

thingworx keeware edge

ThingWorx Kepware Edge License Server

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## ThingWorx Kepware Edge License Server

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Help version 1.003

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## Overview

The ThingWorx Kepware Edge License Server is a centralized system deployed within the OT network that allows and tracks the number of ThingWorx Kepware Edge products that can run given the purchased licenses. The ThingWorx Kepware Edge License Server “leases” a license to an instance of ThingWorx Kepware Edge for a period of time. During this lease interval, the ThingWorx Kepware Edge instance periodically checks in with the license server to renew this lease.

Leases given by the ThingWorx Kepware Edge License Server last for seven (7) days and the ThingWorx Kepware Edge instance will request to renew this lease about every day (15% of the lease interval).

The ThingWorx Kepware Edge License Server is not intended to be run on the same host as the ThingWorx Kepware Edge Server.

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## System Requirements

The following software is required:

- CentOS version 7 or Red Hat Enterprise Linux 7
- OpenJDK 11.0 or greater
  - To install the Java Runtime Environment, open a terminal and run the following command:  

```
sudo yum install java-11-openjdk
```
- Minimum of 4 GB of RAM for the host
- Python3
  - To install Python3, open a terminal and run the following command:  

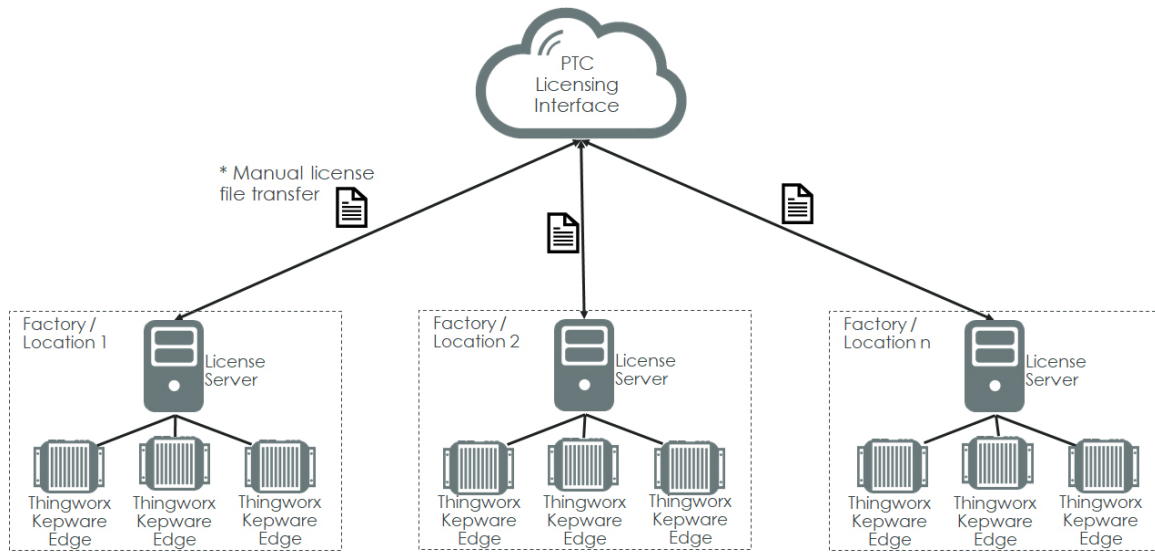
```
sudo yum install python3
```

A working knowledge of the following is required:

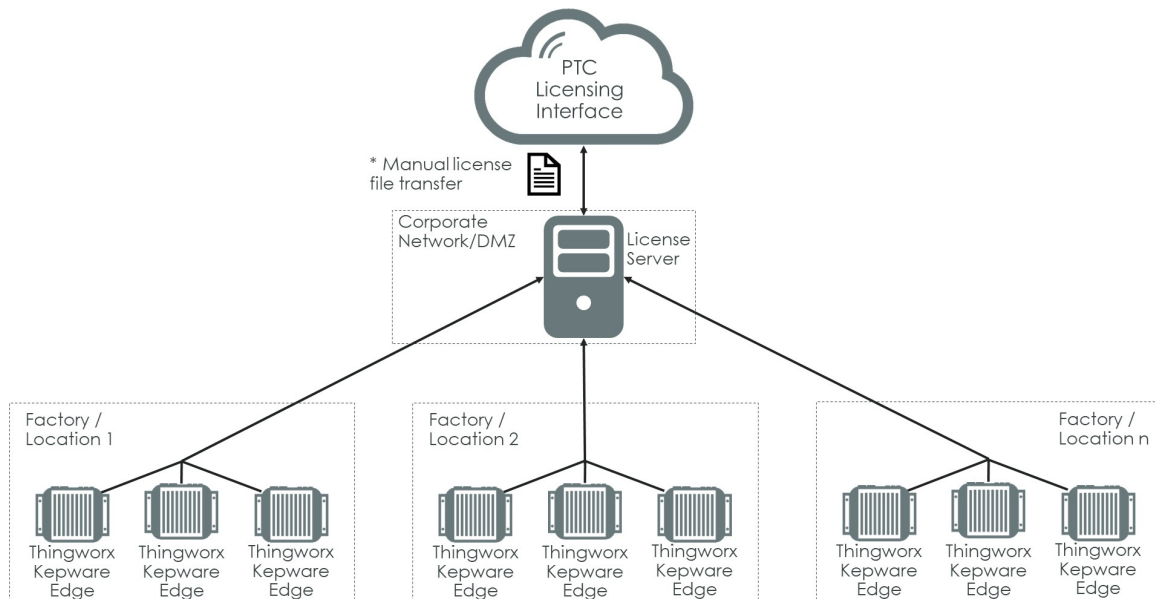
- Linux operating systems and commands
- Command line interfaces
- Certificate management and authentication

