CONNEXIVE Platform V7.0

System Design Manual
(Installation Procedure)

May 7, 2018

Thank you for purchasing "CONNEXIVE Platform".
This document explains the procedure for setting up your system using the product "CONNEXIVE Platform".

Revision history

Edition	Revised Date	Description
1.0	May 7, 2018	New manual.

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manual/license/license.html

Contents

1. Introduction

This document describes the installation procedure of CONNEXIVE Platform.

2. System configuration

2.1 Server configuration

The server configuration of the CONNEIVE Platform is shown in Figure 2 1, and the outline of each model is shown in Table 2.1 1.

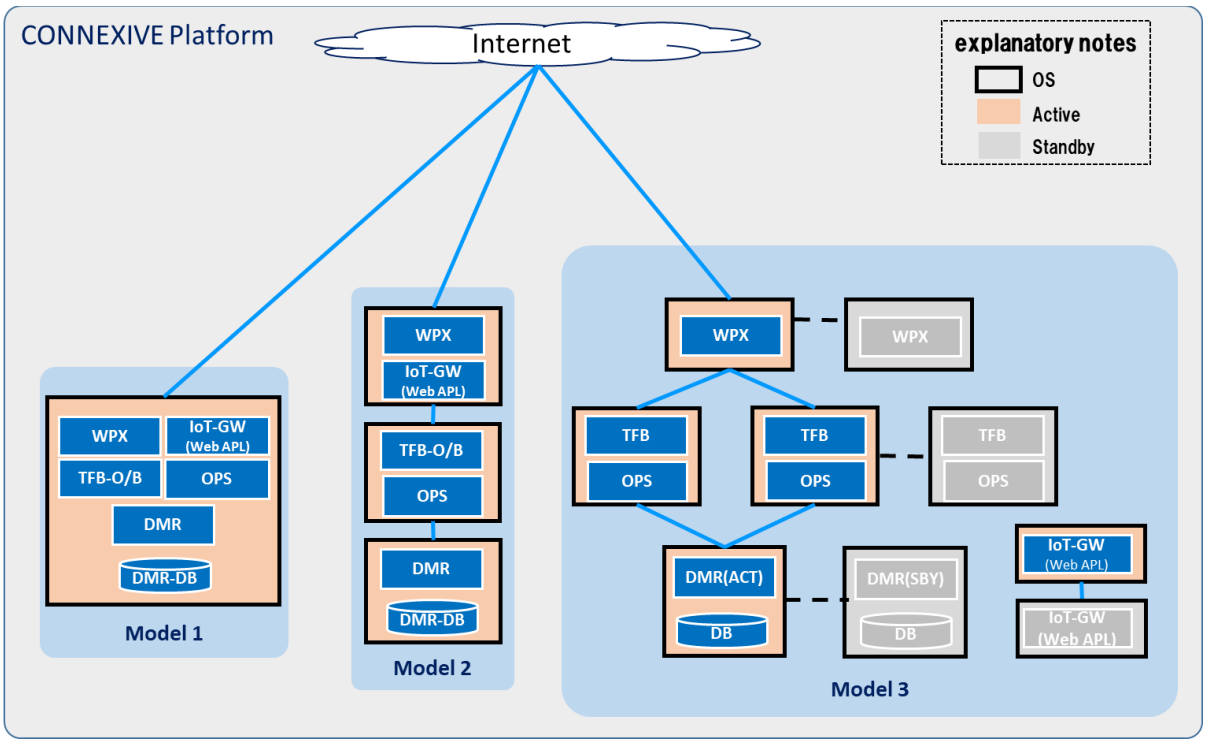


Figure.2-1 Basic model of CONNEXIVE Platform

Table 2.1-1 Overview of basc model

Model name	Overview
Model 1 (All-in-One)	Minimum configuration (AllinOne) model. Use as an environment for demonstration and function confirmation
Model 2 (Standard)	A model without redundancy. Used in commercial systems where low SLA is acceptable.
Model 3 (HA)	Commercial basic model. For systems with high load due to batch processing, it is possible to configure TFB-B into separate servers.

