Garoon 4.6
Installation Guide

Edition 3

Cybozu

Preface

This guide describes instructions for installation and initial configurations of Cybozu Garoon Version 4.6.0. This guide also explains how to upgrade Garoon to version 4.6.0.

Who Should Use This Guide

The target audience of this guide is as follows:

- People who are in charge of the installation of Cybozu Garoon

Typographic Conventions Used in This Guide

This guide uses the following conventions:

Convention	Meaning
Caution	Describes cautions that are important to note.
Note	Describes actions that require attention, or limitations.
Tip	Provides supplementary information about operations, describes other ways to operate Garoon, or offers a helpful hint.
" "	Indicates buttons, links, or tabs on screens.
See "Section title" on page ###.	Indicates a cross reference link to the detailed information.

Environment This Guide Was Written Under

This guide was written based on the following environment:

- Operating system: Windows Server 2012 Standard Edition, Red Hat Enterprise Linux 6
- Web browser: Internet Explorer 11
- Production version: Cybozu Garoon version 4.6.0

Some screenshots provided in this guide may be different depending on the Web browser you use.

Product Names and Their Abbreviations and Product Names Used in This Guide

This guide uses the following abbreviated names:

Abbreviation	Product Name
Garoon	Cybozu Garoon version 4.6.0
Full text search server	Cybozu Full text search version 2.0

Using This Guide

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Contents

1 Before Setting Up

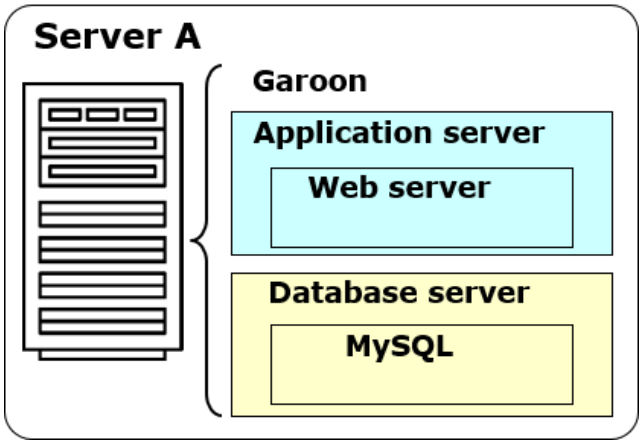
1.1 Deciding Server Machine Configuration

Garoon is composed of the following types of server functions:

Server Function	Description
Application server	Processes information entered by users through Garoon applications. This server receives requests from client computers and returns data, such as HTML files and images.
Database server	Stores and maintains data entered by users.

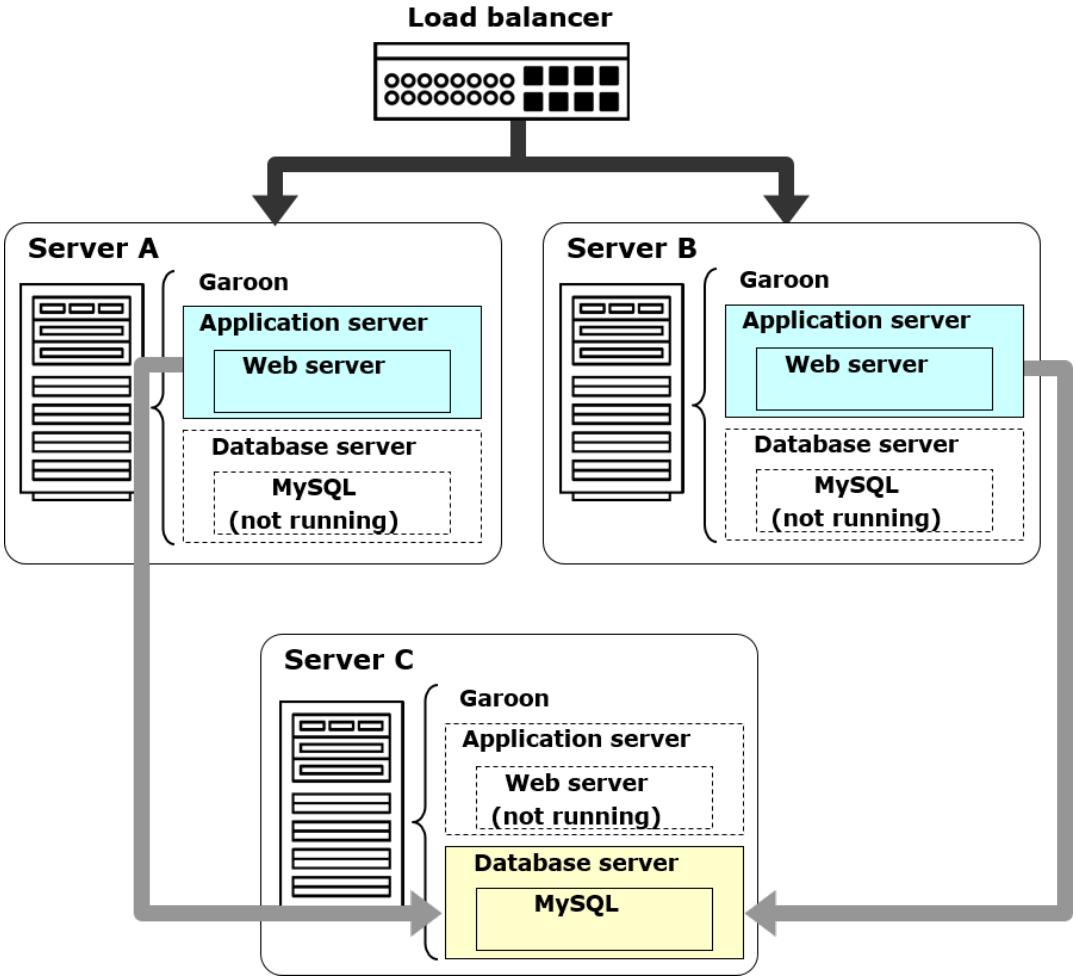
Generally, you can use a single-machine deployment where the application server and the database server are deployed on one server machine.

Example of Single-Machine Deployment:



Garoon also supports a server-distributed deployment where the application server and the database server are deployed on different server machines. Distributing Garoon server functions across multiple machines can improve performance.
You can choose either single-machine deployment or server-distributed deployment depending on your workloads and the capacity of server machines.

Example of Server-Distributed Deployment:



1.2 Points To Be Checked Before Setting Up

This section explains system requirements as well as the ports that are used by Garoon. Make sure that you read through this section before you install or upgrade Garoon.

1.2.1 System Requirements

The tables below describe the system requirements for Garoon as of October 2017.

Note

- Services and products that are no longer supported by their vendors are not included in the list.

Supported Operating Systems

OS	Version
Windows (64bit)	Windows Server 2016 Standard Edition Windows Server 2016 Datacenter Windows Server 2012 R2 Standard Edition Windows Server 2012 R2 Datacenter Windows Server 2012 Standard Edition Windows Server 2012 Datacenter
Linux (64bit)	Red Hat Enterprise Linux 7 Red Hat Enterprise Linux 6

Supported Web Server Services

OS	Web Server Services
Windows (64bit)	Apache 2.2.x
	Internet Information Service (IIS) 8.0, 8.5, 10.0
Linux (64bit)	Apache 2.2.x, 2.4.x

Supported Web Browsers

OS	Web Browsers
Windows	Internet Explorer 11 (modern UI and desktop versions) Microsoft Edge Latest version of Mozilla Firefox Latest version of Google Chrome
Mac	Latest version of Safari Latest version of Mozilla Firefox
iOS	iOS 9 Safari iOS 10 Safari
Android	Android Chrome

Tip

- Garoon also can run in a virtual environment. Note that some virtual environments can degrade performance depending on your operating environment.
- For the latest system requirements and limitations, see the following Japanese page on our website: https://garoon.cybozu.co.jp/product/environment/
- When you choose a server-distributed deployment, all server machines must have the same type of operating system (Windows or Linux).
- If you want to use the Full text search server with Garoon version 4.6, the Full text search server must be version 2.0.3 or later.
  The following table describes the supported combinations of Garoon versions and Full text search server versions:

Garoon version	Supported Full text search server version
Garoon version 4.6.x	2.0.3
Garoon version 4.2.x	2.0.1, 2.0.2, 2.0.3
Garoon version 4.0.x	2.0.1, 2.0.2, 2.0.3

•

Mail Servers

To use the e-mail client feature, a separate mail server is also required. Garoon supports the following mail servers:

Protocol

- SMTP
- SMTPS
- POP3
- POP3S
- IMAP4
  Garoon currently supports IMAP4 for receiving e-mails only. IMAP4 cannot be used for other functions.

Authentication Method

- APOP
- POP before SMTP
- SMTP Authentication

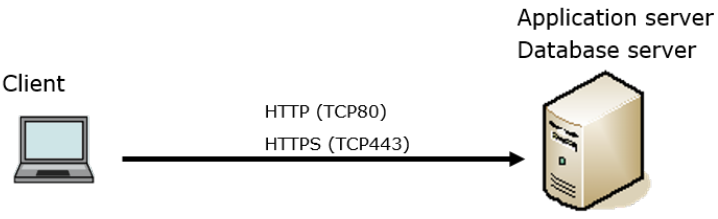
Encryption Protocol

- SSL
- TLS
  TLS is supported only for outgoing mail servers.

1.2.2 Ports Used by Garoon

This section describes ports used by Garoon. When a firewall is deployed, you must open only ports that are relevant to your server configuration or protocols.

Single-Machine Deployment



Communication Between Clients and the Application Server

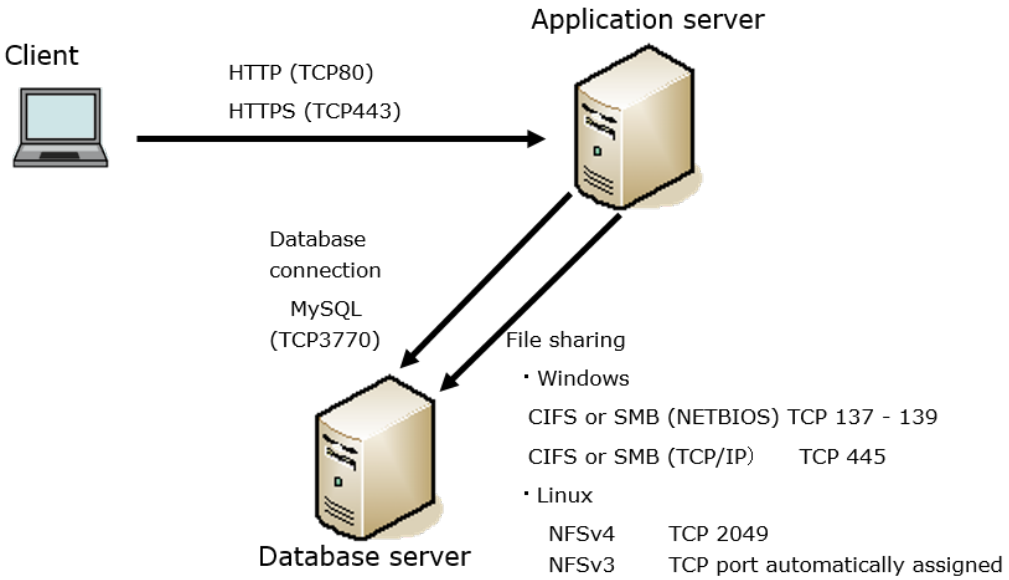
Protocol	Port Number Commonly Used
HTTP	TCP80

HTTPS	TCP443

Tip

- In a single-machine deployment, TCP port 3770 must be closed. The port is used for communication with MySQL but it should not be accessed from the outside of the server machine. Note that you should not disclose the port numbers to others.

Server-Distributed Deployment



Communication Between Clients and the Application Server

Protocol	Port Number Commonly Used
HTTP	TCP80
HTTPS	TCP443

Communication Between the Application Server and the Database Server

Purpose	OS	Protocol	Port Number Commonly Used
Database connection	Windows	MySQL	TCP3770
	Linux		
File sharing	Windows	CIFS or SMB (NETBIOS)	TCP137-139
		CIFS or SMB (TCP/IP)	TCP445
	Linux	NFSv4	TCP2049
		NFSv3	TCP port automatically assigned

Tip

- In a server-distributed deployment, TCP port 3770, which is used for communication with MySQL, must be opened to allow only requests from the application server.
- Generally, Garoon uses TCP port 3770 to communicate with MySQL.
  However, a different port number may be chosen in some installations.

- The MySQL port number is specified in the MySQL configuration file (my.ini or my.cnf).
  The configuration file exists in the following directory if you installed MySQL bundled in the installer:
  - On Windows: C:¥Program Files¥Cybozu¥mysql-5.0¥etc¥my.ini
  - On Linux: /usr/local/cybozu/mysql-5.0/etc/my.ini

Features that Require Internet Access

To use the features listed below, Garoon must be able to access the Internet.
Note that the Cybozu Office Connector and the Notices from Cybozu are available only in Japanese.

- Cybozu Office Connector (weather forecasts and Rokuyo)
- Notices from Cybozu
- RSS Reader (to add Internet sites)

1.2.3 Required Settings for Servers Using IPv6 Communication

To run Garoon on a server using IPv6 communication, you must edit the MySQL configuration file (my.ini or my.cnf). The following steps assume that MySQL bundled in the installer has been installed:

For Windows

Steps:

1. **Log into the server machine as a user who has Administrator rights on the server machine.**
2. **On Windows, from Administrative Tools, open "Services".**
3. **Select "Cybozu_Scheduling_Service_cbgrn" and click "Stop Service".**
4. **Select "Cybozu_Database_Engine_5_0" and click "Stop Service".**
5. **Open the my.ini file.**
   The my.ini file exists in the following directory if you installed MySQL bundled in the installer:
   - C:¥Program Files¥Cybozu¥mysql-5.0¥etc¥my.ini
6. **In the [mysqld] section, include the statement "bind-address=::".**
   Before changing:

```
#UNCOMMENT_ONPRE_LIN user        = %HTTPD_USER%
skip-name-resolve
port                             = 3770
#socket                          = C:/Program Files/Cybozu/mysql-5.0/data/mysql.sock
(Omitted)
```

   After changing:

```
#UNCOMMENT_ONPRE_LIN user        = %HTTPD_USER%
skip-name-resolve
port                             = 3770
#socket                          = C:/Program Files/Cybozu/mysql-5.0/data/mysql.sock
bind-address=::
```

```
(Omitted)
```

7. **On Windows, from Administrative Tools, open "Services".**
8. **Select "Cybozu_Database_Engine_5_0" and click "Start Service".**
9. **Select "Cybozu_Scheduling_Service_cbgrn" and click "Start Service".**

For Linux

Steps:

1. **Log into the server machine as a root user.**
2. **Stop the scheduling service.**

```
[root@garoon admin]# /etc/init.d/cyss_cbgrn stop
```

3. **Stop the MySQL service.**

```
[root@garoon admin]# /etc/init.d/cyde_5_0 stop
```

4. **Open the my.ini file.**

   The my.ini file exists in the following directory if you installed MySQL bundled in the installer:

   • /usr/local/cybozu/mysql-5.0/etc/my.ini

5. **In the [mysqld] section, include the statement "bind-address=::".**

   Before changing:

```
[mysqld]
user          = apache
skip-name-resolve
port                            = 3770
socket                          = /usr/local/cybozu/mysql-5.0/data/mysql.sock
(Omitted)
```

   After changing:

```
[mysqld]
user          = apache
skip-name-resolve
port                            = 3770
socket                          = /usr/local/cybozu/mysql-5.0/data/mysql.sock
bind-address=::
(Omitted)
```

6. **Start the MySQL service.**

```
[root@garoon admin]# /etc/init.d/cyde_5_0 start
```

7. **Start the scheduling service.**

```
[root@garoon admin]# /etc/init.d/cyss_cbgrn start
```

2 Setting Up a Single-Machine Deployment

This chapter describes how to deploy Garoon on a single server machine.

Tip

- To enable Garoon to connect to an LDAP server over SSL, additional configurations are required. For the instructions, see the following page on our website:
  https://manual.cybozu.co.jp/en/tech/sslsetup.html

2.1 Preparing for Installation

This section describes preliminary tasks to be performed before you can install Garoon. The tasks include preparing information necessary for installation and installing a Web server service.

2.1.1 Preparing Information Necessary for Installation

The following information is required for installing Garoon:

Item	Description
Installer	You can download the latest installer from the following Japanese page: https://garoon.cybozu.co.jp/trial/package/index.html
Administrator password (for Windows)or root password (for Linux)	The password of the user account that is used to manage Garoon. This password is required for initializing Garoon.
System administrator information	The information of the system administrator of Garoon. • User name • Login name • Password
Customer information	The information of the customer who will use Garoon. The following information must be available: • Company name • Pronunciation of company name If you want to change the logo displayed on screens, prepare one of the following: • Image file • URL pointing to the image file's location
Database administrator password	The password of the user account (cbroot) that is used to manage MySQL. You must keep this password strictly confidential.
Installation identifier	A string that identifies a Garoon installation. The following characters can be used: • Lowercase alphabetical characters (a–z) • Uppercase alphabetical characters (A–Z) • Underscores (_)

Item	Description
	• Numbers (0–9) Tip: • The default value is "cbgrn". • An identifier cannot start with a number. • The maximum length is 10 characters. • If you already have a different Cybozu product installed, the new installation identifier must be different from any other identifiers that are currently used for Cybozu products.
CGI directory	A directory to be used for storing CGI programs and configuration files for Garoon. The default directory is as follows: • On Windows: C:¥Inetpub¥scripts • On Linux: /var/www/cgi-bin Tip: For Windows, the CGI directory must be configured as a virtual directory before you can install Garoon. For information on how to create a virtual directory, see the following page on our website: https://manual.cybozu.co.jp/en/tech/webalias/
Document root directory	A directory to be used for storing HTML files and image files for Garoon. The default directory is as follows: • On Windows: C:¥Inetpub¥wwwroot • On Linux: /var/www/html

2.1.2 (For Both Operating Systems) Installing a Web Server Service

Install a Web server service on the serve machine, and configure the Web server to enable CGI programs.
If you plan to use an existing installation of a Web server service, additional configurations may be required for running Garoon, such as granting permissions and setting virtual directories.
You must refer to the following page to configure required settings, regardless of whether you plan to install a new Web server service or use an existing installation.
https://manual.cybozu.co.jp/en/tech/webinstall/

After a Web server service is installed, ensure that the Web server service is running.

Tip

- For information on virtual directory, see the following page on our website:
  https://manual.cybozu.co.jp/en/tech/webalias/
- On Linux, configure Apache so that it runs in prefork mode.

2.1.3 (For Both Operating Systems: Only When Using an Existing MySQL Installation) Changing MySQL Settings

MySQL is bundled in the Garoon installer. We recommend that you set up Garoon by installing MySQL bundled in the Garoon installer. However, you can use your existing MySQL installation.
The only supported version of MySQL is 5.6.25, which is bundled in the Garoon installer.
To use an existing MySQL installation, the following steps are required:

Editing the MySQL Configuration File (my.ini or my.cnf) Before You Install Garoon

Before you install Garoon, edit the my.ini file or my.cnf file to include the values described below.

Steps:

1. **Stop the MySQL service.**
2. **Move to the directory where the configuration file exists.**
   - Example of its directory on Windows: C:¥ProgramData¥MySQL¥MySQL Server 5.6¥my.ini
   - Example of its directory on Linux: /usr/my.cnf **Open the configuration file in a text editor. Include the following values and save the file:**
   - For Windows (my.ini)

     Before changing:

     ```
     sql_mode=NO_ENGINE_SUBSTITUTION,STRICT_TRANS_TABLES
     ```

     After changing:

     ```
     sql_mode=NO_ENGINE_SUBSTITUTION
     ```

   - For Linux (my.cnf)

     Before changing:

     ```
     sql_mode=NO_ENGINE_SUBSTITUTION,STRICT_TRANS_TABLES
     ```

     After changing:

     ```
     sql_mode=NO_ENGINE_SUBSTITUTION

     character-set-server = utf8mb4
     collation-server = utf8mb4_general_ci
     skip-character-set-client-handshake

     [client]
     default-character-set=utf8mb4
     ```

4. **Start the MySQL service.**

Entering the Connection Information of MySQL While Installing Garoon

While installing Garoon, select the "Use MySQL already installed on the server" option and enter the following information about the existing MySQL installation:

- The directory where MySQL is installed
- The port number of MySQL
- The MySQL root password

Restarting the MySQL Service After Garoon Is Installed

After the installation of Garoon is completed, you must restart the MySQL service.

Contacting Cybozu About Setting Up the Full Text Search Server

When you install MySQL bundled in the installer, you can use the regular steps to set up the Full text search server.
When you use an existing MySQL installation, you must configure special settings for the Full text search server. For more information on the procedure, please contact us.

2.1.4 (Only for Windows) Configuring a Virtual Directory

A virtual directory maps a URL that users enter on the Web browser to a specific directory on the server. The CGI directory of the Web server must be configured as a virtual directory before you can install Garoon.
For information on virtual directory, see the following page on our website:
https://manual.cybozu.co.jp/en/tech/webalias/

2.1.5 (Only for Windows Server 2012 R2) Installing a Visual C++ Redistributable Package

Before you can install or upgrade to Garoon 4.6 on Windows Server 2012 R2, confirm that the prerequisites listed below are met. Garoon 4.6 cannot be installed successfully if either of the prerequisites is not met.

- Visual C++ Redistributable for Visual Studio 2015 is installed.
- KB2919355 and KB2999226 are applied.

2.1.6 (Only for Linux) Disabling KeepAlive in Apache

In Apache 2.2 (bundled in Red Hat Enterprise Linux 6), the default configuration file includes the statement "KeepAlive Off". The statement means that KeepAlive is disabled. You do not need to edit the configuration.
In Apache 2.4 (bundled in Red Hat Enterprise Linux 7), the default configuration file includes no statement about KeepAlive. The absence of the statement means that KeepAlive is enabled. To disable KeepAlive in Apache 2.4, you must edit the configuration file to include the statement "KeepAlive Off".

Steps:

1. **Edit httpd.conf to disable KeepAlive.**
   Before changing:

```
      :
User apache
Group apache
```

   After changing:

```
      :
User apache
Group apache
KeepAlive Off
```

2. **After you edit the configuration file, restart the Web server service on the server machine.**

   • For Red Hat Enterprise Linux 6:

   ```
   [root@garoon admin]# /etc/init.d/httpd restart
   ```

   • For Red Hat Enterprise Linux 7 or later:

   ```
   [root@garoon admin]# systemctl restart httpd.service
   ```

Tip

• When you choose to enable KeepAlive, you should adjust the KeepAliveTimeout value for your environment. The greater the value of KeepAliveTimeout, the more likely Garoon is to respond slowly when Garoon handles many requests.

2.1.7 (Only for Linux) Disabling transparent hugepages(THP)

THP should be disabled. When THP is enabled, the performance of Garoon version 4.6 or later can be degraded.

Steps:

1. **Disable THP.**

   ```
   [root@garoon admin]# echo never > /sys/kernel/mm/transparent_hugepage/enabled
   ```

2. **Check that THP is disabled.**

   The brackets ([ ]) indicate the currently selected value on the server machine. When THP is disabled, "never" should be selected. Ensure that the following output is displayed:

   ```
   [root@garoon admin]# cat /sys/kernel/mm/transparent_hugepage/enabled
   always madvise [never]
   ```

3. **Edit /etc/rc.d/rc.local to include the following statement so that THP can stay disabled after a restart:**

   File to be edited:

   • /etc/rc.d/rc.local

   Before changing:

   ```
         :
   touch /var/local/subsys/local
   ```

   After changing:

   ```
         :
   touch /var/local/subsys/local
   echo never > /sys/kernel/mm/transparent_hugepage/enabled
   ```

4. **[Only for Red Hat Enterprise Linux 7] Set the Execute permission on /etc/rc.d/rc.local.**
   This must be performed only on Red Hat Enterprise Linux 7. If you use Red Hat Enterprise Linux 6, skip this step and proceed to step 8.

```
# chmod u+x /etc/rc.d/rc.local
```

2.1.8 (Only for Linux) Disabling SELinux

For Linux, you must disable SELinux. Garoon does not work properly when SELinux is enabled.

- To check whether SELinux is enabled:
  Execute the following command:

```
[root@garoon admin]# getenforce
```

  One of the following values is returned:

  - Enforcing: Indicates that SELinux is enabled.
  - Permissive: Indicates that SELinux is in debugging mode (where access control is not enforced but log entries are generated in the same way as when SELinux is enabled).
  - Disabled: Indicates that SELinux is disabled.

