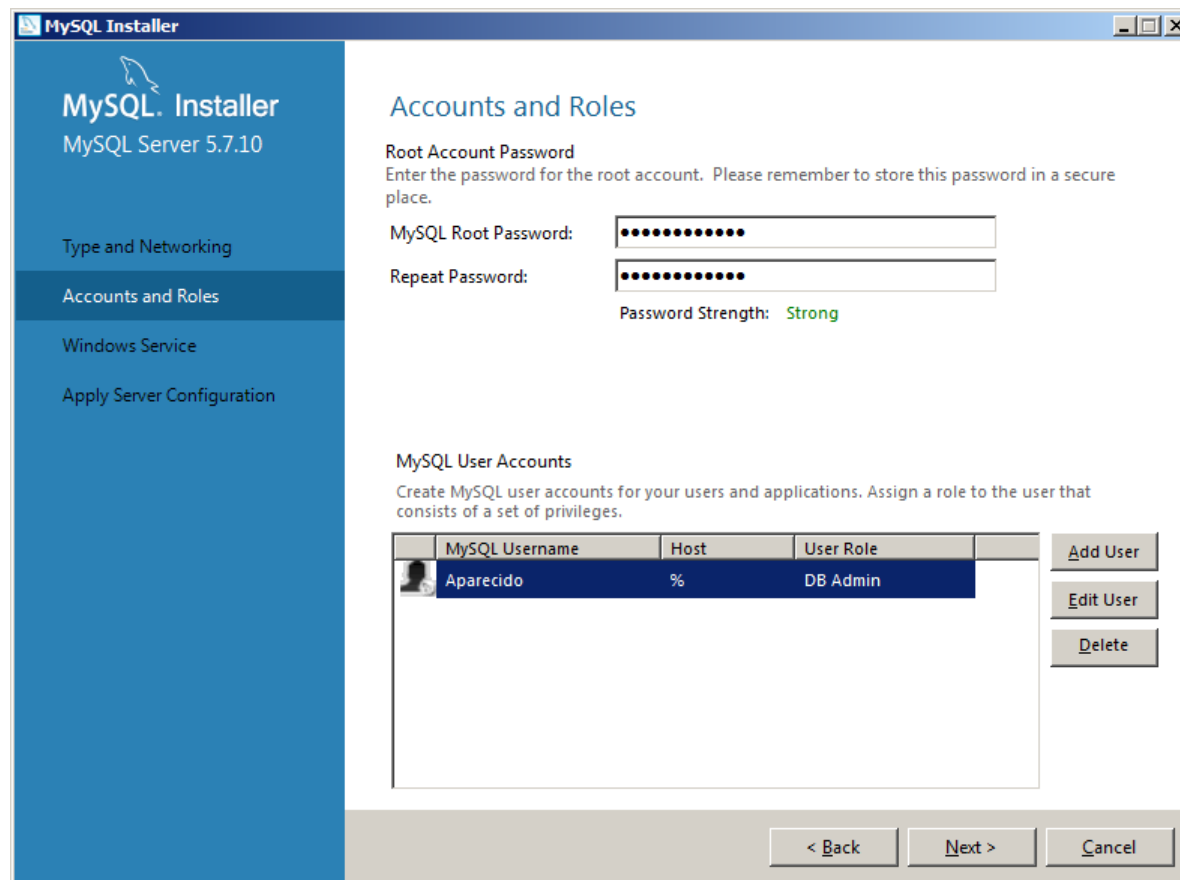
Advanced Configuration

Select the checkbox below to get additional configuration page where you can set advanced options for this server instance.

☐ Show Advanced Options

**Next >** **Cancel**

# MySQL – Instalação



**MySQL Installer**  
MySQL Server 5.7.10

Type and Networking

**Accounts and Roles**

Windows Service

Apply Server Configuration

### Accounts and Roles


**Root Account Password**  
Enter the password for the root account. Please remember to store this password in a secure place.

MySQL Root Password:

Repeat Password:

Password Strength: **Strong**

**MySQL User Accounts**  
Create MySQL user accounts for your users and applications. Assign a role to the user that consists of a set of privileges.

