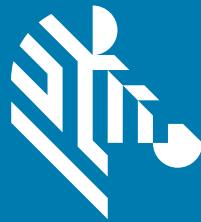


LOCAL LICENSE SERVER



ZEBRA

**Administrator Guide
for Windows
2018.08**

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Introduction

The Zebra Technologies' Embedded Local License Server acts as on premise server to support node-locked site-wide licensing. The license server is designed to administer the licenses within a customer enterprise, report license usage to the back office, and provide served-license status information.

This guide describes how to administer the Zebra Technologies' Embedded Local License Server.



NOTE Screens and windows pictured in this guide are samples and can differ from actual screens.

Contact

Please feel free to send your queries on this presentation to ZebraSWLicensingTeam@zebra.com

Getting Started

Local License Server Requirements

Hardware Requirements

Minimum hardware requirements for the license server:

- Hard drive: 500 MB
- RAM: 4 GB
- CPU: 2 GHz, two cores.

Supported Platforms

The Embedded local license server is supported on the following platforms:

- Windows* x86/x86-64 (.NET Framework 4.5 or later is required)

Supported Browsers

The License Server Manager UI supports the following browsers:

- Mozilla Firefox version 43 or higher
- Google Chrome version 47 or higher
- Microsoft Internet Explorer version 10 or higher.

Java Prerequisites

The following are the Java prerequisites for the machine where the embedded local license server is installed:

- Oracle JRE 1.8 or OpenJDK 1.8
- The JAVA_HOME (or JRE_HOME) environment variable on your system set to the path for your default JDK (or JRE) installation.



NOTE: The license server requires only the JRE component. If JRE is your default Java installation, set the JRE_HOME environment variable; if JDK is your default installation, set JAVA_HOME.

License Server Manager Requirements

The License Server Manager requires installation of Apache Tomcat. Supported versions include:

- 7x (7.0.53 or higher)
- 8x (for 8.5.x, should be 8.5.16 or higher).

DNS Configuration Requirements

Local License Server (LLS) URL end point used by devices for license management (activate/return) needs to be constant and should not change after the LLS is setup and running.

By default the URL exposed by LLS is in the format `http://10.80.204.154:7070/request`, where 10.80.204.154 is the IP address of system on which the LLS is running.

Since the IP of a system can change depending on the network configuration, it is advised to setup a DNS server.

So, the URL format with DNS setup will be like <http://lllicenseserver.zebra.com:7070/request>.

Connectivity Details

The Local License server will be acquiring the licenses from the cloud (<https://zebra-licensing.flexnetoperations.com>) and the port 443 is open for the communication

Download Packages

The Zebra Technologies Embedded local license server software package is provided as an executable file that can be downloaded from the zebra.com website under the **Support & Downloads** section. The software package supports both the 32-bit and 64-bit architectures.

- Windows: zebra_lls_installer_x.y.exe

Administrator Experience on the Local License Server Overview

The following table summarizes the basic tasks to perform as a license server administrator on the LLS.

Table 1 LLS Overview

Phase	Task	Description
1	Un-Wrap the Local License Server Components	The Zebra provided executable will load the necessary files for the Local License Server and Local License Server Manager in the system.
2	Configuring the Local License Server	Before installing the license server, you have the option to configure settings that define the local environment in which the license server will run. (These settings can be edited any time after installation as well.)
3	Registering the Local License Server	Register the server as a device in the End User Licensing Portal.
4	Preparing to Use the License Server Manager	Zebra Technologies has provided the License Server Manager as a tool with which to administer your license server. If so, before launching this tool, you must have an Apache Tomcat server installed and need to perform some additional configuration steps.
5	Start the Local License Server	This phase involves installing and starting up the Zebra local license server as a service.
6	Start the License Server Manager	The administrator tool that the producer provides with the license server enables you to manage and monitor the server and its operations.
7	Acquire Licenses on the License Server	A purchased set of product licenses needs to be acquired on the license server before it can distribute the licenses to client devices running the licensed products. The licenses can be assigned from the End User Portal or through the Offline Server Updates View.
--	Uninstalling the Local License Server	For various reasons, you might need to uninstall the LLS.

Un-Wrap the Local License Server Components

Running the executable file provided by the Zebra Technologies will un-wrap the components required for the Local Licensing Server and place it in the **Program Files** folder.

Default Location is drive: **\Program Files (x86)\ Zebra Local License Server**.

The following folders are available under the Zebra Local License Server:

- add ons
- lib
- server
- ui.

The **add ons** folder has the executable files for the below two components.

Java Runtime Environment (JRE)

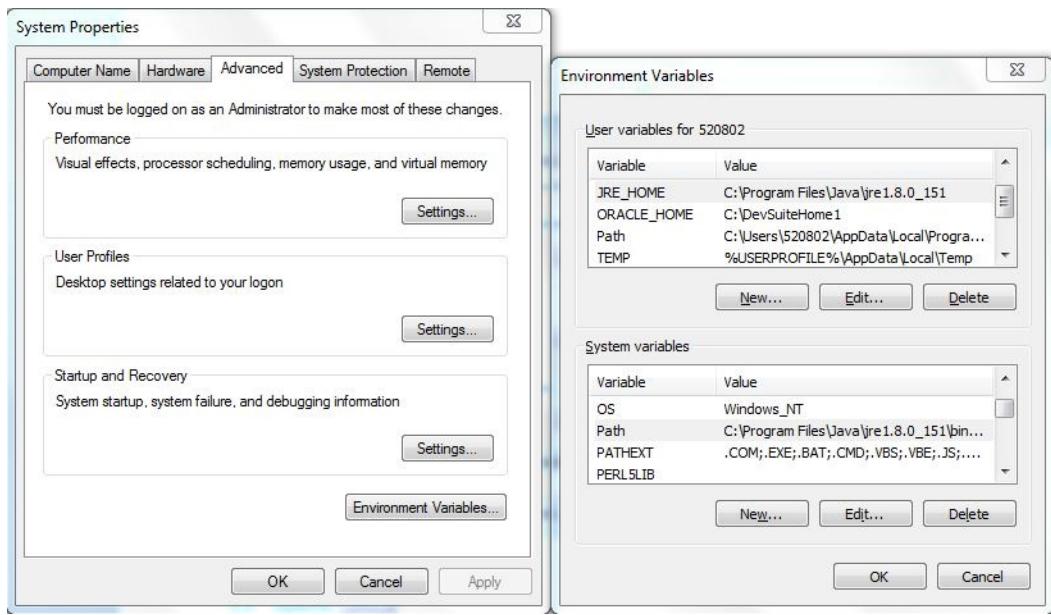
The LLS requires the Java Runtime Environment component to be installed in the system. If it is not installed, download Oracle JRE 1.8 or OpenJDK 1.8 on-line (Java version 8 is required); or for Windows systems, use the executable provided in this folder (both 32-bit and 64-bit versions are provided); or use the command-line to download and install it.

