Using LCS

Note: The following LCS features have been deprecated and removed in March 2020: Page Analytics, Fix Pack Management, and Portal Properties. Please read the LCS Feature Deprecation Update to learn more about how you can prepare for these upcoming changes.

Once your Liferay DXP server is connected to LCS, you can get down to the business that LCS is designed for—managing and monitoring your servers. If you're not already there, log in with your account on lcs.liferay.com. This is where you'll apply updates, view server metrics, manage environments, and more.

This article's sections each detail one or more of LCS's features:

- **What LCS Stores About Your Liferay DXP Servers:** For LCS to work, the LCS servers must store certain information about your servers. Sensitive data, however, isn't stored on the LCS servers. This section describes the data that LCS does and doesn't store.
- **Managing LCS Users in Your Project:** Learn how to manage your LCS project's users by assigning them roles.
- **Using the Dashboard:** Learn how to manage your LCS projects and access your environments and servers in LCS.
- **Managing LCS Environments:** Learn how to create and manage your LCS project's environments. This includes instructions on installing fix packs for an environment's servers.
- **Managing LCS Servers:** Learn how to manage your servers in LCS. This includes viewing server metrics and editing server settings.
- **Managing Your LCS Account:** Learn how to manage your LCS account. This includes setting general account preferences, managing LCS web notifications, and configuring LCS to send you notification emails when specific events occur in your LCS projects.

- **Understanding Environment Tokens:** Learn about the environment tokens that you use to connect your servers to LCS.

What LCS Stores About Your Liferay DXP Servers

To protect your users' privacy, LCS only stores system-specific data. LCS doesn't gather or store data on your users.

By default, LCS stores the following information about your server:

- Portal build number and edition
- Patching Tool Version
- LCS Client Build Number
- Application Server Name
- Database Name
- File Encoding
- OS Name and Version
- Timezone
- IP Address
- Java Version and Java Options
- Number of Processor Cores
- File System Usage
- Memory Usage

The other data LCS stores depends on the services you enable in your environment token. For more information on this, see Registering Your Liferay DXP Server with LCS. When you enable the following services, LCS gathers and stores the data listed for each:

- **Portal analytics:**
    - Portal and portlet metrics
    - JVM metrics
    - Cache and server metrics
- **Fix pack management:**
    - Patches installed on the server
- **Portal properties analysis:**
    - `portal.properties` (except sensitive data)

```
omniadmin.users
ldap.security.credentials.0, ldap.security.credentials.1, ldap.security.credentials.2
facebook.connect.app.secret
auth.token.shared.secret
auth.mac.shared.key
captcha.engine.recaptcha.key.private
amazon.secret.access.key
tunneling.servlet.shared.secret
microsoft.translator.client.secret
dl.store.s3.secret.key
auto.deploy.glassfish.jee.dm.passwd
```

LCS also doesn't store properties that end in `.password`, besides the following non-sensitive properties:

```
portal.jaas.plain.password
portal.jaas.strict.password
login.create.account.allow.custom.password
```

LCS also lets you prevent it from analyzing specific properties of your choosing. For more information on this, see Registering Your Liferay DXP Server with LCS.

Managing LCS Users in Your Project

The Users section of LCS is where you manage the LCS users that are part of your project. It's here that you can grant or revoke LCS Roles. To manage users, first click the *Users* tab just below the Dashboard tab on the upper-left of your screen.

Note: You can't add users to your project via the LCS UI or the LCS client app. To add users to your project, you must contact Liferay support.

