

# BioStar 2

## INSTALLATION GUIDE

Version 2.9.6

English  
EN 101.00.BS2

# CONTENTS

## **Getting Started** **2**

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Minimum System Requirements	2
BioStar 2 Video Extension	2

## **Installing BioStar 2** **3**

---

## **Login** **10**

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Changing server status of BioStar 2	11
Changing port of BioStar 2	12
Unified Gateway Settings	14
Changing database of BioStar 2	16

## **Appendices** **17**

---

Disclaimers	17
Copyright notice	17
Open-source Software License	18

# Getting Started

Before using BioStar 2 to implement an access control system, the BioStar 2 server must be installed on the administrator PC.

The BioStar 2 server receives event logs, user information, etc. from connected devices and stores them.

BioStar 2 can be installed easily. Before installation, please check the [Minimum System Requirements](#).

The BioStar 2 installation file can be found on the Suprema's home page(<https://www.supremainc.com>).

## Minimum System Requirements

Item		Small	Medium	Enterprise
Environment	Total Devices	1 to 50	51 to 100	101 to 1,000
System requirement (Server)	OS	Windows 7(SP1 or higher), Windows 8, Windows 8.1, Windows 10, Windows 11, Windows Server 2008 R2(SP2 or higher), Windows Server 2012, Windows Server 2012 R2, Windows Server 2016, Windows Server 2019, Windows Server 2022 • Windows virtual environments on Mac Boot Camp are not supported.		
	Database	MariaDB 10.1.10, MS SQL Server 2012 SP3, MS SQL Server 2014 SP2, MS SQL Server 2016 SP1, MS SQL Server 2017, MS SQL Server 2019 • TLS 1.0 and 1.1 are supported for MS SQL secure communication.		
	CPU	2 GHz Dual Core	4 GHz Quad Core	4 GHz 16 Core
	RAM	8 GB	16 GB	32 GB
	SSD	512 GB	1 TB	1 TB
System requirement (Client)	CPU	1 GHz	1 GHz	1 GHz
	RAM	4 GB	4 GB	4 GB
	Web Browser	Google Chrome version 100 or higher		

## BioStar 2 Video Extension

Item	Medium	Recommended
CPU	4 GHz Quad Core	4 GHz Quad Core
RAM	8 GB	16 GB
HDD	2 TB	4 TB



- For the best performance, use only the 64-bit operating system.
- BioStar 2 is optimized for Google Chrome.
- To use the **Video** menu, use the 64bits MariaDB or MS SQL database.
- BioStar 2 supports Windows 7, but Microsoft's technical support for Windows 7 has ended. Be aware of the OS selection when installing the system.
- If you are using Windows 8.1 or Windows Server 2012 R2, install the KB2919355 update by referring to the following web page.  
<https://support.microsoft.com/en-us/help/2919355/windows-rt-8-1--windows-8-1--and-windows-server-2012-r2-update-april-2>
- If MS SQL Server and BioStar 2 are installed on different PCs, you should install the Native Client on a PC with BioStar 2 installed.  
<https://www.microsoft.com/en-us/download/details.aspx?id=50402>
- Oracle Database is no longer supported. For details, please contact the Suprema Technical Support.

# Installing BioStar 2

BioStar 2 supports a 32-bit operating system and a 64-bit operating system. Check the system type of your PC where BioStar 2 is to be installed and carry out its installation accordingly.



- Installation files for 32-bit operating systems are not provided from BioStar 2.9.2.
- Do not install BioStar 2 on a PC where BioStar 1 is installed. This may cause performance problems.
- If BioStar 2.3.0 is installed on top of a BioStar 2.2.1 or 2.2.2 installation, all information stored in the SQLite database is migrated to a new MariaDB database.
- Upgrading directly from the existing version to the latest version is possible from BioStar 2.6.0 or higher. If the installed version is lower than 2.6.0, installing all versions in a correct sequence until reaching version v2.6.0 is essential.