2.2 Software configuration

The software configuration of CONNEXIVE Platform is shown below.

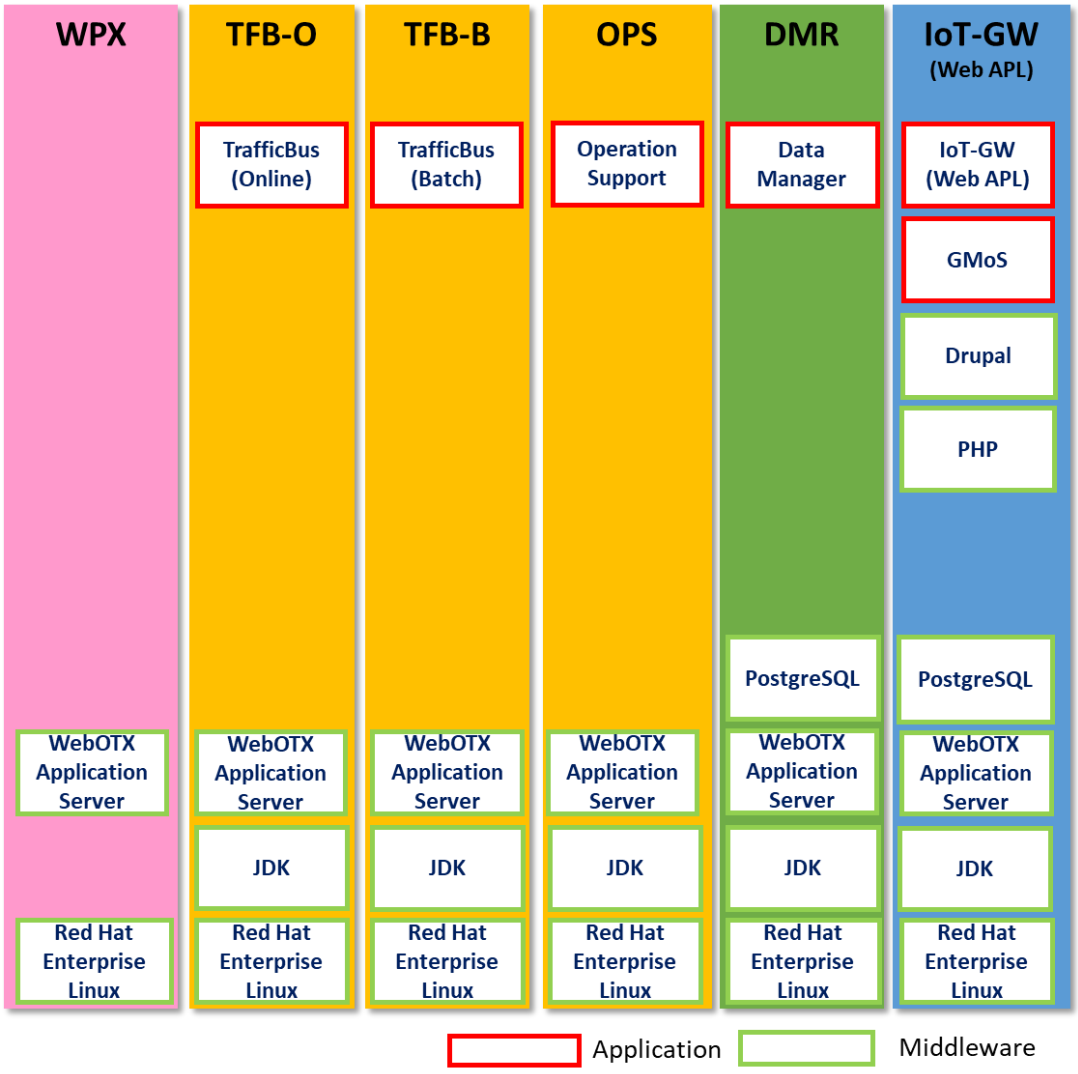


Figure.2-2 Software stack of CONNEXIVE Platform

Details of application / Middleware shown below.