After installing the JRE on the Windows system, set the Java Path in two places in the Environmental Variables. Go to **Computer > Properties > Advanced System Settings**.

- User Variables: Create a New User variable with Variable name = **JRE_HOME** and variable value = **C:\Program Files\Java\jre1.8.0_151**.
- System Variables: Add **C:\Program Files\Java\jre1.8.0_151\bin**; to the Variable name **Path**. Do not override the existing values. Append to the existing values.



NOTE: The above values are provided under the assumption that the JRE is installed in C:\Program Files. Please update the path accordingly if it is installed in some other directory.

Figure 1 System Properties

Apache TomCat

To make use of the License Server Manager, Apache TomCat must be installed in the system. If it is not installed, download the latest version on-line or use the executable in the **add ons** folder and install it.

After installing Apache TomCat in Windows, copy the **f1sm.war** file from the **ui** folder to the path **C:\Program Files\Apache Software Foundation\Tomcat 8.5\webapps**.

The above value is provided under the assumption that the JRE is installed in **C:\Program Files**. Please update the path accordingly if it is installed in some other directory.

Configuring the Local License Server



NOTE: All the settings have their default values and it is not necessary to change any of the values unless it is required except for the ACTIVE_HOSTID. Refer the end of this section to identify the correct HOSTID.

Open the `zebrals.settings` file (located in the `server` directory) in a text editor, and update it with the local environment information; or leave the file as is to accept the default settings. For example, change the `JAVA_HOME` value or uncomment and provide a value for the `PORT` setting. When you update any setting, these rules apply:

- Any setting value that uses a space must be enclosed in quotations
- Do not insert spaces before or after the equal sign (=) in the setting syntax (for example, `PORT=7071`).

Table 2 Configurations in the `zebrals.settings` File

Setting	Description
ZEBRAJAR	The Java executable file for the Embedded Local License Server.
PUBSETTINGS	The license server configuration file generated by the Zebra Technologies.
JAVA_HOME (or JRE_HOME)	The path for JDK or JRE installation that the LLS should use. The Zebra LLS Executable uses this location to find the necessary <code>java.exe</code> and <code>jvm.dll</code> files. By default, the LLS uses the value of your <code>JAVA_HOME</code> (or <code>JRE_HOME</code>) system environment variable to determine the Java installation location, as indicated by the <code>%JAVA_HOME%</code> (or <code>%JRE_HOME%</code>) value for this local setting. However, if you want the LLS to use a different Java installation on your system, edit this local setting to override the server's use of the environment variable.
PORT	The listening port used by the LLS. If no value is specified, the server automatically uses 7070.
ACTIVE_HOSTID	The hostid to use for the LLS. The expected syntax is <code>value/type</code> where <code>type=Ethernet</code> and <code>value</code> is Ethernet MAC address (for example: <code>7200014f5df0/Ethernet</code>). This value is not set by default. If the hostid is not specified, the LLS uses the first available Ethernet address on the device.
EXTENDED_SUFFIX	The suffix used for the extended hostid feature. This value is not set by default.
EXTRA_SYS.getProperties	<p>One or more system properties (each in <code>-Dkey=value</code> format) that are passed to the Java Runtime system. The LLS depends on the Java Runtime Environment to support certain network functionality such as specifying the HTTP proxy. For example, if you plan to have the LLS communicate with the back office through an HTTP proxy, use this setting to identify the proxy parameters needed to configure the server.</p> <p>The following shows example proxy parameters listed as <code>-D</code> system properties for this setting:</p> <pre>EXTRA_SYS.getProperties="-Dhttp.proxyHost=10.90.3.133 -Dhttp.proxyPort=3128 -Dhttp.proxyUser=user1a -Dhttp.proxyPassword=user1apwd35"</pre> <p>By default, this setting has no properties defined.</p>

Identifying the Host ID in Windows

Host ID is the identifier for the LLS. Make sure you have the correct Host ID before starting the server.

Go to **Command Prompt** and type **ipconfig/all**.

Identify the Network Connection which shows the Wireless connection with which the devices will be connected.

In the following example, XXWireless is the wireless connection with which the devices will be connected. Pick the Physical Address (without dashes) and that will be the Host ID.

Host ID is 5CC5D44CE86B.

Figure 2 Physical Address Example

```

5
Physical Address . . . . . : 5E-C5-D4-4C-E8-6B
DHCP Enabled . . . . . : Yes
Autoconfiguration Enabled . . . . . : Yes

Wireless LAN adapter Wireless Network Connection 8:

Connection-specific DNS Suffix . : XXWireless.lan
Description . . . . . : Intel(R) Wireless-N 7260
Physical Address . . . . . : 5C-C5-D4-4C-E8-6B
DHCP Enabled . . . . . : Yes
Autoconfiguration Enabled . . . . . : Yes
Link-local IPv6 Address . . . . . : fe80::e0c6:c7ac:782a:4a7d%46<Preferred>
IPv4 Address . . . . . : 10.80.204.111<Preferred>
Subnet Mask . . . . . : 255.255.252.0
Lease Obtained . . . . . : Thursday, May 24, 2018 12:19:29 PM
Lease Expires . . . . . : Friday, May 25, 2018 12:19:29 PM
Default Gateway . . . . . : 10.80.204.1
DHCP Server . . . . . : 10.80.1.30
DHCPv6 IID . . . . . : 979158484
DHCPv6 Client DUID . . . . . : 00-01-00-01-1D-9B-21-47-28-D2-44-48-EE-69
DNS Servers . . . . . : 2601:249:8100:41ac:6238:e0ff:fe7f:d67b
                         8.8.8.8
                         4.2.2.2
  
```

Update the **zebrals.settings** file under the server directory for the Active Host ID entry as below and save the file. (Remove the # in front of the line to activate this setting.)