Current Version	Upgrade Path
2	2.2.1 > 2.3 > 2.4 > 2.4.1 > 2.5.0 > 2.6.4 > Latest Version
2.2 2.2.1 2.2.2	2.3 > 2.4 > 2.4.1 > 2.5.0 > 2.6.4 > Latest Version
2.3	2.4 > 2.4.1 > 2.5.0 > 2.6.4 > Latest Version
2.4	2.4.1 > 2.5.0 > 2.6.4 > Latest Version
2.5 2.6	2.6.4 > Latest Version
2.6.4 or higher	Latest Version

- If you are using Windows 8.1 or Windows Server 2012 R2, install the KB2919355 update by referring to the following web page.  
<https://support.microsoft.com/en-us/help/2919355/windows-rt-8-1--windows-8-1--and-windows-server-2012-r2-update-april-2>
- If you are using MS SQL 2012 Express, install the Service Pack 3 by referring to the following web page.  
<https://www.microsoft.com/en-us/download/details.aspx?id=49996>
- If you are using MS SQL 2014 Express, install the Service Pack 2 by referring to the following web page.  
<https://www.microsoft.com/en-us/download/details.aspx?id=53168>
- If MS SQL Server and BioStar 2 are installed on different PCs, you should install the Native Client on a PC with BioStar 2 installed.  
<https://www.microsoft.com/en-us/download/details.aspx?id=50402>
- If you are using MS SQL Server, set the Collation option of the server and each table to **CI (Case-insensitive)**.
- When backing up a database from an older version of BioStar 2, disable all services and procedures. Furthermore, if you do not backup and restore the AC database and the TA database together, you will not be able to use the TA database.
- If you want to back up the database of BioStar 2, be sure to also back up the enckey in the \Program Files\BioStar 2 (x64)\util folder and the system.conf and setting.conf file in the \Program Files\BioStar 2 (x64) folder. Otherwise, the database will be unavailable.
- The default values for the ports used by BioStar 2 are as follows. If another program occupies the same port, BioStar 2 may not work properly.

Port			
• HTTP Port	80		Available
• Web-socket Port	9002		Available
• Database Port	3312		Available
• T&A HTTPS Port	3002		Available
• FastCGI Port	9000		Available
• Unified Gateway HTTPS Port	5002		Available
• Report HTTPS port	4214		Available
• HTTPS Port	443		Available
• API Port	9010		Available
• T&A HTTP Port	3000		Available
• T&A Cloud Port	52001		Available
• Unified Gateway HTTP Port	5000		Available
• Report HTTP port	4213		Available

If you use a database configured by the user directly, check the following items before installing BioStar 2.

## MariaDB

- Open the my.cnf file and then change some configurations under [mysqld] as shown below.

```
character-set-server=utf8
collation-server=utf8_unicode_ci
max_connections = 600
```

- Open the my.cnf file and then add some configurations under [mysqld] as shown below.

```
log_bin_trust_function_creators = 1
group_concat_max_len = 102400
```

- Access MariaDB with the root permission and execute the following command.

```
> GRANT SUPER ON . TO user_id@'localhost' IDENTIFIED BY "password";
> GRANT SUPER ON . TO user_id@'%' IDENTIFIED BY "password";
```

## MS SQL Server



- All database and tables should set the Collation as CI(case-insensitive).

### Setting the port

- Run **SQL Server Configuration Manager** and set **TCP/IP Protocol** for **Protocols for SQLEXPRESS** to the desired port number.
- Restart **SQL Server Services** to apply the settings.

### Creating the user and database

- Log in to the **sa** account using **SQL Server Authentication** in **SQL Server Management Studio**.
- Right-click on **Security** and click **New Login**.
- Enter the desired name in the **Login Name** field and select **SQL Server Authentication**.
- Enter the desired password in the **Password** and **Confirm password** field, and then uncheck the **Enforce password policy**.
- Click **OK** to save the settings.
- Right-click on **Database** and click **New Database**.
- Enter the desired name in the **Database Name** field.
- Enter the login name in the **Owner** field. Use the login name set in step c).
- In the **Database Files** section, we recommend that set the **Initial Size (MB)** to 3000 and set the **Autogrowth/Maxsize** to **By 10 MB, Unlimited**.

### Setting the Windows Authentication database

#### 1. Presetting

If you are using Microsoft Windows Active Directory, complete the presets as below before setting up the Windows Authentication database.

- Log in to **SQL Server Management Studio** with an administrator account.
- Right-click on **Security** and click **New Login**.
- Select **Windows Authentication** and click **Search**.

- d) In the **Select a user or group** window, click **Location**, then select the Active Directory path and click **OK**.
- e) Enter the user name in the object name field, then click **Check Names** → **OK**.
- f) Click **Server Roles** in the **Select a page**.
- g) Select **sysadmin** and click **OK**.
- h) Click **User Mapping** in the **Select a page**.
- i) Select **ac**, **master**, **ta**, **ve** and set the Default Schema to **dbo**.
- j) Click **OK** to save the settings.