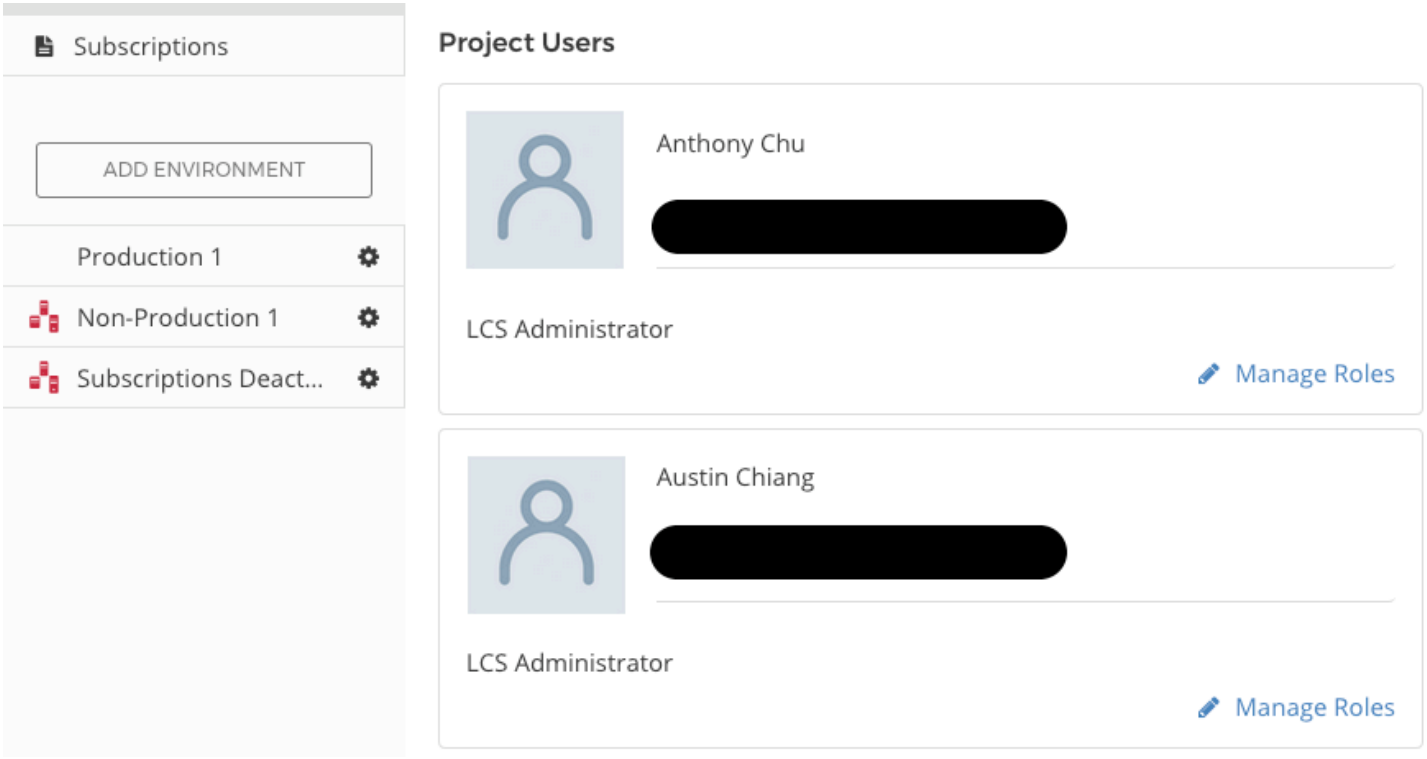


Figure 1: The Users tab lets you manage the LCS users in your project.

The *Users* tab displays a list of the users in your project. This list includes each user's name, email, image, LCS Roles, and a *Manage Roles* button. Each LCS user must have an assigned Role. The following Roles are available:

LCS Administrator: All LCS functionality is available to administrators. This is the only Role that can manage other users' Roles.

LCS Environment Manager: All LCS functionality is available in the scope of an environment, with the exception of managing other users.

LCS Environment Viewer: Has read-only access in the scope of an environment.

You should note that each of these LCS Roles assume users already have the LCS User Role in their Liferay.com accounts. The LCS User Role is granted automatically the first time a user logs into LCS. The actions that can be performed by each of the LCS Roles are detailed in the below permissions matrix.

LCS Permissions Matrix

Access LCS	true	true	true
Access Any Environment	true	false	false
Access a Particular Environment	true	true	true
Manage Users	true	false	false
Create and Delete Environments	true	false	false
Edit Any Environment	true	false	false
Edit a Particular Environment	true	true	false
Server Registration in Any Environment	true	false	false
Server Registration in a Particular Environment	true	true	false
Install Fix Packs in Any Environment	true	false	false
Install Fix Packs in a Particular Environment	true	true	false

Now that you know what Roles are available in an LCS project and what they do, you're ready to learn how to manage them.

MANAGING LCS ROLES

Follow these steps to manage a user's LCS Roles:

1. Click the user's *Manage Roles* button.

2. To revoke a Role, click *Revoke Role* for that Role.

3. To assign a Role, choose the Role (and environment, if applicable) and click *Assign*.

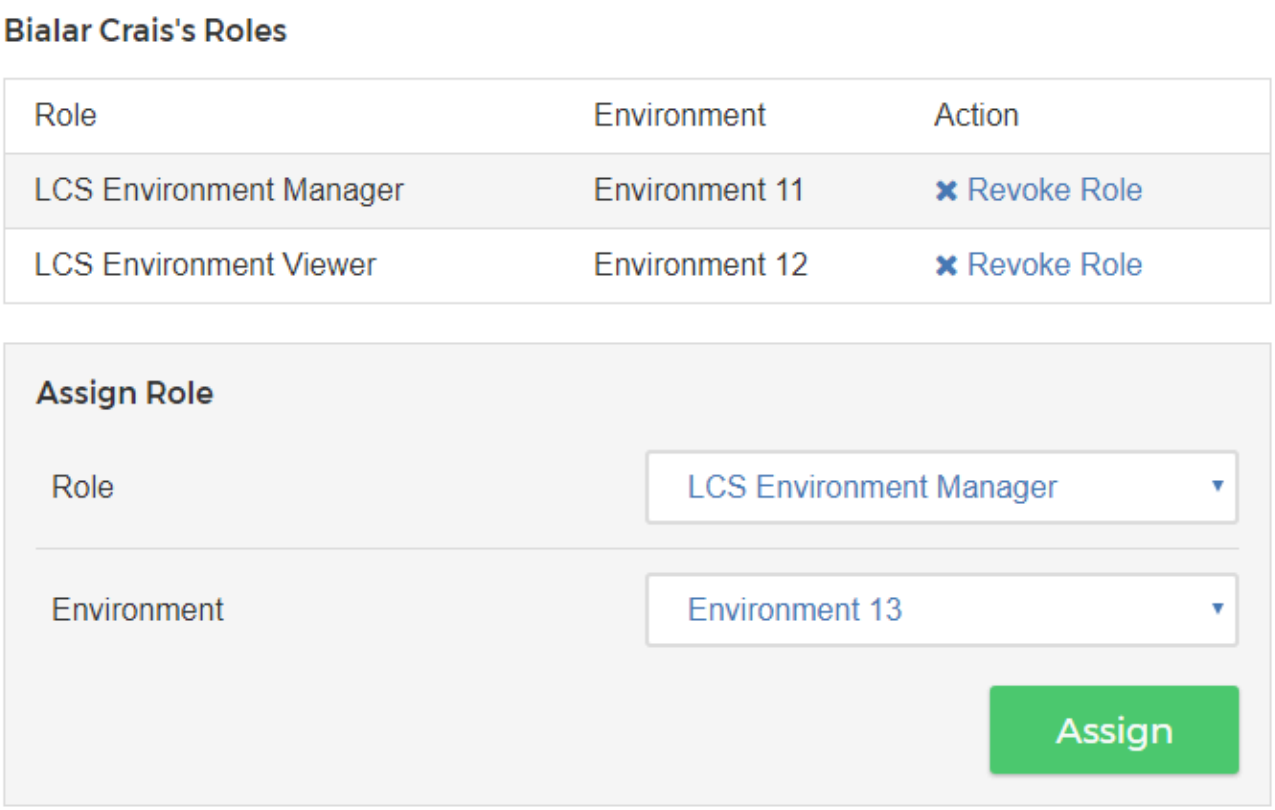


Figure 2: You can assign or revoke a user's LCS Roles.

Using the Dashboard

The LCS Dashboard shows a project's environments and servers. If you're not already at the Dashboard, click it near the upper left-hand corner of your LCS site. Clicking *Dashboard* takes you to the project view. From there, you can get to the environment view and the server view. Each of these views gives you a different look into certain aspects of your LCS project. You'll start with the project view.

USING THE PROJECT VIEW

You can get to the project view at any time by clicking the *Dashboard* tab near the upper left-hand corner of your LCS site. The project appears to the right of this tab, with a drop-down arrow for switching between projects if you have more than one. You can also switch between projects from the user menu at the top right of the Dockbar. The project view contains a Status table that lists status messages for each server in your project. For example, a status message appears for a server when the server is offline. Status messages also appear for servers when fix packs are available, monitoring is unavailable, the patching tool is unavailable, or other events occur that relate to LCS.

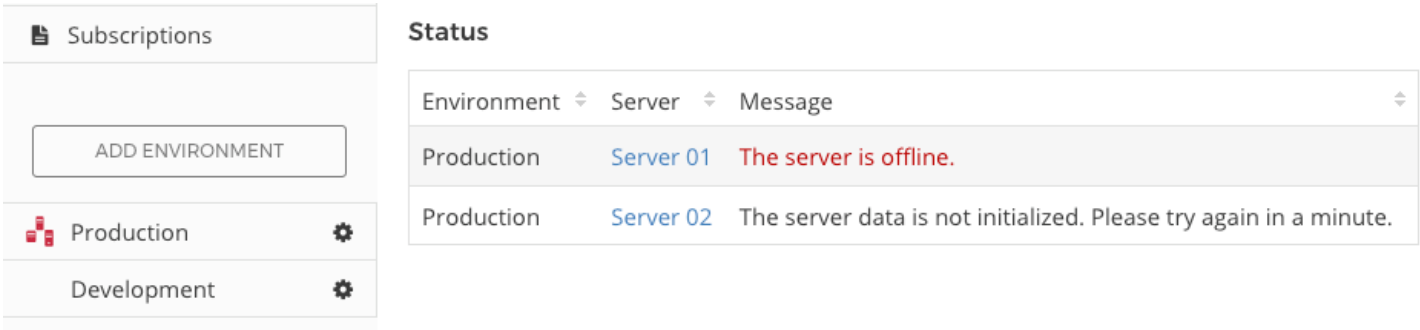


Figure 3: The LCS project view shows an overview of your LCS project.