Figure 3 zebrals.settings File

```

zebrals.settings - Notepad
File Edit Format View Help

#
#Optional
#
#Server port, default to 7070 if not specified.
#PORT=

#Active hostid in <value>/<type> format, such as
#C001D9999/Ethernet. If not set will use default hostid.
ACTIVE_HOSTID=5CC5D44CE86B/Ethernet

#Extended hostid suffix.
#EXTENDED_SUFFIX=

#Server alias.
#SERVER_ALIAS=

#Optional extra system properties (e.g. proxy settings).
#EXTRA_SYS.getProperties=

#Note
#Values that have spaces need to be in quotes
#
  
```

Registering the Local License Server

As a first step, you need to register your Local License Server with Zebra Technologies. Create the server on the End User Licensing Portal with an ID that matches the ACTIVE_HOSTID which you have set up in the **zebrals.settings** file.

To do so, first navigate to Zebra's End User Licensing Portal by entering the URL <https://zebra-licensing.flexnetoperations.com/>. From this page, hover over the **Devices** tab and select **Create Device**.

Figure 4 Devices Tab

Recent Entitlements

Activation ID	Product	Last modified
2fbc-3fe1-586b-436f-832a-67a6-c169-3125	WFC Voice Client SW Rauland STD 8.2	May 24, 2018
2b7d-4903-a315-4e1c-91eb-8286-fec8-ad83	WFC SE Voice Client Suite	May 24, 2018
a9da-2cc4-0ad1-40e1-813d-57df-4962-91fc	WFC Voice Client SW Cisco CUCM STD 8.2	May 24, 2018
4c5c-dae0-a2fc-49e1-bc6a-91e1-7934-3943	WFC Voice Client SW Rauland STD 8.2	May 24, 2018
aa91-a8cd-ad6c-4ae2-b2fa-656f-34e8-95ef	WFC Voice Client SW Rauland STD 8.2	May 24, 2018

Recent Releases

Description	Date
No records found for this account.	

Your Downloads

Workforce Connect

QuickLinks

- List Entitlements
- List Licenses
- List Devices
- List Accounts
- List Users

From the create device page, first check the box next to "Runs license server?" which will update the fields for the device creation.

Enter an appropriate unique name for the server in the name field, select Local for a Local Licensing Server, select ID Type as Ethernet, and enter the ID as the HostID mentioned earlier from your **zebrals.settings** file. Verify all of the information you have entered and ensure that the HostID matches the ACTIVE_HOSTID used earlier and then click **Save** to complete the device creation process.

Figure 5 New Devices Screen

Name: *

Runs license server? (?)

Server deployment: Local Cloud

ID Type: * **ETHERNET** (?)

ID: * Backup ID (Optional)

Account: Zebra (Zebra Technologies)

Site name:

Save

Preparing to Use the License Server Manager

Integrate the License Server with Tomcat

The Zebra License Server includes the License Server Manager Administration tool to help you maintain the server and manage license distribution in your enterprise.

If you intend to use the License Server Manager, you must have an Apache Tomcat server installed. Before launching the License Server Manager for the first time, you are required to perform the following to integrate the license server with Tomcat.

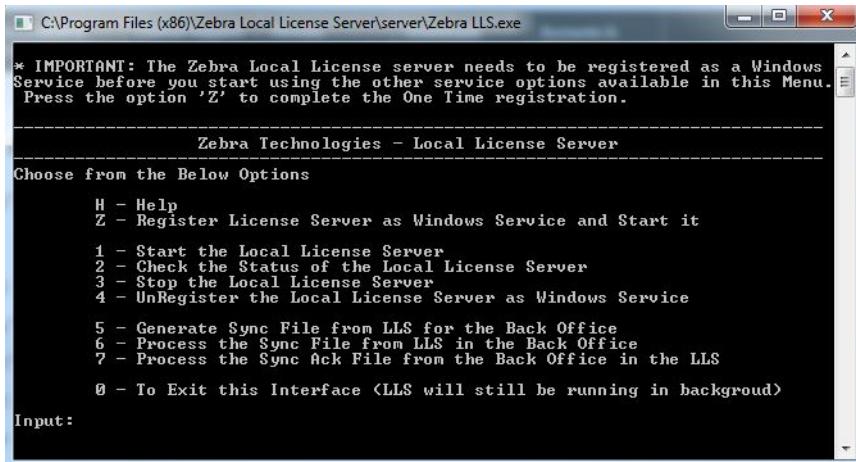
1. Install the Tomcat server if one does not already exist on your system. Tomcat installers are available from the Apache Tomcat website at tomcat.apache.org/ or you can find it available in the **Add Ons** directory.
2. Locate the **f1sm.war** file in your license server installation (in the **ui** folder).
3. Copy the **f1sm.war** file to the **webapps** directory in the Tomcat installation.
4. If necessary, change the port on which the License Server Manager tool listens for browser requests. (By default, the License Server Manager listens on port 8080.) Use these steps:
 - a. Locate the **server.xml** file in the **conf** directory of the Tomcat installation.
 - b. Within the **server.xml** file, locate the appropriate connector element and modify its port attribute value to the desired port number.
5. Start the Tomcat server, and then launch the License Server Manager. See [Start the License Server Manager](#).