MySQL Username	Host	User Role
 Aparecido	%	DB Admin

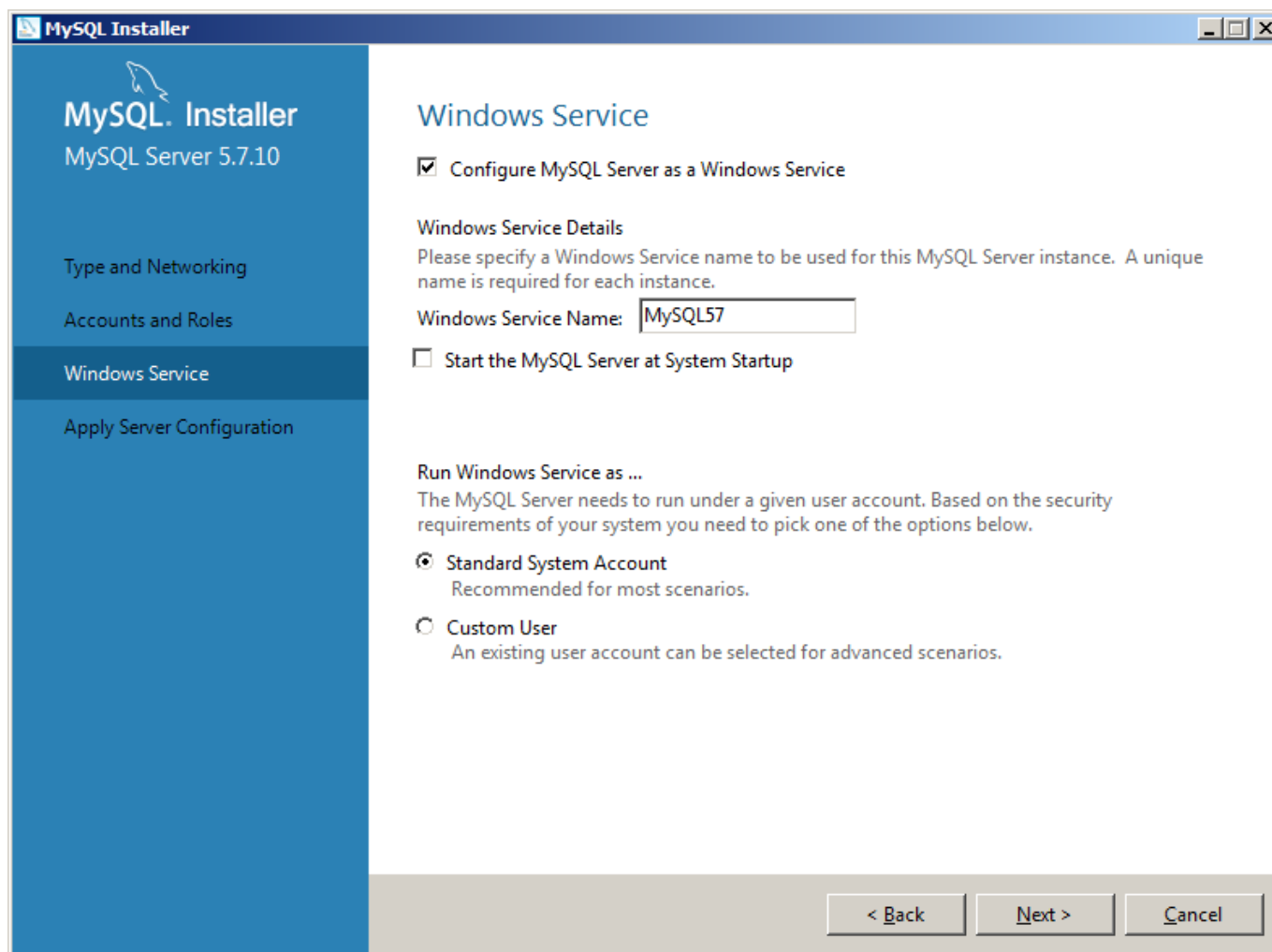
Add User

Edit User

Delete

< Back   Next >   Cancel

# MySQL – Instalação



The screenshot shows the 'MySQL Installer' window for 'MySQL Server 5.7.10'. The left sidebar contains four steps: 'Type and Networking', 'Accounts and Roles', 'Windows Service' (which is the active step), and 'Apply Server Configuration'. The main area is titled 'Windows Service' and contains the following options:

- ☒ **Configure MySQL Server as a Windows Service**

**Windows Service Details**  
Please specify a Windows Service name to be used for this MySQL Server instance. A unique name is required for each instance.

Windows Service Name:

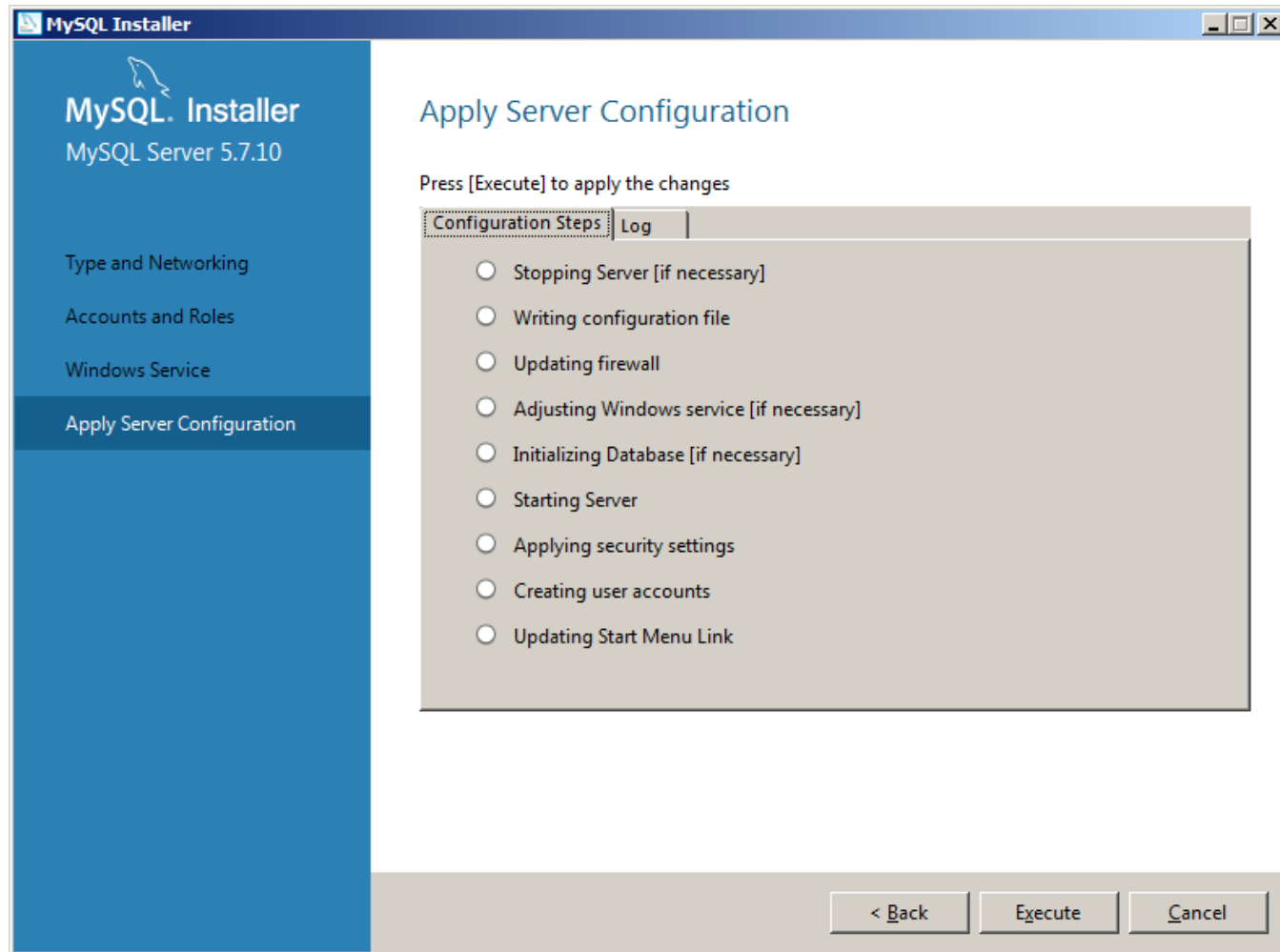
- ☐ **Start the MySQL Server at System Startup**

**Run Windows Service as ...**  
The MySQL Server needs to run under a given user account. Based on the security requirements of your system you need to pick one of the options below.