- To disable SELinux:
  When SELinux is enabled, open the SELinux configuration file (/etc/sysconfig/selinux) to change the value of "SELinux". To apply the change, you must restart the operating system.
  Before changing:

```
    :
SELinux=Enforcing
```

  After changing:

```
    :
SELinux= Disabled
```

  Restart the operating system.

2.1.9 (Only for Linux) Installing Libraries Required for Garoon

For Linux, ensure that the libraries required for running Garoon are installed.
For details on libraries used by Garoon, see the following page:
https://manual.cybozu.co.jp/en/tech/linux_library2.html

2.2 Installing on Windows

This section describes how to install Garoon on Windows.
For example, the steps below are based on the following operation environment:

- Operating system: Windows Server 2012
- Web server service: IIS 8.0

- CGI directory of the Web server: C:¥inetpub¥scripts
- Document root directory of the Web server: C:¥inetpub¥wwwroot
- MySQL: Using MySQL bundled in the Garoon installer

Caution

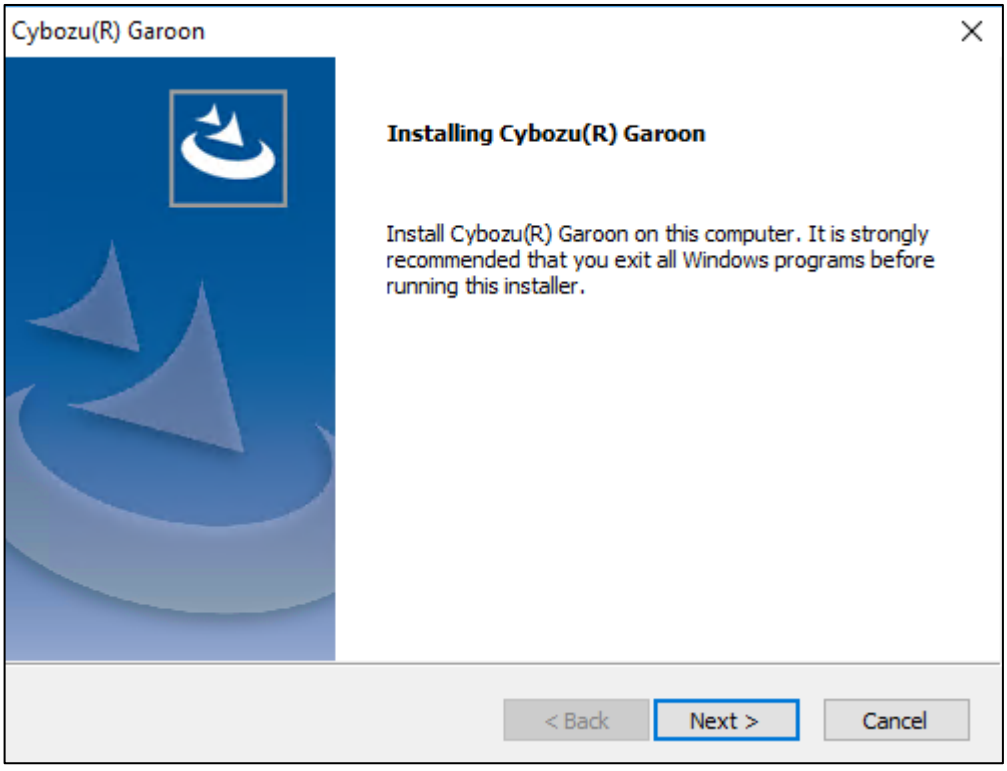
- Do not install a new version of Garoon on a server machine where an older version of Garoon is already installed. Installing different versions of Garoon on one server machine causes the older version to fail.

Note

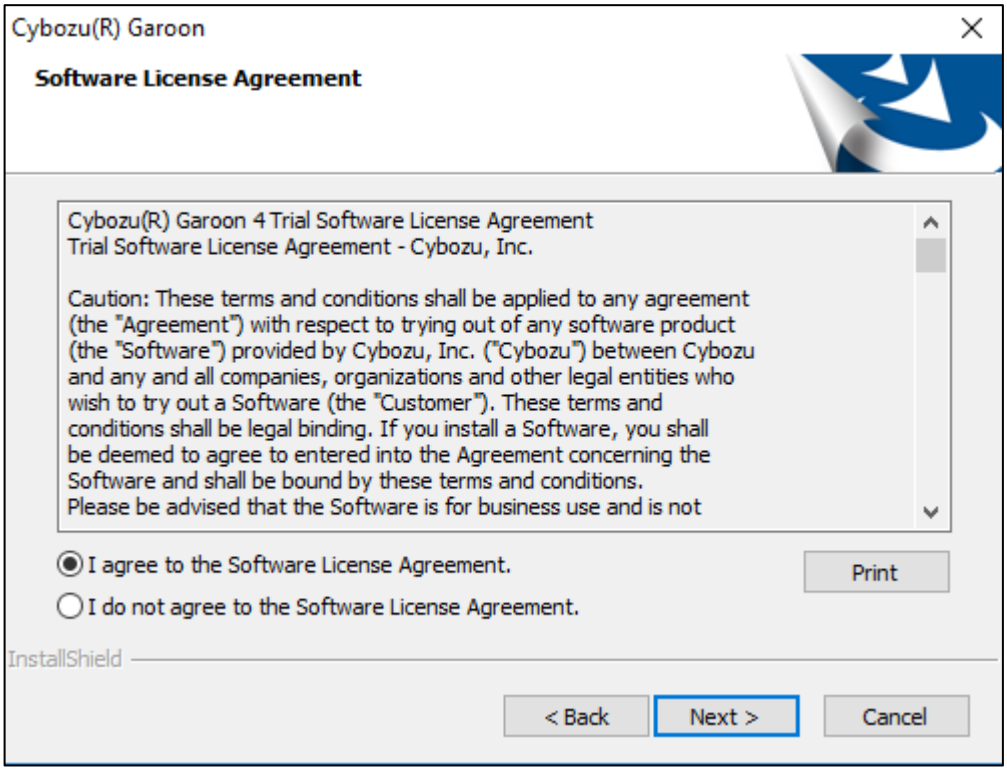
- You must exit all Windows programs before you start the installation.
- You must keep the database administrator password and database user password strictly confidential. If you lose the password, you will not be able to reset the password or migrate Garoon to another server machine.
- Do not operate more than one Garoon installation on one server machine.
- Installing Garoon involves installing the Visual C++ Redistributable for Visual Studio 2015 package. Do not delete the package.
  For Windows Server 2012 R2, note that you must install the package manually. For details, see the following section:
  "2.1.5 (Only for Windows Server 2012 R2) Installing a Visual C++ Redistributable Package" on page 6

Steps:

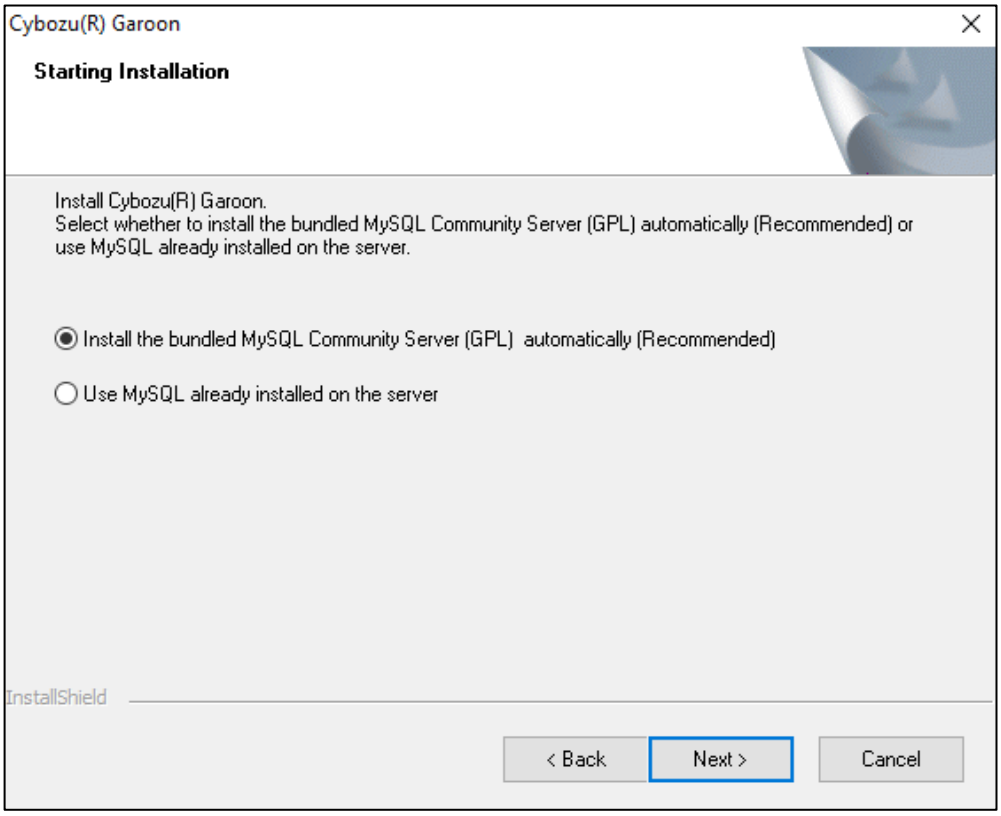
1. **Log into the server machine you want to install Garoon on as a user who has Administrator rights on the server machine.**
2. **Place the installer in any folder, such as "C:¥Temp".**
3. **Start the installer and click "Next".**



4. **Read the Software License Agreement carefully. If you agree with it, select "I agree to the Software License Agreement" and click "Next".**

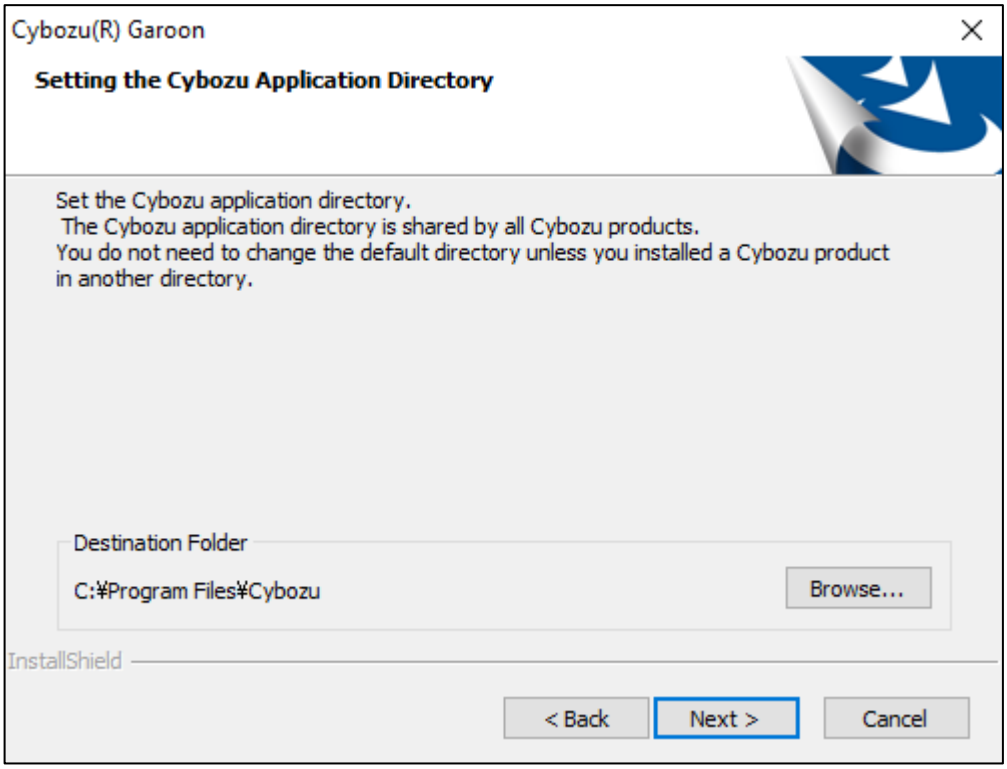


5. **Select "Install the bundled MySQL Community Server (GPL) automatically (Recommended)" and click "Next".**

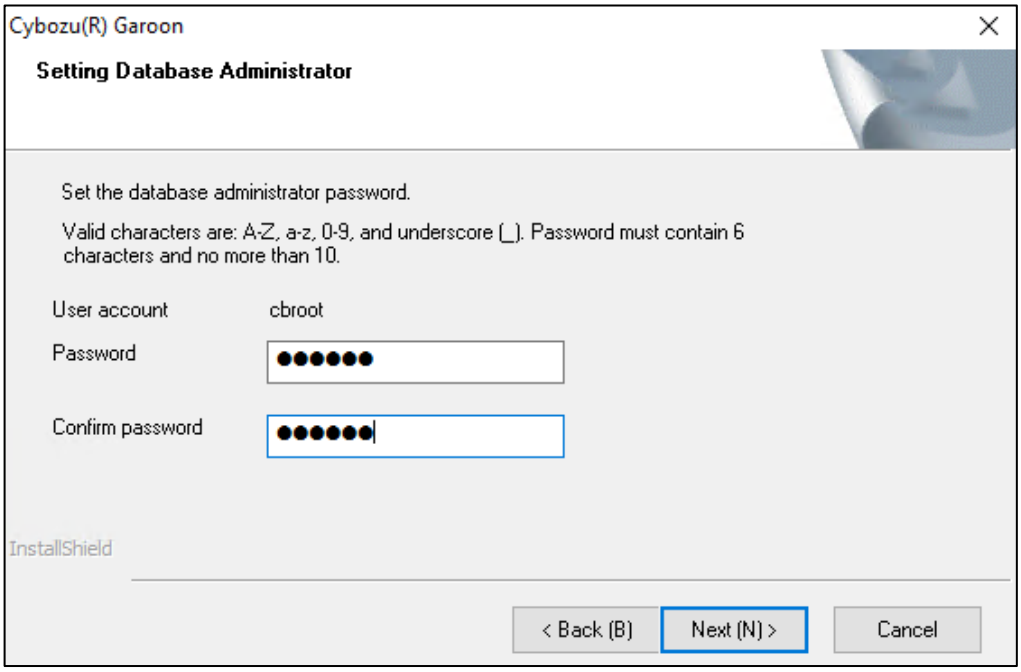


6. **Confirm the Cybozu application directory and click "Next".**

If you want to change the Cybozu application directory, click "Browse" and select another directory.

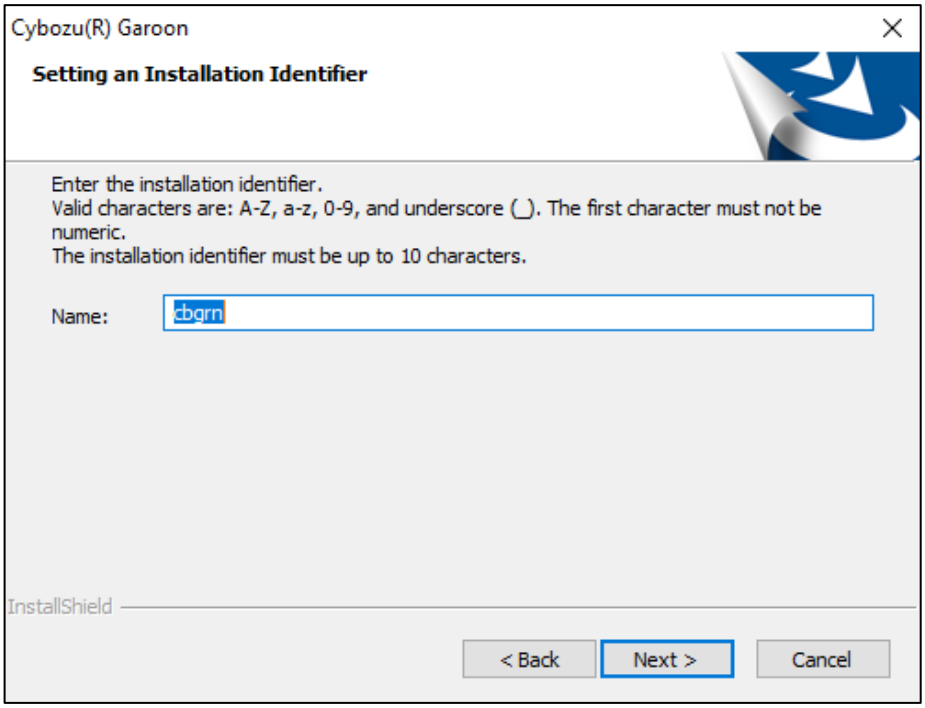


7. **Enter the database administrator password and click "Next".**



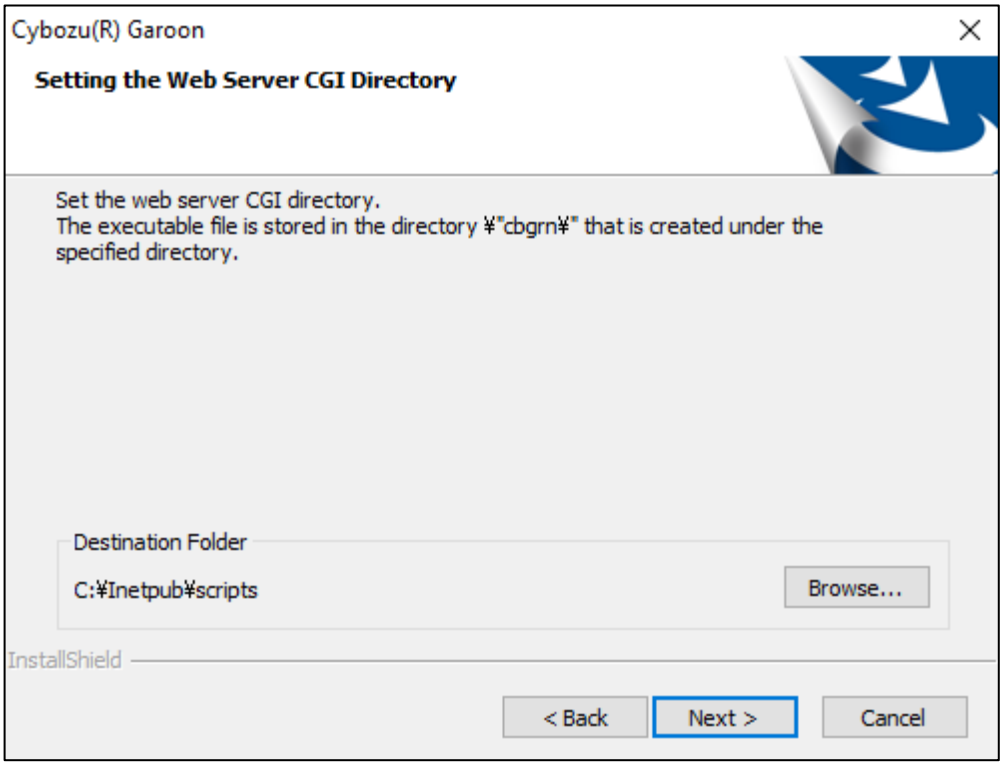
8. **Enter an installation identifier and click "Next".**

- The initial setting is "cbgrn". If you want to change the setting, type any installation identifier and press the Enter key.
- If IIS is not running, you will get a "Failed to detect a web server" error message, and the installer stops.



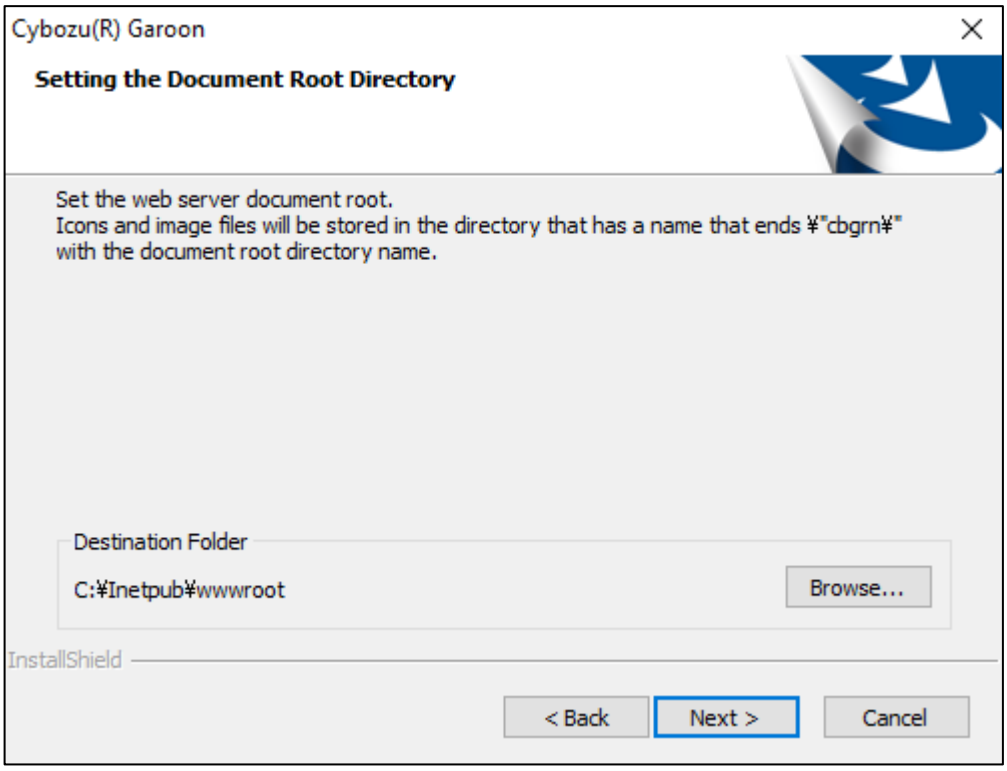
9. **Confirm the CGI directory of the Web server and click "Next".**

If you want to change the CGI directory, click "Browse" and select another directory.



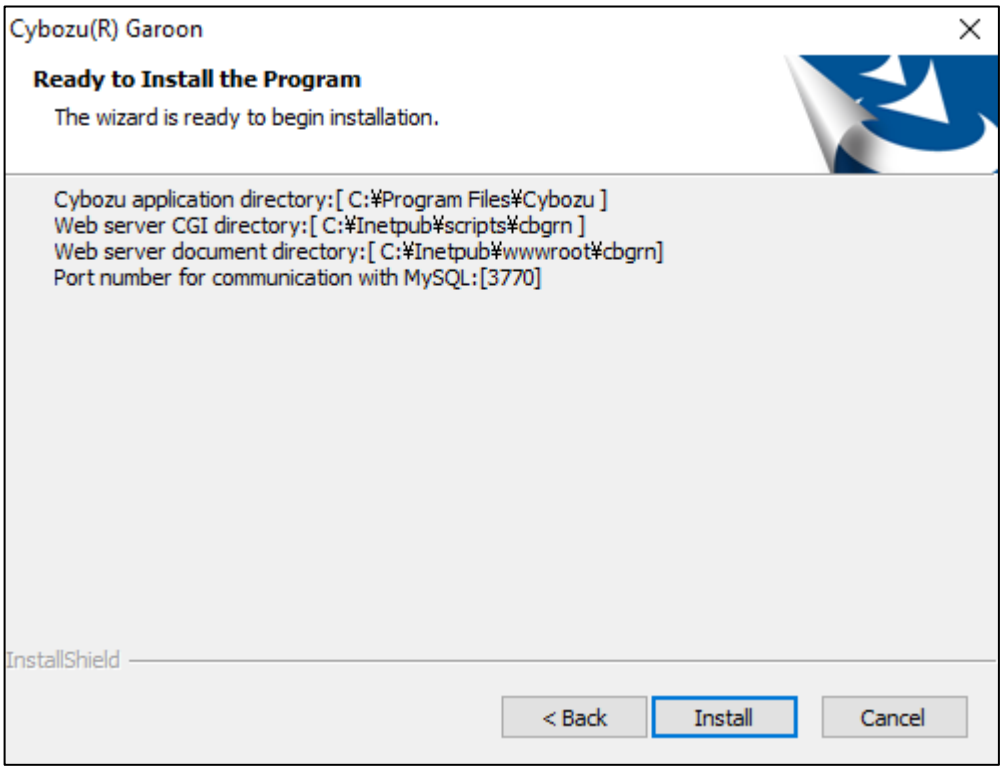
10. **Confirm the document root directory of the Web server and click "Next".**

If you want to change the document root directory, click "Browse" and select another directory.