Start the Local License Server

After you have completed creating and setting up your Local License Server device in Zebra's End User Licensing Portal, perform the following steps to start your local license server:

- Under the server folder, right click on the executable **zebra_local_license_server.exe** and Run as Administrator. It opens the following Interface with different options:

Figure 6 Zebra LLS Program



- Enter **Z**. This registers the License server as a Windows Service and starts the server.
- Confirm that the service is running by performing one of the following:
 - Enter **2** to check the status.
 - In the Windows Services window (`services.msc`), check that the service **FlexNet License Server - zebra (FNLS-zebra)** has started.
- You can stop or start the server using the appropriate options provided in the interface.
- The trusted storage will be created in the path <C:\Windows\ServiceProfiles\NetworkService\flexnetls\zebra>. This folder and its contents are machine generated. Do not tamper with them.
- To view the license server log, navigate to the server's logging directory (by default, `C:\Windows\ServiceProfiles\NetworkService\flexnetls\zebra\logs`), and review the contents of the appropriate .log file.



NOTE: Since the server is registered as a Windows Service, it will continue to run in the background even if you exit the Interface. It will continue to run unless you explicitly stop it using the options provided or shut down your computer. When you restart your computer, the service will start running automatically and you need not have to start the server again.

Start the License Server Manager

The Zebra License Server Manager is a browser-based interface used to monitor and configure the LLS. To set up the License Server Manager using the Tomcat server:

1. Make sure you have installed Apache Tomcat and copied the **flsm.war** file from the server **ui** directory to the **webapps** directory on Tomcat.
2. Launch the Tomcat server using the instructions provided with the Tomcat product. It might be necessary to set the **JAVA_HOME** or **JRE_HOME** environment variable before starting the Tomcat server.
3. If the license server is not already running, start it. (The License Server Manager requires that the license server be running.)
4. Point a web browser to <http://licenseServerHostName:8080/flsm/>.

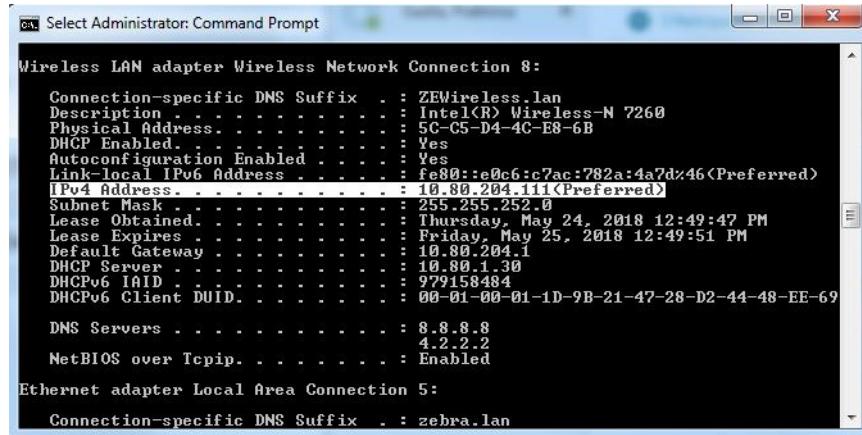
Where: *licenseServerHostName* is the server's IP address

8080 is the default port.

In our example the IP address corresponding to the Active Host ID is 10.80.204.111. So the URL will be <http://10.80.204.111:8080/flsm/>.

With DNS enabled it will be something similar to <http://licenseserver.zebra.com:8080/flsm/>

Figure 7 Local License Server



If licenses are activated from LLS (without DNS) to device than later stage if IP of system changes than devices will not be able to communicate with LLS for any new activation or returns of existing license.

Figure 8 Devices View

The screenshot shows the 'Devices' view of the Zebra License Server Manager. On the left, there's a sidebar with two sections: 'License Server' containing links for Devices, Reservations, Feature Usage, Offline Server Updates, Client Key Operations, Properties, and Login; and 'License Server Manager' containing About and Settings. The main content area has a title 'Devices' and a message 'Devices with features consumed. Click a device ID for further details.' Below this is a table with two columns: 'Device ID' and 'Device ID Type'. A single row is present with the text 'Nothing found to display.' under 'Device ID' and 'Total number of records: 0'.

1. Click **Properties** on the left side of the interface.
2. On the Settings view, check that the following setting is defined correctly:
 - **Server host ID** - It should have the Host ID which was used to register the LLS. If not, choose the correct Host ID and save the changes.

To stop the License Server Manager, close the web page and shut down the Tomcat server.

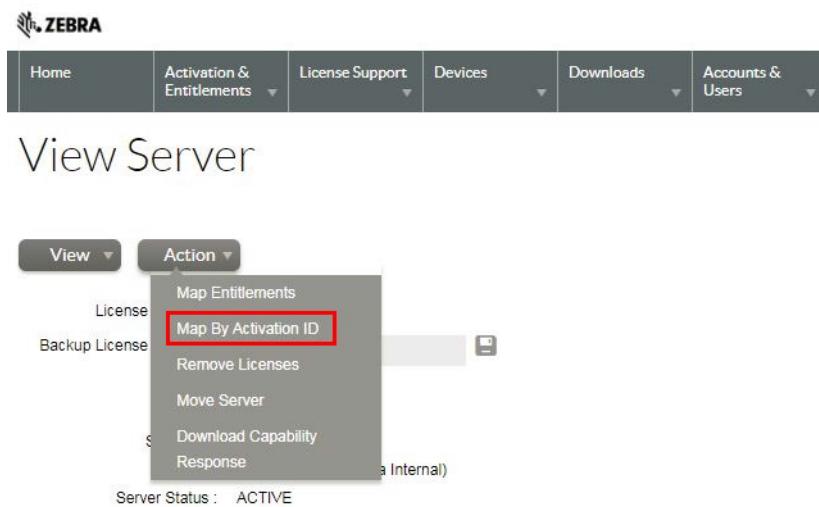
Acquire Licenses on the License Server

Licenses can be acquired to the LLS thorough the following options:

1. Zebra Licensing - End User Portal
2. Offline Server Updates view in the License Manager.

1. Zebra Licensing Portal

The licenses can be assigned to a Local License server from the End User Zebra Licensing Portal. From the End User Portal, open up your Local License Server device details by navigating to the **Devices** tab and searching for the name of your Local License Server and clicking that name.