## 2. Settings to use MS SQL Windows Authentication with Active Directory account

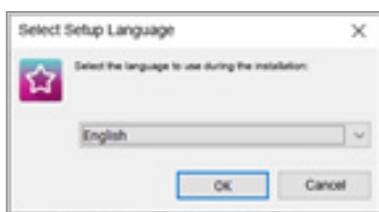
- a) Run **services.msc** and log in as a domain user by selecting **Specify account** in the MSSQL DB's **Properties** > **Logon**.
- b) Add port 1433 as an exception to your Windows firewall.
- c) Create an empty **ac**, **ta**, **ve** database in MS SQL with **sysadmin** authentication.
- d) Enable Windows Authentication for domain users in MS SQL and assign all permissions except **sysadmin** to the **ac**, **ta**, **ve** databases.
- e) Connect all services except Local Computer in **services.msc**.
- f) Set the domain user as an administrator on the local service computer.
- g) ODBC connection to MSSQL.

## 3. Setting the database

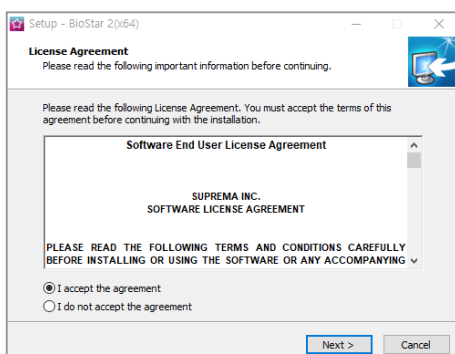
- a) Run **SQL Server Configuration Manager** and click **Client Protocol** under **SQL Native Client Configuration**.
- b) Select **TCP/IP** and check the default port.
- c) Click **Protocols for SQLEXPRESS** under **SQL Server Network Configuration**.
- d) Make sure that the ODBC port is set to the same as the default port in **TCP/IP**.
- e) Log in to **SQL Server Management Studio** by an administrator account.
- f) Click **Security** → **Logins** and then double-click **NT AUTHORITY\SYSTEM**.
- g) Click **Server Roles** in the **Select a page**.
- h) Select **public**, **sysadmin**, and then click **OK**.
- i) Click **User Mapping** in the **Select a page**.
- j) Select the **ac**, **master**, **ta**, and **ve** databases and click **OK** to save.

1 Double-click the downloaded setup program. (ex. 'BioStar 2 Setup.x.x.x.xxx.exe')

2 Select a language and click **OK**.



3 To continue the installation, select **I accept the agreement** and click **Next**.



- 4 Enter the password for admin account and click **Next**.  
The password set in this step will be used when you log in to BioStar 2.

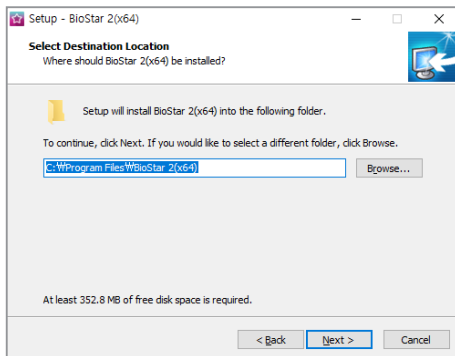
- 5 Install the database to be used in BioStar 2. You can install a new MariaDB or connect it to the already-installed MariaDB. Installing BioStar 2 for the first time, please select **Express Installation** and click **Next**.

- 6 If **Express Installation** has been selected from **Database Installation Type**, enter the database manager's account password and click **Next**. If **Custom Installation** has been selected from **Database Installation Type**, enter the detailed information on the already-configured database and click **Next**.

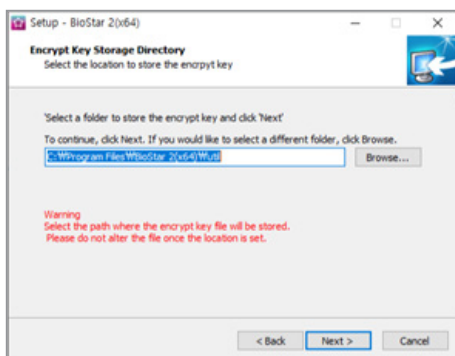


- BioStar 2 supports the following databases.
  - MariaDB 10.1.10
  - MS SQL Server 2012 SP3
  - MS SQL Server 2014 SP2
  - MS SQL Server 2016 SP1
  - MS SQL Server 2017
  - MS SQL Server 2019
    - TLS 1.0 and 1.1 are supported for MS SQL secure communication.
- If the database table creation fails when MS SQL Server is set as the Database Type, you can create the table by executing the script in **C:\Program Files\BioStar 2 (x64)\dbscript\mssql** folder.
- When installing with custom settings, **AC DB name**, **TA DB name**, and **VE DB name** cannot be set the same.