LCS lists the environments in your project on the left side of the screen. You can also create new environments here by clicking the *Add Environment* tab (more on this shortly). To view an environment's settings, click the environment's gear icon. Clicking an environment shows more information about it. This takes you to the environment view. Also note that each environment's icon indicates the environment's type and status:

- **Red icon:** There's a problem with one or more of the environment's servers.
- **Green icon:** The environment's servers are operating properly.
- **Icon with a circle:** The environment's servers are clustered.

Managing LCS Environments

Environments are the key components of your LCS project. When you register a server in LCS, you do so in an environment. An environment is therefore the gateway to managing and monitoring your servers in LCS.

WORKING WITH ENVIRONMENTS

Clicking an environment on the left-hand side of the Dashboard takes you to the environment view, which lets you manage an environment in your LCS project.

The UI is segmented into three tabs:

1. **Fix Packs:** View and apply fix packs for the environment's servers. This tab only appears if a server is registered in the environment. A table displays the following information for each fix pack:
    - **Name:** The fix pack's name.
    - **Status:** The fix pack's status.
    - **Server:** The server the fix pack can be applied to.
    - **Size:** The fix pack's size. This only appears if the server is running.

Once a fix pack downloads, LCS prompts you to restart your server, which installs any downloaded fix packs. Note that you must start your server with the privileges required to write to the disk location where patches are stored and processed (the `patching-tool` folder). To use LCS to install fix packs across a cluster, follow the same procedure. LCS downloads and installs fix packs simultaneously across all nodes—you don't have to handle each separately.

2. **Registration:** Generate and download *environment tokens* that connect your servers to LCS.

3. **Environment Settings:** Change the environment's name, location, and description. You can also see if the environment allows clustered servers and view the environment's subscription type. Click the *Save* button to save any changes you make in the Environment Settings tab. You can also delete the environment by clicking *Delete Environment*.

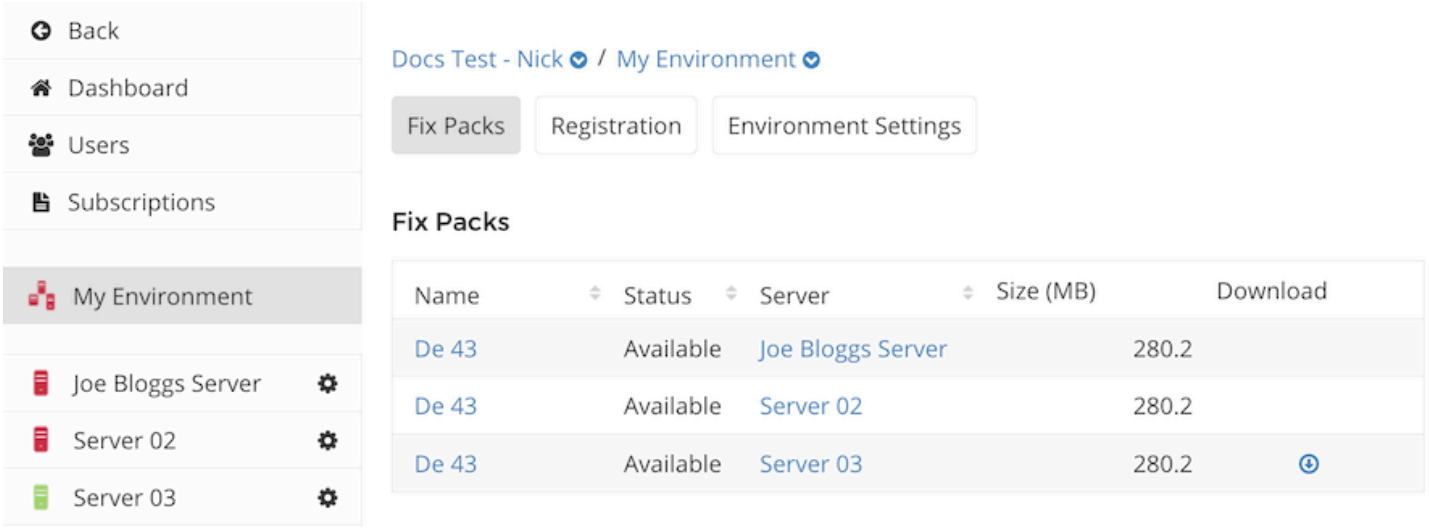


Figure 4: The LCS environment view shows an overview of an LCS environment.