Figure 9 View Server Page

1. In the **View Server** page, select **Actions > Map by Activation ID**. The **Map by Activation IDs** page appears.

Figure 10 Map by Activation IDs Page

Device ID:
5CC5D44CE86B (ETHERNET)

Activation IDs (one per line):

Enter Activation IDs here.

Validate Cancel

2. In the **Activation IDs** field, enter in the desired Activation ID from the license you want available on the Local License Server. If you want to enter more than one Activation ID, then make sure all entries are separated by the enter key and only one per line.
3. Click **Validate** to proceed to the next page.

Figure 11

Qty to add	Available qty	Activation ID	Product	Expiration
3	16	b8bc-6686-378b-40b4-97bc-3557-6cee-3275	Zebra Test Software Product - X , Version 1.0	Jul 2, 2018

4. After the Activation ID validation, in the **Qty to add** field enter the desired quantity of licenses you want to be available for that activation ID (must be equal to or less than the remaining quantity).
5. Click **Save** to complete the assigning process.

Once assigned to your Local License Server, you will be able to view the assigned license features in the License Server Web Manager after the synchronization. The synchronization is scheduled to happen every two weeks. If you want to perform a manual synchronization, stop & start the server from the Command Prompt UI.

If you need to activate additional licenses from the same activation ID, repeat the above process and provide the additional quantity in the **Qty to add** field.

Learn more about the synchronization policies in the section [Synchronization Policies Between Local License Server and Cloud](#).

2. Offline Server Updates View

Use the **Offline Server Updates** view to update the served license pool using offline operations instead of direct communication to a back-office server. In the upper half of the view, you can do either:

- Save a capability request to a binary file by clicking **Download** in the **Save capability/confirmation request for offline processing by back-office server** section. This request is used to poll for any license updates for the license server.
- Enter an activation ID (in the **Activation ID** field) and count (in the **Count** field) in the **Generate offline request using Activation ID and Count** section. When you click **Download**, the activation request is saved as a binary file. This request is used to obtain license rights for the license server through a specific activation ID that the Zebra Technologies has provided you.

Figure 12 Offline Server Updates View

Once the request is downloaded as a binary request file, you have to navigate to Zebra's End User Licensing Portal, hover over the **Devices** tab and then select **Offline Device Management**. In the **Offline Device Management** page, make sure **Upload Type** is selected as **Generate license** then click **Choose File** and select the recently generated binary request file. Once the file has been selected, click **Upload** to generate the binary response file. To download the binary response file, click link in the alert created from uploading the request binary file.

To acquire additional licenses or return licenses:

The same steps needs to be followed and the count needs to be changed accordingly.

For Example:

1. There are 20 licenses which are acquired already and there is a need to add additional 15 qty, the new count needs to be 35 (20+15).
2. There are 20 licenses which are acquired already and there is a need to remove 8 licenses, the new count needs to be 12 (20-8).



NOTE: Unlike the Option from the **End Customer Portal**, the quantity is always cumulative from this interface. The Offline Server Updates method replaces the existing quantity with the new quantity. **Qty to add** or remove cannot be specified explicitly and it needs to be calculated.

Figure 13 Offline Device Management Page

Offline Device Management

Manually upload either a Capability Request or Synchronization History Files for offline processing. The application will offer you a response file to download.

Upload type: Generate license
 Upload synchronization history

No file chosen

Local License Server Administrator Guide

When you have generated and downloaded the binary response file from Zebra's End User Licensing Portal, browse for the file by clicking **Choose File** in the lower half of the view (in the Local Licensing Server Web Manager) and then click **Upload**. The license server then processes the response, which updates the contents of the server's trusted storage.

Additional views available in the License Server Manager:

- **Devices** View

The **Devices** view displays the client devices recognized by the license server as having been served licenses from the server's shared pool or from licenses reserved for the client. Each client is identified by its device ID, the ID type, and the device type-physical, virtual, or unknown. When you click the device ID for a specific client, the **Device Details** view opens, listing the features currently served to the client.

Figure 14 Devices View

Device Details

Device ID: TC51_17068522513633
Device ID Type: STRING
Device Type: UNKNOWN

Consumed Features

Feature Name	Version	Used	Expiry
software-feature-testA	1.0	1	2018-07-02
software-feature-testB	1.0	1	2018-07-02
software-feature-testC	1.0	1	2018-07-02

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- **Feature Usage** View

The **Feature Usage** view displays details regarding all the features installed on the license server.

Figure 15 Feature Usage View

Feature Usage

Search (case-sensitive): Search by: Feature ▾

Feature	Version	Count	Available	Expiry	Activation Code (Product Name)
software-feature-testE	1.0	5	5	2018-07-03	037f-3e2b-0e30-45f3-8367-1fdc-cc2a-9013 (Zebra Test Software Product - Z)
software-feature-testA	1.0	2	2	2018-07-02	b8bc-6686-378b-40b4-97bc-3557-6cee-3275 (Zebra Test Software Product - X)
software-feature-testC	1.0	2	2	2018-07-02	b8bc-6686-378b-40b4-97bc-3557-6cee-3275 (Zebra Test Software Product - X)
software-feature-testB	1.0	2	2	2018-07-02	b8bc-6686-378b-40b4-97bc-3557-6cee-3275 (Zebra Test Software Product - X)
software-feature-testD	1.0	5	5	2018-07-03	037f-3e2b-0e30-45f3-8367-1fdc-cc2a-9013 (Zebra Test Software Product - Z)

Page 1 of 1
Go to page Total number of records: 5

When you click a feature name, the **Feature Details** page displays containing detailed information about the feature. This includes the total count allocated to the server, the count currently being used, and the number of reserved licenses within the used count.