7 Click **Next** after setting a path for BioStar 2 to be installed.

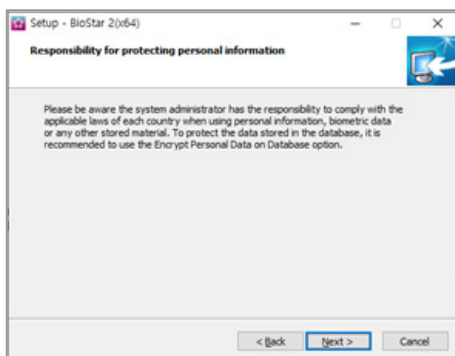


8 Click **Next** after setting a path for the encryption key to be stored.



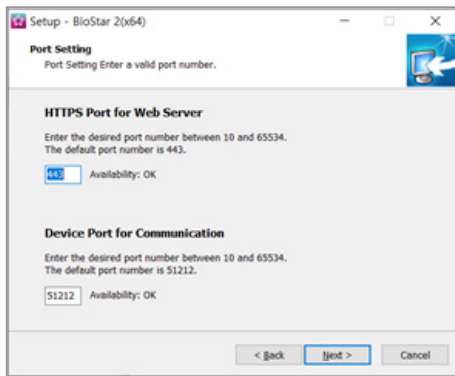
- You can set a path for the encryption key to be stored. However, if the encryption key file is modified or moved after selecting the path, a system error may occur.
- If you delete BioStar 2, the encryption key files will be deleted.

9 Read the instructions on the responsibility for protecting personal information stored in the database and click **Next** to continue the installation.



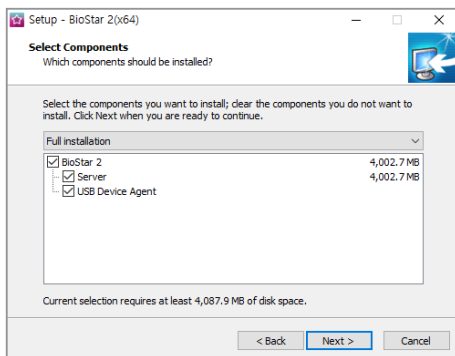


10 Enter the port number and click **Next**.

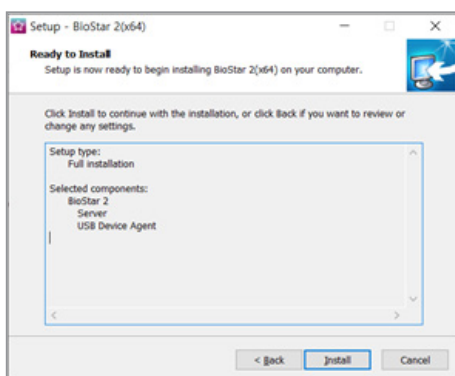


- When you install BioStar 2 on a PC where BioStar 1 is installed, the device port (51212) is not available. In this case, we recommend that uninstall BioStar 1.

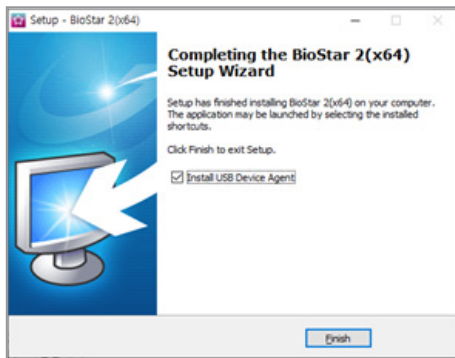
11 Select a component of BioStar 2 and click **Next**. If you select **USB Device Agent**, a USB-Agent and a driver for using BioMini, BioMini Plus 2, and DUALi DE-620 will be installed together.