## Architecture

### Single Factory or Location Architecture



### Company-Wide Architecture



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## Installing

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ThingWorx Kepware Edge License Server must be installed by a user with root permissions.

## Setup

The ThingWorx Kepware Edge License Server utilizes port 1443 for secure communication and 7070 for insecure communication.

● **Note:** These ports must be allowed through the server firewall for the license server to work correctly.

The installer supports both GUI and terminal installations.

To install, run the following command:

```
sudo ./tkells-<version>-linux-x64-installer.run
```

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## System Time Synchronization

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The License Server “leases” licenses to instances of ThingWorx Kepware Edge for specific periods of time. It is therefore important to ensure that the system times of the ThingWorx Kepware Edge License Server and the ThingWorx Kepware Edge instances are kept synchronized as closely as possible.

● It is recommended to configure the ThingWorx Kepware Edge instance to synchronize system time to the ThingWorx Kepware Edge License Server.

● **Note:** If the system clocks lose synchronization by more than 180 minutes, license checks may fail and cause the instance to stop operating.

## Configuring Secure Communications

At installation, a self-signed certificate is generated to secure communications between the ThingWorx Kepware Edge instances and the license server. It is strongly recommended that this certificate be replaced with a Certificate Authority (CA) signed certificate. After importing the CA signed certificate to the java keystore, follow these steps to apply the certificate to the licensing server:

1. Copy the certificate file onto the system, in a location the flexnetls user can access.
2. Open the `/opt/flexnetls/ptc_p/local-configuration.yaml` file in a text editor.
3. Set the `keystore-path` and `keystore-password` variables. The default location for the keystore-path is `/opt/tkells/<version>` though another location could be used.  
*where <version> is the server release version in the format of major.minor version (i.e. 1.2)*

🔥 It is strongly recommended to obfuscate the password so that it is not stored as plain text. To do this, execute the following command from the `/opt/flexnetls/ptc_p` path location to obtain an obfuscated password:

```
java -jar flexnetls.jar --password=<password>
```

Example:

```
$ java -jar flexnetls.jar --password=abracadabra
abracadabra => OBF:1ri71v1r1v2n1ri71shq1ri71shs1ri71v1r1v2n1ri7
```

The response provides a string, such as "OBF:<obfuscated\_password>", and the entire string should be included as the `keystore-password` variable including the "OBF:" prefix.

4. Save the file.
5. Restart the license server daemon using the following command:

```
sudo systemctl restart flexnetls-ptc_p.service
```

## Changing the Administrator Password

To change the administrator password, run the following command:

```
/opt/tkells/<version>/ptcls_cli/ptcls_admin.py --user admin manage-credentials --set-admin
```

*where <version> is the server release version in the format of major.minor versions (i.e. 1.2).*

The requirements for the administrator password for license server are:

- At least 8 characters
  - At most 64 characters
  - At least one digit
  - At least one upper-case character
  - No space characters
  - At least one special character ( `^* $-+? _&=!%{}/#` )
- 🟢 **Tip:** Specifically and only these special characters

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## Adding Licenses

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1. Prior to obtaining licenses, determine the Host ID of the host on which the license server is running. To get that information, run the following command:

```
/opt/tkells/<version>/ptcls_cli/ptcls_admin.py --user admin manage-status --host-id
```

where <version> is the server release version in the format of major.minor versions (i.e. 1.2)

Example host-id that would be provided by command:

```
VM_UUID:A39F4D56-D607-61CF-5D2E-C436B7F29127:8898
```

2. Take this value to the MyKepware and follow the **Activate Product License** link to generate the licenses activation response file.
3. Save the activation response file.
4. Copy the activation response file onto the license server system.
5. Install the license(s) using the following command:

```
/opt/tkells/<version>/ptcls_cli/ptcls_admin.py --user admin manage-entitlement --install <filename>
```

where <version> is the server release version in the format of major.minor versions (i.e. 1.2).