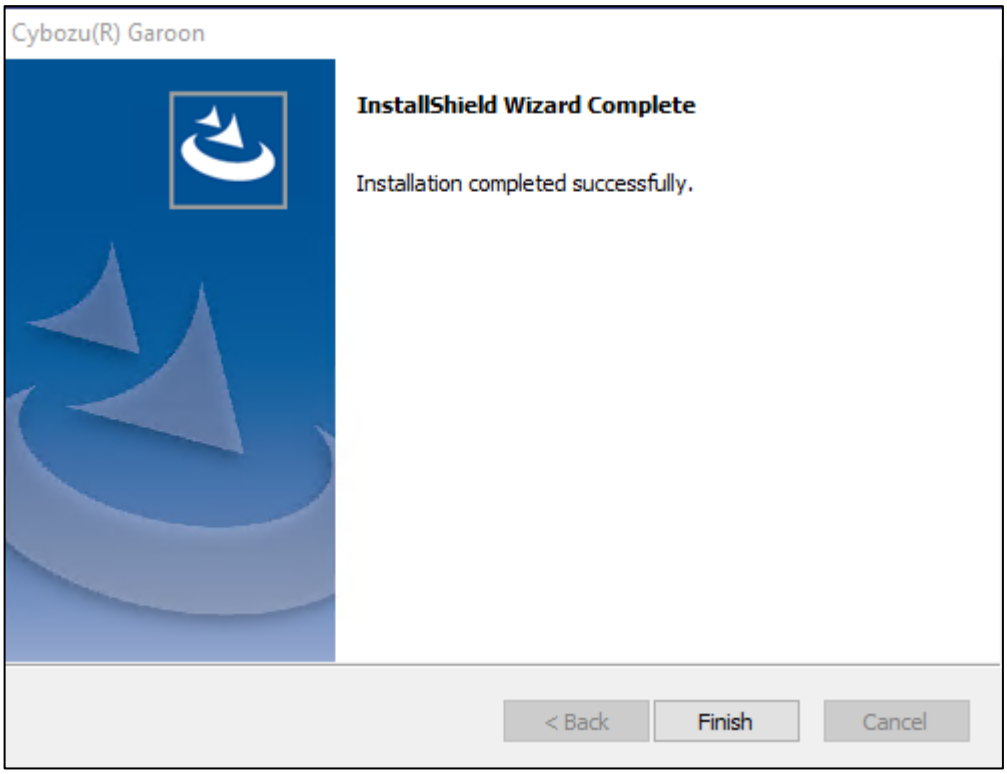
11. **Verify the displayed settings and click "Install".**

The installation starts.



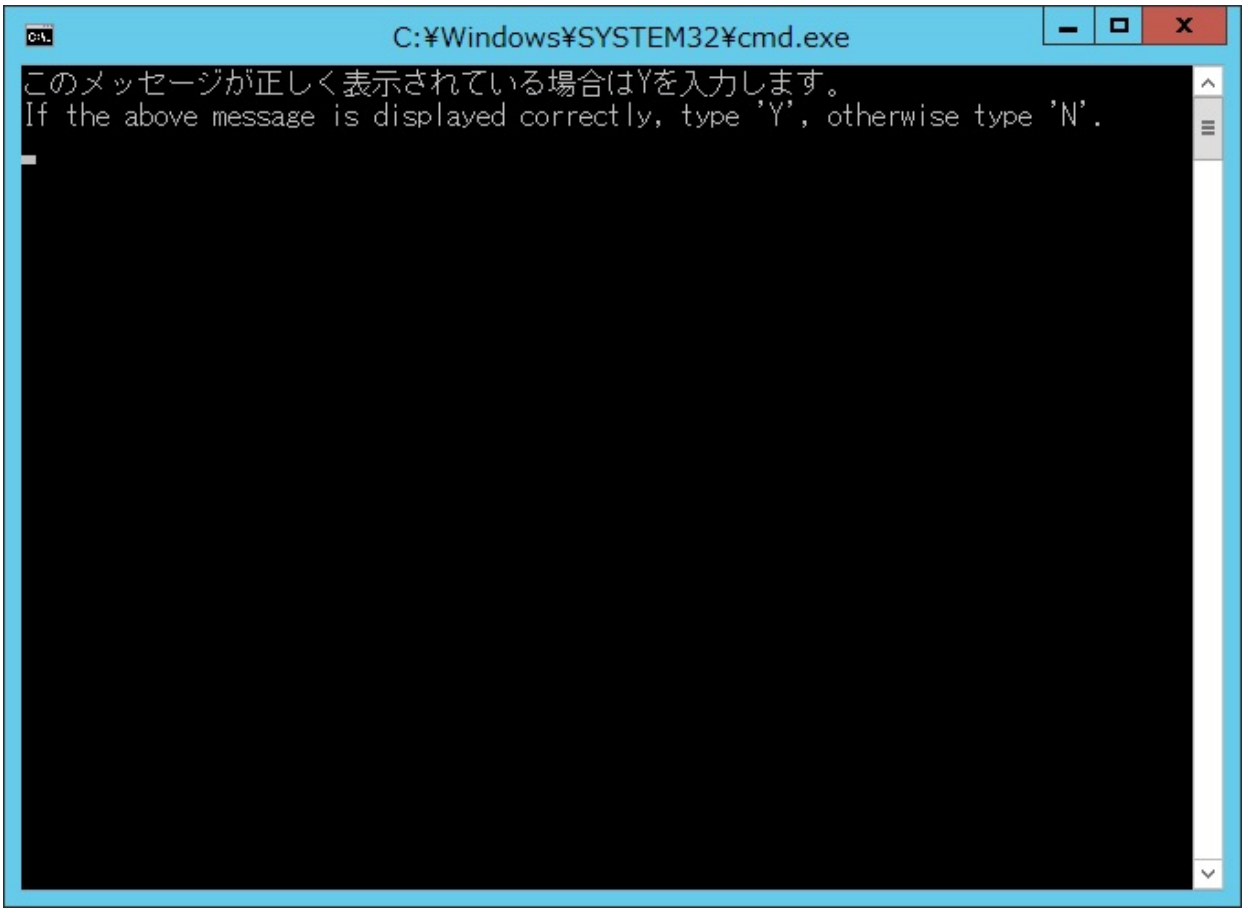
12. **Click "Finish" on the "InstallShield Wizard Complete" screen.**

The installer exits.



13. **When the Command Prompt window appears, initialize Garoon.**

See "2.2.1Initializing Garoon on Windows" on page 25.



Tip

- The installation log file for Garoon and MySQL is saved in the following directory if you installed Garoon with the default settings:
  C:¥WINDOWS¥SysWOW64¥_cb_installer.log

2.2.1 Initializing Garoon on Windows

The initialization involves setting passwords for the Administrator of Garoon and the database user.

To initialize Garoon, use Command Prompt to run initialize.bat.

Note

- If you cancel the initialization process while it is in progress, Garoon may become unusable.
  If you cancel the initialization process midway, roll back Garoon to its pre-initialization state, and start the initialization process again from the beginning.
- To delete standard data and sample data, you must initialize Garoon. The initialization of Garoon also deletes other data.

Steps:

1. **Go to the initialize directory.**
   - This step can be skipped if you proceed to initialization after Garoon is installed. Proceed to step 3.
   - Execute the following command:

     cd *CGI directory*¥*installation identifier*¥initialize

     Example:

     cd C:¥inetpub¥scripts¥cbgrn¥initialize

2. **Type the following command and press the Enter key:**
   - For example, you can use the following command when you installed MySQL bundled in the Garoon installer:

     initialize.bat ja "C:¥Program Files¥Cybozu¥mysql-5.0" cybozu

   - About initialize.bat
     Syntax:

     initialize.bat *language* "*path to the MySQL directory*" *database administrator password*

     Parameters:

language	Specify one of the following: ja: Japanese. The time zone is "Asia/Tokyo". en: English. The time zone is "Europe/London". zh: Chinese. The time zone is "Asia/Shanghai".
path to the MySQL directory	If you installed MySQL bundled in the Garoon installer, the directory path is as follows: C:¥Program Files¥Cybozu¥mysql-5.0 If MySQL was already installed on the server, specify the MySQL installation directory.

3. **Check the displayed information, type 'Y' or 'N', and press the Enter key.**

When you type 'Y', you will see Japanese messages for step 4 and beyond. When you type 'N', you will see English messages for step 4 and beyond. The following procedure assumes that you type 'Y':

```
このメッセージが正しく表示されている場合は Y を入力します。
If the above message is displayed correctly, type 'Y', otherwise type 'N'.
```

4. **Type the database user password and press the Enter key.**

```
Initializing Garoon.

Set a password for the database user.
Valid characters are: a–z, A–Z, 0–9, and underscore (_).
Passwords must be 6 to 10 characters.
```

5. **Type the Administrator password and press the Enter key.**

```
Set a password for "Administrator".
```

- Passwords must be composed of only single-byte characters.
- The following characters are not acceptable: less than sign (<), greater than sign (>), vertical bar (|), and ampersand (&). In some environments, other symbols are also unacceptable.
- If you want to use symbols in your password, initialize Garoon and then use "System Administration" to change the password. For details on how to change the password, see the *Administrator Guide*: https://help.cybozu.com/en/g4/guide/index.html#guide_index_02

6. **Select which data sets you want to install, and press the Enter key.**

You can select which data sets to install only if you typed 'Y' in step 3 and the display language is Japanese. This message does not appear if you typed 'N' in step 3.

```
Select the data that you want to install on Garoon. Select "Nothing" to install no data.
1: Standard data and sample data
    Installs standard data (including Japanese holidays and request forms) and sample data (including users and the portal). With the data, you can try Garoon immediately.
2: Standard data
    Installs standard data, including Japanese holidays and request forms. Sample data is not installed.
3: Nothing
[1|2|3]:
```

- About standard data and sample data
  Standard data and sample data are for helping you understand Garoon's features.
  - Standard data
    Registers holidays, appointment types, and other information. It is recommended that you install standard data if you plan to create users from scratch in Garoon.
  - Sample data
    Registers sample users, organizations, and appointments. You can use the sample users to try out Garoon's features.

  You can install standard data and sample data later. For information on how to install the data, see "Initializing Garoon" in the *Administrator Guide*.
  https://help.cybozu.com/ja/g42/admin/appdx/command/initialization.html

7. **Check the displayed information, type "yes", and press the Enter key.**

The initialization will start.

```
Summary of initialize configuration
```

```
Database administrator password: "cybozu"
Database user password: "cybozu"
"Administrator" password: "cybozu"
Data to be installed: Your selection in step 6

Are you sure you want to initialize Garoon with the above settings?
[yes or no]
```

To cancel the initialization, type "no" and press the Enter key.

```
Initialization is aborted.
To initialize again, execute the following command:

CD "C:¥inetpub¥scripts¥cbgrn¥initialize¥"
initialize.bat ja "C:¥Program Files¥Cybozu¥mysql-5.0" [CBROOT_PASSWORD]
```

8. **Confirm that the initialization is completed successfully.**

```
The installation has completed successfully.
Start a web browser and access the URL below:

http://FQDN or IP address of the server/virtual path to the CGI directory/cbgrn/grn.exe

Example) http://webserver.cybozu.co.jp/scripts/cbgrn/grn.exe
Example) http://10.10.203.55/scripts/cbgrn/grn.exe
```

9. **If your Web server service is IIS, change the IIS settings to configure the handler mapping.**
See "2.2.2Changing IIS Settings" on page 27.

2.2.2 Changing IIS Settings

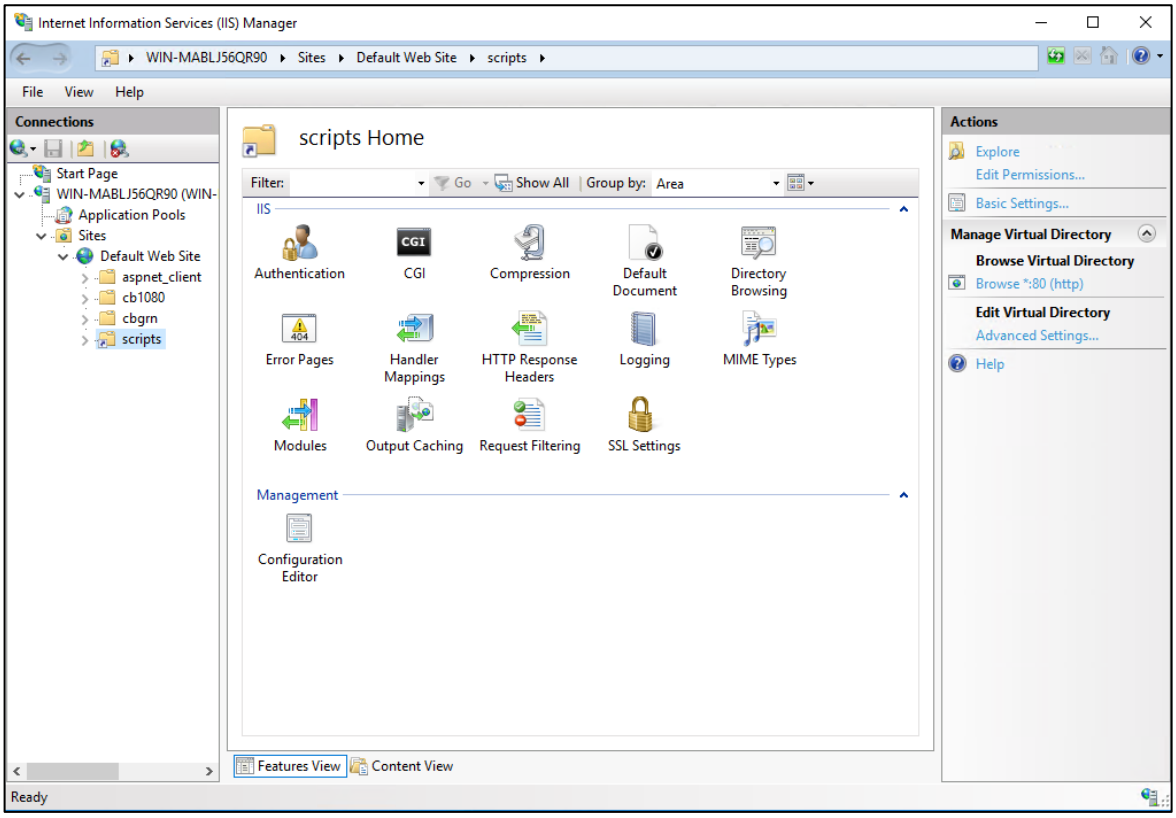
If your Web server service is IIS, change the IIS settings to configure the handler mapping after Garoon is installed. This example assumes that you use IIS 8.0 and that Garoon is installed in the default installation directory.

Steps:

1. **Start Server Manager.**
2. **Start IIS Manager.**
   - For IIS 8.0 or 8.5:
     Select "Tools" > "Internet Information Services (IIS) Manager".
   - For IIS 10:
     On Windows, select "Administrative Tools" > "Internet Information Services (IIS) Manager".

3. **From the "Connections" pane, select "*computer name*" > "Sites" > "Default Web Site" > "scripts".**

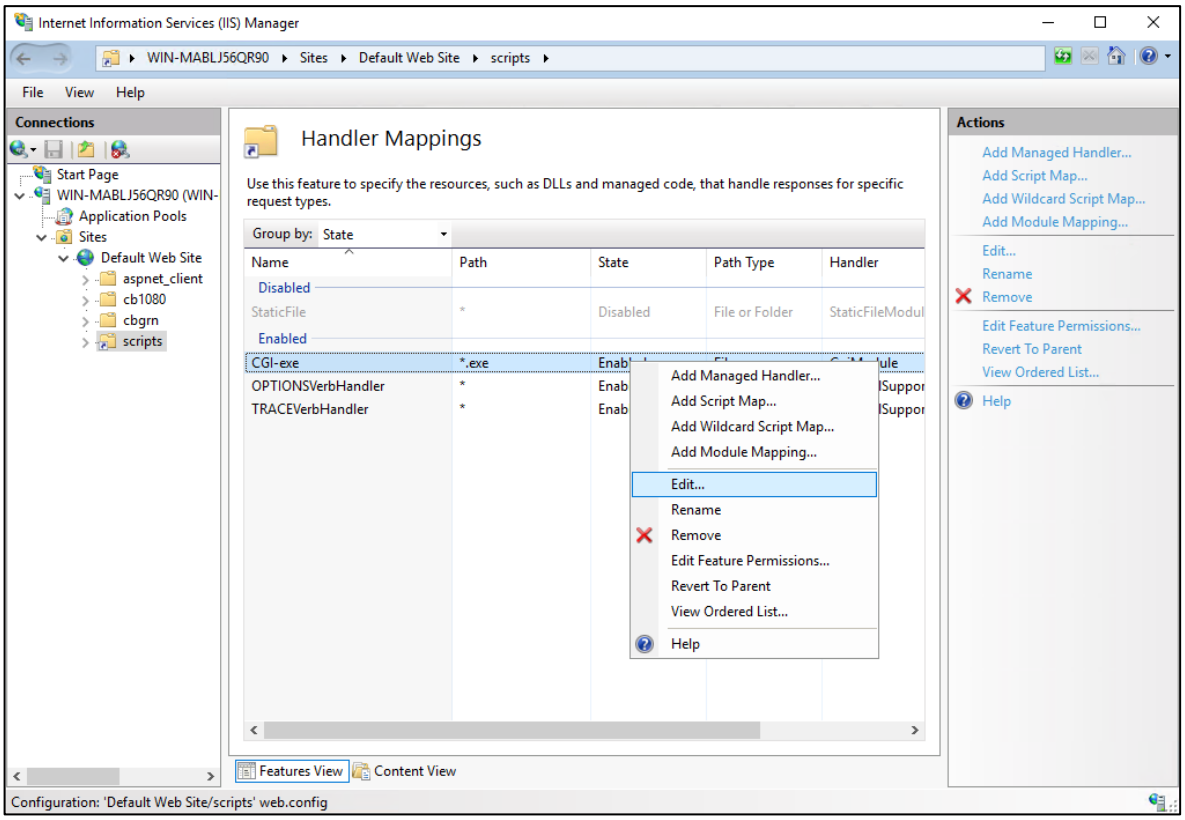
If "scripts" does not appear under "Default Web Site", check the virtual directory settings.
The CGI directory of the Web server, which was specified during Garoon installation, must be configured as a virtual directory.
For information on how to create a virtual directory, see the following page on our website:
https://manual.cybozu.co.jp/en/tech/webalias/



4. **On the "Features View" tab, double-click "Handler Mappings" in "scripts".**

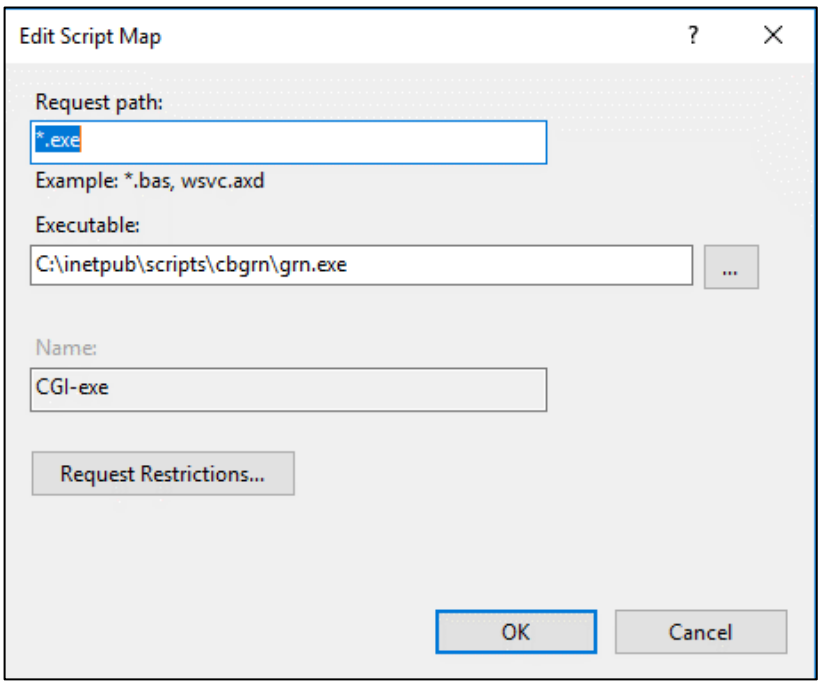
5. **Right-click "CGI-exe" and click "Edit".**

When other exe files in the same virtual directory also use "scripts", you must set a handler mapping for each exe file.



6. **On the "Edit Script Map" dialog box, in the "Executable" field, enter the path and name of the file "grn.exe". Click "OK".**

Example: C:¥inetpub¥scripts¥cbgrn¥grn.exe



7. **When you are asked "Do you want to allow this ISAPI extension?" click "Yes".**

When the ISAPI extension is allowed, the Garoon program runs on the IIS process.

If the state of "CGI-exe" is "Disabled", right-click "CGI-exe" to select "Edit Feature Permissions". Check the permissions. Select the "Execute" check box, if it is not selected. Click "OK" to apply your change.

8. **Access the Garoon URL to check that the login screen appears.**

9. **Configure Garoon's initial settings.**
See "2.4Post-Installation Tasks" on page 35.

Tip

- If you access the Garoon URL but the screen is not displayed properly, check the following points:
  - IUSR of IIS can access the document root directory.
  - The Web server has virtual directories configured properly.
    For information on how to create a virtual directory, see the following page on our website:
    https://manual.cybozu.co.jp/en/tech/webalias/
  - The firewall is configured correctly.
- If an error occurs when users attempt to attach files on Garoon, see the following Japanese page:
  https://manual.cybozu.co.jp/tech/support/trouble/access_05.html
- If the following problem occurs, you must change the settings appropriately:
  - An error (HTTP 404) occurs when users attempt to open or download a file.
    For details, see the following Japanese FAQ:
    https://faq.cybozu.info/alphascope/cybozu/web/garoon4/Detail.aspx?id=1131

2.3 Installing on Linux

This section describes how to install Garoon on Linux.
For example, the steps below are based on the following operation environment:

- Operating system: Red Hat Enterprise Linux 6
- Web server service: Apache 2.2.15
- CGI directory of the Web server: /var/www/cgi-bin
- Document root directory of the Web server: /var/www/html
- MySQL: Using MySQL bundled in the Garoon installer

Caution

- Before you start installing Garoon, ensure that the libraries required for running Garoon are installed.
See "(Only for Linux) Installing Libraries Required for Garoon" on page 18.
- Do not install a new version of Garoon on a server machine where an older version of Garoon is already installed. Installing different versions of Garoon on one server machine causes the older version to fail.

Note

- You must keep the database administrator password and database user password strictly confidential. If you lose the password, you will not be able to reset the password or migrate Garoon to another server machine.
- Do not operate more than one Garoon installation on one server machine.

- Before you start installing Garoon, ensure that the Web server service is running.

Steps:

1. **Log into the server machine as a root user.**

2. **Check httpd.conf to ensure that KeepAlive is disabled.**
   For details on how to check or edit KeepAlive settings, see the following section:
   "2.1.6 (Only for Linux) Disabling KeepAlive in Apache" on page 16

   Tip

   - When you choose to enable KeepAlive, you should adjust the KeepAliveTimeout value for your environment. The greater the value of KeepAliveTimeout, the more likely Garoon is to respond slowly when Garoon handles many requests.

3. **Check that THP is disabled.**
   The brackets ([ ]) indicate the currently selected value on the server machine. When THP is disabled, "never" should be selected. Ensure that the following output is displayed:

   ```
   [root@garoon admin]# cat /sys/kernel/mm/transparent_hugepage/enabled
   always madvise [never]
   ```

   Disable THP, if it is enabled. For details, see the following section:
   "2.1.7(Only for Linux) Disabling transparent hugepages(THP)" on page 17

4. **Move to the directory where the installer exists.**

5. **Execute the installer.**

   ```
   [root@garoon admin]# sh grn-4.6.0-linux-x64.bin
   ```

6. **Check the displayed information, type 'Y' or 'N', and press the Enter key.**
   When you type 'Y', you will see Japanese messages for step 7 and beyond. When you type 'N', you will see English messages for step 7 and beyond. The following procedure assumes that you type 'Y':

   ```
   ガルーンのインストールを開始します。このメッセージが正しく表示されている場合は Y を入力します。
   Installing starts. If the above message is displayed correctly, type 'Y', otherwise type 'N'.
   ```

7. **Read the Software License Agreement carefully. If you agree with it, type "yes" and press the Enter key.**
   To scroll the window, press the Space or Enter key.