Table 2.2-1 List of applications and middlewares

Application/Middleware	category	WPX	TFB-O	TFB-B	OPS	DMR	IoT-GW (Web	file	version
Traffic Bus(Online)	Application	-	○	-	-	-	-	m2m-tfb-o.war	7.0
								m2m-sql.tar.gz	7.0
Traffic Bus(Batch)	Application	-	-	○	-	-	-	m2m-tfb-b.war	7.0
								m2m-sql.tar.gz	7.0
Operation Support	Application	-	-	-	○	-	-	m2m-ops.war	7.0
								connexive-ops-command.zip	7.0
Data Manager	Application	-	-	-	-	○	-	m2m-dmr.war	7.0
								m2m-sql.tar.gz	7.0
IoT-GW	Application	-	○	-	-	-	○	mng.zip	7.0
								apl.zip	7.0
								alter_users.sql	7.0
								create_tables.sql	7.0
								init_data.sql	7.0
								update_block.sql	7.0
								ja.po	7.0
								update.service.sh	7.0
								01_device_start_notice.zip	7.0
								01_device_start_notice_template.zip	7.0
								02_device_access_check_template.zip	7.0
								02_device_ctrl_regist.zip	7.0
								03_dev-device_access_check_apl.zip	7.0

Application/Middleware	category	WPX	TFB-O	TFB-B	OPS	DMR	IoT-GW (Web	file	version
								04_dev-device_access_check_batch.zip	7.0
								connexive-ops-command.zip	7.0
								serviceImport_IotGw.xml	7.0
								gms-base.ear	7.0
PostgreSQL	Middleware	-	○	○	-	○	○	postgres-x.x.x.tar.gz	9.4.4
WebOTX Application Server	Middleware	○	○	○	○	○	○	-	10.1
JDK	Middleware	-	○	○	○	○	○	jdk-xxxx-linux-x64.rpm	8u162
Drupal	Middleware	-	-	-	-	-	○	drupal-x.x.tar.gz	7.58
PHP	Middleware	-	-	-	-	-	○	php-x.x.x.tar.gz	5.6.11
	Middleware	-	-	-	-	-	○	re2c-x.x6.tar.gz	0.16
Red Hat Enterprise Linux	Middleware	○	○	○	○	○	○		6/7

3. Installation

3.1 Notes and Restrictions

Refer to "System Design Manual (Installation Procedure)".

3.2 Preparation for installation

In order to install using Ansible, it is necessary to prepare the following beforehand.

(1) Please complete installation of WebOTX Application Server in advance. In addition, please select the option when installing WebOTX Application Server as follows.Hereafter, the installation media mount position of the WebOTX Application Server is indicated as $ {webotx_media}, and the input place to the installer is written in italic.

```
# cd ${webotx_media}
# ./WOINST.SH

Please select one of the following WebOTX V10.1 products or enter "A" for additional installation of the installed product.

  1. WebOTX Application Server Express
  2. WebOTX Application Server Standard
  3. WebOTX Client
  4. WebOTX Manual
  A. Additional installation menu of the installed product
  C. Install Cancel

[Enter 1 or 2 depending on the license of purchased WebOTX Application Server]

## Executing the WebOTX installation script.
## Current mount-path is /XXX


Please input installation base directory of WebOTX products with an absolute path.(Default: /opt)
(WebOTX product is installed in /opt/WebOTX by default.)

[Enter]

/opt is used as installation base directory of WebOTX products.
The OTX101UTIL package will be installed because it's necessary for license registration.

Preparing...                          ########################################### [100%]
Updating / installing...
   1:OTX101UTIL-10.10.00.00-1         ########################################### [100%]
```

The OTX101UTIL package is installed in /opt/share.nec .
Please enter license key of the chosen product.

[Enter licenses for purchased WebOTX Application Server]

Please enter license key of the chosen product additionally,
or enter return only to proceed to the next. [1 license entered]

[Enter]

Would you like to install by default? (Default: y)
If you want to configure the installation in detail, please enter 'n'.