12 If ready to install, click **Install**.



13 Select whether to install additional program and click Finish. Follow on screen instructions to complete.



- The USB Device Agent Certificate provided can be applied to a local network only.
- When another program uses port 443, BioStar 2 Setting program will be launched automatically and then you can change the port number. For more information, see [Changing port of BioStar 2](#).
- For more information on Database setting changes, see [Changing database of BioStar 2](#).

# Login

BioStar 2 is a web-based system which can be accessed from anywhere as long as you remember your login ID and password.

- 1 Run your web browser.
  - We recommend that you use Google Chrome 100 or later.
- 2 Run BioStar 2.
  - If running from the PC installed with BioStar 2, enter 'https://127.0.0.1' in the address input field of the web browser.
  - If BioStar 2 is installed on another PC, enter 'https://BioStar 2 server IP address' in the address input field of the web browser.
  - Do not use the 'Localhost' to access the BioStar 2.

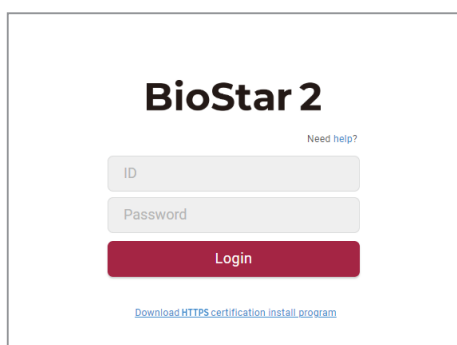


- BioStar 2 uses port 443. If port 443 is used by a program, quit the program and try again. If the program cannot be closed, run 'BioStar 2 Setting' to change the port number. For more information, see [Changing port of BioStar 2](#).

- 3 Log in with the administrator account. The administrator account ID is 'admin' and when you log in for the first time, **Not secure** warning will be displayed in the address bar.

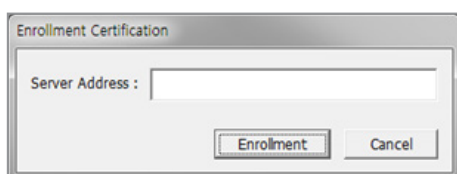


- 4 To use HTTPS properly, register the IP address of the PC where BioStar 2 is installed. Click **Download HTTPS certification install program**.



- 5 Unzip the downloaded file and run **cert-register.exe** file. **Enrollment Certification** window will appear.

- 6 Enter the IP address of the PC where BioStar 2 is installed and click **Enrollment**.




- 7 Check the security warning message and click **Yes**.

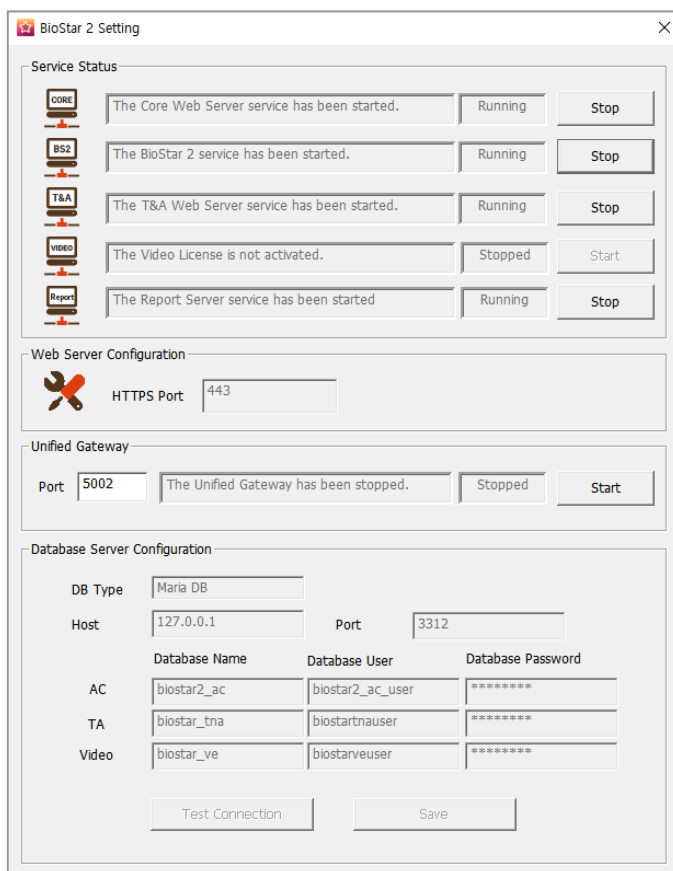
- 8 When you restart the web browser and enter the registered IP address, **Secure** will appear on the address bar of the web browser.