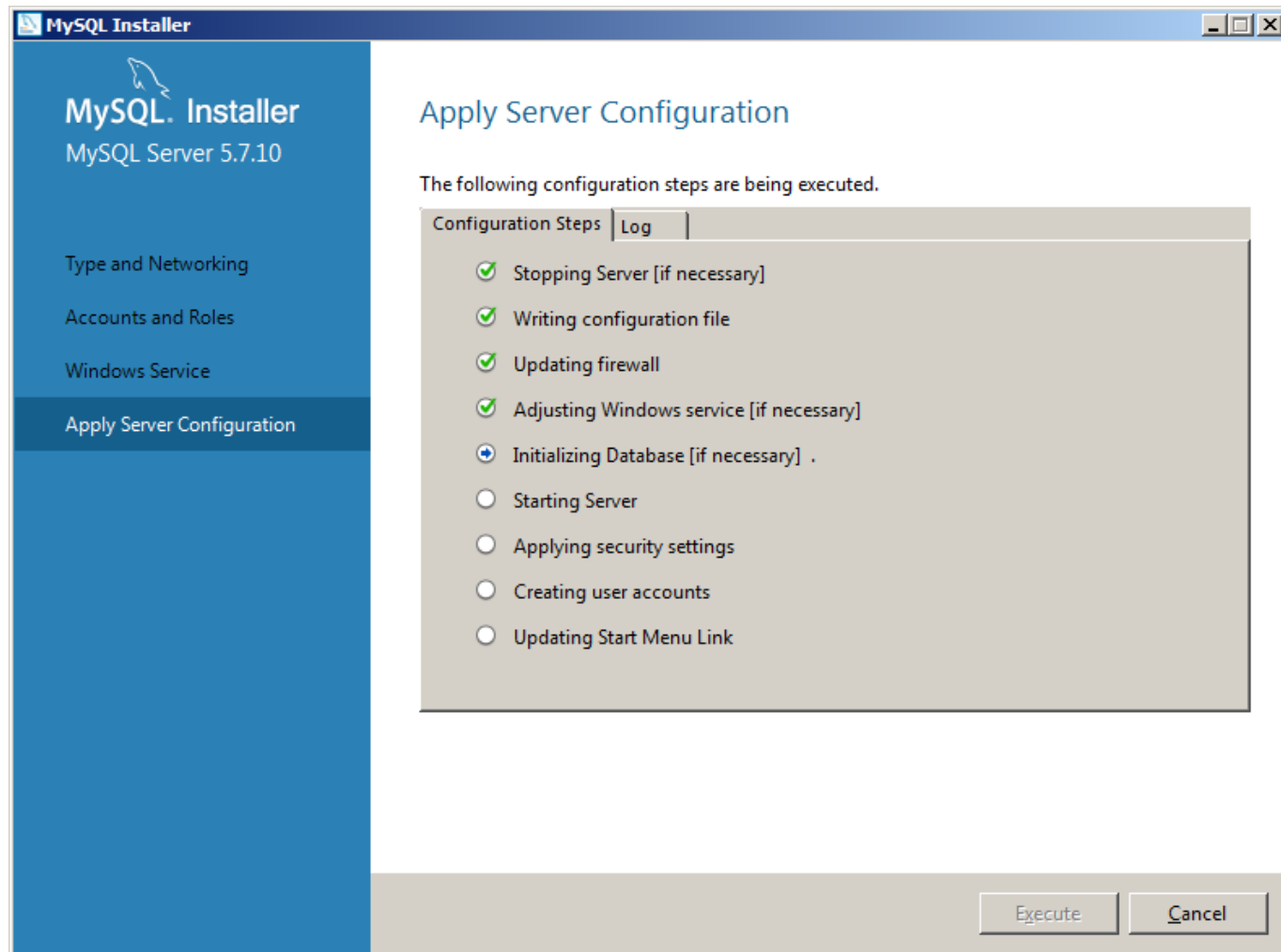
- ☒ **Standard System Account**  
Recommended for most scenarios.
- ☐ **Custom User**  
An existing user account can be selected for advanced scenarios.

At the bottom right, there are three buttons: '< Back', 'Next >', and 'Cancel'.