[n]

Please enter the number of the optional function to change the choice state,
or enter N to proceed to the next. (Default : N)

1. WebOTX Web Server 2.4 [not selected]
N. Proceed to the next

[1]

Please enter the number of the optional function to change the choice state,
or enter N to proceed to the next. (Default : N)

1. WebOTX Web Server 2.4 [selected]
N. Proceed to the next

[N]

Would you like to apply patch of the chosen product during installation? [y,n]
(Default: n)
[Enter]

It will be installed with the following settings

Selected Product Name : WebOTX Application Server Express
Install Base Directory : /opt
Number of License Registration : 1
WebOTX Web Server 2.4 : selected
Apply Patch File : none

****
* Installation of WebOTX V10.1 on your computer. To continue, enter y. *

```
* Enter q to exit the installation. [y, q] (Default: y)                *
*************************************************************************
```

[Enter]

Start the installation.

```
Preparing...                          ########################################### [100%]
Updating / installing...
   1:OTX101BSJS-10.10.00.00-1         ########################################### [100%]
Preparing...                          ########################################### [100%]
Updating / installing...
   1:OTX101BSJC-10.10.00.00-1         ########################################### [100%]
Preparing...                          ########################################### [100%]
Updating / installing...
   1:OSPI121RUN-12.10.00.00-1         ########################################### [100%]
Preparing...                          ########################################### [100%]
Updating / installing...
   1:OTX101WEBSV24-1:2.40.27.00-1     ########################################### [100%]
```

SELinux is enabled on this machine, but WebOTX does not support the configuration with SELinux enabled.
Please change the configuration of SELinux disabled after the installation.

Installation completed.

Would you like to continue configuration? [y,n] (Default: y)

[Enter]

Executing the WebOTX V10.1 configuration script.

Please input the directory of JDK with an absolute path.(Default:)

*[JDK installation path used by WebOTX Application Server**]***

Please select topology of Web Server and Web Container, and type of Web Server.(Default : 1)

To use Web Server and Web Container on the same machine(topology : co-located),
please enter the number from the following:

1. Type of Web Server to use [WebOTX Web Server 2.4]
2. Type of Web Server to use [Apache HTTP Server 2.4]
3. Type of Web Server to use [Internal Java based Web Server]

To use Web Server and Web Container on different machines(topology : separation),
please enter the number from the following:

For the machine to be used as Web Server:
4. Type of Web Server to use [WebOTX Web Server 2.4]
5. Type of Web Server to use [Apache HTTP Server 2.4]

For the machine to be used as Web Container:
6. Not using Web Server

[Enter]

Please enter the number of setting item menu to change value,
or enter N to proceed to the next. (Default : N)

1. Setting item menu of "WebOTX Operation User"
   Configure as WebOTX Operation User [n]
2. Setting item menu of admin domain
   Admin port number [6202] (not used)
3. Setting item menu of user domain
   Create a user domain [y]
   Domain name [domain1]
   HTTP port number [80] (not used)
   HTTPS port number [443] (not used)
   (Enter this number to check the port number other than HTTP/HTTPS.)

N. Proceed to the next

[3]

Please enter the number of setting item menu to change value,
or enter U to return to the upper setting menu. (Default : U)

1. Create a user domain [y]
   Domain name [domain1]
2. Port number list
   HTTP port number | 80 (not used)
   HTTPS port number | 443 (not used)
   Admin port number | 6212 (not used)
   AJP listener port number | 8099 (not used)
   Console port number | 5858 (not used)
   Embedded IIOP listener port number | 7780 (not used)
   JMS Server port number | 9700 (not used)
   JMS Connection port number | 9701 (not used)
   JMS Management Connection port number | 9702 (not used)
   Name Server port number | 2809 (not used)

U. Return to the upper setting menu

[1]

Would you like to create the user domain? [y,n] (Default: y)

[n]

Please enter the number of setting item menu to change value,
or enter U to return to the upper setting menu. (Default : U)

1. Create a user domain [n]
U. Return to the upper setting menu

[U]

Please enter the number of setting item menu to change value,
or enter N to proceed to the next. (Default : N)

1. Setting item menu of "WebOTX Operation User"
   Configure as WebOTX Operation User [n]
2. Setting item menu of admin domain
   Admin port number [6202] (not used)
3. Setting item menu of user domain
   Create a user domain [n]

N. Proceed to the next

[N]

Please enter the number of the function to be executed,
or enter B to back to the previous setting menu.