Figure 16 Feature Details

- **Properties View**

The **Properties** view displays the current policy settings used by the Embedded local license server.

Figure 17 Properties View

License Server Properties		
Properties		
Property	Value	Description
Server host ID	34F39A440836 (ETHERNET) ▾	Server's host ID used when fulfilling served licenses with the back office. If multiple IDs are available, select the one registered with the back-office server.
General properties		
Server Version	2018.05	Server's executable version
Server UUID	386ff4ba-8e8a-431b-b8ad-9dfac50ee523	This server's UUID value
Server Status	Alive	Indicates server state
Secure REST API Settings		
REST Security enabled	false	The property that determines if security is applied to REST endpoints
Server Sync Settings		
Synchronization To Backoffice Enabled	true	The property that determines whether synchronization to the back office is enabled. If synchronization is disabled, metered-usage and license-distribution data is still collected and retained but is not sent to the back office until synchronization is re-enabled.
Synchronization To Backoffice Page Size	50	The maximum number of client records to include in a synchronization message to the back office. A smaller page size limits the memory overhead at the expense of having multiple synchronization transactions.
Synchronization to Backoffice Interval	5m	The amount of time between synchronization sessions with the back office. The value can be specified with an optional unit-suffix letter-s, m, h, d, or w-indicating seconds, minutes, hours, days, or weeks. If no suffix is used, the server assumes the value is in seconds.
Synchronization To Backoffice Retry Count	4	The number of times to retry synchronization attempts if a synchronization session with the back office fails.
Synchronization To Backoffice Retry Interval	1m	The amount of time between synchronization attempts, when synchronization with the back office fails. The value can be specified with an optional unit-suffix letter-s, m, h, d, or w-indicating seconds, minutes, hours, days, or weeks. If no suffix is used, the server assumes the value is in seconds.
Synchronization To Backoffice Delay	2s	At license-server startup, the amount of time the server should wait before initiating a synchronization session to the back office.
Synchronization To Backoffice Include Historical Data	true	The property that determines whether historical license-distribution data for concurrent features is collected and sent to the back office as part of the synchronization data. If historical-data is disabled, the data sent includes only the most recent license-distribution update for each client since previous synchronization session.
License Server Recovery From Backoffice Enabled	true	The property that determines whether license-recovery from back office is enabled. If recovery is enabled, metered usage data and the license-distribution state for concurrent features are recovered from the back office on initial server startup with a fresh or reset trusted storage.

The properties included on this page:

- **Server host ID:** The license server's hostid value used to fulfill capability requests against a back-office server. If the server has multiple hostid values, the list contains the available hardware Ethernet addresses and dongle IDs. If virtual hosts are supported, the VM UUID will also be listed. Select the value registered with your backoffice system.
- **General Properties:** The license server version, device UUID, and status.

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- **Secure REST API Settings:** Settings that control administrative security on the license server.
- **Server sync settings:** Properties for synchronizing to the back office.

Figure 18 Properties View

License Generation		
Response Lifetime	1d	The lifetime of a served-license response on the client. This value can be specified with an optional unit-suffix letter-s, m, h, d, or w-indicating seconds, minutes, hours, days, or weeks. If no suffix is used, the server assumes the value is in seconds. If value is 0 (zero), the response has an unlimited lifetime.
Default Borrow Interval	1w	The borrow interval for served licenses, in seconds. This value can be specified with an optional unit-suffix letter-s, m, h, d, or w-indicating seconds, minutes, hours, days or weeks.
Default Renew Interval	15	The renew interval, as a percentage of the borrow interval, for features that do not specify an override. If set to zero, the renew interval is at client discretion.
Allow Virtual Clients	true	The property that determines whether virtual clients are allowed to obtain licenses.
Allow Virtual Server	true	The property that determines whether the license server is allowed to run on a virtual host.
Default Borrow Granularity	SECOND	The borrow granularity to use for clients that do not specify one. For clients before version 4.0, the granularity will be day, regardless of this setting.
Host ID Validation Interval	2m	The frequency with which the license server validates that its host ID has not changed. If this is set to zero, validation is disabled.
Backup URI		The URI of the backup server in a failover configuration.
Main URI		The URI of the main server in a failover configuration.
Disable Virtual Machine Check	false	The property that determines whether the server should check if it is running on a virtual host.
Client Expiry Timer Interval	2s	The interval between client expiry sessions
Settings for server to server sync between FNE servers		
Synchronization to fne enabled	<input checked="" type="checkbox"/>	The property that determines whether to enable server to server synchronization.
Main FNE Server URI		The URI of the main server in a failover configuration.
Synchronization to FNE interval	5m	The amount of time between initiating synchronization sessions with the main server. The value can be specified with an optional unit-suffix letter-s, m, h, d, or w-indicating seconds, minutes, hours, days, or weeks. If no suffix is used, the server assumes the value is in seconds.
Synchronization to fne pagesize	100	The maximum number of client records to include in a synchronization message to the backup server.
Synchronization to fne retry count	1	When a synchronization from the main server fails, the number of times to retry synchronization.
Synchronization to fne retry repeat interval	1m	The amount of time between synchronization attempts when synchronization from the main server fails. The value can be specified with an optional unit-suffix letter-s, m, h, d, or w-indicating seconds, minutes, hours, days, or weeks. If no suffix is used, the server assumes the value is in seconds.
Capability polling settings		
Capability Polling Enabled	true	The property that determines whether capability-request polling is enabled. If polling is enabled, a capability request is sent to the back office periodically to update the license server's license rights. This property is used for the online deployment model of the license server.
Capability Polling Interval	1d	The amount of time between capability-request polls. The value can be specified with an optional unit-suffix letter-s, m, h, d, or w-indicating seconds, minutes, hours, days, or weeks. If no suffix is used, the server assumes the value is in seconds.
Capability Polling Retry Count	3	The number of capability-polling attempts allowed, if polling fails.
Capability Polling Retry Interval	30s	The amount of time between capability-polling attempts, if the polling fails. The value can be specified with an optional unit-suffix letter-s, m, h, d, or w-indicating seconds, minutes, hours, days, or weeks. If no suffix is used, the server assumes the value is in seconds.