# MySQL – Instalação

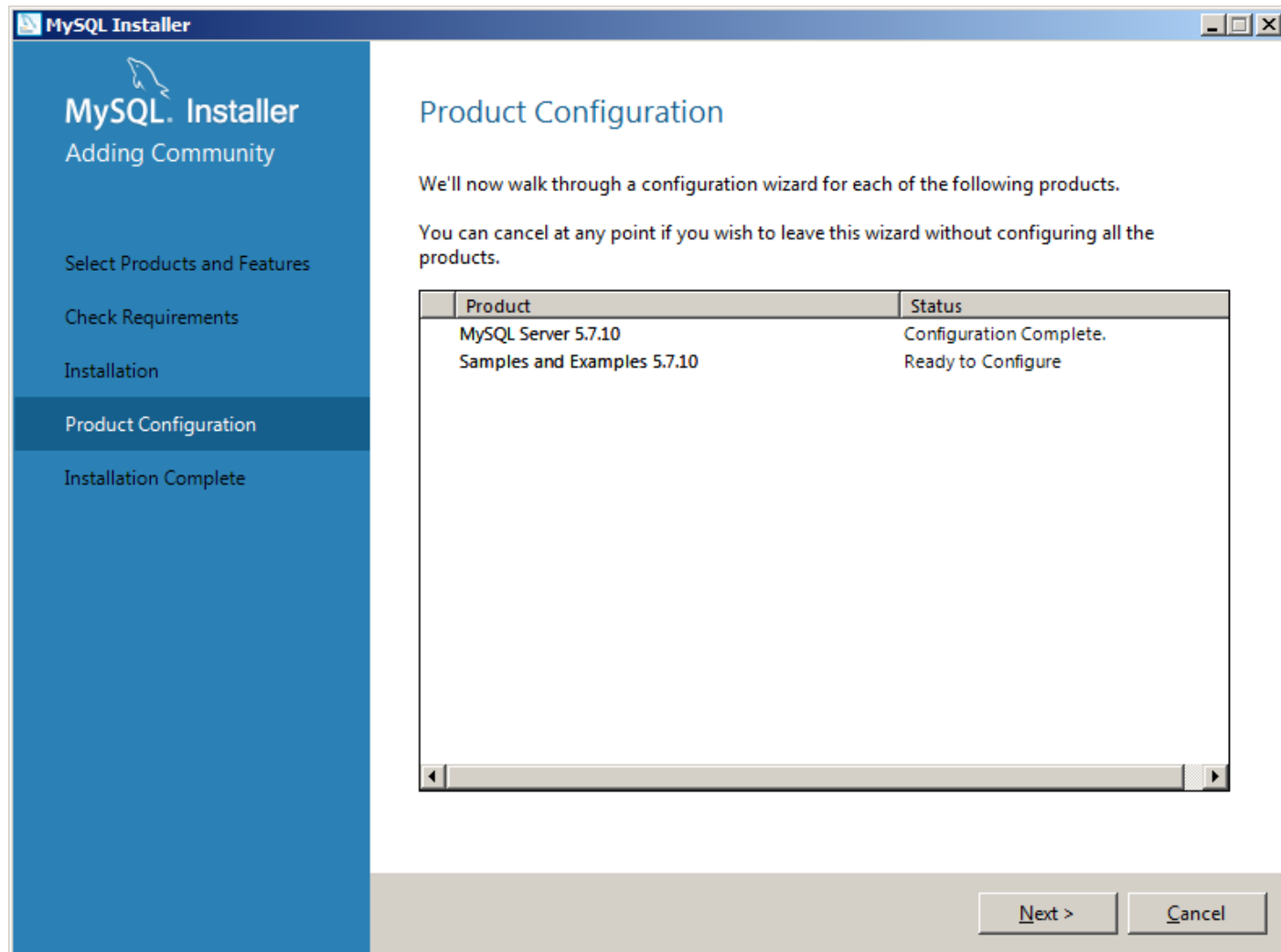


# MySQL – Instalação

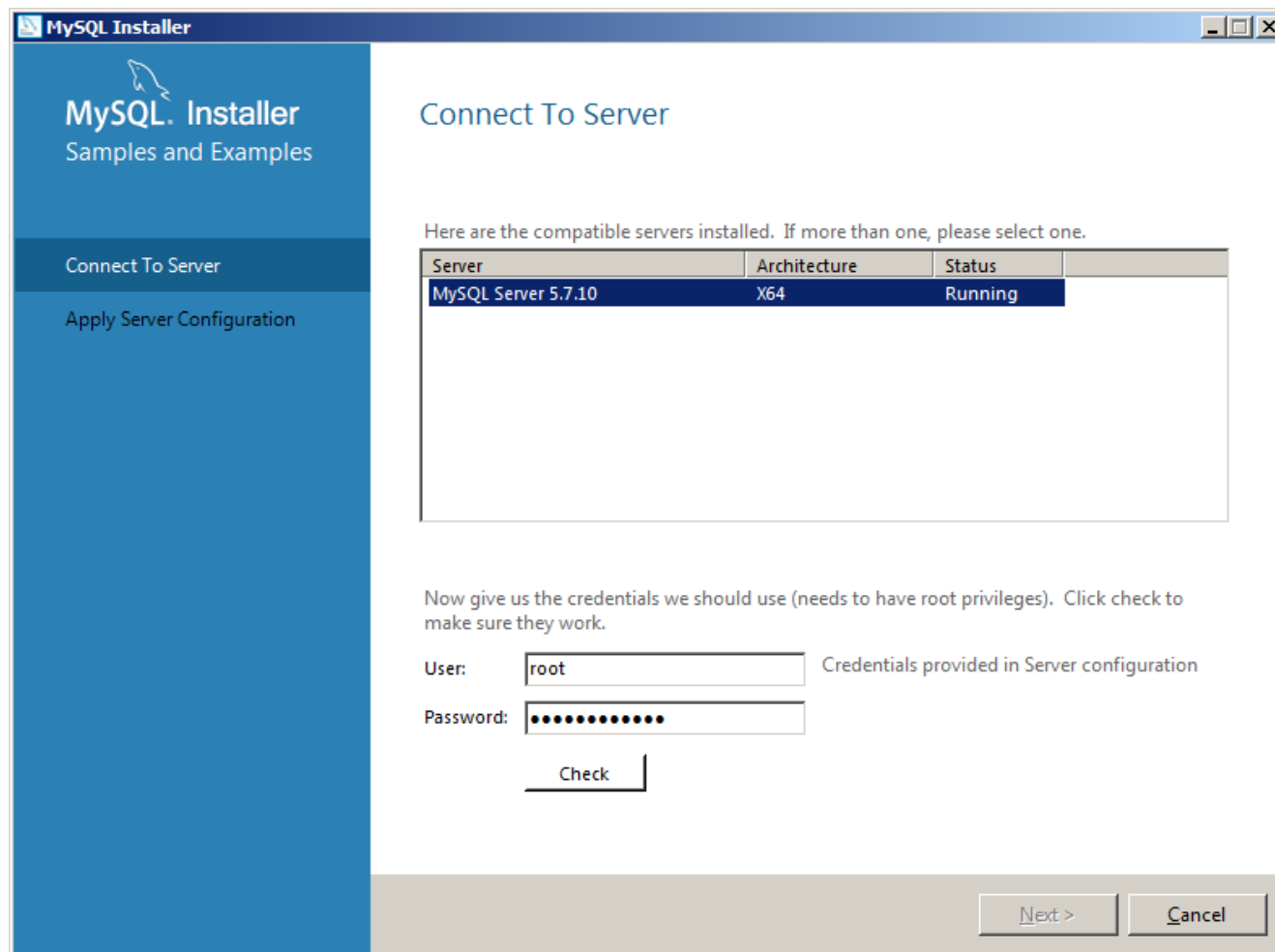




# MySQL – Instalação



# MySQL – Instalação



MySQL Installer

MySQL. Installer  
Samples and Examples

Connect To Server

Apply Server Configuration

### Connect To Server

Here are the compatible servers installed. If more than one, please select one.

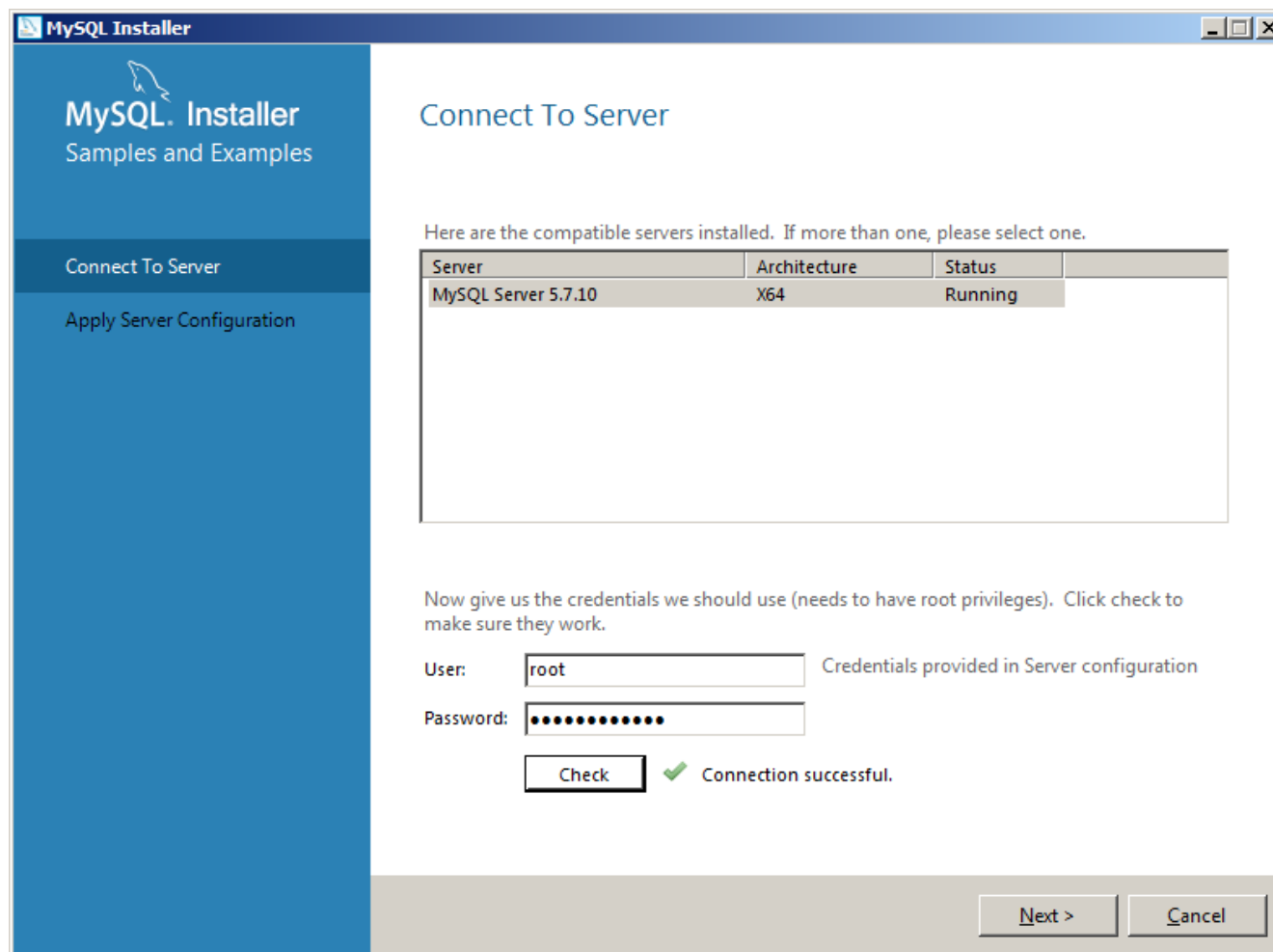
Server	Architecture	Status
MySQL Server 5.7.10	X64	Running

Now give us the credentials we should use (needs to have root privileges). Click check to make sure they work.

User:  Credentials provided in Server configuration

Password:

# MySQL – Instalação



MySQL. Installer  
Samples and Examples

Connect To Server

Apply Server Configuration

## Connect To Server


Here are the compatible servers installed. If more than one, please select one.