1. Verify the value of the setting item
2. Start the configuration

B. Back to the setting menu
C. Cancel

[2]

It will be configured with the following settings
Selected Product Name [WebOTX Application Server Express]

JDK installation directory [/usr/java/jdk1.8.0_162]
Web Server and Web Container [on the same machine(topology : co-located)]
Type of Web Server to use [WebOTX Web Server 2.4]

```
Configure as "WebOTX Operation User" [n]
Admin port number of admin domain  [6202] (not used)

Create a user domain [n]

*************************************************************************
* Configuration of WebOTX V10.1 on your computer. To continue, enter y. *
* Enter q to exit the configuration. [y, q] (Default: y)              *
*************************************************************************
```

[y]

```
Start the configuration.

Buildfile: /opt/WebOTX/setup.xml
The result of 'ant' should look at '/opt/WebOTX/ant_setup.log'.


UDP connection(port number 514) of rsyslog is not possible.
Please enable UDP connection of rsyslog for output logs to syslog.

Configuration completed.
```

(2) Prepare a machine that has Ansible (Version 2.1.1.0 or higher *) installed and can connect to ssh on the CONNEXIVE Platform installation host.

(3) On the installation destination server machine, please correct / etc / hosts so that host name resolution is performed as follows.

localhost ⇒ Local loopback address (127.0.0.1)

Host name ⇒ real IP address other than local loopback address

(4) Store the CONNEXIVE Platform building playbook (connexive_playbook.tar.gz) included in this product in an arbitrary directory on the machine prepared in (1).

* Operation confirmed with Version 2.1.1.0

3.3 Structure of Playbook

[ROOT Directory]	
+-- site.yml	File as the starting point of the playbook
+-- production.xxx	Inventory file with information on build target server
+-- XXX.yml	A file that defines the role required for each component.

```
+-- group_vars/          Directory where variable definitions are stored
|   +-- all              Common variable definitions. Please do not change the default definition.
|   +-- all-in-one  All-in-One Configuration variable definition file
|   +-- standard         Standard configuration variable definition file.
|   +-- ha               Variable definition file for HA configuration.
+--  roles/              Store roles loaded in Playbook.
    +-- common/         role for Common processing
    +-- dmr/            role for DMR
    +-- iotgw-db/       role for IoT-GW (DB)
    +-- iotgw-gmos/     role for IoT-GW (GMoS)
    +-- iotgw-web/      role for IoT GW(Web APL)
    +-- java/           role for JDK
    +-- openssl/        role for OpenSSL
    +-- ops/            role for OPS
    +-- ops_command/    role for OPS command
    +-- php/            role for PHP
    +-- postgresql/     role for PostgreSQL
    +-- tfb/            role for TFB
    +-- webotx/         role for WebOTX Application Server
     +-- wpx/           role for WPX
```

The standard configuration in each role directory is as follows. Depending on the role, directories and files may be unnecessary.

```
[role directory]
 +-- files/              Scripts to be executed by files / tasks used in roles are stored.
 +-- tasks/
 |   +-- main.yml        A file that is the starting point of processing a role.
 +-- meta/
     +-- main.yml        Meta information file that defines role dependency
```

3.4 Installation procedure

(1) Deployment of CONNEXIVE Platform Building Playbook

Expand the CONNEXIVE Platform construction playbook (connexive_playbook.tar.gz) in an arbitrary directory.

```
# tar zxvf connexive_playbook.tar.gz
```

In the following, the expansion destination is expressed as $ {CONNEXIVE_PLAYBOOK_HOME}.

(2) Setting of destination host.