8. **Type an installation identifier and press the Enter key.**
   The initial setting is "cbgrn". If you want to change the setting, type any installation identifier and press the Enter key.
   The installation identifier that you enter here will be included in the URL to access Garoon.

   ```
   Enter the installation identifier.

   Valid characters are: a–z, A–Z, 0–9, and underscore (_). The first character must not be numeric.
   The installation identifier must be up to 10 characters.
   [cbgrn]:
   ```

9. **Select which MySQL installation to use. Select '1' and press the Enter key.**

```
Select whether to install the bundled MySQL Community Server (GPL) automatically (Recommended),
or to use MySQL already installed on the server.
1: Install the bundled MySQL Community Server (GPL) automatically
2: Use MySQL already installed on the server
[1|2]:
```

10. **Confirm the installation directory for Garoon programs and data, and then press the Enter key.**

    If you want to change the installation directory, type the absolute path of another directory, and then press the Enter key.

```
Specify a directory for program files.
Check available free disk space. The data size may become large.
[/usr/local/cybozu]
```

11. **Type the database administrator password and press the Enter key.**

```
Enter a password for the database administrator (cbroot).
Valid characters are: a–z, A–Z, 0–9, and underscore (_).
Passwords must be 6 to 10 characters.

Enter Password:
```

12. **Type the database user password and press the Enter key.**

```
Enter a password for the database user.
Valid characters are: a–z, A–Z, 0–9, and underscore (_).
Passwords must be 6 to 10 characters.

Enter Password:
```

13. **Type the Administrator password and press the Enter key.**

```
Enter a password for "Administrator".
Enter Password:
```

14. **Confirm the CGI directory of the Web server and press the Enter key.**

    If you want to change the CGI directory, type the absolute path of another directory, and then press the Enter key.

```
Set the CGI directory.
The installation directory is set to "CGI directory/cbgrn".
Example: /var/www/cgi-bin/cbgrn
[/var/www/cgi-bin]
```

15. **Confirm the document root directory of the Web server and press the Enter key.**

    If you want to change the document root directory, type the absolute path of another directory, and then press the Enter key.

```
Specify the document root directory.
The installation directory is set to "document root directory/cbgrn".
Example: /var/www/html/cbgrn
[/var/www/html]
```

16. **Confirm name of the Run As user of the Web server and press the Enter key.**

    When you want a different Run As user, type the name of the user and press the Enter key.

```
Enter the Web server Run As user name.
```

```
[apache]:
```

When "nobody" is displayed, it indicates that the Web server service is not running. Press Ctrl + C to suspend the installation. Start the Web server service, and then execute the installer again.

17. **Select which data sets you want to install, and press the Enter key.**

You can select which data sets to install only if you typed 'Y' in step 4 and the display language is Japanese. This message does not appear if you typed 'N' in step 4.

```
Select the data that you want to install on Garoon. Select "Nothing" to install no data.
1: Standard data and sample data
    Installs standard data (including Japanese holidays and request forms) and sample data (including
users and the portal). With the data, you can try Garoon immediately.
2: Standard
    Installs standard data, including Japanese holidays and request forms. Sample data is not installed.
3: Nothing
[1|2|3]:
```

- About standard data and sample data
  Standard data and sample data are for helping you understand Garoon's features.
  - Standard data
    Registers holidays, appointment types, and other information. It is recommended that you install standard data if you plan to create users from scratch in Garoon.
  - Sample data
    Registers sample users, organizations, and appointments. You can use the sample users to try out Garoon's features.

  You can install standard data and sample data later. For details on how to install the data, see the following page:
  See "2.3.1Initializing Garoon on Linux" on page 34.

18. **Check the displayed information. If it is correct, type "yes", and then press the Enter key.**

The installation will start.

```
Summary of install configuration
Installation directory for program files:        /usr/local/cybozu
Database administrator:                          cbroot
Database administrator password:                 cybozu
"Administrator" password:                        cybozu
Database user password:                  cybozu
Data to be installed: Standard data and sample data
Installation identifier:                         cbgrn
Web server user name:                            apache
CGI installation directory:                      /var/www/cgi-bin/cbgrn
Installation directory for image files:                  /var/www/html/cbgrn
Port number for communicating with MySQL:                3770
Installation script for scheduling service:      /etc/rc.d/init.d/cyss_cbgrn
Uninstallation script for Cybozu products:                       /var/www/cgi-
bin/cbgrn/uninstall_cbgrn
Installation script for MySQL:                           /etc/rc.d/init.d/cyde_5_0
Uninstallation script for MySQL:                         /usr/local/cybozu/mysql-5.0/uninstal
l_cyde_5_0

Are you sure you want to install the product with the above settings?
[yes or no]:
```

19. **Confirm that the installation is completed successfully.**

```
Installing MySQL...
Installing CGI...
installing DB Script....
Installing Cybozu Scheduling Service...
Installing Web files...
Copying license files...
Installing uninstall scripts...
DataBase Initialization...
done.

The installation has completed successfully.
Start a web browser and access the URL below:

http://FQDN or IP address of the server/virtual path to the CGI directory/cbgrn/grn.cgi

Example) http://webserver.cybozu.co.jp/cgi-bin/cbgrn/grn.cgi
Example) http://10.10.203.55/cgi-bin/cbgrn/grn.cgi
```

20. **Configure Garoon's initial settings.**

See "2.4Post-Installation Tasks" on page 35.

Tip

- For Garoon version 3.5.0 and later, Garoon is initialized during the installation process. Therefore, it is not necessary for you to initialize Garoon before you can start using Garoon.
  After you start using Garoon, you can initialize Garoon when you want to delete sample data or data that you entered for trial use.
  See "2.3.1Initializing Garoon on Linux" on page 34.
- If you access the Garoon URL but the screen is not displayed properly, check the following points:
  - The Run As user of the Web server ("apache" in the example above) has the Read permission on the document root directory of the Web server.
  - The Web server has virtual directories configured properly.
    For information on how to create a virtual directory, see the following page on our website:
    https://manual.cybozu.co.jp/en/tech/webalias/
  - SELinux is disabled.
  - The firewall is configured correctly.
- The installation logs for Garoon and MySQL are saved in the following directories:
  - Installation log for Garoon: *directory where the installer was executed*/install.log
  - Installation log for MySQL: *directory where the installer was executed*/install_cyde.log

2.3.1 Initializing Garoon on Linux

You can initialize Garoon when you want to delete sample data or data that you entered for trial use.
The initialization involves setting passwords for the Administrator of Garoon and the database user.

Note

- If you cancel the initialization process while it is in progress, Garoon may become unusable. If you cancel the initialization process midway, roll back Garoon to its pre-initialization state, and start the initialization process again from the beginning.

Steps:

1. **Start a command-line console and move to the following directory:**

CGI directorylinstallation identifier

Example:

cd /var/www/cgi-bin/cbgrn

2. **Type the following command and press the Enter key:**

• Example

./grn.cgi -C -q code/command/grn_initialize.csp db_admin_password='cybozu' db_user_password='cybozu' garoon_admin_password='cybozu' default_timezone='Asia/Tokyo' default_locale='ja' init_data='1'

• Parameters

db_admin_password	Specify the database administrator password.
db_user_password	Specify the database user password.
garoon_admin_password	Specify the Administrator password.
default_timezone	Specify the time zoneinformation. ja: Japanese en: English zh: Chinese
init_data	Specify whether to install any data. • 2: Installs standard data and sample data. • 1: Installs standard data. • 0: Installs no data. About standard data and sample data: Standard data and sample data are for helping you understand Garoon's features. • Standard data Registers holidays, appointment types, and other information. • Sample data Registers sample users, organizations, and appointments. You can use the sample users to try out Garoon's features.

3. **Type 'y' and press the Enter key.**

To cancel the initialization, type 'n' and press the Enter key.

Do you really initialize Garoon? (y/[n]):

4. **Confirm that the initialization is completed successfully.**

Done in 18 minutes 18 seconds.

2.4 Post-Installation Tasks

After Garoon is installed and initialized, perform additional tasks such as checking the log file and configuring settings on Garoon for starting its operation.

2.4.1 Checking the Log File

You can view the grn_initialize.log file to check whether the initialization completed successfully. The grn_initialize.log file is stored in the following directory if Garoon was installed in the default installation directory:

- Windows: C:¥inetpub¥scripts¥cbgrn
- Linux: /var/www/cgi-bin¥cbgrn

Example of grn_initialize.log (on Windows)

```
2014-08-11 21:04:49 Writing to log file: C:¥inetpub¥scripts¥cbgrn/grn_initialize.log
2014-08-11 21:04:49 Garoon: Version 4.6.0
2014-08-11 21:04:49 Operating System: Windows NT WIN-8GC7VCK14T0 6.2 build 9200 (Unknown
Windows version Standard Edition) i586
2014-08-11 21:04:49 Command Line Parameters: db_admin_password='cybozu'
db_user_password='cybozu' garoon_admin_password='cybozu' default_timezone='Asia/Tokyo'
default_locale='ja' force_initialize='yes' init_data='2'
2014-08-11 21:04:49 Starting
2014-08-11 21:11:57 Done in 7 minutes 8 seconds.
2014-08-12 11:56:13 Writing to log file: C:¥inetpub¥scripts¥cbgrn/grn_initialize.log
2014-08-12 11:56:13 Garoon: Version 4.6.0
2014-08-12 11:56:13 Operating System: Windows NT WIN-8GC7VCK14T0 6.2 build 9200 (Unknown
Windows version Standard Edition) i586
2014-08-12 11:56:13 Command Line Parameters: db_admin_password='cybozu'
db_user_password='cybozu' garoon_admin_password='cybozu' default_timezone='Asia/Tokyo'
default_locale='ja' force_initialize='yes' init_data='2'
2014-08-12 11:56:13 Starting
2014-08-12 12:06:20 Done in 10 minutes 7 seconds. ——————————————— a)
```

a): After the initialization is completed, this line indicates how much time the process took.

2.4.2 Changing MySQL Settings

When your server machine has 8 GB or more memory installed, change the mysqld settings. To change the mysqld settings, edit the MySQL configuration file (my.ini or my.cnf).

Steps:

1. **Stop the Web server service.**
2. **Stop Garoon services.**
   See "6.2Stopping Services" on page 94.
3. **Back up the MySQL configuration file.**
   - If you installed MySQL bundled in the Garoon installer and installed Garoon in the default installation directory, the configuration file exists in the following directory:
     - Windows: C:¥Program Files¥Cybozu¥mysql-5.0¥etc¥my.ini
     - Linux: usr/local/cybozu/mysql-5.0/etc/my.ini

- If you use your existing MySQL installation, rather than installing MySQL along with Garoon, back up the configuration file of the existing MySQL installation.
  - Example of its directory on Windows: C:¥ProgramData¥MySQL¥MySQL Server 5.6¥my.ini
  - Example of its directory on Linux: /usr/my.cnf

4. **Edit the configuration file to change the setting values.**
   See "Recommended Values in the Configuration File (my.inior my.cnf)" on page 37.

5. **Start Garoon services.**
   See "6.1Starting Services" on page 94.

6. **Start the Web server service.**

Recommended Values in the Configuration File (my.inior my.cnf)

Recommended values vary depending on the amount of memory installed on the server machine where MySQL is running. You can accept the initial settings if the memory size of your server machine is not listed in the tables below.

If the Amount of Installed Memory Is 80 GB or Less:

Parameter \ Amount of installed memory		8GB	16GB	24GB	48GB	80GB
Amount of memory consumed by Garoon		5.2GB	12GB	18GB	36GB	60GB
Recommended value	innodb_buffer_pool_size	4600M	11200M	17100M	34600M	57700M
	max_connections	50	50	50	50	100

If the Amount of Installed Memory Is 128 GB or More:

Parameter \ Amount of installed memory		128GB	154GB	180GB	206GB	232GB	256GB
Amount of memory consumed by Garoon		96GB	115.5GB	135GB	154.5GB	174GB	192GB
Recommended value	innodb_buffer_pool_size	92800M	111400M	130500M	149100M	168100M	185300M
	max_connections	100	150	150	200	200	250

2.4.3 Configuring Settings for Starting Garoon's Operation

On Garoon, configure settings that are required before you can start the operation of Garoon. The settings include customer information, system administrator information, and various application settings. For details, see the Japanese *Startup Guide*.
https://help.cybozu.com/ja/g46/intro/index.html

3 Upgrading with a Single-Machine Deployment

Direct upgrade to version 4.6 is supported only from version 4.0 or 4.2.
If you are using Garoon version 3.7 or earlier, upgrade it to version 4.0 first, then upgrade to 4.6.

Tip

- If you have any questions, consult our official partners or your vendor.
  https://cybozu.co.jp/products/partner/ (Japanese only)
- With Garoon version 4.0.0 or later, you cannot use Cybozu Garoon 3 Reminder. After you upgrade Garoon to version 4.0.0 or later, you must use Cybozu Desktop 2.
- If the Full text search server is currently being used, it must be upgraded to version 2.0.3 or later when Garoon is upgraded to version 4.6. The following table describes the supported combinations of Garoon versions and Full text search server versions:

Garoon version	Supported Full text search server version
Garoon version 4.6.x	2.0.3
Garoon version 4.2.x	2.0.1, 2.0.2, 2.0.3
Garoon version 4.0.x	2.0.1, 2.0.2, 2.0.3

3.1 Preparing for Upgrading

To upgrade Garoon, the following preparation steps are required:

Checking Upgrade Requirements

- If you are using Power Up Kit Series[1], you must follow different steps to upgrade Garoon. For details on how to upgrade, consult our official partners or your vendor.

  https://cybozu.co.jp/products/partner/ (Japanese only)

[1]: As of November 2015, the applicable products are as follows:

- Power Up Kit Series SFA for Garoon
- Power Up Kit Series Workflow Paper Layout for Garoon
- Power Up Kit Series Workflow External Database Connector for Garoon
- Power Up Kit Series Multi-Company for Garoon
- Power Up Kit Series Group Mail for Garoon

Backing Up the Current Garoon Instance

Before you upgrade Garoon, you must back up the data for your current instance. For details on how to back up, see "Backup and Restoration" in the *Administrator Guide* for the version you are currently using.

https://help.cybozu.com/ja/g46/admin/maintenance/backup_restore/index.html

Identifying the Upgrade Steps for Your Current Version of Garoon

Upgrading from Version 4.0.x or 4.2.x to Version 4.6.0

You can use the latest installer to upgrade Garoon.

See "3.2Upgrading on Windows" on page 41.
See "3.3Upgrading on Linux" on page 42.

Upgrading from Version 3.7.x to Version 4.6.0

Upgrade Garoon using the following steps:

Steps:

1. **Upgrade Garoon to version 4.0.0.**
   - Installer:
     https://garoon.cybozu.co.jp/support/download/garoon4/archive/
   - Installation guide:
     https://help.cybozu.com/en/g4/guide/index.html#guide_index_03
2. **Upgrade Garoon to version 4.6.0.**

   See "3.2Upgrading on Windows" on page 41.
   See "3.3Upgrading on Linux" on page 42.

Upgrading from Version 3.0.x or 3.1.x to Version 4.6.0

Upgrade Garoon using the following steps:

Steps:

1. **Upgrade Garoon to version 3.5.0.**
   - Installer:
     https://products.cybozu.co.jp/garoon3/download/archive/
   - Installation manual:
     https://help.cybozu.com/en/g/guide/index.html#gr3_install
2. **Upgrade Garoon to version 3.7.0.**
   - Installer:
     https://products.cybozu.co.jp/garoon3/download/archive/
   - Installation manual:
     https://help.cybozu.com/en/g/guide/index.html#gr3_install
3. **Upgrade Garoon to version 4.0.0.**
   - Installer:
     https://garoon.cybozu.co.jp/support/download/garoon4/archive/

- Installation guide:
  https://help.cybozu.com/en/g4/guide/index.html#guide_index_03

4. **Upgrade Garoon to version 4.6.0.**
   See "3.2Upgrading on Windows" on page 41.
   See "3.3Upgrading on Linux" on page 42.

Tip

- You can download the installers for version 4.0.0 or earlier from the archive library. For the user name and password required to access the archive library, refer to our online support (available only in Japanese).

Checking CGI Memory Requirements for Each Version of Garoon

Compared to earlier versions, CGI processes consume more memory in version 3.5.0 and later. The following table describes how much memory is consumed per CGI process for each version:

Version	Amount of Memory Consumed by a CGI Process
Version 3.0.0 up to but not including 3.5.0	Approximately 40 MB
3.5.0 or later	Approximately 55MB

Memory requirements for a Web server vary depending on the usage and configuration of Garoon.
If additional memory is necessary, consult our official partners or your vendor.
https://cybozu.co.jp/products/partner/ (Japanese only)

Ensuring that You Know the Database Administrator Password

You must know the database administrator password that was set when the current version of Garoon was installed.

Changing IIS Settings

For Windows, you might want to use a different version of IIS after you upgrade Garoon. In such a case, you must configure the settings for the new version of IIS. For details, see the following section:
"2.2.2Changing IIS Settings" on page 27

Checking Libraries

For Linux, ensure that the libraries required for running Garoon are installed. For details on libraries used by Garoon, see the following page:
https://manual.cybozu.co.jp/tech/linux_library2.html

Stopping the Full Text Search Server

When using the Full text search server, stop Solr and Worker on the server machine where the Full text search server is deployed. To stop the services, execute the following commands in the order in which they are listed:

```
[root@garoon admin]# /etc/init.d/cbss_solr stop
[root@garoon admin]# /etc/init.d/cbss_worker stop
```

For details on how to stop the services, see the following Japanese guide:
Full Text Search Server Guide
https://help.cybozu.com/ja/g4/guide/index.html#guide_index_07

3.2 Upgrading on Windows

This section describes how to upgrade Garoon, based on the following assumptions:

- Operating system: Windows Server 2012
- Web server service: IIS 8.0
- CGI directory of the Web server: C:¥inetpub¥scripts
- Document root directory of the Web server: C:¥inetpub¥wwwroot
- Installation identifier: cbgrn
- MySQL: Installing MySQL bundled in the Garoon installer

Note

- Do not terminate the upgrade process when the process is in progress.
- Installing Garoon involves installing the Visual C++ Redistributable for Visual Studio 2015 package. Do not delete the package.
  For Windows Server 2012 R2, note that you must install the package manually. For details, see the following section:
  "2.1.5 (Only for Windows Server 2012 R2) Installing a Visual C++ Redistributable Package" on page 16

Steps:

1. **Log into the server machine where Garoon is installed as a user who has Administrator rights on the server machine.**
2. **Stop the Web server service.**
3. **On Windows, from Administrative Tools, open "Services".**
4. **Select "Cybozu_Scheduling_Service_cbgrn" and click "Stop Service".**
5. **Check that the status of Cybozu_Database_Engine_5_0 is "Running", and then close the "Services" window.**
   If Cybozu_Database_Engine_5_0 is not running, click "Start Service" and close the "Services" window. If you leave the window open and start the upgrade process, the process may fail.
6. **Start the installer for Garoon version 4.6.0.**

7. **Enter the database administrator password and click "Next".**
   The installation starts.
8. **On the "Upgrade complete" screen, click "Finish".**
9. **On Windows, from Administrative Tools, open "Services".**
10. **Select "Cybozu_Scheduling_Service_cbgrn" and click "Start Service".**
11. **Start the Web server service.**

Tip

- When you upgrade Garoon, log files are generated in the following locations:
  - Installation log for MySQL: C:¥WINDOWS¥SysWow64¥_cb_installer.log
  - Upgrade log: C:¥inetpub¥scripts¥cbgrn¥versionup_###.log[1]
    [1]: The placeholder "###" represents a three-digit number.
  - MySQL errors: C:¥ProgramFiles¥Cybozu¥mysql-5.0¥data¥error.log
- The message below appears during the upgrade process, but the process is completed successfully. No action required.
  - Warning: Using a password on the command line interface can be insecure.
- After the upgrade, the following directory remains on the server. You can delete the directory, if you want, because Garoon does not use the directory.
  - C:¥Program Files¥cybozu¥mysql-5.0¥files¥cbgrn¥cbdnet

3.3 Upgrading on Linux

This section describes how to upgrade Garoon, based on the following assumptions:

- Operating system: Red Hat Enterprise Linux 6
- Web server service: Apache 2.2.15
- CGI directory of the Web server: /var/www/cgi-bin
- Document root directory of the Web server: /var/www/html
- Installation identifier: cbgrn
- MySQL: Installing MySQL bundled in the Garoon installer

Note

- Before you start an upgrade, ensure that the libraries required for running Garoon are installed. See "(Only for Linux) Installing Libraries Required for Garoon" on page 18.
- The installer must be in a directory for which the Run As user of the Web server service has Execute and Write permissions. The Run As user must have Execute and Write permissions on all parent directories of the directory that contains the installer.
- Do not terminate the upgrade process when the process is in progress.

Steps:

1. **Log into the server machine as a root user.**

2. **Stop the Web server service on the server machine.**

   • For Red Hat Enterprise Linux 6:

   ```
   [root@garoon admin]# /etc/init.d/httpd stop
   ```

   • For Red Hat Enterprise Linux 7 or later:

   ```
   [root@garoon admin]# systemctl stop httpd.service
   ```

3. **Stop the scheduling service.**

   ```
   [root@garoon admin]# /etc/init.d/cyss_cbgrn stop
   ```

4. **Check the status of the MySQL service.**

   ```
   [root@garoon admin]# /etc/init.d/cyde_5_0 status
   ```

   Start the MySQL service if it is not running.

   ```
   [root@garoon admin]# /etc/init.d/cyde_5_0 start
   ```

5. **Check httpd.conf to ensure that KeepAlive is disabled.**

   For details on how to check or edit KeepAlive settings, see the following section:

   "2.1.6 (Only for Linux) Disabling KeepAlive in Apache" on page 16

   Tip

   • When you choose to enable KeepAlive, you should adjust the KeepAliveTimeout value for your environment. The greater the value of KeepAliveTimeout, the more likely Garoon is to respond slowly when Garoon handles many requests.

6. **Check that THP is disabled.**

   The brackets ([ ]) indicate the currently selected value on the server machine. When THP is disabled, "never" should be selected. Ensure that the following output is displayed:

   ```
   [root@garoon admin]# cat /sys/kernel/mm/transparent_hugepage/enabled
   always madvise [never]
   ```

   Disable THP, if it is enabled. For details, see the following section:

   "2.1.7(Only for Linux) Disabling Transparent Hugepages (THP)" on page 17

7. **Move to the directory where the installer exists.**

8. **Execute the installer.**

   ```
   [root@garoon admin]# sh grn-4.6.0-linux-x64.bin
   ```

9. **Check the displayed information, type 'Y', and then press the Enter key.**

   ```
   Garoon のインストールを開始します。このメッセージが正しく表示されている場合は Y を入力します。
   Installing starts. If the above message is displayed correctly, type 'Y', otherwise type 'N'.
   ```

10. **If you agree with the Software License Agreement, type "yes" and press the Enter key.**

    To scroll the window, press the Space or Enter key.

    If you do not agree with the Software License Agreement, type "no" and press the Enter key. The upgrade process will stop.

11. **Select the upgrade option. Type '1' and press the Enter key.**

    ```
    Garoon is already installed.
    1: Upgrade
    2: Partial Uninstallation (Customizable resource files and database files remain undeleted.)
    3: Complete Uninstallation (Completely remove all features and components.)
    ```

```
[1|2|3]:
```

12. **Confirm the directory where program files will be installed. Type the database administrator password and press the Enter key.**

```
Cybozu program files will be installed in the directory "/usr/local/cybozu".

Enter a password for the database administrator (cbroot).
Valid characters are: a–z, A–Z, 0–9, and underscore (_).
Passwords must be 6 to 10 characters.

Enter Password:
```

13. **Check the displayed information. If it is correct, type "yes", and then press the Enter key.**

The installation will start.