Managing LCS Servers

Clicking a server in the Dashboard or environment view takes you to the server view. Server view provides detailed information about a server, including statistics and performance metrics. To protect your users' privacy, LCS doesn't gather, store, or analyze user data.

Server view is segmented into six tabs:

Page Analytics: Displays metrics on page views and load times.

Snapshot Metrics: Displays application, JVM, and server metrics.

Fix Packs: Displays the server's available and installed fix packs.

Details: Displays general information about your Liferay DXP installation, Java version, and hardware.

Server Settings: View or change your server's name, location, and description. You can also unregister the server from LCS.

Note: LCS only supports Snapshot Metrics for servers running on Tomcat or WebLogic. On other application servers you may see a console message indicating that LCS doesn't support server metrics for your application server. You may also see a benign `NullPointerException` for the LCS `TaskSchedulerServiceImpl` and `ScheduleTasksCommand`.

PAGE ANALYTICS

Page Analytics appears by default when you enter server view. Page Analytics shows page views and load times for the selected site and time period. By default, all sites are selected. You can select a specific site from the *Site* selector menu. You can also select a different time period in the *Period* and *Ending At* fields. The arrows next to the *Ending At* field move the selected time period up or down, respectively, by one period. For example, if you select *One Hour* in the *Period* field, pressing the right arrow next to *Ending At* moves the selected time period up by one hour. Note that at the beginning of the current time period, it can take up to 15 minutes for data to become available. Also note that data is available for three months from the time LCS collected it.

By default, load times and page views for all pages are plotted against time in separate graphs. Below these graphs, a table displays summary statistics of data over the same time period, for each page. If you click a page in the table, the graphs plot the data for just that page. If you can't find the page you're looking for, you can search for it in the *Search* box at the top of the table. To plot data for all pages again, click the *All Pages* row at the bottom of the table.

Load times are also color coded to indicate speed. The *Load Times* graph's background is red for values above 3,000 ms, orange for values from 2,000 to 3,000 ms, and green for values less than 2,000 ms. Likewise, the table displays all load times greater than 3,000 ms in red text.