## Changing server status of BioStar 2

You can check the status of the BioStar 2 server and stop or start the server.

1 Click  **Start** → **All Programs** → **BioStar 2** → **BioStar 2 Setting**.




**BioStar 2 Setting**

**Service Status**

Service	Status	Action
CORE	The Core Web Server service has been started.	Running   Stop
BS2	The BioStar 2 service has been started.	Running   Stop
T&A	The T&A Web Server service has been started.	Running   Stop
VIDEO	The Video License is not activated.	Stopped   Start
Report	The Report Server service has been started	Running   Stop

**Web Server Configuration**

 HTTPS Port

**Unified Gateway**

Port  The Unified Gateway has been stopped. | Stopped | Start

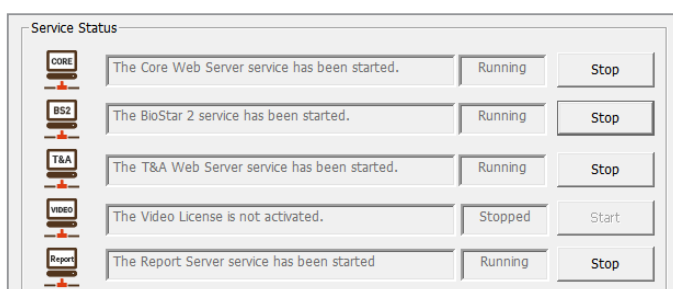
**Database Server Configuration**

DB Type

Host  Port

	Database Name	Database User	Database Password
AC	biostar2_ac	biostar2_ac_user	*****
TA	biostar_tna	biostartnauser	*****
Video	biostar_ve	biostarveuser	*****

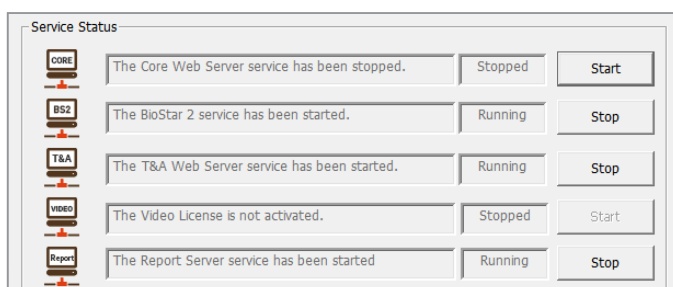
2 Click **Stop** button of the server you want to stop.



**Service Status**

Service	Status	Action
CORE	The Core Web Server service has been stopped.	Stopped   Start
BS2	The BioStar 2 service has been started.	Running   Stop
T&A	The T&A Web Server service has been started.	Running   Stop
VIDEO	The Video License is not activated.	Stopped   Start
Report	The Report Server service has been started	Running   Stop

3 Click **Start** button to restart the server.



**Service Status**

Service	Status	Action
CORE	The Core Web Server service has been started.	Running   Stop
BS2	The BioStar 2 service has been started.	Running   Stop
T&A	The T&A Web Server service has been started.	Running   Stop
VIDEO	The Video License is not activated.	Stopped   Start
Report	The Report Server service has been started	Running   Stop



- If the time setting on the BioStar 2 server has changed, stop and restart the Core Web Server. Otherwise, BioStar 2 may not work properly.

## Changing port of BioStar 2

You can change the port used by BioStar 2. If BioStar 2 cannot use port 443, run BioStar 2 Setting to change the port.



- If you use MS SQL as a database, when changes the port in BioStar 2, you must also change the port manually in the database. Otherwise, BioStar 2 may be disconnected from the database and may not work properly.

### Changing with BioStar 2 Setting (HTTPS port)

1 Click **Start** → **All Programs** → **BioStar 2** → **BioStar 2 Setting**.

The screenshot shows the 'BioStar 2 Setting' window. It has several sections: 'Service Status' with icons for CORE, BS2, T&A, VIDEO, and Report, each with a status message and buttons (Running/Stopped, Start/Stop); 'Web Server Configuration' with a wrench icon and an 'HTTPS Port' field set to 443; 'Unified Gateway' with a 'Port' field set to 5002 and a status message; and 'Database Server Configuration' with fields for DB Type (Maria DB), Host (127.0.0.1), Port (3312), and a table for database users (AC, TA, Video) with their respective names, users, and passwords. There are 'Test Connection' and 'Save' buttons at the bottom.