In the inventory file (production.xxx) and the variable definition file (all-in-one, …) in the expanded playbook, placeholder "@ target_host @" defined in the file is set as the installation destination Replace with host name or IP address.

Ex). ${CONNEXIVE_PLAYBOOK_HOME}/production.all-in-one

```
[all-in-one]
192.168.1.2
```

Ex). ${CONNEXIVE_PLAYBOOK_HOME}/group_vars/all-in-one

```
group_vars/all-in-one
connexive_tfb_host:  192.168.1.2
```

(3) Setting of proxy server

To configure the proxy server, set the proxy server address and port number in "http_proxy" and "https_proxy" in the configuration file (group_vars / all-in-one).

Ex). ${CONNEXIVE_PLAYBOOK_HOME}/group_vars/all-in-one

```
proxy_env:
  http_proxy: "http://proxy.example.jp:8080"
  https_proxy: "http://proxy.example.jp:8080"
```

(4) Execute playbook

Execute the following command to start the installation.

```
# ansible-playbook -i production.xxx site.yml
```

"Faild = 0" is displayed in the execution result of the playbook, and please confirm that the installation was completed normally.

Ex).

```
PLAY RECAP ********************************************************************
192.168.1.2            : ok=xxx  changed=xxx  unreachable=0    failed=0
```

4. Uninstallation

4.1 Notes and Restrictions

Refer to "System Design Manual (Installation Procedure)".

4.1 Uninstallation procedure

(1) Undeploying applications deployed to WebOTX Application Server

As the administrator of WebOTX Application Server, undeploy the application.

```
# /opt/WebOTX/bin/otxadmin undeploy –u <user_id> -w <password> m2m-tfb-o
# /opt/WebOTX/bin/otxadmin undeploy –u <user_id> -w <password> m2m-dmr
# /opt/WebOTX/bin/otxadmin undeploy –u <user_id> -w <password> m2m-ops
# /opt/WebOTX/bin/otxadmin undeploy –u <user_id> -w <password> gms-base
```

(2) Delete WebOTX Application Server's cnxv domain.

Delete the cnxv domain created for CONNEXIVE Platform.

```
# /opt/WebOTX/bin/otxadmin stop-domain –u <user_id> -w <password> -p <port> cnxv
# /opt/WebOTX/bin/otxadmin delete-domain –u <user_id> -w <password> -p <port> cnxv
```

(3) Stop middlewares

As the root user, stop WebOTX Application Server and PostgreSQL.

```
# systemctl stop WOAgentSvc101
# /etc/init.d/postgres stop
```

(4) Remove files

Execute the following command and delete all files installed using the Playbook.

```
# rm –rf /opt/connexive /opt/pgsql
# rm –rf /usr/local/drush /usr/local/openssl-1.0.2k /usr/local/php-5.6.11 /usr/local/postgresql-9.4.4
# rm –rf /usr/local/src/php-5.6.11 /usr/local/src/postgresql-9.4.4 /usr/local/src/re2c-0.16
# rm –rf /etc/init.d/postgres
# rm –rf /tmp/connexive
```

5. Various setting points

5.1 Setting Application log

The log output setting of the AP is described below.

Table 5.1-1 List of log files of applications

No.	Target application	File path	File name
1	DMR	/opt/connexive/webapps/m2m-dmr.war/WEB-INF/classes/	log4j2.xml
2	OPS(Administration GUI)	/opt/connexive/webapps/m2m-ops.war/WEB-INF/classes/	
3	OPS（command）	/opt/connexive/ops/conf/	
4	TFB	/opt/connexive/webapps/m2m-tfb-o.war/WEB-INF/classes/	

As the root user, edit log4j2.xml.