To cancel the installation, type "no" and press the Enter key.

```
Summary of install configuration

Installation directory for program files:        /usr/local/cybozu
Database administrator:                          cbroot
Database administrator password:                 cybozu
Installation identifier:                         cbgrn
Web server user name:                            apache
CGI installation directory:                      /var/www/cgi-bin/cbgrn
Installation directory for image files:                  /var/www/html/cbgrn
Port number for communicating with MySQL:                3770
Installation script for scheduling service:      /etc/rc.d/init.d/cyss_cbgrn
Uninstallation script for Cybozu products:                       /var/www/cgi-
bin/cbgrn/uninstall_cbgrn
Installation script for MySQL:                           /etc/rc.d/init.d/cyde_5_0
Uninstallation script for MySQL:                         /usr/local/cybozu/mysql-
5.0/uninstall_cyde_5_0

Are you sure you want to install the product with the above settings?
[yes or no]:
```

14. **Confirm that the upgrade has completed successfully.**

```
Upgrade completed successfully.
Installing Cybozu Scheduling Service...
Installing Web files...
Copying license files...
Installing uninstall scripts...
removing versionup script...

The installation has completed successfully.
Start a web browser and access the URL below:

http://FQDN or IP address of the server/virtual path to the CGI directory/cbgrn/grn.cgi

Example) http://webserver.cybozu.co.jp/cgi-bin/cbgrn/grn.cgi
Example) http://10.10.203.55/cgi-bin/cbgrn/grn.cgi
```

15. **Start the scheduling service.**

```
[root@garoon admin]# /etc/init.d/cyss_cbgrn start
```

16. **Check that the scheduling service is running.**

```
[root@garoon admin]# /etc/init.d/cyss_cbgrn status
```

When the scheduling service is running, this command returns the process ID of the running process.

Example of a returned process ID:

```
sched(31622) is running...
```

17. **Start the Web server service on the server machine.**

- For Red Hat Enterprise Linux 6:

```
[root@garoon admin]# /etc/init.d/httpd start
```

- For Red Hat Enterprise Linux 7 or later:

```
[root@garoon admin]# systemctl start httpd.service
```

18. **Check that the Web server service is running on the server machine.**

- For Red Hat Enterprise Linux 6:

```
[root@garoon admin]# /etc/init.d/httpd status
```

- For Red Hat Enterprise Linux 7 or later:

```
[root@garoon admin]# systemctl status httpd.service
```

When the Web server service is running, this command returns the process ID of the running process.

Example of a returned process ID:

```
httpd (pid  11772) is running...
```

Tip

- When you upgrade Garoon, log files are generated. The log files exist in the following directories:
  - Installation log for Garoon: *directory where the installer was executed*/install.log
  - Installation log for MySQL: *directory where the installer was executed*/install_cyde.log
- The message below appears during the upgrade process, but the process is completed successfully. No action required.
  - Warning: Using a password on the command line interface can be insecure.
- After the upgrade, the following directory remains on the server. You can delete the directory, if you want, because Garoon does not use the directory.
  - /usr/local/cybozu/mysql-5.0/files/cbgrn/cbdnet

3.4 Post-Upgrade Necessary Tasks

Perform the following tasks if required:

Checking Log Files

Open the log files to check whether files were updated successfully.

The log files contain the following results:

- Report on the MySQL update process
- Report on the updated Garoon data
- Report on the update program execution

If you installed MySQL bundled in the Garoon installer and installed Garoon in the default installation directory, the log files are generated in the following files (where the placeholder "###" represents a three-digit number):

For Windows:

- Report on the update program execution: C:¥inetpub¥scripts¥cbgrn¥versionup_###.log
- MySQL errors: C:¥ProgramFiles¥Cybozu¥mysql-5.0¥data¥error.log

For Linux:

- Installation log for Garoon: *directory where the installer was executed*/install.log
- Installation log for MySQL: *directory where the installer was executed*/install_cyde.log
- Report on the update program execution: /var/www/cgi-bin/cbgrn/versionup_###.log
- MySQL errors: /usr/local/cybozu/mysql-5.0/data/error.log

The Format of versionup_###.log

```
The following is an example of the log file generated on Windows:
[Tue, 12 Aug 2014 20:49:21 +0900] DB root password corrected!
[Tue, 12 Aug 2014 20:49:21 +0900] start upgrading mysqldb
(Omitted)
20140812 20:49:40 [INFO] Started grn4.6.0_local_main.
20140812 20:49:40 [INFO] Updated the version number of system attribute. 4.6.0
20140812 20:49:40 [INFO] Start execDiffSql()
20140812 20:49:53 [INFO] End execDiffSql()
20140812 20:49:53 [INFO] Start _convertApplicationUserSettings
20140812 20:49:53 [INFO] End _convertApplicationUserSettings
20140812 20:49:53 [INFO] Start execDropSql()
20140812 20:49:54 [INFO] Start _setDemoLicense
20140812 20:49:54 [INFO] End _setDemoLicense
20140812 20:49:54 [INFO] End execDropSql()
20140812 20:49:54 [INFO] Finished grn4.6.0_local_main.
20140812 20:49:54 [INFO] Started grn4.60_remote_main.
20140812 20:49:54 [INFO] Finished grn4.60_remote_main.
20140812 20:49:54 [INFO] Finished updating.                                   a)
[Tue, 12 Aug 2014 20:49:55 +0900] 20140812 20:49:55 [INFO] Started updating after installation.
20140812 20:49:55 [INFO] Remove all files of smarty cache directory.
20140812 20:49:55 [INFO] Remove all the session data.                         b)
20140812 20:49:55 [INFO] Finished updating after installation.

[Tue, 12 Aug 2014 20:49:55 +0900] start removing versionup scripts
[Tue, 12 Aug 2014 20:49:55 +0900] end removing versionup scripts
```

a): Report on the updated Garoon data

b): Report on the update program execution

Note

- If you find a message with a state other than "INFO" or "OK", you must take appropriate action according to the message. If the cause of the error is unknown, consult our official partners or your vendor. https://cybozu.co.jp/products/partner/ (Japanese only)

Checking PHP Portlets

If you upgrade Garoon from a version earlier than 4.6 to the latest version, PHP portlets are set to be private. You have to make PHP portlets public, if necessary.
An error may occur when Garoon provides PHP portlets that use old versions of PHP. To use the same PHP portlets on an upgraded Garoon instance, ensure that there are no errors before you make the portlets public.

Garoon versions and their supported PHP versions are as follows:

Garoon version	PHP version
Garoon 3.0.x	PHP 4
Garoon 3.1.0 - 4.2.x	PHP 5
Garoon 4.6.0 or later	PHP 7

-

Checking Settings Required for Connecting to LDAP over SSL

To enable Garoon to connect to an LDAP server over SSL, additional configurations are required. For detailed instructions, see the following page on our website:
https://manual.cybozu.co.jp/en/tech/sslsetup.html

Registering Your License

When you upgrade Garoon from version 3.7.x or earlier, you must register a license for version 4.6.0. Garoon runs in trial mode until you register the license. If the license is not registered within 60 days after the upgrade, Garoon applications will be no longer accessible.

Steps:

1. **Log into Garoon with a system administrator account.**
2. **On the "System administration" screen, click "Basic system administration" > "License" > "Manage licenses".**
3. **Click "Register license".**
4. **Enter your license key and click "Register".**
5. **Check that the license information is correct and click "Register".**

Activating Inactive Features

When you upgrade Garoon from version 3.7.x or earlier, the features that were added in version 4.0.0 or later are inactive. If necessary, activate the following features:

- Mobile view

- Thumbnail images
- Respond feature in Space
- Drag and drop moving of appointments
- File attachments to appointments
- Automatic e-mail forwarding
- Facility usage request
- Appointment response request feature
- Displaying HTML e-mail as plain text by default

Receiving Weather Information

Weather information is unavailable temporarily immediately after an upgrade. Although weather information is received automatically every six hours, this means that weather information can be unavailable for up to about six hours.
To receive weather information immediately after an upgrade, you must receive it manually.

1. **Log into Garoon with a system administrator account.**
2. **On the "System administration" screen, click "Application settings" > "Cybozu Online Service" > "Receive event data".**
3. **Select the check box for weather information, and click "Receive".**

Starting the Full Text Search Server

When the Full text search server is used, start Solr and Worker on the server machine where the Full text search server is deployed.
To start the services, execute the following commands in the order in which they are listed:

```
/etc/init.d/cbss_worker start
/etc/init.d/cbss_solr start
```

For details on how to start the services, see the following Japanese guide:
Full Text Search Server Guide
https://help.cybozu.com/ja/g4/guide/index.html#guide_index_07

Updating Indexes on the Full Text Search Server

When the Full text search server is used, you must update indexes on the Full text search server. With updated indexes, the message search time can be decreased when users store a large number of messages.
You can update indexes not only during the upgrade but also after the upgraded Garoon instance goes into usage. The index update process can be executed during business hours because the process does not cause a heavy load on Garoon nor block users from searching.

For Windows:

1. **Login to the server machine as a user who has Administrator rights.**

Log into the database server in a server-distributed deployment.

2. **Start Command Prompt and move to the following directory:**

```
CGI directory¥installation identifier
```

Example:

```
cd C:¥inetpub¥scripts¥cbgrn
```

3. **Type the following command and press the Enter key:**

```
.¥grn.exe -C -q code¥command¥fts¥update_index.csp exec
```

When "Finish indexing of message data." appears and you can search messages in Garoon, the index update process is completed.

For Linux:

1. **Log into the server machine as a root user.**
Log into the database server in a server-distributed deployment.

2. **Move to the following directory:**

```
CGI directory/installation identifier
```

Example:

```
cd /var/www/cgi-bin/cbgrn
```

3. **Type the following command and press the Enter key:**

```
./grn.cgi -C -q code/command/fts/update_index.csp exec
```

When "Finish indexing of message data." appears and you can search messages in Garoon, the index update process is completed.

3.5 Recovering from an Upgrade Failure

If an upgrade to version 4.6.0 failed, use the steps below to restore the previous version.

Steps:

1. **Back up upgrade log files.**
Back up log files that were generated when the upgrade failed. The log files are required for troubleshooting the failure. For details on the log files to be backed up, see the following section:
"Checking Log Files" on page 45

2. **Uninstall version 4.6.0 of Garoon.**
Select "Complete uninstallation" for the uninstallation option.
See "4Uninstalling with a Single-Machine Deployment" on page 51.

3. **Install the previous version of Garoon as a new instance.**
If any Service Pack was applied to the previous Garoon instance, apply the same Service Pack to the new instance.
For details on how to install Garoon, see the *Installation Guide* for your version.
For version 3.1.x and earlier: https://manual.cybozu.co.jp/en/garoon3/index.html#01

For version 3.5.x and 3.7.x: https://help.cybozu.com/en/g/guide/index.html#gr3_install
For version 4.0.0 and later: https://help.cybozu.com/en/g4/guide/index.html#guide_index_03

4. **Restore backed up Garoon data.**
Restore the backed up data of the previous Garoon instance to the new Garoon instance that you installed in step 3.
For details on how to restore data, see the *Administrator Guide* for your version.
For version 3.1.x and earlier: https://manual.cybozu.co.jp/en/garoon3/index.html#02
For version 3.5.x and 3.7.x: https://help.cybozu.com/en/g/guide/index.html#gr3_admin
For version 4.0.0 and later: https://help.cybozu.com/en/g4/guide/index.html#guide_index_01

Tip

- You can restore Garoon only by following the steps described above.

4 Uninstalling with a Single-Machine Deployment

This chapter describes how to uninstall Garoon.

4.1 Uninstalling on Windows

This section describes how to uninstall Garoon on Windows.
The steps below assume that you installed MySQL bundled in the Garoon installer and set the installation identifier to "cbgrn".

Note

- Follow the steps described below to uninstall Garoon completely. Otherwise, some files may remain on the server machine.
- When the Full text search server is used, firstly you must uninstall the Full text search server and then uninstall Garoon if the conditions listed below are true. If you start with uninstalling Garoon, the Full text search server might fail to be uninstalled.
  - The Full text search server and Garoon are installed in the same directory on the same server.
  - You plan to use "Complete Uninstallation" to uninstall Garoon.

  Under the conditions listed above, if you start with uninstalling Garoon and the Full text search server fails to be uninstalled, please contact us.

Steps:

1. **Log into the server machine that you want to uninstall Garoon on as a user who has Administrator rights on the server machine.**
2. **On Windows, from Control Panel, open "Programs and Features".**
3. **On the "Programs and Features" window, right-click "Cybozu(R) Garoon 4.6.0 (cbgrn)" and click "Uninstall".**
   The uninstaller starts.
4. **Select "Complete Uninstallation" and click "Next".**
   The uninstallation process starts.
   To cancel the uninstallation, click "Cancel".
5. **On the "Maintenance Complete" screen, select whether to restart the server machine now or later, then click "Finish".**
   If you want to uninstall MySQL after, select "No, I will restart my computer later," and click "Finish".
6. **On the "Programs and Features" window, right-click "MySQL Community Server (GPL)" and click "Uninstall".**

The uninstaller starts.

7. **Select "Complete Uninstallation" and click "Next".**
   The uninstallation process starts.
   To cancel the uninstallation, click "Cancel".

8. **Restart the server machine.**

Tip

- If you are using an existing MySQL installation instead of installing MySQL bundled in the Garoon installer, the Garoon uninstallation process does not uninstall the existing MySQL installation. If you want, you can uninstall the existing MySQL installation manually after you uninstall Garoon.

4.2 Uninstalling on Linux

This section describes how to uninstall Garoon on Linux.

Note

- Follow the steps described below to uninstall Garoon completely. Otherwise, some files may remain on the server machine.

Steps:

1. **Log into the server machine as a root user.**

2. **Move to the directory where the installer exists.**

3. **Execute the installer.**

```
[root@garoon admin]# sh grn-4.6.0-linux-x64.bin
```

4. **Check the displayed information, type 'Y', and then press the Enter key.**

```
ガルーンのインストールを開始します。 このメッセージが正しく表示されている場合は Y を入力します。
Installing starts. If the above message is displayed correctly, type 'Y', otherwise type 'N'.
```

5. **Read the Software License Agreement carefully. If you agree with it, type "yes" and press the Enter key.**
   To scroll the window, press the Space or Enter key.
   If you do not agree with the Software License Agreement, type "no" and press the Enter key. The installer exits.

6. **Ensure that you know the installation identifier of the Garoon instance to uninstall.**

7. **Type the installation identifier of the Garoon instance to uninstall, and press the Enter key.**

8. **Type '3' to uninstall Garoon completely, and then press the Enter key.**
   Type '2' when you want to keep resources such as configuration files and the database files.

9. **Type '3' to uninstall MySQL completely, and then press the Enter key.**

Tip

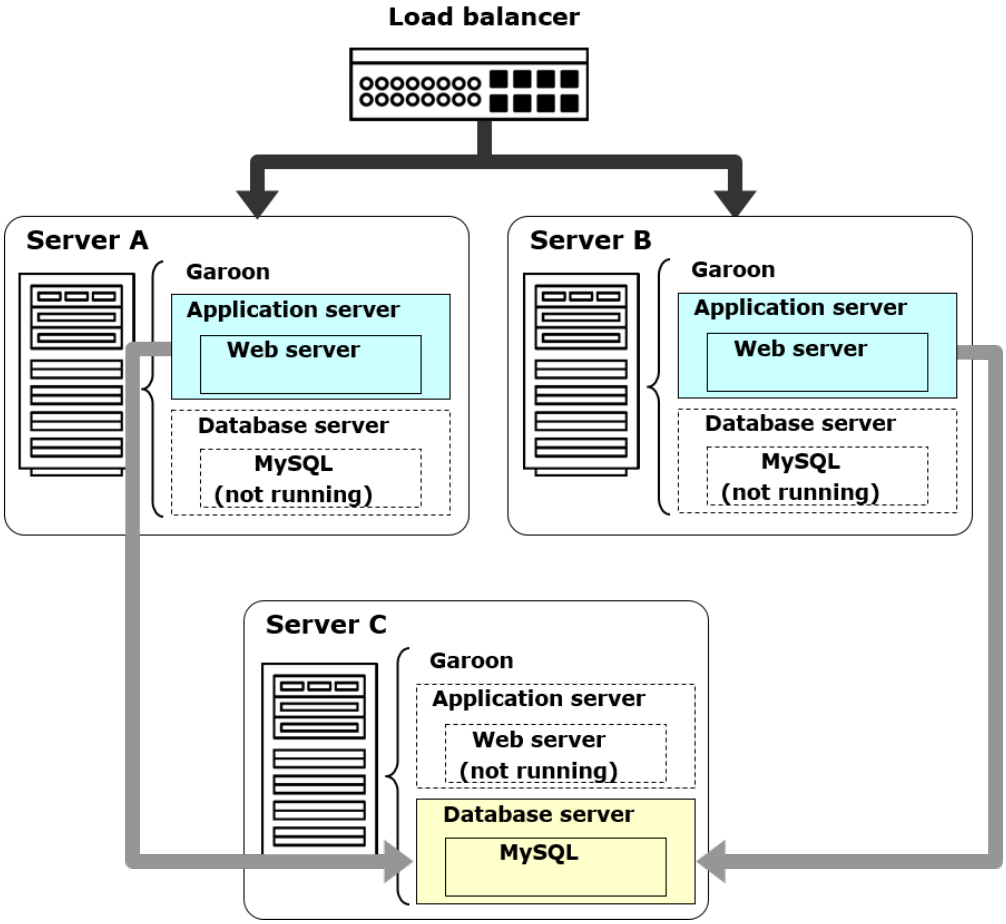
- If you are using an existing MySQL installation instead of installing MySQL bundled in the Garoon installer, the Garoon uninstallation process does not uninstall the existing MySQL installation. If you want, you can uninstall the existing MySQL installation manually after you uninstall Garoon.

5 Using a Server-Distributed Deployment

This chapter describes how to set up a server-distributed deployment where application servers and database servers run on different server machines. For example, the steps described in this chapter deploy Garoon on the following server machines:

Server Function	Description	Server Machine Name
Application server	Runs Garoon applications to process information entered by users. Receives requests from client computers and returns generated data, such as HTML files and images, to server machines or client computers.	Server A Server B
Database server	Maintains entered data, such as appointments, topics, and attachments.	Server C

Example of Server-Distributed Deployment:



Note

- To run Garoon on multiple server machines, you must synchronize the system time of all server machines. Garoon cannot work successfully when there is a time lag between the server machines.

5.1 Building a New Server-Distributed Deployment During Installation

5.1.1 Server-Distributed Deployment on Windows

This part describes how to build a new server-distributed deployment on multiple Windows server machines.

For example, the steps below set up the following deployment:

Item		Example
Environment	Server operating system	Windows Server 2012
	Web server service	IIS 8.0
	CGI directory of the Web server	C:¥inetpub¥scripts
	Document root directory of the Web server	C:¥inetpub¥wwwroot
	Port number used by MySQL	3770
	MySQL installation method	Installing MySQL bundled in the Garoon installer
Server machines	Application server	Server A Server B
	Database server	Server C
How to synchronize time between server machines		Synchronization with NTP

General Steps

Step 1	Install Garoon See "Step 1 Install Garoon" on page 56.
Step 2	Change the destination database See "Step 2 Change the Destination Database" on page 57.
Step 3	Change the data storage areas See "Step 3 Change the Data Storage Areas" on page 58.
Step 4	Change the startup type of services

	See "Step 4 Change the Startup Type for Services" on page 61.

Step 5	Start Garoon See "Step 5 Start Garoon" on page 61.

Step 6	Configure settings on Garoon that are necessary for starting its operation See "Step 6 Configure Settings on Garoon That Are Necessary for Starting Its Operation" on page 61.

Caution

- Do not install a new version of Garoon on a server machine where an older version of Garoon is already installed. Installing different versions of Garoon on one server machine causes the older version to fail.

Note

- If any programs other than the installer are running, exit all of them.
- To run Garoon on multiple server machines, you must synchronize the system time of all server machines. Garoon cannot work successfully when there is a time lag between the server machines.

Tip

- For details on the Web server service settings, see the following page:
  https://manual.cybozu.co.jp/en/tech/webinstall/

Step 1 Install Garoon

Detailed steps:

1. **Ensure that preparations for installation are completed.**
   Complete preparations for installation in the same way as for single-machine deployment.
   To set up a server-distributed deployment, all server machines must have the same values for various settings. See "2.1Preparing for Installation" on page 13.
2. **On each server machine, ensure that the Web server service is running.**
   Start the Web server service if it is not running.
3. **On each server machine, install Garoon.**
   Install Garoon on each server machine in the same way as for single-machine deployment.
   See "2.2Installing on Windows" on page 18.
4. **On each server machine, initialize Garoon.**
   Initialize Garoon on each server machine in the same way as for single-machine deployment.
   See "2.2.1Initializing Garoon on Windows" on page 25.
5. **On the database server (Server C), optimize the MySQL configuration.**

When the server machine has 4GB or more memory installed, change the MySQL settings.
See "2.4.2Changing MySQL Settings" on page 36.

6. **On each server machine, check that Garoon is accessible.**

Step 2 Change the Destination Database

Detailed steps:

1. **On each server machine, stop the Web server service.**
   Stop the Web server service if it is running.

2. **On each server machine, stop Garoon services.**
   1) On Windows, from Administrative Tools, open "Services".
   2) Stop the scheduling service first, and then MySQL.
   - Scheduling service: Cybozu_Scheduling_Service_cbgrn[1]
   - MySQL: Cybozu_Database_Engine_5_0

   [1]: Replace "cbgrn" with your installation identifier.

3. **On the database server (Server C), note down the port used by MySQL.**
   Open the my.ini file and note down the value of the port property in [mysqld].

File to be checked	C:¥Program Files¥Cybozu¥mysql-5.0¥etc¥my.ini
Example of port numbers	[client] port = 3770 socket = C:/Program Files/Cybozu/mysql-5.0/data/mysql.sock default-character-set = utf8mb4 [mysqld] skip-name-resolve port = 3770[1]

[1]: This is the port number used by MySQL.

4. **On the application servers (Server A and Server B), change the settings for the destination database.**
   On Server A and Server B, open the lwc.ini file to change the destination host.
   Specify the values of the host name or IP address and the port number used by the database server (Server C).

File to be edited:	C:¥inetpub¥scripts¥cbgrn¥lwc.ini
Destination host ("prop:_host" in [dbconn])	Specify one of the following: • val:*host name*:*port number* • val:*IP address*:*port number*

Example:
Before changing:

```
[dbconn]
class = "CB_DatabaseConnection"
require = "fw/database.csp"
```

a)

```
prop:_host = "val:127.0.0.1:3770"
prop:_dbname = "val:cb_cbgrn"
```

After changing:

```
[dbconn]
class = "CB_DatabaseConnection"
require = "fw/database.csp"
prop:_host = "val:server_c:3770"   b)
prop:_dbname = "val:cb_cbgrn"
```

a): Initial setting

b) The port number that you noted down in step 3, and the host name or IP address

Step 3 Change the Data Storage Areas

Configure settings so that session data and attachments can be stored on server machines dedicated to each, rather than on their local machines.

Detailed steps:

1. **On each server machine, add a Windows user account with the same user name and password.**
   If you are using Windows Server 2012, assign Administrator rights to the new user.

2. **On the application servers (Server A and Server B), use IIS Manager to perform the following steps:**
   Select *computer name* > "Sites" > "Default Web Site" > "scripts" > "cbgrn"[1].
   [1]: Replace "cbgrn" with your installation identifier.

3. **On the application servers (Server A and Server B), change the user account to be used for anonymous access.**
   1) Double-click "Authentication". Right-click "Anonymous Authentication", and then select "Edit".
   2) On the "Edit Anonymous Authentication Credentials" screen, select the "Specific user" radio button.
   3) Click "Set".
   4) On the "Set Credentials" screen, enter the user name and password of the user that you created in step 3-1. Click "OK".

4. **Change the directory names of the data storage areas on the application servers (Server A and Server B).**
   To prevent session data and attachments from being stored on Server A or Server B, change the directory names of the data storage areas on Server A and Server B.
   Example:

Data	Directory Name Before Change	Directory Name After Change
Session data[1]	C:¥inetpub¥scripts¥cbgrn¥sessiondata	C:¥inetpub¥scripts¥cbgrn¥sessiondata_bak
Attachments	C:¥Program Files¥Cybozu¥mysql-5.0¥files	C:¥Program Files¥Cybozu¥mysql-5.0¥files_bak

[1]: This change only needs to be made when application servers are distributed on multiple server machines.

5. **On the database server (Server C), create a directory in the session data storage area to store session data.**

The directory only needs to be created when application servers are distributed on multiple server machines.
Example: C:¥inetpub¥scripts¥cbgrn¥sessiondata¥sessionfiles
You must create a new directory. If you set the session data storage area to the shared folder itself in step 3-8, files will not be stored correctly.