6. View the licenses hosted on the license server using the following command:

```
/opt/tkells/<version>/ptcls_cli/ptcls_admin.py --user admin manage-entitlement --show
```

where <version> is the server release version in the format of major.minor versions (i.e. 1.2).

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## Transferring Licenses

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Transferring licenses is necessary to migrate activation IDs from one license server to another. Moving activation IDs off the license server is a multi-step process:

1. Navigate to MyKepware and select **Return an Activation**.
2. Download the return-request file.
3. Remove the licenses from the local license server.
  - a. Copy the return-request file generated in the previous step to the license server.
  - b. Process that file using the following command:

```
/opt/tkells/<version>/ptcls_cli/ptcls_admin.py --user admin manage-entitlement --install <filename>
```

where <version> is the server release version in the format of major.minor versions (i.e. 1.2).
4. Provide confirmation to MyKepware to demonstrate that the licenses have been removed from the server.
  - a. On the license server, Issue the following command:

```
/opt/tkells/<version>/ptcls_cli/ptcls_admin.py --user admin manage-entitlement --confirm <filename>
```

where <version> is the server release version in the format of major.minor versions (i.e. 1.2).
  - b. This generates a return file to be uploaded to MyKepware to confirm removal of the licenses.



5. To apply the activation ID to a new license server, follow the [Adding Licenses](#) instructions.
  - **Note:** This is necessary to use the activation IDs on another license server.

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## Troubleshooting

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### Checking Available License Unlocks

To show the number of product unlocks currently available on the license server, issue the following command:

```
/opt/tkells/<version>/ptcls_cli/ptcls_admin.py -manage-entitlement -show
```

where <version> is the server release version in the format of major.minor versions (i.e. 1.2).

### Showing Connected Clients

To show the client systems currently obtaining unlocks from the license server, issue the following command:

```
/opt/tkells/<version>/ptcls_cli/ptcls_admin.py -manage-entitlement -list-clients
```

where <version> is the server release version in the format of major.minor versions (i.e. 1.2).

### Displaying the License Server Status

To show a status indication, including the binding and ready state of the server, issue the following command:

```
/opt/tkells/<version>/ptcls_cli/ptcls_admin.py -manage-status -show
```

where <version> is the server release version in the format of major.minor versions (i.e. 1.2).

### Installation

If the installation fails, check the install log in the install folder for details. Once the condition causing the failure has been remedied, uninstall the partially installed server using the uninstaller in the same folder, then run the installer again.

### Resources

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The following documents or sites provide information that may be helpful in deployment, configuration, and use of the ThingWorx Kepware Edge License Server.

For more information on licensing, please visit the [Licensing Support](#) page.

For information on the following topics, see the Resources section of the [ThingWorx Kepware Edge](#) product page:

- Quick start guides
- User manuals
- How-to videos

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# Glossary

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## A

### **Activate / Activation**

The process to license product instances to allow licensed operation.

### **Activation ID**

A unique identifier provided for one or more product unlocks.

### **Activation Response File**

In MyKepware, when a user successfully finishes the 'Activate Product License' workflow, this file is generated to apply to the license server. If this file is not applied to the license server, the product instances cannot successfully activate.

## H

### **Host ID**

The machine identity where the license server is installed.

## L

### **Lease**

Each product instance will check with the license server daily to ensure an unlock is available to continue to run. Each day, the instance receives a 7-day permission to continue to run in the event there are network connection issues preventing the instance from contacting the license server.

### **License Server**

A centralized system deployed within the OT network that allows and tracks the number of products that can run given the purchased licenses. Tracking includes activation ID, number of product unlocks used, and number of unlocks still available.

### **License Server Name**

A "friendly" descriptive name of the server that helps identify the server location later (i.e. NZ-01 might be used to indicate country and operating line).

## R

### **Return**

The process of moving an activation ID from one license server to another. The return process starts in MyKepware. Note: an activation ID can only be used on one license server.

### **Return-Request File**

File generated from the license server when returning a license. Note: the return process needs to start in MyKepware.

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**Return file**

The file generated during the start of a return process in MyKepware. The file is applied to the existing license server so that a return-request file is generated.

**T**

**Transfer License**

See Return

**U**

**Unlocks**

An activation ID can have multiple product unlocks that the license server uses to manage how many product instances and tags are allowed.