Productos Recursos Seguridad Soporte

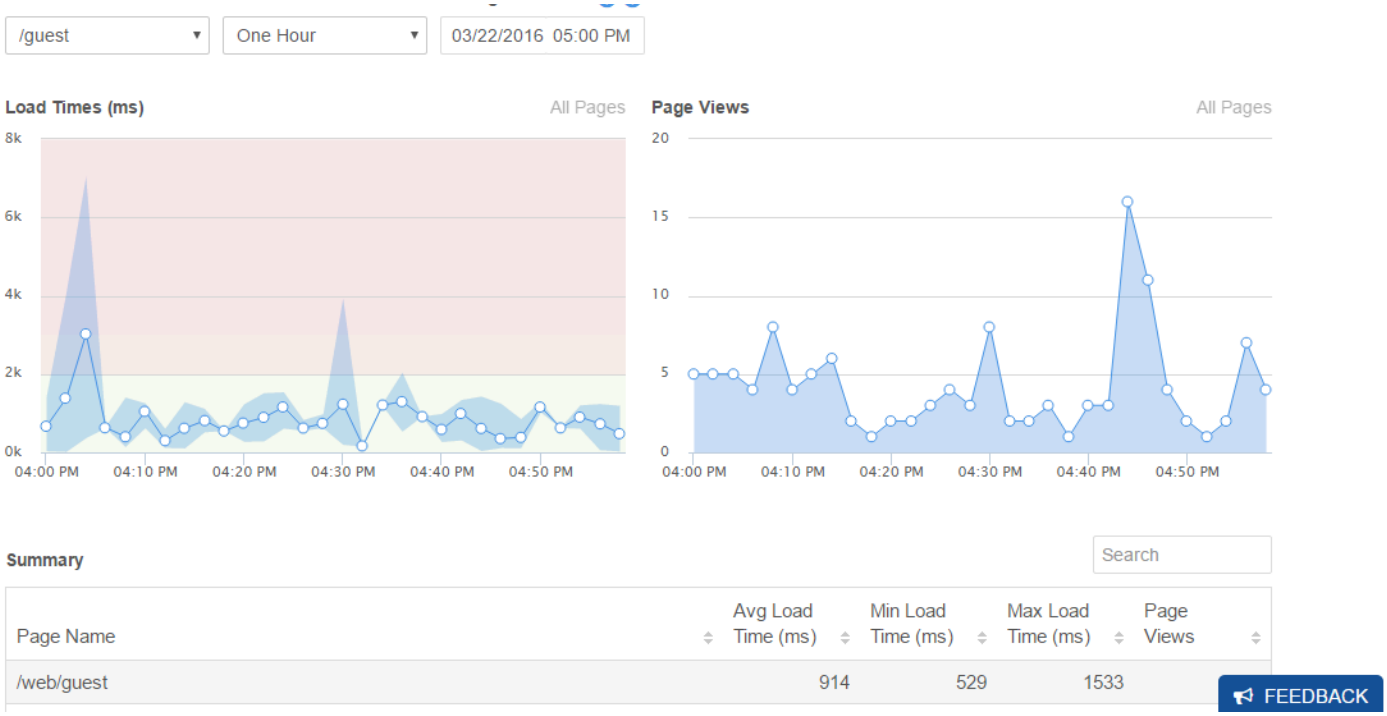


Figure 5: The Page Analytics interface in the LCS Server view.

SNAPSHOT METRICS

To view other metrics and statistics of your server's performance, click the *Snapshot Metrics* tab near the top of the page. These metrics are broken down into three main categories: *Application*, *JVM*, and *Server*. Application is selected by default when you click the Snapshot Metrics button.

The Application category also has three other categories: *Pages*, *Portlets*, and *Cache*. Pages lists the frequency that specific pages load, along with their average load times. Portlets lists the same statistics, but for specific portlets in your server. The Cache category lists Liferay Single VM metrics and Hibernate metrics. The following screenshot shows the statistics in the Portlets category.

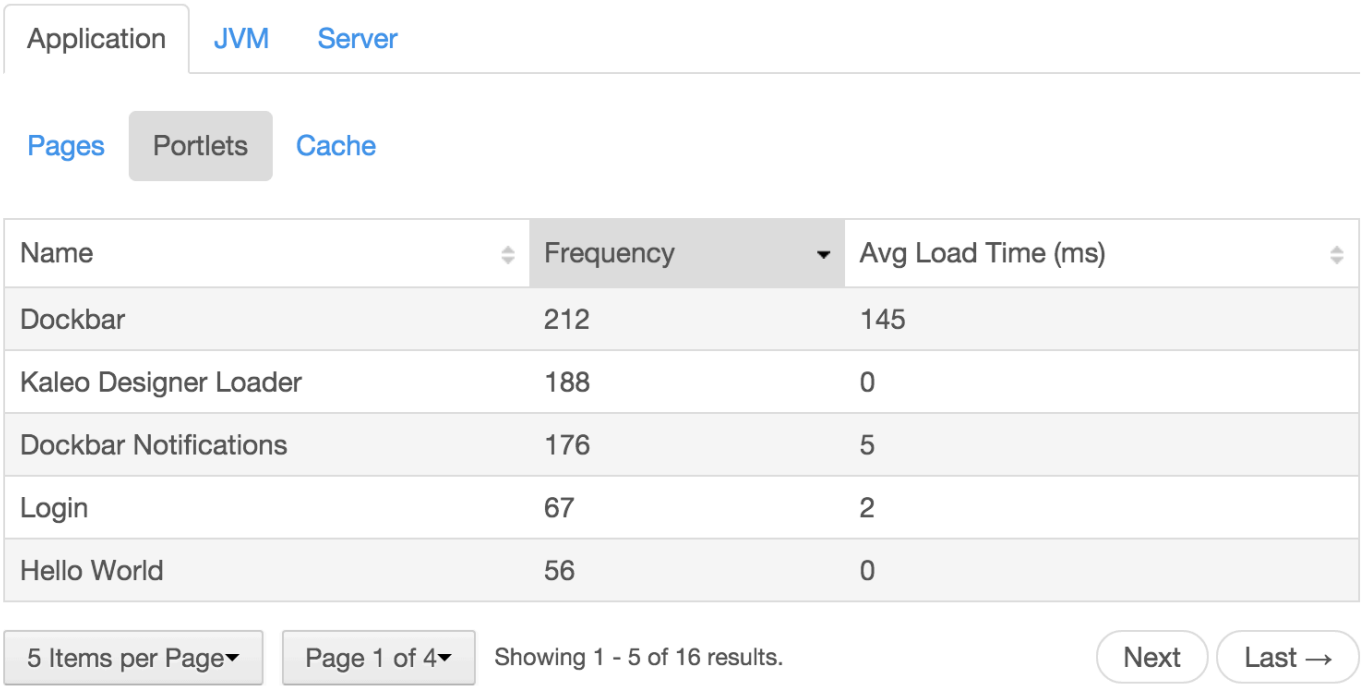


Figure 6: The LCS application metrics show portlet performance statistics, like frequency of use and average load time.