6. **On the database server (Server C), configure the session data storage area and the attachment storage area so that they can be shared over network.**

Example:

Data	Storage Area Directory Name	Absolute Path
Session data[1]	sessiondata	C:¥inetpub¥scripts¥cbgrn¥sessiondata
Attachments	files	C:¥Program Files¥Cybozu¥mysql-5.0¥files

[1]: This configuration only needs to be made when application servers are distributed on multiple server machines.
On Windows, start Explorer and locate the storage area directory to be shared. Right-click the name of the directory, and then click "Properties".
On the properties screen, change the Sharing and Security settings.

- Sharing
  - To configure the session data storage area (a directory named "sessiondata"):
    1) Click the "Sharing" tab, and then click "Share".
    2) Select "Everyone" and click "Remove". For security reasons, it is recommended that "Everyone" be removed to ensure that no permissions are given to it.
    3) Enter the name of the user you created in step 3-1, and click "Add".
    4) From the "Permission Level" drop-down list, select "Read/Write". Click "Share".

  - To configure the attachment storage area (a directory named "files"):
    1) On the "Sharing" tab, click "Advanced Sharing".
    2) Select the "Share this folder" check box, and then click "Permissions".
    3) Click "Add".
    4) In the "Enter the object names to select" field, add the name of the user you created in step 3-1. Click "OK".
    5) Select the name of the user you created in step 3-1, and assign the Full Control permission to the user.

- Security
  - To configure the session data storage area (a directory named "sessiondata"):
    1) Click the "Security" tab, and then select "Edit".

2) Click "Add". In the "Enter the object names to select" field, add the name of the user you created in step 3-1. Click "OK".

3) In the "Permissions" list, ensure that the following check boxes are selected. Click "OK".

- Modify
- Read & execute
- List folder contents
- Write
- Read

- To configure the attachment storage area (a directory named "files"):

1) Click the "Security" tab, and then select "Edit".

2) Click "Add". In the "Enter the object names to select" field, add the name of the user you created in step 3-1. Click "OK".

3) In the "Permissions" list, ensure that the following check boxes are selected. Click "OK".

- Modify
- Read & execute
- List folder contents
- Write
- Read

7. **On the application servers (Server A and Server B), check how the session data is stored.**

On each server machine, open the php.ini file and find the [Session] section. Ensure that the session.save_handler property's value is set to "files".

File to be checked	C:¥inetpub¥scripts¥cbgrn¥php.ini
How to store session data	[Session] session.save_handler = files[1] session.use_cookies = 1 session.use_only_cookies = 1 (Omitted)

[1]: If you find any other value specified, you must change it to "files".

8. **Change the data storage areas on the application servers (Server A and Server B).**

On each server machine, open the common.ini file to change the directories that store session data and attachments.

- File to be edited: C:¥inetpub¥scripts¥cbgrn¥common.ini

Data	Change to
Session data[1]	[Session] save_path = "//*IP address of Server C*/sessiondata/sessionfiles"[2]
Attachments	[Files] dir = "//*IP address of Server C*/files/cbgrn"[3]

[1]: This change only needs to be made when application servers are distributed on multiple server machines.

[2]: Specify the directory that you created in step 3-5.

[3]: Specify the directory that you configured in step 3-6. Replace "cbgrn" with your installation identifier.

Tip

- The attachment storage area must be a subdirectory of the shared folder. If the storage area is set to the share folder itself, files will not be stored correctly.

Step 4 Change the Startup Type for Services

In a server-distributed deployment, Garoon uses MySQL and the scheduling service that are running on the database server. To ensure this, you must configure the application servers to prevent the services from starting automatically.

Detailed steps:

1. **On the application servers (Server A and Server B), configure Garoon services to prevent them from starting automatically.**
   On Windows, from Administrative Tools, open "Services".
   Right-click the service name and click "Properties".
   On the "General" tab, set "Startup Type" to "Disabled" and click "OK".

Server Machine	Service To Be Disabled
Server A	• Cybozu_Database_Engine_5_0 • Cybozu_Scheduling_Service_cbgrn[1]
Server B	• Cybozu_Database_Engine_5_0 • Cybozu_Scheduling_Service_cbgrn[1]
Server C	Not available

[1]: Replace "cbgrn" with your installation identifier.

Step 5 Start Garoon

Detailed steps:

1. **On the database server (Server C), start Garoon services.**
   On Windows, from Administrative Tools, open "Services". Start the services in the order in which they are listed below.
   1) MySQL: Cybozu_Database_Engine_5_0
   2) Scheduling service: Cybozu_Scheduling_Service_cbgrn[1]
      [1]: Replace "cbgrn" with your installation identifier.

2. **On the application servers (Server A and Server B), start the Web server service.**
   After the Web server services start, access Garoon on Server A and Server B.
   Check that Garoon management functions and applications can work successfully.
   If they fail to work, check whether required settings are configured correctly.

Step 6 Configure Settings on Garoon That Are Necessary for Starting Its Operation

On Garoon, configure settings that are required before you can start the operation of Garoon. The settings include customer information, system administrator information, and various application settings. For details, see the Japanese *Startup Guide*.
https://help.cybozu.com/ja/g46/intro/index.html

Notes on Operation

In a server-distributed deployment, you must regularly delete temporary files on application servers.
For details on how to delete temporary files, see the following section:
"5.3Deleting Temporary Files" on page 86

5.1.2 Server-Distributed Deployment on Linux

This part describes how to build a new server-distributed deployment on multiple Linux server machines.
For example, the steps below set up the following deployment:

Item		Example
Environment	Server operating system	Red Hat Enterprise Linux 6
	Web server service	Apache 2.2.15
	CGI directory of the Web server	/var/www/cgi-bin
	Document root directory of the Web server	/var/www/html
	Port number used by MySQL	3770
	MySQL installation method	Installing MySQL bundled in the Garoon installer
Server machines	Application server	Server A Server B
	Database server	Server C
How to synchronize time between server machines		Synchronization with NTP

General Steps

Step 1	Install Garoon See "Step 1 Install Garoon" on page 63.
Step 2	Change the destination database See "Step 2 Change the Destination Database" on page 64.
Step 3	Change the data storage areas See "Step 3 Change the Data Storage Areas" on page 65.
Step 4	Change the startup type of services See "Step 4 Change the Startup Type for Services" on page 69.

Step 5	Start Garoon See "Step 5 Start Garoon" on page 70.

Step 6	Configure settings for starting Garoon's operation See "Step 6 Configure Settings on Garoon That Are Necessary for Starting Its Operation" on page 70.

Caution

- Do not install a new version of Garoon on a server machine where an older version of Garoon is already installed. Installing different versions of Garoon on one server machine causes the older version to fail.

Note

- If any programs other than the installer are running, exit all of them.
- To run Garoon on multiple server machines, you must synchronize the system time of all server machines. Garoon cannot work successfully when there is a time lag between the server machines.

Step 1 Install Garoon

Detailed steps:

1. **Ensure that preparations for installation are completed.**
   Complete preparations for installation in the same way as for single-machine deployment.
   To set up a server-distributed deployment, all server machines must have the same values for various settings.
   See "2.1Preparing for Installation" on page 13.

2. **On each server machine, ensure that the Web server service (httpd) is running.**
   On each server machine, execute the following command to check whether the Web server service is running:
   - For Red Hat Enterprise Linux 6:

     ```
     # /etc/init.d/httpd status
     ```

   - For Red Hat Enterprise Linux 7 or later:

     ```
     # systemctl status httpd.service
     ```

   When the Web server service is running, this command returns the process ID of the running process.
   Example of a returned process ID:

   ```
   httpd (pid 21583 21576 21575 21573 21572 21571 21570 21569 21568) is running...
   ```

   If the Web server service is found to be not running, execute the following command to start the Web server service:

• For Red Hat Enterprise Linux 6:

```
# /etc/init.d/httpd start
```

• For Red Hat Enterprise Linux 7 or later:

```
# systemctl start httpd.service
```

3. **On each server machine, install Garoon.**
   Install Garoon on each server machine in the same way as for single-machine deployment.
   See "2.3Installing on Linux" on page 30.

4. **On the database server (Server C), optimize the MySQL configuration.**
   When the server machine has 4GB or more memory installed, change the MySQL settings.
   See "2.4.2Changing MySQL Settings" on page 36.

5. **On each server machine, check that Garoon is accessible.**

Step 2 Change the Destination Database

Detailed steps:

1. **On each server machine, stop the Web server service (httpd).**
   On each server machine, execute the following command:

   • For Red Hat Enterprise Linux 6:

   ```
   # /etc/init.d/httpd stop
   ```

   • For Red Hat Enterprise Linux 7 or later:

   ```
   # systemctl stop httpd.service
   ```

2. **On each server machine, stop Garoon services.**
   To stop the services, use the following commands in the order in which they are listed:

   1) Scheduling service

   ```
   # /etc/init.d/cyss_cbgrn stop[1]
   ```

   2) MySQL service

   ```
   # /etc/init.d/cyde_5_0 stop
   ```

   [1]: Replace "cbgrn" with your installation identifier.

3. **On the database server (Server C), note down the port used by MySQL.**
   Open the my.ini file and note down the value of the port property in [mysqld].

File to be checked	/usr/local/cybozu/mysql-5.0/etc/my.ini
Example of port numbers	[client] port = 3770 socket = /usr/local/cybozu/mysql-5.0/data/mysql.sock default-character-set = utf8mb4 [mysqld] user = apache skip-name-resolve port = 3770[1] socket = /usr/local/cybozu/mysql5.0/data/

	mysql.sock

[1]: This is the port number used by MySQL.

4. **On the application servers (Server A and Server B), change the settings for the destination database.**

   On each server machine, open the lwc.ini file to change the destination host.
   Specify the values of the host name or IP address and the port number used by the database server (Server C).

File to be edited:	/var/www/cgi-bin/cbgrn/lwc.ini
Destination host ("prop:_host" in [dbconn])	Specify one of the following: • val:*host name*:*port number* • val:*IP address*:*port number*

   Example:
   Before changing:

```
[dbconn]
class = "CB_DatabaseConnection"
require = "fw/database.csp"
prop:_host = "val:localhost:3770" ——————————— a)
prop:_dbname = "val:cb_cbgrn"
```

   After changing:

```
[dbconn]
class = "CB_DatabaseConnection"
require = "fw/database.csp"
prop:_host = "val:server_c:3770" ——————————— b)
prop:_dbname = "val:cb_cbgrn"
```

   a): Initial setting
   b) The port number that you noted down in step 3, and the host name or IP address

Step 3 Change the Data Storage Areas

Configure settings so that session data and attachments can be stored on server machines dedicated to each, rather than on their local machines.

Detailed steps:

1. **On the application servers (Server A and Server B), check how the session data is stored.**

   On each server machine, open the php.ini file and find the [Session] section. Ensure that the session.save_handler property is set to "files".

File to be checked	/var/www/cgi-bin/cbgrn/php.ini
How to store session data	[Session] session.save_handler = files[1] session.use_cookies = 1 session.use_only_cookies = 1 (Omitted)

[1]: If you find any other value specified, you must change it to "files".

2. **On each server machine, note down the data storage areas.**

On each server machine, open the common.ini file. Note down the value of the save_path property in [Session] and the dir property in [Files].

File to be checked	/var/www/cgi-bin/cbgrn/common.ini
Session data storage area	[Session] cookie_lifetime = "0" cookie_path = "/" file_lifetime = "1" save_path = "*session data storage area*"
Attachment storage area	[Files] dir = "*attachment storage area*/cbgrn"

3. **On the database server (Server C), open the exports file to specify the data storage areas and the list of application servers.**

Specify the data storage area on Server C, which you noted down in step 2, and list the IP addresses of the application servers (Server A and Server B).

File to be edited:	/etc/exports
Session data storage area	/var/www/cgi-bin/cbgrn/sessiondata *IP address of Server A*(rw) *IP address of Server B*(rw) [1]
Attachment storage area	/usr/local/cybozu/mysql-5.0/files *IP address of Server A*(rw) *IP address of Server B*(rw)

[1]: This configuration only needs to be made when application servers are distributed on multiple server machines.

4. **On the database server (Server C), check the status of "rpcbind", "nfs", and "nfslock".**

Execute the following commands to check whether the services are running:

- rpcbind
  - For Red Hat Enterprise Linux 6:

```
# /etc/init.d/rpcbind status
```

  - For Red Hat Enterprise Linux 7 or later:

```
# systemctl status rpcbind.service
```

- nfslock
  - For Red Hat Enterprise Linux 6:

```
# /etc/init.d/nfslock status
```

  - For Red Hat Enterprise Linux 7 or later:

```
# systemctl status nfs-lock.service
```

- nfs
  - For Red Hat Enterprise Linux 6:

```
# /etc/init.d/nfs status
```

  - For Red Hat Enterprise Linux 7 or later:

```
# systemctl status nfs-server.service
```

Example:

```
[root@chiba etc]# /etc/init.d/rpcbind status
```

a)

```
rpcbind is stopped
[root@chiba etc]# /etc/init.d/nfslock status
rpc.statd (pid  1142) is running...                                    b)
[root@chiba etc]# /etc/init.d/nfs status
rpc.svcgssd is stopped
rpc.mountd (pid 24048) is running...
nfsd (pid 24045 24044 24043 24042 24041 24040 24039 24038) is running...
rpc.rquotad (pid 24032) is running...
```

a): This indicates that the service is not running.

b): This indicates that the service is running.

5. **If any services are found to be stopped in step 4, start the services in the order in which they are listed below:**

1) rpcbind

- For Red Hat Enterprise Linux 6:

```
# /etc/init.d/rpcbind start
```

- For Red Hat Enterprise Linux 7 or later:

```
# systemctl start rpcbind.service
```

2) nfslock

- For Red Hat Enterprise Linux 6:

```
# /etc/init.d/nfslock start
```

- For Red Hat Enterprise Linux 7 or later:

```
# systemctl start nfs-lock.service
```

3) nfs

- For Red Hat Enterprise Linux 6:

```
# /etc/init.d/nfs start
```

- For Red Hat Enterprise Linux 7 or later:

```
# systemctl start nfs-server.service
```

When nfs is already running, you must manually apply the changes made in the exports file.
Execute the following command:

```
# /usr/sbin/exportfs -ar
```

6. **On the application servers (Server A and Server B), remove the Write permission from the data storage areas.**

On each server machine, execute the following commands:

- Session data storage area[1]

```
# chmod -R 000 /var/www/cgi-bin/cbgrn/sessiondata
```

- Attachment storage area

```
# chmod -R 000 /usr/local/cybozu/mysql-5.0/files
```

[1]: The Write permission must be removed for the session data storage area only when application servers are distributed on multiple server machines.

When the access permissions are not changed and the application server fails to NFS mount, session data will be stored in the session data storage area on the application server.

7. **On the application servers (Server A and Server B), check the status of "rpcbind" and "nfslock".**

On each server machine, execute the following commands to check whether the services are running:

- rpcbind
  - For Red Hat Enterprise Linux 6:

```
# /etc/init.d/rpcbind status
```

  - For Red Hat Enterprise Linux 7 or later:

```
# systemctl status rpcbind.service
```

- nfslock
  - For Red Hat Enterprise Linux 6:

```
# /etc/init.d/nfslock status
```

  - For Red Hat Enterprise Linux 7 or later:

```
# systemctl status nfs-lock.service
```

Example:

```
# /etc/init.d/rpcbind status
rpcbind is stopped ——————————————————————— a)
# /etc/init.d/nfslock status
rpc.statd (pid 1654) is running... ——————————————— b)
```

a): This indicates that the service is not running.

b): This indicates that the service is running.

8. **If any services are found to be stopped in step 7, start the services in the order in which they are listed below:**

1) rpcbind

- For Red Hat Enterprise Linux 6:

```
# /etc/init.d/rpcbind start
```

- For Red Hat Enterprise Linux 7 or later:

```
# systemctl start rpcbind.service
```

2) nfslock

- For Red Hat Enterprise Linux 6:

```
# /etc/init.d/nfslock start
```

- For Red Hat Enterprise Linux 7 or later:

```
# systemctl start nfs-lock.service
```

9. **On the application servers (Server A and Server B), mount the data storage areas located on the database server (Server C).**

On each server machine, execute the following commands to mount the data storage areas that are located on Server C, which you noted down in step 2:

- Session data storage area[1]:

```
# mount -o intr,noac IP address or host name of Server C:/var/www/cgi-bin/cbgrn/sessiondata
/var/www/cgi-bin/cbgrn/sessiondata
```

• Attachment storage area:

```
# mount -o intr IP address or host name of Server C:/usr/local/cybozu/mysql-5.0/files
/usr/local/cybozu/mysql-5.0/files
```

[1]: This only needs to be executed when application servers are distributed on multiple server machines.

10. **On the application servers (Server A and Server B), check that the data storage areas located on the database server (Server C) are mounted.**

Execute the following command and ensure that it returns the data storage areas that you mounted in step 9:

```
# mount
```

Example of returned information:

```
10.16.63.186:/var/www/cgi-bin/cbgrn/sessiondata on /var/www/cgi-bin/
cbgrn/sessiondata type nfs (rw,intr,noac,vers=4,addr=10.16.63.186,
clientaddr=10.16.63.185)
10.16.63.186:/usr/local/cybozu/mysql-5.0/files on /usr/local/cybozu/
mysql-5.0/files type nfs (rw,intr,vers=4,addr=10.16.63.186,
clientaddr=10.16.63.185)
```

a): Session data storage area located on Server C

This is returned only when application servers are distributed on multiple server machines.

b): Attachment storage area located on Server C

Step 4 Change the Startup Type for Services

In a server-distributed deployment, Garoon uses MySQL and the scheduling service that are running on the database server. To ensure this, you must configure the application servers to prevent the services from starting automatically.

Detailed steps:

1. **Configure Garoon services to prevent them from starting automatically.**

Execute the following commands to configure MySQL and the scheduling service to prevent them from starting automatically:

• For Red Hat Enterprise Linux 6:

Server Machine	Command
Server A	# /sbin/chkconfig cyde_5_0 off # /sbin/chkconfig cyss_cbgrn off [1]
Server B	# /sbin/chkconfig cyde_5_0 off # /sbin/chkconfig cyss_cbgrn off [1]
Server C	Not available

[1]: Replace "cbgrn" with your installation identifier.

• For Red Hat Enterprise Linux 7 or later:

Server Machine	Command
Server A	# systemctl disable cyde_5_0 # systemctl disable cyss_cbgrn[1]
Server B	# systemctl disable cyde_5_0 # systemctl disable cyss_cbgrn[1]

Server Machine	Command
Server C	Not available

[1]: Replace "cbgrn" with your installation identifier.

Tip

- To enable the session data storage area to be mounted automatically when the operating system starts, you must configure required services to start automatically. For details on how to configure services to start automatically, see the following section:
"Configuring Services To Start Automatically" on page 71

Step 5 Start Garoon

Detailed steps:

1. **On the database server (Server C), start Garoon services.**
   To start the services, use the following commands in the order in which they are listed:

   1) MySQL service
   ```
   # /etc/init.d/cyde_5_0 start
   ```
   2) Scheduling service
   ```
   # /etc/init.d/cyss_cbgrn start[1]
   ```
   [1]: Replace "cbgrn" with your installation identifier.

2. **On the application servers (Server A and Server B), start the Web server service (httpd).**
   Execute the following command:
   - For Red Hat Enterprise Linux 6:
   ```
   # /etc/init.d/httpd start
   ```
   - For Red Hat Enterprise Linux 7 or later:
   ```
   # systemctl start httpd.service
   ```

   Check that Garoon management functions and applications can work successfully. If they fail to work, check whether required settings are configured correctly.

Step 6 Configure Settings on Garoon That Are Necessary for Starting Its Operation

On Garoon, configure settings that are required before you can start the operation of Garoon. The settings include customer information, system administrator information, and various application settings. For details, see the Japanese *Startup Guide*.
https://help.cybozu.com/ja/g46/intro/index.html

Notes on Operation

In a server-distributed deployment, you must regularly delete temporary files on application servers. For details on how to delete temporary files, see the following section:
"5.3Deleting Temporary Files" on page 86

Configuring Services To Start Automatically

To enable directories that are located on other server machines to be mounted automatically, the target directories must be registered with the fstab file. Additionally, the required services must start automatically.

Steps:

1. **On the application servers (Server A and Server B), edit the fstab file.**
   On each server machine, open the fstab file to specify directories you want to mount.

File to be edited:	/etc/fstab
Mounted directory for session data	*IP addresses or host name of Server C*:/var/www/cgi-bin/cbgrn/sessiondata /var/www/cgi-bin/cbgrn/sessiondata nfs intr,noac 0 0
Mounted directory for attachments	*IP addresses or host name of Server C*:/usr/local/cybozu/mysql-5.0/files /usr/local/cybozu/mysql -5.0/files nfs intr 0 0

2. **On the application servers (Server A and Server B), check "rpcbind" and "nfslock" for their startup type.**
   Execute the following commands to check whether the services are configured to start automatically.
   - rpcbind
     - For Red Hat Enterprise Linux 6:
       ```
       # /sbin/chkconfig --list rpcbind
       ```
     - For Red Hat Enterprise Linux 7 or later:
       ```
       # systemctl list-unit-files |grep rpcbind
       ```
   - nfslock
     - For Red Hat Enterprise Linux 6:
       ```
       # /sbin/chkconfig --list nfslock
       ```
     - For Red Hat Enterprise Linux 7 or later:
       ```
       # systemctl list-unit-files |grep nfs-lock
       ```

3. **On the application servers (Server A and Server B), ensure that required services are configured to start automatically.**
   If step 2 found that any services are not configured to start automatically, execute the following commands to enable automatic start:
   - rpcbind
     - For Red Hat Enterprise Linux 6:
       ```
       # /sbin/chkconfig rpcbind on
       ```
     - For Red Hat Enterprise Linux 7 or later:
       ```
       # systemctl enable rpcbind
       ```
   - nfslock
     - For Red Hat Enterprise Linux 6:
       ```
       # /sbin/chkconfig nfslock on
       ```
     - For Red Hat Enterprise Linux 7 or later:
       ```
       # systemctl enable nfs-lock
       ```

4. **On the database server (Server C), check "rpcbind", "nfslock", and "nfs" for their startup type.**

   Execute the following commands to check whether the services are configured to start automatically.