- **License generation:** Policies that help manage served features.
- **Settings for server to server sync between FNE servers:** Policies for failover synchronization.
- **Capability polling settings:** Settings that control whether and how often the license server contacts the back office for license updates and how often the server should retry communications after a failed attempt.

Figure 19 Properties View

Locally deployed License Servers settings		
Server Host UUID		Host UUID that uniquely identifies this server instance when communicating with the back office.
Server Instance ID		Instance ID that uniquely identifies this server instance in the REST API.
Tenant ID		The tenant for which this server will serve licenses.
Enterprise ID		The enterprise to which this server belongs.
Site ID		The location of this server.
Trusted storage directory.	\$(base.dir)	The default directory for the trusted storage. The default value is the flexnetls folder in the user's home directory.
Log4J Configuration File		External override file for Log4J configuration. If no value is specified a default bundled configuration is used.
Access log pattern	access_yyyy_mm_dd.request.log	The name format for request log.
Publisher defined hostid policy	DISABLED	The property that determines whether to enable support for a custom hostid for the license server. If so, use the value strict.
Extended HostId enabled	true	The property that enables support for extended hostids for the license server.
TS Force reset	false	The property that determines whether trusted storage can be reset when unsynchronized data still exists on the license server.
Backup maintenance interval	3d	The maximum amount of time that the back-up server can serve licenses in a failover situation. This value can be specified with an optional unit-suffix letter-s, m, h, d, or w-indicating seconds, minutes, hours, days, or weeks. If no suffix is used, the server assumes the value is in seconds.
Sync Compatibility	false	Enable sync compatibility when migrating from FlexNet Embedded Server App to FlexNet Embedded License Server.
Logging Properties		
Logging Directory	C:\Windows\ServiceProfiles\NetworkService\flexnetls\zebra\logs	The directory to which the license server writes the log.
Logging Threshold	INFO	The lowest level of log-message granularity to record fatal, error, warn, or info. For example, if fatal is set, only messages about fatal events are recorded. However, if warn is set, fatal-event, error, and warning messages are recorded.
Graylog Host		The host name of a Graylog server, if any, to which logging messages will be sent.
Graylog Threshold	WARN	The lowest level of log-message granularity to record fatal, error, warn, or info. For example, if fatal is set, only messages about fatal events are recorded. However, if warn is set, fatal-event, error, and warning messages are recorded.

- **Locally deployed license server settings:** Settings specific to your license server and environment.
- **Logging properties:** Log locations and the lowest level of granularity for log messages captured in the log.

License Server Manager Information and Settings

Below the other commands in the License Server Manager Menu is the **License Server Manager** group. The group contains the **About** and **Settings** views. The **About** view (not shown) displays build, system, and browser information. In the **Settings** view, you specify the port number and host name (network name or IP address) for the license server, as well as the number of records to show on a page. These configuration settings appear in a separate list because they can be modified even if the license server is inaccessible, unlike the license server policy settings and configuration properties.

The default port for the license server is 7070.

Figure 20 Settings View

Property	Value	Description
Page size	50	Number of records to display per page.
FlexNet license server host name	localhost	Host name where UI will look for FlexNet license server. Default is localhost.
FlexNet license server listen port	7070	Port on which UI will look for FlexNet license server. Default is 7070.
Connect using HTTPS	<input type="radio"/> Yes <input checked="" type="radio"/> No	Indicates whether to use HTTPS protocol while communicating with the server or not. Default is No.

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Options include:

- **Page size** - The number of records to display per page.

- **Zebra license server host name** - The hostname of the machine the license server is running. See [Preparing to Use the License Server Manager](#) for more information about this file.
- **Zebra license server listen port** - The port number for the license server. (The default port for the server is 7070.)
- Connect using HTTPS - Indicates whether to use secured protocol while communicating with the server.

Synchronization Policies Between Local License Server and Cloud

Synchronization between the local license server and the cloud server is enabled by default.

The default sync frequencies are as follows:

- Sync frequency between the local license server and cloud is once in two weeks.
- In case if there are any issues during the sync, next attempt will be made in another 24 hours.
- There will be two retry attempts with 24 hour interval in between each attempt.



NOTE: Manual Sync - Stopping and restarting the server triggers a synchronization between the local license server and the cloud.

Local license server can be setup in 2 ways:

1. Server is setup in a host machine which has network connectivity and can talk to the cloud.
2. Server is setup in a standalone machine which doesn't have connectivity to the cloud on a continuous basis.

Server with Network Connectivity

When the server has the network connectivity, the default sync policies will come into play and the synchronization will happen automatically in the scheduled frequencies.

If there is a need for unscheduled synchronization, use the option of manual sync by stopping and restarting the server.

Server without Network Connectivity

When the server is out of network, the sync attempts will fail and the synchronization will not happen. In that case, offline synchronization tools needs to be used (Detailed Information is provided in the next section).

The command prompt user interface (Zebra LLS.exe) needs to be installed on a machine which has the network connectivity.

Using the command prompt user interface:

1. Generate the sync file from the machine where LLS is hosted.
2. Process the sync file in the new machine which has the network connectivity and get the acknowledgment file.
3. Process the acknowledgment file back in the machine where LLS is hosted.



NOTE: Alternatively, the standalone machine can be connected to the network and the manual sync can be performed by restarting the server.

Disadvantages of not Having Regular Synchronization

The served devices will not be showing up in the cloud which will result in issues during the repairs & services.

Offline Synchronization Options

Offline synchronization can be performed by using the options (5 through 7) provided in the Command Prompt UI. When the LLS is out of network connectivity, you need another machine which has network connectivity to the cloud to complete the offline synchronization.

Step 1: Download the Sync Files



NOTE: This step needs to be executed in the Machine where Local License Server is installed. Then the generated sync file needs to be transferred to the Machine with Internet Connectivity.