The JVM category, as its name indicates, shows statistics about the JVM running on your server. This includes data on the garbage collector and memory. The number of runs, total time, and average time are listed for each garbage collector item. The memory metrics are presented in a bar chart that shows the usage of the PS Eden Space, Code Cache, Compressed Class Space, PS Old Gen, PS Survivor Space, and Metaspace.

Garbage Collector Metrics

Name	Runs	Total Time (ms)	Average Time (ms)
PS MarkSweep	6	2242	373
PS Scavenge	175	2378	13

Memory Metrics

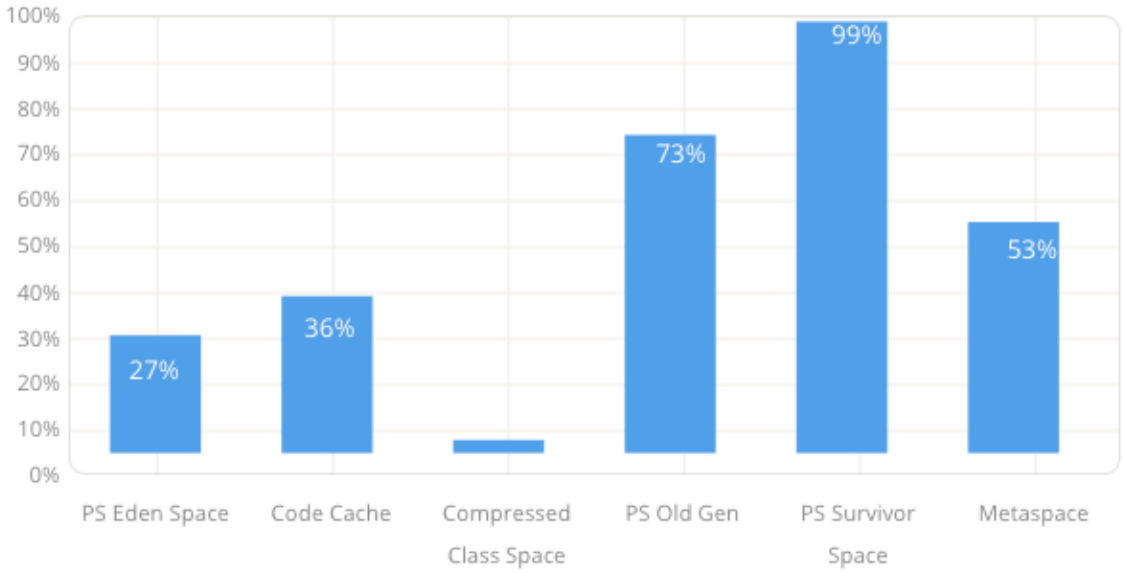


Figure 7: The LCS JVM metrics show performance data for memory and the garbage collector.

Server is the third category in Snapshot Metrics. The Server category shows additional information about how your server is running. For example, horizontal bar graphs show the number of current threads running on your server, as well as the JDBC connection pools.

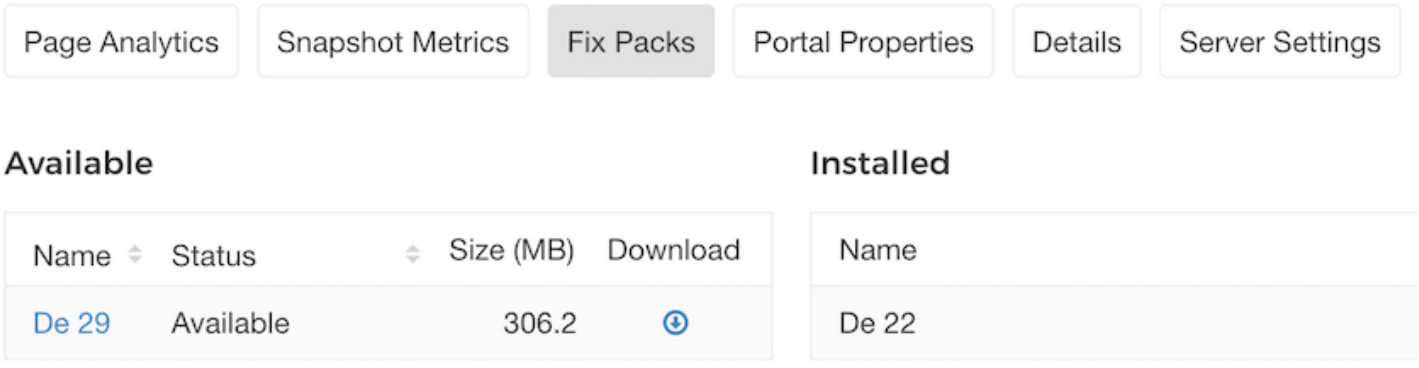


Figure 8: The LCS server metrics show current threads and JDBC connection pools.