   - rpcbind
     - For Red Hat Enterprise Linux 6:

       ```
       # /sbin/chkconfig --list rpcbind
       ```

     - For Red Hat Enterprise Linux 7 or later:

       ```
       # systemctl list-unit-files |grep rpcbind
       ```

   - nfslock
     - For Red Hat Enterprise Linux 6:

       ```
       # /sbin/chkconfig --list nfslock
       ```

     - For Red Hat Enterprise Linux 7 or later:

       ```
       # systemctl list-unit-files |grep nfs-lock
       ```

   - nfs
     - For Red Hat Enterprise Linux 6:

       ```
       # /sbin/chkconfig --list nfs
       ```

     - For Red Hat Enterprise Linux 7 or later:

       ```
       # systemctl list-unit-files |grep nfs-server
       ```

5. **Ensure that required services are configured to start automatically.**

   If step 4 found that any services are not configured to start automatically, execute the following commands to enable automatic start:

   - rpcbind
     - For Red Hat Enterprise Linux 6:

       ```
       # /sbin/chkconfig rpcbind on
       ```

     - For Red Hat Enterprise Linux 7 or later:

       ```
       # systemctl enable rpcbind
       ```

   - nfslock
     - For Red Hat Enterprise Linux 6:

       ```
       # /sbin/chkconfig nfslock on
       ```

     - For Red Hat Enterprise Linux 7 or later:

       ```
       # systemctl enable nfs-lock
       ```

   - nfs
     - For Red Hat Enterprise Linux 6:

       ```
       # /sbin/chkconfig nfs on
       ```

     - For Red Hat Enterprise Linux 7 or later:

       ```
       # systemctl enable nfs-server
       ```

5.2 Migrating to a Server-Distributed Deployment

This section describes how to migrate from an existing single-machine deployment to a server-distributed deployment. You can continue to use the existing server machine to run the database server and add new server machines to run application servers.
For example, the steps below set up the following deployment:

New Server Machines (Application servers)

- Server A
- Server B

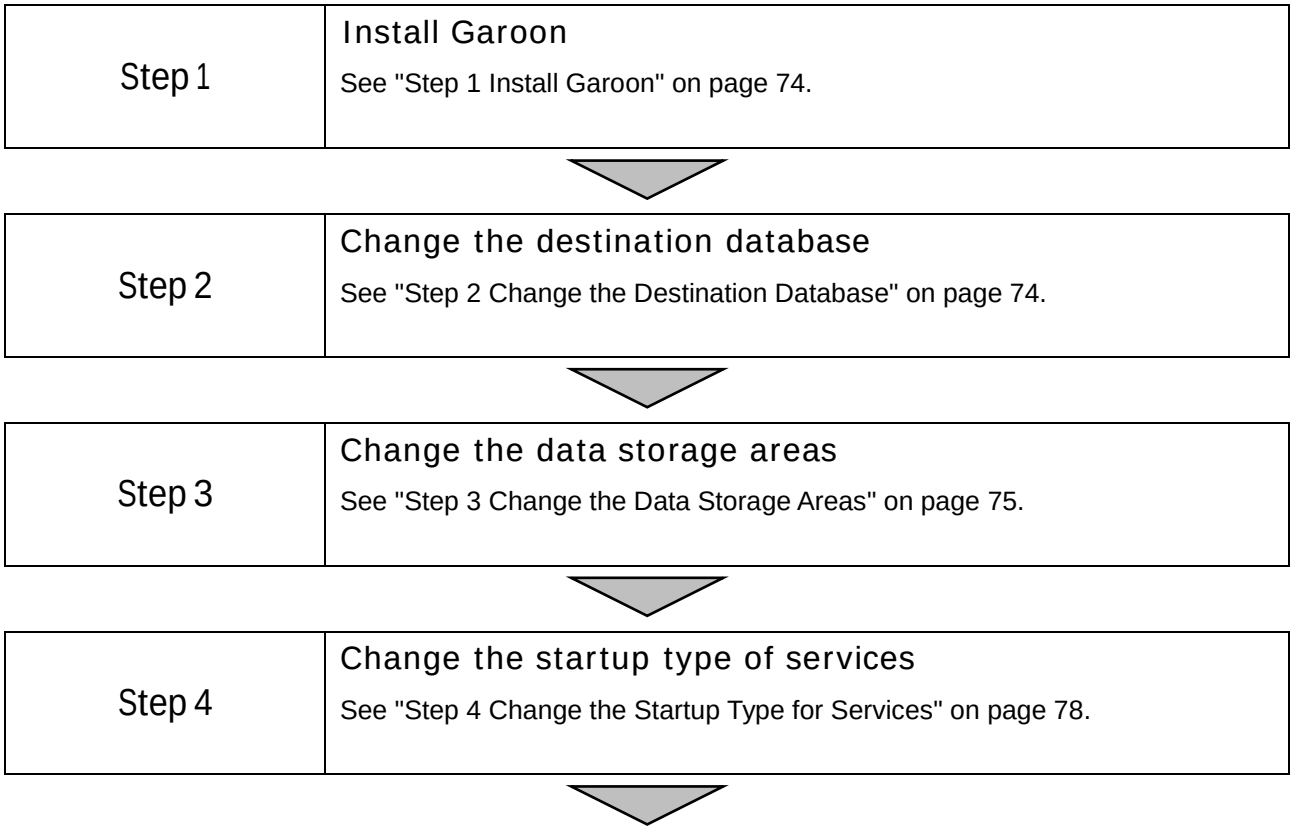
Existing Server Machine (Database server)

- Server C

5.2.1 Server-Distributed Deployment on Windows

The flow for how to migrate from an existing Garoon deployment to a server-distributed deployment on Windows is as follows:

General Steps



Step 5	Start Garoon See "Step 5 Start Garoon" on page 78.

Step 1 Install Garoon

Detailed steps:

1. **On the application servers (Server A and Server B), ensure that the Web server service is running.**
   Start the Web server service if it is not running.
2. **On the application servers (Server A and Server B), install Garoon.**
   See "2.2Installing on Windows" on page 18.
3. **On the application servers (Server A and Server B), initialize Garoon.**
   See "2.2.1Initializing Garoon on Windows" on page 25.
4. **On the application servers (Server A and Server B), check that Garoon is accessible.**

Step 2 Change the Destination Database

Detailed steps:

1. **On each server machine, stop the Web server service.**
   Stop the Web server service if it is running.
2. **On each server machine, stop Garoon services.**
   1) From the server's Administrative Tools, open "Services".
   2) Stop the scheduling service first, and then the MySQL service.
   - Scheduling service: Cybozu_Scheduling_Service_cbgrn[1]
   - MySQL service: Cybozu_Database_Engine_5_0

   [1]: Replace "cbgrn" with your installation identifier.
3. **On the database server (Server C), note down the port used by MySQL.**
   Open the my.ini file and note down the value of the port property in [mysqld].

File to be checked	C:¥Program Files¥Cybozu¥mysql-5.0¥etc¥my.ini
Example of port numbers	[client] port = 3770 socket = C:/Program Files/Cybozu/mysql-5.0/data/mysql.sock default-character-set = utf8mb4 [mysqld] skip-name-resolve port = 3770[1]

[1]: This is the port number used by MySQL.

4. **On the application servers (Server A and Server B), change the settings for the destination database.**

   On Server A and Server B, open the lwc.ini file to change the destination host.
   Specify the values of the host name or IP address and the port number used by the database server (Server C).

File to be edited:	C:¥inetpub¥scripts¥cbgrn¥lwc.ini
Destination host ("prop:_host" in [dbconn])	Specify one of the following: • val:*host name*:*port number* • val:*IP address*:*port number*

   Example:
   Before changing:

```
[dbconn]
class = "CB_DatabaseConnection"
require = "fw/database.csp"
prop:_host = "val:127.0.0.1:3770"  ——— a)
prop:_dbname = "val:cb_cbgrn"
```

   After changing:

```
[dbconn]
class = "CB_DatabaseConnection"
require = "fw/database.csp"
prop:_host = "val:server_c:3770"  ——— b)
prop:_dbname = "val:cb_cbgrn"
```

   a): Initial setting
   b): The port number that you noted down in step 3, and the host name or IP address

Step 3 Change the Data Storage Areas

Configure settings so that session data and attachments can be stored on server machines dedicated to each, rather than on their local machines.

Detailed steps:

1. **On each server machine, add a Windows user account with the same user name and password.**

   If you are using Windows Server 2012, assign Administrator rights to the new user.

2. **On the application servers (Server A and Server B), use IIS Manager to perform the following steps:**

   Select "Sites" > "Default Web Site" > "scripts" > "cbgrn"[1].
   [1]: Replace "cbgrn" with your installation identifier.

3. **On the application servers (Server A and Server B), change the user account to be used for anonymous access.**

   1) Double-click "Authentication". Right-click "Anonymous Authentication", and then select "Edit".
   2) On the "Edit Anonymous Authentication Credentials" screen, select the "Specific user" radio button.
   3) Click "Set".

4) On the "Set Credentials" dialog box, enter the user name and password of the user that you created in step 1. Click "OK".

4. **Change the directory names of the data storage areas on the application servers (Server A and Server B).**

To prevent session data and attachments from being stored on Server A or Server B, change the directory names of the data storage areas on Server A and Server B.

Example:

Data	Directory Name Before Change	Directory Name After Change
Session data[1]	C:¥inetpub¥scripts¥cbgrn¥sessiondata	C:¥inetpub¥scripts¥cbgrn¥sessiondata_bak
Attachments	C:¥Program Files¥Cybozu¥mysql-5.0¥files	C:¥Program Files¥Cybozu¥mysql-5.0¥files_bak

[1]: This change only needs to be made when application servers are distributed on multiple server machines.

5. **On the database server (Server C), create a directory in the session data storage area to store session data.**

The directory only needs to be created when application servers are distributed on multiple server machines.

Example:

C:¥inetpub¥scripts¥cbgrn¥sessiondata¥sessionfiles

You must create a new directory. If you set the session data storage area to the shared folder itself in step 8, files will not be stored correctly.

6. **On the database server (Server C), configure the session data storage area and the attachment storage area so that they can be shared over network.**

Example:

Data	Storage Area Directory Name	Absolute Path
Session data[1]	sessiondata	C:¥inetpub¥scripts¥cbgrn¥sessiondata
Attachments	files	C:¥Program Files¥Cybozu¥mysql-5.0¥files

[1]: This configuration only needs to be made when application servers are distributed on multiple server machines.

On Windows, start Explorer and locate the storage area directory to be shared. Right-click the name of the directory, and then click "Properties".

On the properties screen, change the Sharing and Security settings.

- Sharing
  - To configure the session data storage area (a directory named "sessiondata"):
    1) Click the "Sharing" tab, and then click "Share".
    2) Select "Everyone" and click "Remove". For security reasons, it is recommended that "Everyone" be removed to ensure that no permissions are given to it.
    3) Enter the name of the user you created in step 3-1, and click "Add".

4) From the "Permission Level" drop-down list, select "Read/Write". Click "Share".

- To configure the attachment storage area (a directory named "files"):

1) On the "Sharing" tab, click "Advanced Sharing".

2) Select the "Share this folder" check box, and then click "Permissions".

3) Click "Add".

4) In the "Enter the object names to select" field, add the name of the user you created in step 3-1. Click "OK".

5) Select the name of the user you created in step 3-1, and assign the Full Control permission to the user.

- Security
  - To configure the session data storage area (a directory named "sessiondata"):

1) Click the "Security" tab, and then select "Edit".

2) Click "Add". In the "Enter the object names to select" field, add the name of the user you created in step 3-1. Click "OK".

3) In the "Permissions" list, ensure that the following check boxes are selected. Click "OK".

- Modify
- Read & execute
- List folder contents
- Write
- Read

- To configure the attachment storage area (a directory named "files"):

1) Click the "Security" tab, and then click "Edit". Add the user you created in step 3-1.

2) Click "Add". In the "Enter the object names to select" field, add the name of the user you created in step 3-1. Click "OK".

3) In the "Permissions" list, ensure that the following check boxes are selected. Click "OK".

- Modify
- Read & execute
- List folder contents
- Write
- Read

7. **On the application servers (Server A and Server B), check how the session data is stored.**

On each server machine, open the php.ini file and find the [Session] section. Ensure that the session.save_handler property's value is set to "files".

File to be checked	C:¥inetpub¥scripts¥cbgrn¥php.ini
How to store session data	[Session] session.save_handler = files[1] session.use_cookies = 1 session.use_only_cookies = 1 (Omitted)

[1]: If you find any other value specified, you must change it to "files".

8. **Change the data storage areas on the application servers (Server A and Server B).**

On each server machine, open the common.ini file to change the directories that store session data and attachments.

• File to be edited: C:¥inetpub¥scripts¥cbgrn¥common.ini

Data	Change to
Session data[1]	[Session] save_path = "//*IP address of Server C*/sessiondata/sessionfiles" [2]
Attachments	[Files] dir = "//*IP address of Server C*/files/cbgrn" [3]

[1]: This change only needs to be made when application servers are distributed on multiple server machines.

[2]: Specify the directory that you created in step 5.

[3]: Specify the directory that you configured in step 6. Replace "cbgrn" with your installation identifier.

Tip

- The attachment storage area must be a subdirectory of the shared folder. If the storage area is set to the share folder itself, files will not be stored correctly.

Step 4 Change the Startup Type for Services

In a server-distributed deployment, Garoon uses MySQL and the scheduling service that are running on the database server. To ensure this, you must configure the application servers to prevent the services from starting automatically.

Detailed steps:

1. **On the application servers, configure Garoon services to prevent them from starting automatically.**

   On Windows, from Administrative Tools, open "Services".
   Right-click the service name and click "Properties".
   On the "General" tab, set "Startup Type" to "Disabled" and click "OK".

Server Machine	Service To Be Disabled
Server A	• Cybozu_Database_Engine_5_0 • Cybozu_Scheduling_Service_cbgrn [1]
Server B	• Cybozu_Database_Engine_5_0 • Cybozu_Scheduling_Service_cbgrn [1]
Server C	Not available

[1]: Replace "cbgrn" with your installation identifier.

Step 5 Start Garoon

Detailed steps:

1. **On the database server (Server C), open Garoon services.**

   On Windows, from Administrative Tools, open "Services". Start the services in the order in which they are listed below.
   1) MySQL service: Cybozu_Database_Engine_5_0
   2) Scheduling service: Cybozu_Scheduling_Service_cbgrn[1]

   [1]: Replace "cbgrn" with your installation identifier.

2. **On the application servers (Server A and Server B), start the Web server service.**

   After the Web server services start, access Garoon on Server A and Server B.

Check that Garoon management functions and applications can work successfully.
If they fail to work, check whether required settings are configured correctly.

Notes on Operation

In a server-distributed deployment, you must regularly delete temporary files on application servers.
For details on how to delete temporary files, see the following section:
"5.3Deleting Temporary Files" on page 86

5.2.2 Server-Distributed Deployment on Linux

The flow for how to migrate from an existing Garoon deployment to a server-distributed deployment on Linux is as follows:

General Steps

Step 1	Install Garoon See "Step 1 Install Garoon" on page 79.
Step 2	Change the destination database See "Step 2 Change the Destination Database" on page 80.
Step 3	Change the data storage areas See "Step 3 Change the Data Storage Areas" on page 81.
Step 4	Change the startup type of services See "Step 4 Change the Startup Type for Services" on page 85.
Step 5	Start Garoon See "Step 5 Start Garoon" on page 86.

Step 1 Install Garoon

Detailed steps:

1. **On the application servers (Server A and Server B), ensure that the Web server service is running.**

On each server machine, execute the following command to check whether the Web server service is running:

- For Red Hat Enterprise Linux 6:

```
# /etc/init.d/httpd status
```

- For Red Hat Enterprise Linux 7 or later:

```
# systemctl status httpd.service
```

When the Web server service is running, this command returns the process ID of the running process.
Example of a returned process ID:

```
httpd (pid 21583 21576 21575 21573 21572 21571 21570 21569 21568) is running...
```

If the Web server service is found to be not running, execute the following command to start the Web server service:

- For Red Hat Enterprise Linux 6:

```
# /etc/init.d/httpd start
```

- For Red Hat Enterprise Linux 7 or later:

```
# systemctl start httpd.service
```

2. **On the application servers (Server A and Server B), install Garoon.**
See "2.3Installing on Linux" on page 30.

3. **On the application servers (Server A and Server B), check that Garoon is accessible.**

Step 2 Change the Destination Database

Detailed steps:

1. **On each server machine, stop the Web server service (httpd).**
On each server machine, execute the following command:

- For Red Hat Enterprise Linux 6:

```
# /etc/init.d/httpd stop
```

- For Red Hat Enterprise Linux 7 or later:

```
# systemctl stop httpd.service
```

2. **On each server machine, stop Garoon services.**
To stop the services, use the following commands in the order in which they are listed:
1) Scheduling service

```
# /etc/init.d/cyss_cbgrn stop[1]
```

2) MySQL service

```
# /etc/init.d/cyde_5_0 stop
```

[1]: Replace "cbgrn" with your installation identifier.

3. **On the database server (Server C), note down the port used by MySQL.**
Open the my.ini file and note down the value of the port property in [mysqld].

File to be checked	/usr/local/cybozu/mysql-5.0/etc/my.ini
Example of port numbers	[client]

	Port = 3770 socket = /usr/local/cybozu/mysql-5.0/data/mysql.sock default-character-set = utf8mb4 [mysqld] user = apache skip-name-resolve port = 3770[1] socket = /usr/local/cybozu/mysql-5.0/data/mysql.sock

[1]: This is the port number used by MySQL.

4. **On the application servers (Server A and Server B), change the settings for the destination database.**

On each server machine, open the lwc.ini file to change the destination host.
Specify the values of the host name or IP address and the port number used by the database server (Server C).

File to be edited:	/var/www/cgi-bin/cbgrn/lwc.ini
Destination host ("prop:_host" in [dbconn])	Specify one of the following: • val:*host name*:*port number* • val:*IP address*:*port number*

Example:
Before changing:

```
[dbconn]
class = "CB_DatabaseConnection"
require = "fw/database.csp"
prop:_host = "val:localhost:3770" ——————————————————— a)
prop:_dbname = "val:cb_cbgrn"
```

After changing:

```
[dbconn]
class = "CB_DatabaseConnection"
require = "fw/database.csp"
prop:_host = "val:server_c:3770" ——————————————————— b)
prop:_dbname = "val:cb_cbgrn"
```

a): Initial setting
b) The port number that you noted down in step 3, and the host name or IP address

Step 3 Change the Data Storage Areas

Configure settings so that session data and attachments can be stored on server machines dedicated to each, rather than on their local machines.

Detailed steps:

1. **On the application servers (Server A and Server B), check how the session data is stored.**

On each server machine, open the php.ini file and find the [Session] section. Ensure that the session.save_handler property is set to "files".

File to be checked	/var/www/cgi-bin/cbgrn/php.ini
How to store session data	[Session] session.save_handler = files[1] session.use_cookies = 1 session.use_only_cookies = 1 (Omitted)

[1]: If you find any other value specified, you must change it to "files".

2. **On each server machine, note down the data storage areas.**

On each server machine, open the common.ini file. Note down the value of the save_path property in [Session] and the dir property in [Files].

File to be checked	/var/www/cgi-bin/cbgrn/common.ini
Session data storage area	[Session] cookie_lifetime = "0" cookie_path = "/" file_lifetime = "1" save_path = "*session data storage area*"
Attachment storage area	[Files] dir = "*attachment storage area*/cbgrn"

3. **On the database server (Server C), open the exports file to specify the data storage areas and the list of application servers.**

Specify the data storage area on Server C, which you noted down in step 2, and list the IP addresses of the application servers (Server A and Server B).

File to be edited:	/etc/exports
Session data storage area	/var/www/cgi-bin/cbgrn/sessiondata *IP address of Server A*(rw) *IP address of Server B*(rw) [1]
Attachment storage area	/usr/local/cybozu/mysql-5.0/files *IP address of Server A*(rw) *IP address of Server B*(rw)

[1]: This configuration only needs to be made when application servers are distributed on multiple server machines.

4. **On the database server (Server C), check the status of "rpcbind", "nfs", and "nfslock".**

Execute the following commands to check whether the services are running:

- rpcbind
  - For Red Hat Enterprise Linux 6:

```
# /etc/init.d/rpcbind status
```

  - For Red Hat Enterprise Linux 7 or later:

```
# systemctl status rpcbind.service
```

- nfslock
  - For Red Hat Enterprise Linux 6:

```
# /etc/init.d/nfslock status
```

  - For Red Hat Enterprise Linux 7 or later:

```
# systemctl status nfs-lock.service
```

- nfs

- For Red Hat Enterprise Linux 6:

```
# /etc/init.d/nfs status
```

- For Red Hat Enterprise Linux 7 or later:

```
# systemctl status nfs-server.service
```

```
[root@chiba etc]# /etc/init.d/rpcbind status
rpcbind is stopped                                                    a)
[root@chiba etc]# /etc/init.d/nfslock status
rpc.statd (pid  1142) is running...                                   b)
[root@chiba etc]# /etc/init.d/nfs status
rpc.svcgssd is stopped
rpc.mountd (pid 24048) is running...
nfsd (pid 24045 24044 24043 24042 24041 24040 24039 24038) is running...
rpc.rquotad (pid 24032) is running...
```

a): This indicates that the service is not running.

b): This indicates that the service is running.

5. **If any services are found to be stopped in step 4, start the services in the order in which they are listed below:**

1) rpcbind

- For Red Hat Enterprise Linux 6:

```
# /etc/init.d/rpcbind start
```

- For Red Hat Enterprise Linux 7 or later:

```
# systemctl start rpcbind.service
```

- 2) nfslock
  - For Red Hat Enterprise Linux 6:

```
# /etc/init.d/nfslock start
```

  - For Red Hat Enterprise Linux 7 or later:

```
# systemctl start nfs-lock.service
```

- 3) nfs
  - For Red Hat Enterprise Linux 6:

```
# /etc/init.d/nfs start
```

  - For Red Hat Enterprise Linux 7 or later:

```
# systemctl start nfs-server.service
```

When nfs is already running, you must manually apply the changes made in the exports file.
Execute the following command:

```
# /usr/sbin/exportfs -ar
```

6. **On the application servers (Server A and Server B), remove the Write permission from the data storage areas.**

On each server machine, execute the following commands:

- Session data storage area[1]

```
# chmod -R 000 /var/www/cgi-bin/cbgrn/sessiondata
```

- Attachment storage area

```
# chmod -R 000 /usr/local/cybozu/mysql-5.0/files
```

[1]: The Write permission must be removed for the session data storage area only when application servers are distributed on multiple server machines.

When the access permissions are not changed and the application server fails to NFS mount, session data will be stored in the session data storage area on the application server.

7. **On the application servers (Server A and Server B), check the status of "rpcbind" and "nfslock".**

   On each server machine, execute the following commands to check whether the services are running:

   - rpcbind
     - For Red Hat Enterprise Linux 6:

       ```
       # /etc/init.d/rpcbind status
       ```

     - For Red Hat Enterprise Linux 7 or later:

       ```
       # systemctl status rpcbind.service
       ```

   - nfslock
     - For Red Hat Enterprise Linux 6:

       ```
       # /etc/init.d/nfslock status
       ```

     - For Red Hat Enterprise Linux 7 or later:

       ```
       # systemctl status nfs-lock.service
       ```

   Example:

   ```
   # /etc/init.d/portmap status
   rpcbind is stopped
   # /etc/init.d/nfslock status
   rpc.statd (pid 1654) is running...
   ```

   a): This indicates that the service is not running.

   b): This indicates that the service is running.

8. **If any services are found to be stopped in step 7, start the services in the order in which they are listed below:**

   1) rpcbind
      - For Red Hat Enterprise Linux 6:

        ```
        # /etc/init.d/rpcbind start
        ```

      - For Red Hat Enterprise Linux 7 or later:

        ```
        # systemctl start rpcbind.service
        ```

   2) nfslock
      - For Red Hat Enterprise Linux 6:

        ```
        # /etc/init.d/nfslock start
        ```

      - For Red Hat Enterprise Linux 7 or later:

        ```
        # systemctl start nfs-lock.service
        ```

9. **On the application servers (Server A and Server B), mount the data storage areas located on the database server (Server C).**

On each server machine, execute the following commands to mount the data storage areas that are located on Server C, which you noted down in step 2:

- Session data storage area[1]:

```
# mount -o intr,noac IP address or host name of Server C:/var/www/cgi-bin/cbgrn/sessiondata
/var/www/cgi-bin/cbgrn/sessiondata
```

- Attachment storage area:

```
# mount -o intr IP address or host name of Server C:/usr/local/cybozu/mysql-5.0/files
/usr/local/cybozu/mysql-5.0/files
```

[1]: This only needs to be executed when application servers are distributed on multiple server machines.

10. **On the application servers (Server A and Server B), check that the data storage areas located on the database server (Server C) are mounted.**

Execute the following command and ensure that it returns the data storage areas that you mounted in step 9:

```
# mount
```

Example of returned information:

```
10.16.63.186:/var/www/cgi-bin/cbgrn/sessiondata on /var/www/cgi-bin/
cbgrn/sessiondata type nfs (rw,intr,noac,vers=4,addr=10.16.63.186,
clientaddr=10.16.63.185)                                              a)
10.16.63.186:/usr/local/cybozu/mysql-5.0/files on /usr/local/cybozu/
mysql-5.0/files type nfs (rw,intr,vers=4,addr=10.16.63.186,
clientaddr=10.16.63.185)                                              b)
```

a): Session data storage area located on Server C

This is returned only when application servers are distributed on multiple server machines.

b): Attachment storage area located on Server C

Step 4 Change the Startup Type for Services

In a server-distributed deployment, Garoon uses MySQL and the scheduling service that are running on the database server. To ensure this, you must configure the application servers to prevent the services from starting automatically.

Detailed steps:

1. **Configure Garoon services to prevent them from starting automatically.**

Execute the following commands to configure the MySQL service and the scheduling service to prevent them from starting automatically:

- For Red Hat Enterprise Linux 6:

Server Machine	Command
Server A	# /sbin/chkconfig cyde_5_0 off # /sbin/chkconfig cyss_cbgrn off [1]
Server B	# /sbin/chkconfig cyde_5_0 off # /sbin/chkconfig cyss_cbgrn off [1]
Server C	Not available

[1]: Replace "cbgrn" with your installation identifier.

- For Red Hat Enterprise Linux 7 or later:

Server Machine	Command
Server A	# systemctl disable cyde_5_0 # systemctl disable cyss_cbgrn[1]
Server B	# systemctl disable cyde_5_0 # systemctl disable cyss_cbgrn[1]
Server C	Not available

[1]: Replace "cbgrn" with your installation identifier.