Use the option 5 and provide the IP address of the LLS machine and the path where you want the sync file to be generated.

Once the download completes, a message stating the number of transaction records downloaded is displayed:

OfflineSync utility started.

Sync completed for three device records.

If there are no new transaction records to download, the message displays the following:

OfflineSync utility started.

No new data is available.

Step 2: Synchronize to the Cloud



NOTE: This step needs to be executed in the Machine which has Internet connectivity to the Cloud. Get the sync file generated in the LLS Machine and give that as an input in this step.

Use the option 6 and provide the path where the sync files from LLS are placed.

A sync acknowledgment message is returned:

Successfully sent sync data and received a sync acknowledgment.

Upon successful sync, a sync ack file will be generated in the server folder with the name sync_ack.bin. This ack file needs to be transferred back to the LLS Machine.

Step 3: Update the Synchronization Time



NOTE: This step needs to be executed in the Machine where Local License Server is installed. Get the sync acknowledgment file generated and place it in the server folder.

The synchronization acknowledgment needs to be processed on the license server to update the last time of synchronization so that it knows that the data has been synchronized to the back office.

Use the Option 7 and provide the IP address of the LLS Machine and the path where the sync files are generated (in Step 1):

The server responds with the following message:

OfflineSync utility started.

Purging file 20140613T105312.fnesync

Uninstalling the Local License Server

To uninstall the license server service on Windows:

1. As an administrator, open a command prompt and navigate to the license server's installation directory.
2. Execute the `command zebra1s.bat -stop` to stop the service.
3. Execute the `command zebra1s.bat -uninstall` to uninstall the license server service. (If you attempt to uninstall the service before stopping it, a message appears indicating that you need to stop the service first.)
4. To ensure there are no hanging instances or services, execute `sc delete FNLS-zebra` as an administrator. Either the command will fail with the message "The specified service does not exist as an installed service", or it will succeed with the message "[SC] DeleteService SUCCESS"
5. Delete the license server component files from the installation folder.
6. Optionally, delete these files (listed with their default locations):
 - a. The trusted storage files (the .ks, .db, and .0 files) in `C:\Windows\ServiceProfiles\NetworkService\flexnet1s\zebra`
 - b. The log files in `C:\Windows\ServiceProfiles\NetworkService\flexnet1s\zebra\logs`

Recovery Options during System Failure

The server failure can be categorized into two cases:

- Soft Failure - Ethernet MAC Address persists after recovery.
- Hard Failure - Ethernet MAC Address does not persist after the recovery.

Soft Failure

The machine on which the Local License Server is hosted has some issues which does not affect the Ethernet MAC address. The MAC address remains the same after the machine is recovers from the failure.

The Local License server is registered as a Windows Service and it will run once the machine is restarted. There is a chance that the registration is deleted or the service is stopped. So the Host Machine recovers from failure and restarts, perform the following steps.

1. Check whether the LLS is up and running by checking in the License Server Manager UI or in the Zebra Command Prompt UI by using the **Option 2 - "Check the Status of the Local License Server"**.
2. If the server is running, no other actions required and the LLS will start reflecting the earlier status of the Licenses & Devices after the initial sync with the Zebra Cloud server. If not, continue with Step 3.
3. If the Zebra Command Prompt UI says the Service is stopped, try starting the server by using the **Option 1 - "Start the Local License Server"**.
4. If the Zebra Command Prompt UI says the Service is not installed, try registering the server again by using the **Option Z - "Register License Server as Windows Service and Start it"**.
5. Once the service starts running, the LLS will resume the earlier status before the system failure.
6. If there are any issues, please reach out the Zebra Help Desk team.

Hard Failure

The machine on which the LLS is hosted has fatal issues which affects the Ethernet MAC address, causing it to be different once the machine recovers from the failure.

In this case, a new server needs to be created using the new Ethernet MAC Address as the Host ID and this function s as a new installation.



NOTE: The served end-points however will continue to work based on existing entitlement on the end-point. Any check-in, refresh operation, etc., will require these end-points to be reconfigured to point to the new Server's updated URL.



NOTE: For details around the previously served devices or unused licenses, please reach out to the Zebra help desk to migrate the licenses to the new server. It is highly recommended that the LLS data be periodically synced with Zebra for such disaster recovery and backup purposes.

Frequently Asked Questions

Q: How do I get access to the Zebra's End User Licensing Portal?

A: Follow the Instructions in the system generated mail upon successful creation of the entitlements.

Q: What is the URL for the Zebra's End User Licensing Portal?

A: <https://zebra-licensing.flexnetoperations.com/>

Q: I'm not able to create the Local License Server in the portal because I receive "Unexpected Error" message.

A: Only users with Customer Administrator role are allowed to create a Local License Server. Contact the Zebra Help Desk to make sure you have the Customer Administrator role assigned to your user account.

Q: When I try to run the `zebra_local_license_server.exe` file, it shutdowns after launch of command prompt.

A: Make sure the environmental variable is setup properly to run an executable file.

For example: If 'FINDSTR' is not found, follow the below process to add the appropriate environment variable:

1. Go to **Computer > Properties > Advanced System Settings > Environment Variables**.
2. In the **System Variables** section, add `C:\Windows\System32` to the **Variable name Path**.
3. Do not override the existing values. Append to the existing values.

Q: The licenses I assigned in the licensing portal are not reflecting in the local server.

A: Synchronization should happen between the cloud and the local server to reflect the changes. Refer to the sync schedule. You can manually initiate a sync by stopping the server and starting it again in the command prompt user interface.

Q: How do I upgrade to the latest version of the Local License Server?

A: There will be upgrade instructions provided for each newer version. Follow the instructions carefully to upgrade into a newer version.

Q: My server stops intermittently after I start it.

A: Make sure the host machine has enough available RAM. Insufficient RAM availability could cause the server to stop.

Q: License Server Manager URL shows 'This site can't be reached' message.

A: Make sure the Apache service is running and you have used the correct IP address in URL.