Table 5.1-2 Log configuration

No.	parameter	default	detail
1	SizeBasedTriggeringPolicy	10MB	Specify the log rotation size
2	DefaultRolloverStrategy	10	Specify the log rotation generations
3	level	-	Specify the log level

Ex) log4j2.xml

```
…
 <Appenders>
  <appender name="ACCESS_LOG" class="org.apache.log4j.RollingFileAppender">
 …
    <RollingFile name="M2M-TFB" append="true" fileName="${logsdir}/cnxv/M2MPF_TrafficBus.log"
                filePattern="${logsdir}/cnxv/M2MPF_TrafficBus.%d{yyyy-MM-dd}-%i.log">
      <PatternLayout pattern="${logFormat}"/>
      <Policies>
          <SizeBasedTriggeringPolicy size="10 MB" />
      </Policies>
      <DefaultRolloverStrategy max="10"/>
    </RollingFile>
 …
```

```
  </Appenders>
 …
  <Loggers>
 …
    <Logger name="com.nec.m2m.platform.dpx" level="WARN">
 …
</Loggers>
```

5.2 Setting Java of WebOTX Application Server

Please check the WebOTX Application Server product manual [Construction / Operation Guide> Tuning] and [Reference> Setting]. The main tuning parameters are as follows.
Note that the components (processes) on which the various APs are deployed are different depending on the edition of WebOTX Application Server (Express / Standard) you use, so please set the following for each of the following components.

Express: Operation management agent
Standard: TP system - WebOTX process group.

Table 5.2-1 Java configuration

No.	componet	parameter	default	detail
1	Agent	heap-size	64m	Specify the initial Java heap size
2		max-heap-size	512m	Specify the maximum Java heap size.
3		max-perm-size	192m	Specify the maximum Java permanent size.
4		perm-size	64M	Initial value of Permanent area
5	TPsystem - WebOTX process group	initialHeapSize	32	Specify the initial heap size in bytes of 1 megabyte or more. When "Byte (-)" is selected in "Unit of initial heap size", specify a multiple of 1024. Specifying -1 will default to JavaVM.
6		initialHeapSize Scale	m	Specify the unit of the initial heap size. The unit is 'k' for kilobytes, 'm' for megabytes, '-' for bytes. When not specified, it becomes the default value of JavaVM (depends on JavaVM).
7		maxHeapSize	-1	Specify the maximum heap size in bytes of 2 megabytes or more. When "Byte (-)" is

				selected for "Maximum heap size unit", specify a multiple of 1024. If -1 is specified, it defaults to JavaVM.
8		maxHeapSizeScale	m	Specify the unit of the maximum heap size. The unit is 'k' for kilobytes, 'm' for megabytes, '-' for bytes. When not specified, it becomes the default value of JavaVM (depends on JavaVM).

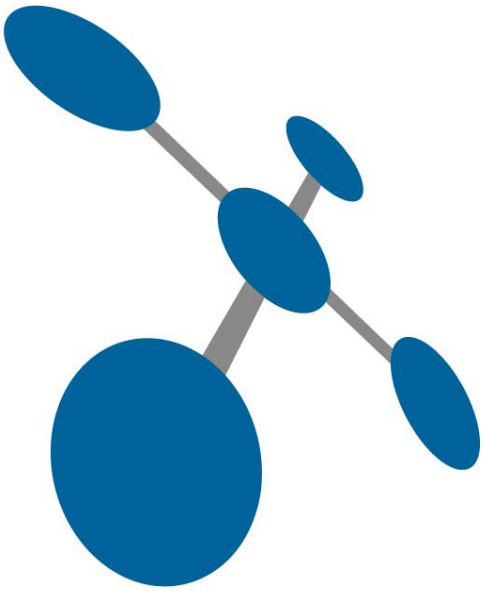
5.1 Setting DBMS of PostgreSQL

As root user, edit postgresql.conf.

* Refreshing PostgreSQL is required to reflect the setting.

Table 5.1-1 PostgreSQL configuration

No	parameter	default	detail
1	listen_addresses	localhost	PostgreSQL standby address
2	port	5432	The port number to use when connecting to PostgreSQL
3	shared_buffers	32MB	Shared memory cache used for PostgreSQL as a whole
4	work_mem	1MB	Memory buffer for sort used by each PostgreSQL process
5	max_connections	100	Number of concurrent connections accepted



CONNEXIVE