2 Click the **Stop** button for all BioStar 2 services. **HTTPS Port** is activated.

3 Enter the port number in **HTTPS port** field.

This screenshot shows the 'BioStar 2 Setting' window after the services have been stopped. In the 'Service Status' section, all services (CORE, BS2, T&A, VIDEO, Report) now show 'Stopped' status and 'Start' buttons. The 'Web Server Configuration' section remains the same with 'HTTPS Port' set to 443.

4 Click the **Start** button for all BioStar 2 services.

5 Run BioStar 2. If using port 450, enter 'IP address:450'.

## Changing with BioStar 2 for all port



- The items may vary depending on the type of license that is activated.

**1** Log in to BioStar 2 and click on the port. All ports in use in BioStar 2 are displayed.

Port		
• HTTP Port	80	Available
• Web-socket Port	9002	Available
• Database Port	3312	Available
• T&A HTTPS Port	3002	Available
• FastCGI Port	9000	Available
• Unified Gateway HTTPS Port	5002	Available
• Report HTTPS port	4214	Available
• HTTPS Port	443	Available
• API Port	9010	Available
• T&A HTTP Port	3000	Available
• T&A Cloud Port	52001	Available
• Unified Gateway HTTP Port	5000	Available
• Report HTTP port	4213	Available

**2** Click the of the port to change and enter the desired value.

**3** Click **Apply** to save the settings.

## Unified Gateway Settings

You can change the execution port of BioStar 2 to the Unified Gateway.

Unified Gateway allows efficient processing of requests to the BioStar 2 server through the reverse proxy method, improves security vulnerabilities in iframes, and minimizes SSL certificate errors.



- When installing or upgrading BioStar 2, the **Unified Gateway** is **Inactive**, and the default port values are as follows.
  - Unified Gateway HTTPS Port: 5002
  - Unified Gateway HTTP Port: 5000

### Setting up Unified Gateway in BioStar 2 Setting

1 Click **Start** → **All Programs** → **BioStar 2** → **BioStar 2 Setting**.

2 Click the **Start** button in the **Unified Gateway** section. Unified Gateway becomes active.



- Activating **Unified Gateway** will restart the server.
- If the port is in use, a pop-up message will appear. Enter a different port number and activate it again.

3 If the HTTPS connection, the **HTTPS Port** field changes to 5002 and the **Unified Gateway's Port** field changes to 443. To change the port, click **Stop** to stop **Unified Gateway** and then change it.

## Setting up Unified Gateway in BioStar 2

- 1 Click **Settings > Security**.
- 2 Activate **Unified Gateway** in **Unified Gateway Setting**.

Unified Gateway Setting	
• Unified Gateway	<input checked="" type="checkbox"/> Active




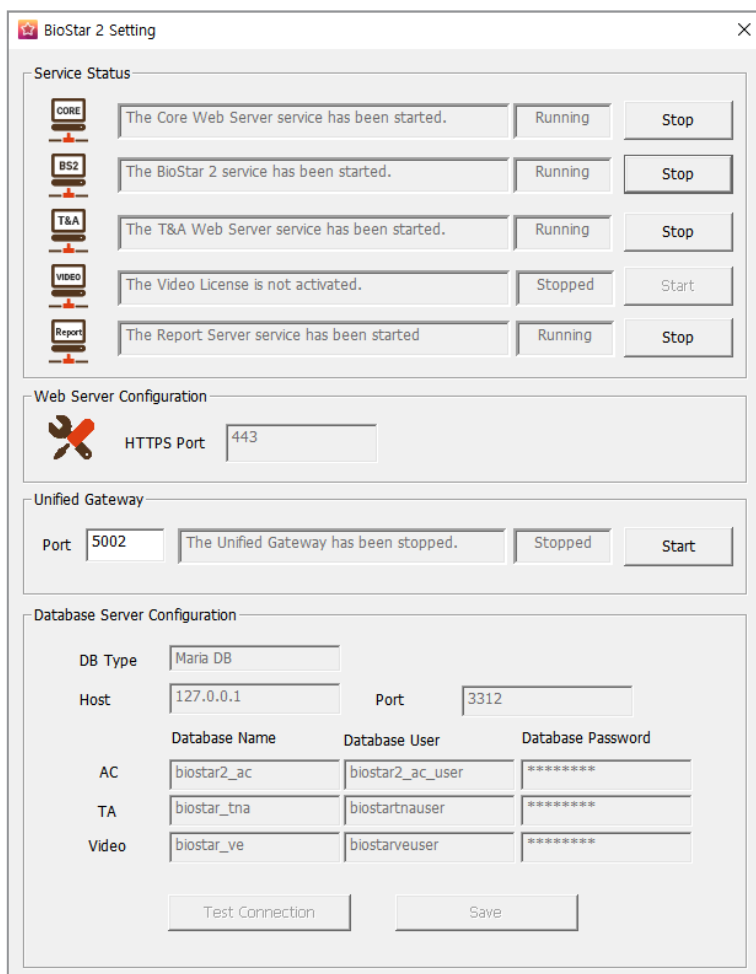
- When you activate **Unified Gateway**, the server restarts and automatically directed to the login page.
- If the port is in use, a pop-up message will appear. Enter a different port number and activate it again.