Server	Architecture	Status
MySQL Server 5.7.10	X64	Running

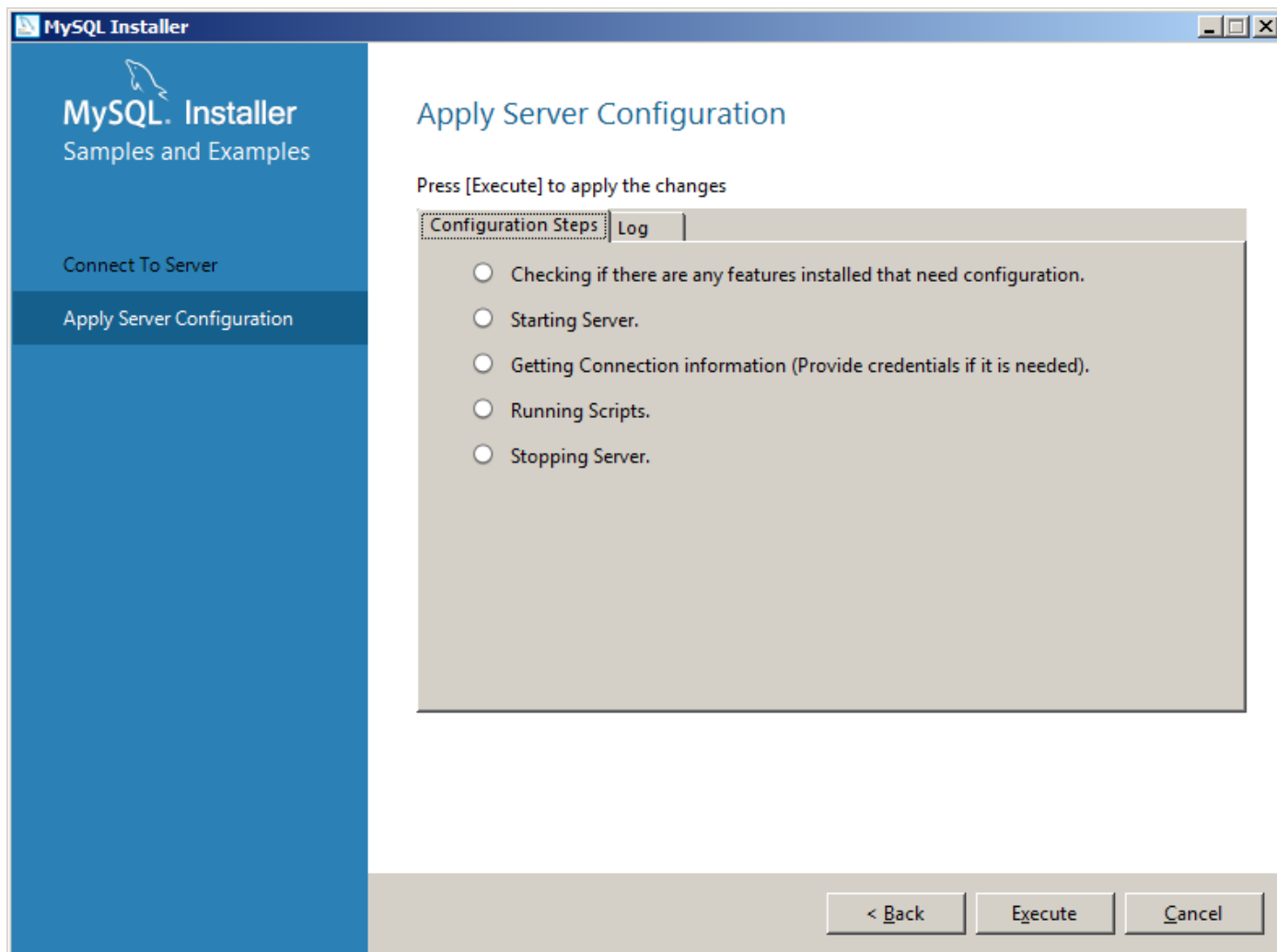
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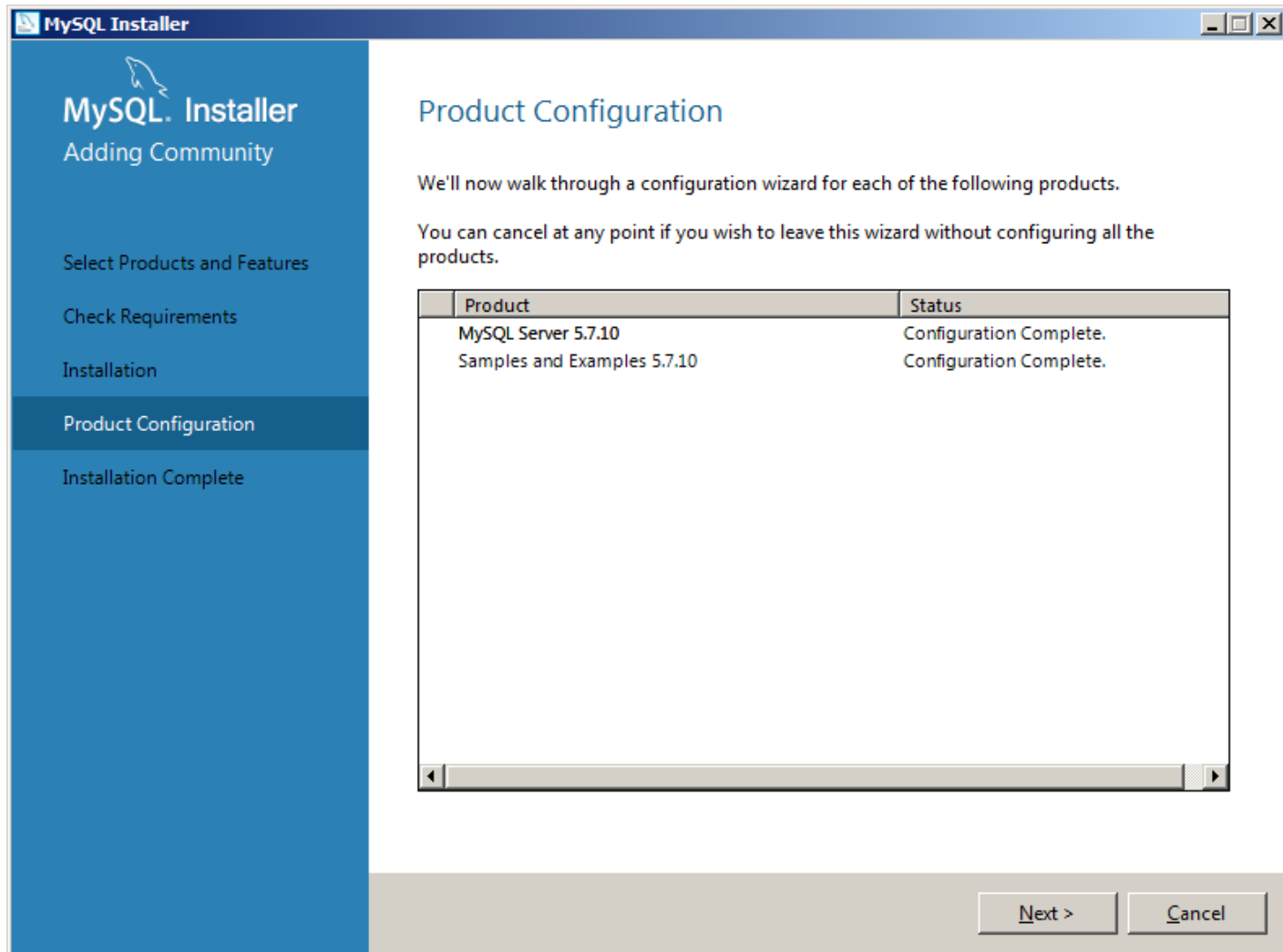
Password:

 Connection successful.

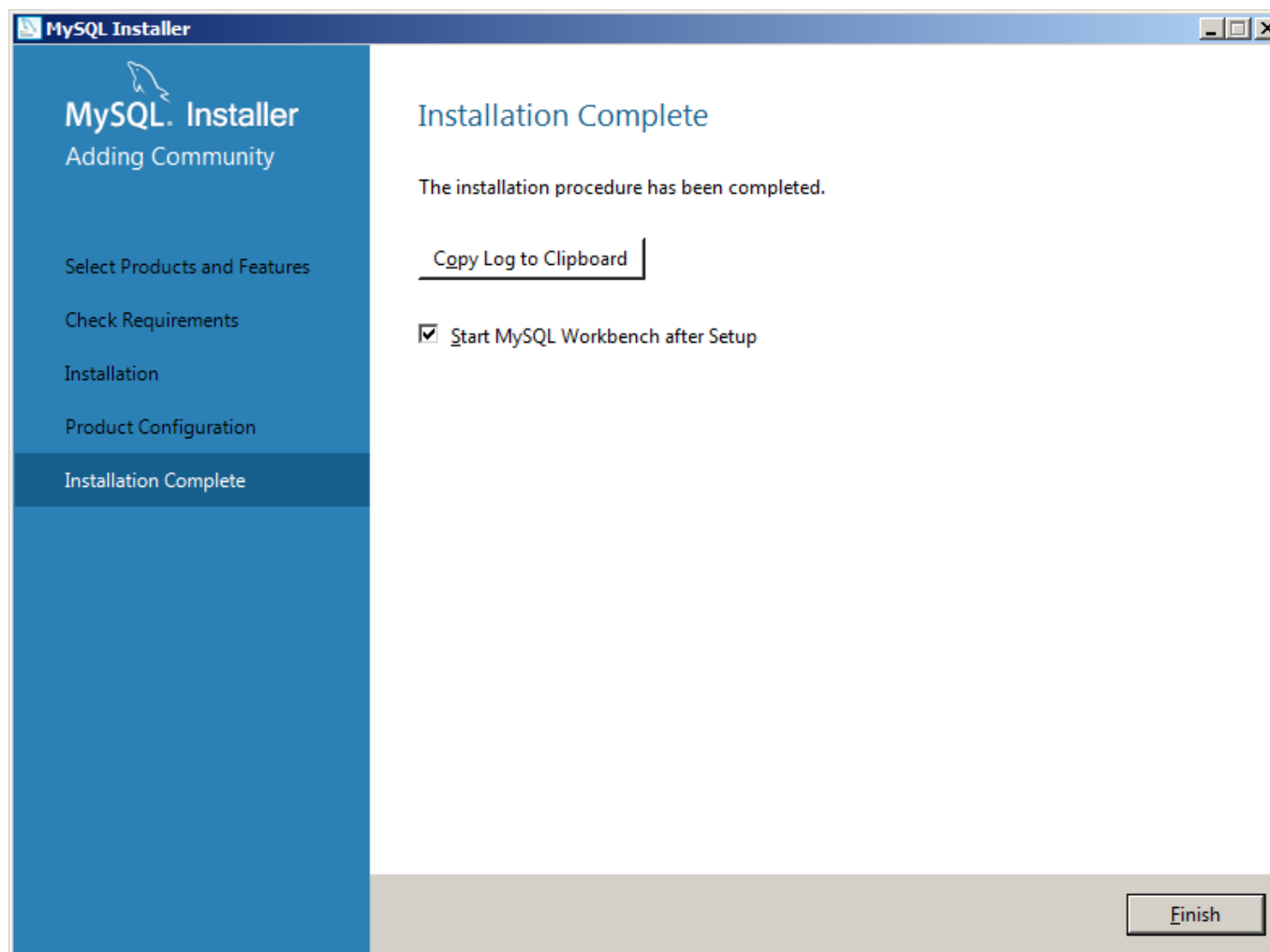
# MySQL – Instalação



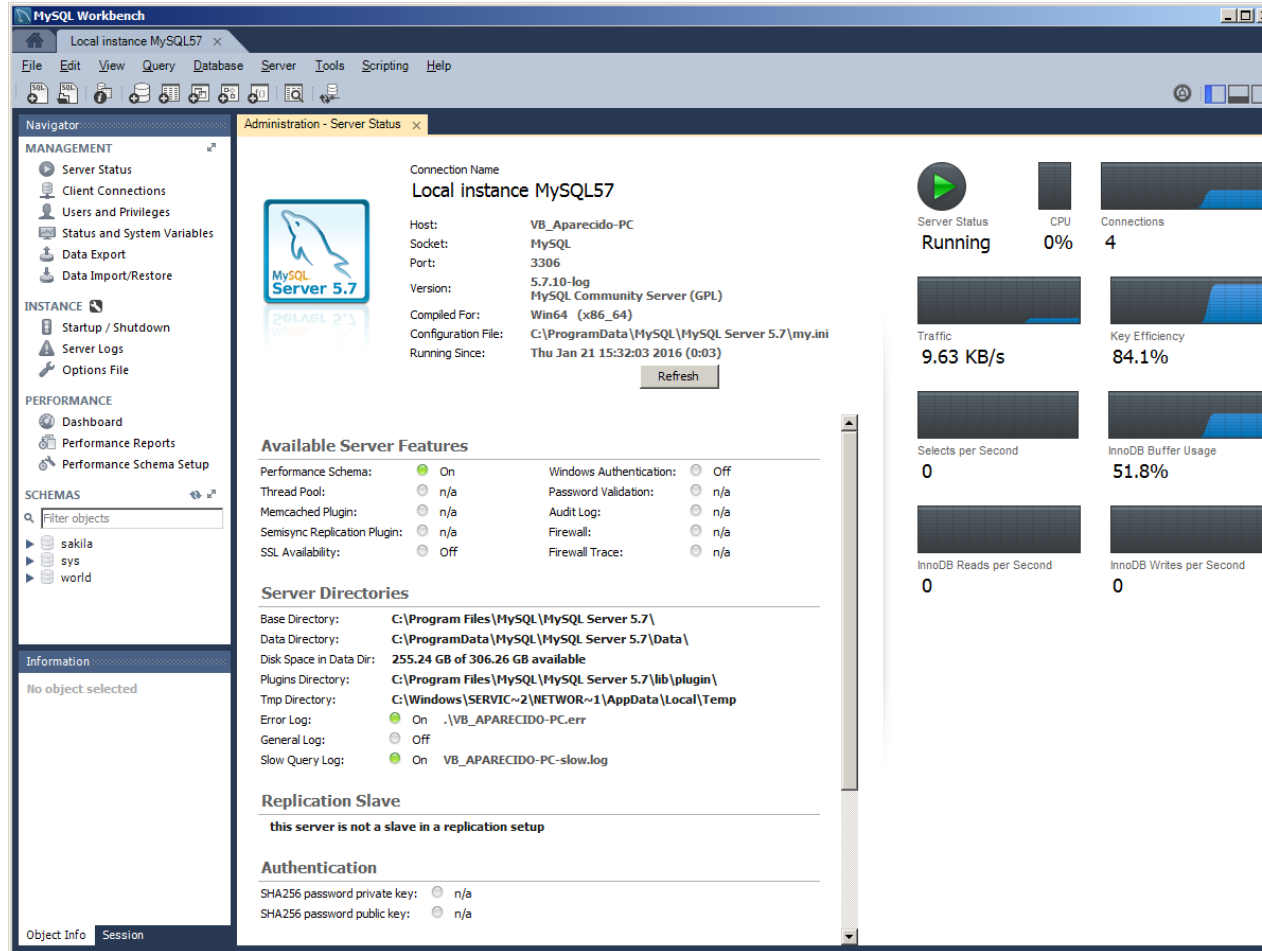
# MySQL – Instalação



# MySQL – Instalação



# MySQL – Workbench



The screenshot shows the MySQL Workbench Administration - Server Status window for a local instance named MySQL57. The interface includes a left sidebar with navigation options, a central status area, and a right sidebar with performance metrics.

**Navigation Sidebar:**

- MANAGEMENT
  - Server Status
  - Client Connections
  - Users and Privileges
  - Status and System Variables
  - Data Export
  - Data Import/Restore
- INSTANCE
  - Startup / Shutdown
  - Server Logs
  - Options File
- PERFORMANCE
  - Dashboard
  - Performance Reports
  - Performance Schema Setup
- SCHEMAS
  - Filter objects
  - sakila
  - sys
  - world

**Administration - Server Status**

Connection Name: Local instance MySQL57

MySQL Server 5.7 logo

Host: VB\_Aparecido-PC  
 Socket: MySQL  
 Port: 3306  
 Version: 5.7.10-log  
 MySQL Community Server (GPL)  
 Compiled For: Win64 (x86\_64)  
 Configuration File: C:\ProgramData\MySQL\MySQL Server 5.7\my.ini  
 Running Since: Thu Jan 21 15:32:03 2016 (0:03)

Refresh

**Available Server Features**

Performance Schema: <input checked="" type="radio"/> On	Windows Authentication: <input type="radio"/> Off