Tip

- To enable the session data storage area to be mounted automatically when the operating system starts, you must configure required services to start automatically. For details on how to configure services to start automatically, see the following section:
"Configuring Services To Start Automatically" on page 71

Step 5 Start Garoon

Detailed steps:

1. **On the database server (Server C), start Garoon services.**
   To start the services, use the following commands in the order in which they are listed:

   1) MySQL service

   ```
   # /etc/init.d/cyde_5_0 start
   ```

   2) Scheduling service

   ```
   # /etc/init.d/cyss_cbgrn start1
   ```

   [1]: Replace "cbgrn" with your installation identifier.

2. **On the application servers (Server A and Server B), start the Web server service (httpd).**
   Execute the following command:

   - For Red Hat Enterprise Linux 6:

   ```
   # /etc/init.d/httpd start
   ```

   - For Red Hat Enterprise Linux 7 or later:

   ```
   # systemctl start httpd.service
   ```

   Check that Garoon management functions and applications can work successfully. If they fail to work, check whether required settings are configured correctly.

Notes on Operation

In a server-distributed deployment, you must regularly delete temporary files on application servers.
For details on how to delete temporary files, see the following section:
"5.3Deleting Temporary Files" on page 86

5.3 Deleting Temporary Files

In a server-distributed deployment, the scheduling services on application servers must be disabled to prevent multiple services from running in parallel.

However, when the scheduling service is not running, temporary files may be left undeleted. To address this, you must regularly delete temporary files on all application servers.
Use provided commands to delete temporary files stored in the following directories:

- *CGI directory*/*installation identifier*/tmp
- *CGI directory*/*installation identifier*/upload_tmp

Note

- The provided commands described below delete all temporary files that have existed for 24 hours or more.
- You cannot delete temporary files when Garoon is in backup mode. For details on backup mode, see the following page in the *Administrator Guide*:
https://help.cybozu.com/ja/g46/admin/maintenance/backup_restore/backup_mysql.html#backup_restore_backup_mysql_03

Tip

- Typically, you should delete temporary files once a day.

For Windows

Steps:

1. **On the application servers (Server A and Server B), start Command Prompt and move to the CGI directory.**
   On each server machine, execute the following command:

   ```
   > cd C:¥inetpub¥scripts¥cbgrn
   ```

2. **On the application servers (Server A and Server B), delete temporary files.**
   On each server machine, execute the following command:

   ```
   > grn.exe -C -q code¥sched¥dynamic¥cleanup.csp
   ```

   Corresponding temporary files are deleted from the following directories:
   - C:¥inetpub¥scripts¥cbgrn¥tmp
   - C:¥inetpub¥scripts¥cbgrn¥upload_tmp

Tip

- You can create a task to automate deleting temporary files.
- It is recommended that auto-deletion of temporary files be executed during an off-peak time.

For Linux

Steps:

1. **On the application servers (Server A and Server B), start the console and move to the CGI directory.**
   On each server machine, execute the following command:

   ```
   # cd /var/www/cgi-bin/cbgrn
   ```

2. **On the application servers (Server A and Server B), delete temporary files.**
   On each server machine, execute the following command:

   ```
   # ./grn.cgi -C -q code/sched/dynamic/cleanup.csp
   ```

Corresponding temporary files are deleted from the following directories:

- /var/www/cgi-bin/cbgrn/tmp
- /var/www/cgi-bin/cbgrn/upload_tmp

Tip

- To automate deleting temporary files, you can use cron to execute the command regularly.
- It is recommended that auto-deletion of temporary files be executed during an off-peak time.

5.4 Upgrading with a Server-Distributed Deployment

Direct upgrade to version 4.6 is supported only from version 4.0 or 4.2.
Complete preparations for upgrading in the same way as for single-machine deployment. For details, see the following section:
See "3.1Preparing for Upgrading" on page 38.

Tip

- If you have any questions, consult our official partners or your vendor.
  https://cybozu.co.jp/products/partner/ (Japanese only)

5.4.1 Upgrading on Windows

The upgrade steps must be performed by a user who has Administrator rights on Windows.

Steps:

1. **On the database server (Server C), back up the data of the current Garoon instance.**
   For details on backups, see the following manual for your version:
   "Backup and Restoration" in the *Administrator Guide*
   https://help.cybozu.com/ja/g42/admin/maintenance/backup_restore/index.html
   After you back up the data, check that the MySQL service is running on the database server (Server C).
2. **On each server machine, stop the Web server service.**
3. **Check on each server machine that the scheduling services are not running.**
   - Stop the scheduling service if it is running.
     On Windows, select "Administrative Tools" > "Services" to stop the following service:
     - Scheduling service: Cybozu_Scheduling_Service_cbgrn[1]
       [1]: Replace "cbgrn" with your installation identifier.
   - If multiple scheduling services are running on one server, you must stop all of the services.

- After you stop the scheduling service, you must close the "Services" window on Windows. If you proceed to the next step without closing the window, the upgrade process may fail.

4. **When Full text search is active, stop Solr and Worker.**

   On every server where Full text search is active, execute the following commands in the order in which they are listed:

   ```
   net stop Cybozu_SearchServer_Solr
   net stop Cybozu_SearchServer_Worker
   ```

   For details on how to stop the services, see the following Japanese guide:

   Full Text Search Server Guide

   https://help.cybozu.com/ja/g4/guide/index.html#guide_index_07

5. **On the database server (Server C), upgrade Garoon to version 4.6.0.**

   Upgrade Garoon in the same way as for single-machine deployment.

   See "3.2Upgrading on Windows" on page 41.

6. **On the application servers (Server A and Server B), upgrade Garoon to version 4.6.0.**

   1) On Server A and Server B, ensure that the MySQL service is running.

   2) Upgrade Garoon.
      Upgrade Garoon in the same way as for single-machine deployment.
      See "3.2Upgrading on Windows" on page 41.

7. **On the application servers (Server A and Server B), check the anonymous authentication setting.**

   You created a Windows user when you installed Garoon and changed the data storage areas.

   Check that the user is set for anonymous authentication.

   1) Select "Sites" > "Default Web Site" > "scripts" > "cbgrn"[1].
      [1]: Replace "cbgrn" with your installation identifier.
   2) Double-click "Authentication". Right-click "Anonymous Authentication" and select "Edit".
   3) On the "Edit Anonymous Authentication Credentials" screen, select the "Specific user" radio button.
   4) Click "Set".
   5) Check that the "Set Credentials" screen shows the user that you created during the setup of the server-distributed deployment. If a different user is shown, set the user that you created during the setup of the server-distributed deployment.

8. **On the database server (Server C), start the scheduling service.**

   On Windows, select "Administrative Tools" > "Services" to start the following service:

   - Scheduling service: Cybozu_Scheduling_Service_cbgrn[1]
     [1]: Replace "cbgrn" with your installation identifier.
   - Check that the status of the scheduling service is "Running".

9. **On the application servers (Server A and Server B), stop the MySQL service.**

   On Windows, select "Administrative Tools" > "Services" to stop the following service:

   - MySQL service: Cybozu_Database_Engine_5_0

10. **Configure Garoon services to prevent them from starting automatically.**

In a server-distributed deployment, Garoon uses the MySQL service and the scheduling service that are running on the database server. If each service is running automatically on the application servers, you must change their configurations.

1) On Windows, from Administrative Tools, open "Services".

2) Right-click the service name and click "Properties".

3) On the "General" tab, set "Startup Type" to "Disabled" and click "OK".

Server Machine	Service To Be Disabled
Server A	• Cybozu_Database_Engine_5_0 • Cybozu_Scheduling_Service_cbgrn[1]
Server B	• Cybozu_Database_Engine_5_0 • Cybozu_Scheduling_Service_cbgrn[1]
Server C	Not available

[1]: Replace "cbgrn" with your installation identifier.

11. **On the application servers (Server A and Server B), start the Web server service.**

12. **On the database server (Server C), enable the scheduling service to start automatically.**
Before you upgraded Garoon, you might have configured the scheduling service on the database server (Server C) to prevent it from starting automatically. In such a case, reconfigure the scheduling service to enable automatic start.

1) On Windows, from Administrative Tools, open "Services".

2) Right-click the service name and click "Properties".

3) On the "General" tab, set "Startup Type" to "Automatic", and click "OK".

13. **Perform the tasks that are necessary post-upgrade.**
Perform the tasks that are necessary post-upgrade in the same way as for single-machine deployment.
See "3.4Post-Upgrade Necessary Tasks" on page 45.

5.4.2 Upgrading on Linux

The upgrade steps must be performed by a root user.

Note

- The installer must be in a directory for which the Run As user of the Web server service (for example, "Apache") has the Execute permission. The Run As user must have Execute and Write permissions for all ancestor directories of the directory that contains the installer.
- When NFS is used, directories on application servers must be mounted before the upgrade process can start.

Steps:

1. **On the database server (Server C), back up the data of the current Garoon instance.**
For details on backups, see the following manual for your version:
"Backup and Restoration" in the *Administrator Guide*
https://help.cybozu.com/ja/g42/admin/maintenance/backup_restore/index.html

After you back up the data, check that the MySQL service is running on the database server (Server C).

2. **On each server machine, stop the Web server service (httpd).**
   Execute the following command:
   - For Red Hat Enterprise Linux 6:

     ```
     # /etc/init.d/httpd stop
     ```

   - For Red Hat Enterprise Linux 7 or later:

     ```
     # systemctl stop httpd.service
     ```

3. **Check on each server machine that the scheduling services are not running.**
   Stop the scheduling service if it is running.
   Execute the following command:

   ```
   # /etc/init.d/cyss_cbgrn stop
   ```

4. **When Full text search is active, stop Solr and Worker.**
   On every server where Full text search is active, execute the following commands in the order in which they are listed:

   ```
   /etc/init.d/cbss_solr stop
   /etc/init.d/cbss_worker stop
   ```

   For details on how to stop the services, see the following Japanese guide:
   Full Text Search Server Guide
   https://help.cybozu.com/ja/g4/guide/index.html#guide_index_07

5. **On the database server (Server C), upgrade Garoon to version 4.6.0.**
   Upgrade Garoon in the same way as for single-machine deployment.
   See "3.3Upgrading on Linux" on page 42.

6. **On the application servers (Server A and Server B), upgrade Garoon to version 4.6.0.**
   Upgrade Garoon in the same way as for single-machine deployment.
   See "3.3Upgrading on Linux" on page 42.

7. **On the database server (Server C), start the scheduling service.**
   Execute the following commands:

   ```
   # /etc/init.d/cyss_cbgrn start
   # /etc/init.d/cyss_cbgrn status
   ```

   You can execute the following command to check whether the scheduling service is running:
   Example:

   ```
   # /etc/init.d/cyss_cbgrn status
   sched(25766) is running...
   ```

   a): This indicates that the service is running.

8. **Configure Garoon services to prevent them from starting automatically.**
   In a server-distributed deployment, Garoon uses the MySQL service and the scheduling service that are running on the database server. If each service is running automatically on the application servers, you must change their configurations.

   Execute the following commands to configure the MySQL service and the scheduling service to prevent them from starting automatically:

• For Red Hat Enterprise Linux 6:

Server Machine	Service To Be Disabled
Server A	# /sbin/chkconfig cyde_5_0 off # /sbin/chkconfig cyss_cbgrn off[1]
Server B	# /sbin/chkconfig cyde_5_0 off # /sbin/chkconfig cyss_cbgrn off[1]
Server C	Not available

[1]: Replace "cbgrn" with your installation identifier.

• For Red Hat Enterprise Linux 7 or later:

Server Machine	Service To Be Disabled
Server A	# systemctl disable cyde_5_0 # systemctl disable cyss_cbgrn[1]
Server B	# systemctl disable cyde_5_0 # systemctl disable cyss_cbgrn[1]
Server C	Not available

[1]: Replace "cbgrn" with your installation identifier.

9. **On the application servers (Server A and Server B), start the Web server service (httpd).**

Execute the following command:

• For Red Hat Enterprise Linux 6:

```
# /etc/init.d/httpd start
```

• For Red Hat Enterprise Linux 7 or later:

```
# systemctl start httpd.service
```

10. **On the database server (Server C), enable the scheduling service to start automatically.**

Before you upgraded Garoon, you might have configured the scheduling service on the database server (Server C) to prevent it from starting automatically. In such a case, reconfigure the scheduling service to enable automatic start.

Execute the following command:

```
# /sbin/chkconfig cyss_cbgrn on[1]
```

[1]: Replace "cbgrn" with your installation identifier.

11. **Perform the tasks that are necessary post-upgrade.**

Perform the tasks that are necessary post-upgrade in the same way as for single-machine deployment.

5.5 Uninstalling with a Server-Distributed Deployment

Uninstall Garoon from all server machines that have Garoon installed.
Uninstall Garoon On each server machine in the same way as for single-machine deployment.

Note

- For Linux, you might mount the session data storage area and the attachment storage area located on other server machines. In such a case, you must unmount the directories before you can start the uninstallation process.

  Command example:

  - Session data storage area:

    ```
    # umount /var/www/cgi-bin/cbgrn/sessiondata
    ```

  - Attachment storage area:

    ```
    # umount    /usr/local/cybozu/mysql-5.0/files
    ```

  See "4.1Uninstalling on Windows" on page 51.
  See "4.2Uninstalling on Linux" on page 52.

6 Starting and Stopping Services

This chapter describes how to start and stop the scheduling service and the MySQL service.
The steps below assume that you installed MySQL that is bundled in the Garoon installer and set the installation identifier to "cbgrn".

6.1 Starting Services

Start the MySQL service first, and then the scheduling service.

For Windows

Steps:

1. **On Windows, from Administrative Tools, open "Services".**
2. **Select "Cybozu_Database_Engine_5_0" and click "Start Service".**
   When you use an existing MySQL installation, rather than installing MySQL bundled in the Garoon installer, start the service of the existing MySQL installation.
3. **Select "Cybozu_Scheduling_Service_cbgrn" and click "Start Service".**

For Linux

Steps:

1. **Start the MySQL service.**

   ```
   [root@garoon admin]# /etc/init.d/cyde_5_0 start
   ```

   When you use an existing MySQL installation, rather than installing MySQL bundled in the Garoon installer, start the service of the existing MySQL installation.
2. **Start the scheduling service.**

   ```
   [root@garoon admin]# /etc/init.d/cyss_cbgrn start
   ```

6.2 Stopping Services

Stop the scheduling service first, and then the MySQL service.

For Windows

Steps:

1. **On Windows, from Administrative Tools, open "Services".**
2. **Select "Cybozu_Scheduling_Service_cbgrn" and click "Stop Service".**

3. **Select "Cybozu_Database_Engine_5_0" and click "Stop Service".**
   When you use an existing MySQL installation, rather than installing MySQL bundled in the Garoon installer, stop the service of the existing MySQL installation.

For Linux

Steps:

1. **Stop the scheduling service.**

```
[root@garoon admin]# /etc/init.d/cyss_cbgrn stop
```

2. **Stop the MySQL service.**

```
[root@garoon admin]# /etc/init.d/cyde_5_0 stop
```

   When you use an existing MySQL installation, rather than installing MySQL bundled in the Garoon installer, stop the service of the existing MySQL installation.

Appendix A Organization of Files

This appendix describes how Garoon files are organized. The description assumes that the installation identifier is "cbgrn". The installed files are categorized into the following four groups:

- CGI application files
- MySQL files
- Full text search server
- Image files

Appendix A.1 Organization of Files on Windows

CGI Application Files

The CGI application of Garoon is installed in the CGI directory that you specified during installation. The various files of the CGI application are stored in a subdirectory of the CGI directory that is named with your installation identifier.

- Example of the CGI directory: C:¥inetpub¥scripts

A bold name indicates a directory and normal name indicates a file.

C:¥inetpub¥scripts	**CGI directory**
└¥cbgrn	**Installation identifier**
├¥code	**Garoon programs**
│├¥command	
│├¥doc_root	
│├¥include	
│├¥pear	
│├¥plugin	
│├¥sched	
│└¥smarty	
├¥db	
├¥extensions	**Necessary PHP extension files**
├¥grn	**Necessary configuration files for Garoon**
├¥help	
├¥initialize	
├¥locale	**Garoon language resources**
├¥logs	
├¥page	**Garoon template files**
├¥sessiondata	**PHP session data**
├¥smarty	
│├¥cashed	**Cache data of the smarty library**
│└¥compiled	**Compiled templates of the smarty library**
├¥tmp	**Temporary files created by PHP scripts**
├¥upload_temp	**PHP temporary uploaded files**
│	
├¥cacher.ini	
├¥common.ini	
├¥db_error.log	
├¥garoon.ini	

```
        ├¥garoon_lwc.ini
        ├¥garoon_policy.ini
        ├¥grn.exe
        ├¥grn_initialize.log
        ├¥libeay32.dll
        ├¥libmariadbl.dll
        ├¥libsasl.dll
        ├¥libssh2.dll
        ├¥LICENSE_en.txt
        ├¥LICENSE_ja.txt
        ├¥LICENSE_zh.txt
        ├¥logger.ini
        ├¥lwc.ini
        ├¥php.ini
        ├¥php5.dll
        ├¥profile.ini
        ├¥sched.exe
        ├¥sched.ini
        ├¥sched.log
        ├¥ssleay32.dll
        ├¥state.ini
        └¥system_admin.ini
```

MySQL

MySQL files are stored in the installation directory that you specified during installation.

- Example of the installation directory: C:¥Program Files¥Cybozu

A bold name indicates a directory and normal name indicates a file.

```
C:¥Program Files¥Cybozu          Installation directory
  └¥mysql-5.0                    MySQL files
      ├¥bin
      │   ├¥my_print_defaults.exe
      │   ├¥mysql.exe
      │   ├¥mysql_upgrade.exe
      │   ├¥mysqladmin.exe
      │   ├¥mysqlbinlog.exe
      │   ├¥mysqlcheck.exe
      │   ├¥mysqld.exe
      │   ├¥mysqldump.exe
      │   └¥mysqlimport.exe
      │
      ├¥data                     MySQL data and logs
      │   ├¥cb_cbgrn
      │   ├¥cb_slash
      │   ├¥mysql
      │   ├¥performance_schema
      │   ├¥auto.cnf
      │   ├¥error.log
      │   ├¥ib_logfile0
      │   ├¥ib_logfile1
      │   ├¥ib_logfile2
      │   ├¥ibdata1
      │   ├¥mysql.pid
      │   └¥slow.log
      │
```

```
        ├¥etc
        │ ├¥Samples
        │ ├¥my.ini
        │ └¥worker.ini
        │
        ├¥files                 Attachments in Garoon
        │ └¥cbgrn
        ├¥lib
        ├¥share
        │ ├¥charsets
        │ └¥english
        ├¥tmp
        └¥cb_version
```

Full Text Search Server

The Full text search server files are stored in the installation directory that you specified during installation.

- Example of the installation directory: C:¥Program Files¥Cybozu

A bold name indicates a directory and normal name indicates a file.

```
C:¥Program Files¥Cybozu     Installation directory
  └¥cbfts                   Full text search server files
      ├¥logs
      └¥conf
          └¥cb
              └¥fts.json
```

Tip

- The Garoon installation process deploys Full text search server files but they are limited to files that are required for Garoon to connect the Full text search server. The Full text search server program is not installed.
  When the Full text search server program is installed, many directories and files that are not listed above are deployed.

Image Files

Image files are stored in a subdirectory named with your installation identifier.

- Example of the document root directory: C:¥inetpub¥wwwroot

A bold name indicates a directory and normal name indicates a file.

```
C:¥inetpub¥wwwroot          Document root directory
  └¥cbgrn                   Installation identifier
      ├¥3rd_party_license   Third party license information
      ├¥api                 Files used by related products
      ├¥fw                  Framework image files, and so on
      ├¥grn                 Garoon image files, and so on
      │ ├¥common
      │ ├¥flash
      │ ├¥html
      │ └¥image
      │     └¥cybozu
      ├¥help                Garoon Help files
```

└¥tiny_mce	**Image files for rich text format, and so on**

Appendix A.2 Organization of Files on Linux

CGI Application Files

The CGI application of Garoon is installed in the CGI directory that you specified during installation. The various files of the CGI application are stored in a subdirectory of the CGI directory that is named with your installation identifier.

- Example of the CGI directory: /var/www/cgi-bin

A bold name indicates a directory and normal name indicates a file.

/var/www/cgi-bin	**CGI directory**
└/cbgrn	**Installation identifier**
├/code	**Garoon programs**
│ ├/command	
│ ├/doc_root	
│ ├/include	
│ ├/pear	
│ ├/plugin	
│ ├/sched	
│ └/smarty	
├/data	
├/db	
├/extensions	**PHP extension files**
├/grn	**Necessary configuration files for Garoon**
├/locale	**Garoon language resources**
├/logs	
├/page	**Garoon template files**
├/sessiondata	**PHP session data**
├/smarty	
│ ├/cached	**Cache data of the smarty library**
│ └/compiled	**Compiled templates of the smarty library**
├/tmp	**Temporary files created by PHP scripts**
├/upload_tmp	**PHP temporary uploaded files**
├/cacher.ini	
├/common.ini	
├/cyss_cbgrn.pid	
├/db_error.log	
├/garoon.ini	
├/garoon_lwc.ini	
├/garoon_policy.ini	
├/grn.cgi	
├/grn.exe	
├libmariadb.so	
├libmariadb.so.2	
├/LICENSE_en.txt	
├/LICENSE_ja.txt	
├/LICENSE_zh.txt	
├/logger.ini	

```
        ├/lwc.ini
        ├/php.ini
        ├/profile.ini
        ├/sched
        ├/sched.ini
        ├/sched.log
        ├/script.log
        ├/state.ini
        ├/system_admin.ini
        └/uninstall_cbgrn
```

MySQL

MySQL files are stored in the installation directory that you specified during installation.

- Example of the installation directory: /usr/local/cybozu

A bold name indicates a directory and normal name indicates a file.

```
/usr/local/cybozu                    MySQL files
  ├/mysql-5.0
      ├/bin
      │   ├/my_print_defaults
      │   ├/mysql
      │   ├/mysql_install_db
      │   ├/mysql_upgrade
      │   ├/mysqladmin
      │   ├/mysqlbinlog
      │   ├/mysqlcheck
      │   ├/mysqld
      │   ├/mysqld_safe
      │   ├/mysqld_safe_pc
      │   ├/mysqldump
      │   ├/mysqlimport
      │   └/resolveip
      │
      ├/cbfts
      ├/data
      │   ├/cb_cbgrn
      │   ├/cb_slash
      │   ├/mysql
      │   ├/performance_schema
      │   ├/auto.cnf
      │   ├/error.log
      │   ├/ib_logfile0
      │   ├/ib_logfile1
      │   ├/ib_logfile2
      │   ├/ibdata1
      │   ├/mysql.sock
      │   └/slow.log
      │
      ├/etc
      │   ├/Samples
      │   ├/my.ini
      │   └/worker.ini
      │
      ├/files
      │   └/cbgrn
```

```
        |
        ├/lib
        ├/scripts
        ├/share
        ├/support-files
        ├/tmp
        ├/cb_version
        └/uninstall_cyde_5_0
```

Full Text Search Server

The Full text search server files are stored in the installation directory that you specified during installation.

- Example of the installation directory: /usr/local/cybozu

A bold name indicates a directory and normal name indicates a file.

```
/usr/local/cybozu                  Installation directory
  └/cbfts                          Full text search server files
      ├/conf
      |  └/cb
      |     └¥fts.json
      └/logs
```

Tip

- The Garoon installation process deploys Full text search server files but they are limited to files that are required for Garoon to connect the Full text search server. The Full text search server program is not installed.
  When the Full text search server program is installed, many directories and files that are not listed above are deployed.

Image Files

Image files are stored in a subdirectory named with your installation identifier.

- Example of the document root directory: /var/www/html

A bold name indicates a directory and normal name indicates a file.

```
/var/www/html                      Document root directory
  └/cbgrn                          Installation identifier
      ├/3rd_party_license          Third party license information
      ├/api
      ├/fw                         Framework image files, and so on
      ├/grn                        Garoon image files, and so on
      |  ├/common
      |  ├/flash
      |  ├/html
      |  └/image
      |     └/cybozu
      ├/help              Garoon Help files
      └/tiny_mce                   Image files for rich text format, and so on
```

Start-Up Script Files

The start-up script files are installed in the start-up script directory.

- Example of the start-up script directory: /etc/rc.d/init.d

  MySQL service start-up script: /etc/rc.d/init.d/cyde_5_0
  Scheduling service start-up script: /etc/rc.d/init.d/cyss_cbgrn

Index

Contact: https://garoon.cybozu.co.jp/support/user_package/
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