## Changing database of BioStar 2






You can change the database settings of BioStar 2.

- 1 Click  **Start** → **All Programs** → **BioStar 2** → **BioStar 2 Setting**.




**BioStar 2 Setting**

**Service Status**

	The Core Web Server service has been started.	Running	Stop
	The BioStar 2 service has been started.	Running	Stop
	The T&A Web Server service has been started.	Running	Stop
	The Video License is not activated.	Stopped	Start
	The Report Server service has been started	Running	Stop

**Web Server Configuration**

 HTTPS Port

**Unified Gateway**

Port  The Unified Gateway has been stopped. Stopped Start

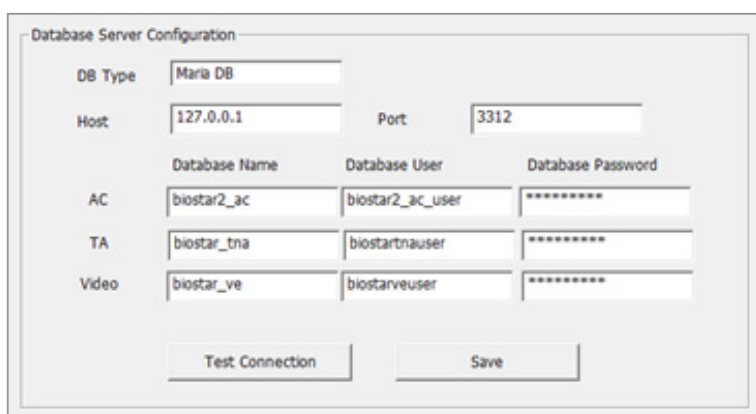
**Database Server Configuration**

DB Type

Host  Port

	Database Name	Database User	Database Password
AC	biostar2_ac	biostar2_ac_user	*****
TA	biostar_tna	biostartnauser	*****
Video	biostar_ve	biostarveuser	*****

- 2 Click the **Stop** button for all BioStar 2 services. **Database Server Configuration** is activated.



**Database Server Configuration**

DB Type

Host  Port

	Database Name	Database User	Database Password
AC	biostar2_ac	biostar2_ac_user	*****
TA	biostar_tna	biostartnauser	*****
Video	biostar_ve	biostarveuser	*****

- 3 Edit the necessary fields. If you are not sure about the each information, contact your system administrator.
- 4 Click **Test Connection** to check if the database has been set properly.
- 5 Click **Save** to save the settings.

# Appendices

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<https://github.com/danieleggert/minizip>

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#### THE BASIC LIBRARY FUNCTIONS

-----

Written by: Philip Hazel  
 Email local part: ph10  
 Email domain: cam.ac.uk

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## Sqlcipher

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## I18next

<https://www.i18next.com/>

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### **i18next-http-backend**

<https://www.npmjs.com/package/i18next-http-backend>

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### **Immer**

<https://immerjs.github.io/immer/>

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## prop-types

<https://www.npmjs.com/package/prop-types>

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## React Hook Form

<https://react-hook-form.com/>

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**React**

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**React-dom**

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**REACT ROUTER**

<https://reactrouter.com/>

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### **REACT ROUTER-dom**

<https://reactrouter.com/>

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### **react-i18next**

<https://react.i18next.com/>

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### **react-number-format**

<https://www.npmjs.com/package/react-number-format>

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### **React Redux**

<https://react-redux.js.org/>

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**redux-persist**

<https://github.com/rt2zz/redux-persist>

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