Thread Pool: <input type="radio"/> n/a	Password Validation: <input type="radio"/> n/a
Memcached Plugin: <input type="radio"/> n/a	Audit Log: <input type="radio"/> n/a
Semisync Replication Plugin: <input type="radio"/> n/a	Firewall: <input type="radio"/> n/a
SSL Availability: <input type="radio"/> Off	Firewall Trace: <input type="radio"/> n/a

**Server Directories**

Base Directory: C:\Program Files\MySQL\MySQL Server 5.7\  
 Data Directory: C:\ProgramData\MySQL\MySQL Server 5.7\Data\  
 Disk Space in Data Dir: 255.24 GB of 306.26 GB available  
 Plugins Directory: C:\Program Files\MySQL\MySQL Server 5.7\lib\plugin\  
 Tmp Directory: C:\Windows\SERVIC~2\NETWORK~1\AppData\Local\Temp  
 Error Log: ☒ On .\VB\_APARECIDO-PC.err  
 General Log: ☐ Off  
 Slow Query Log: ☒ On VB\_APARECIDO-PC-slow.log

**Replication Slave**

this server is not a slave in a replication setup

**Authentication**

SHA256 password private key: ☐ n/a  
 SHA256 password public key: ☐ n/a

**Performance Metrics (Right Sidebar):**

- Server Status: Running
- CPU: 0%
- Connections: 4
- Traffic: 9.63 KB/s
- Key Efficiency: 84.1%
- Selects per Second: 0
- InnoDB Buffer Usage: 51.8%
- InnoDB Reads per Second: 0
- InnoDB Writes per Second: 0

# MySQL – Workbench