Note that in Snapshot Metrics, the application and garbage collector metrics are based on data collected by LCS from server registration to the present. Memory and server metrics, however, show only the current state.

FIX PACKS

To view your server's fix packs, click the Fix Packs tab near the top of the page. The available and installed fix packs appear in separate tables. The available fix packs table functions exactly like the Fix Packs table in environment view for downloading and installing fix packs.



PORTAL PROPERTIES

The *Portal Properties* tab lets you view your portal's property values in a searchable table. This gives you a convenient display for your portal property settings. The properties in this table are organized into the following categories:

Default Values: The default values for your portal's properties.

Custom Values: Any custom values you've set for your portal's properties. This includes any property values you change via a `portal-ext.properties` file.

Dynamic Properties: Any property values set at runtime. For example, the Liferay Home folder's location depends on your configuration. To specify this folder when setting any properties that require it, use `${liferay.home}` instead of an absolute directory path.

You can display any combination of these categories by selecting the corresponding checkboxes from the gear icon next to the search box at the top-right of the table. For example, by checking the *Show Default Values* and *Show Custom Values* checkboxes, the table shows your portal's default and custom property values. To show only the custom values, select only *Show Custom Values*.

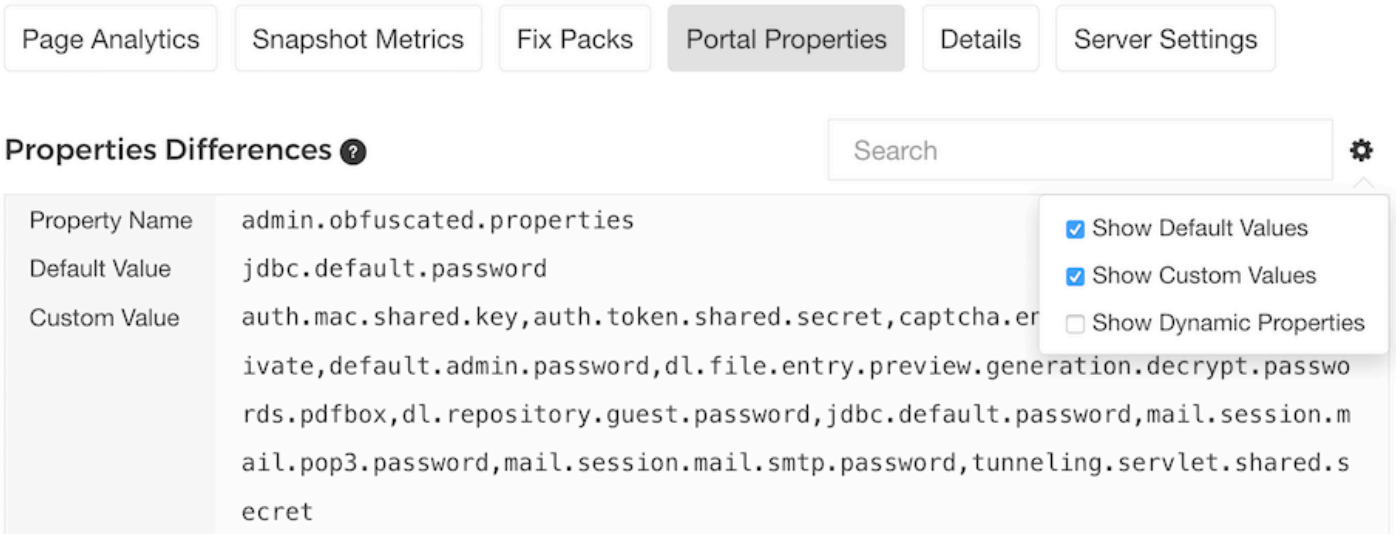


Figure 10: Click the gear icon to select the type of portal properties to show in the table.

DETAILS

The *Details* tab shows general information about your server. There are three tabs under Details: *Software*, *Java*, and *Hardware*. Each shows information, respectively, about your Liferay DXP installation, Java installation, and hardware. This information is useful to the Liferay Support team in the event you need their assistance.

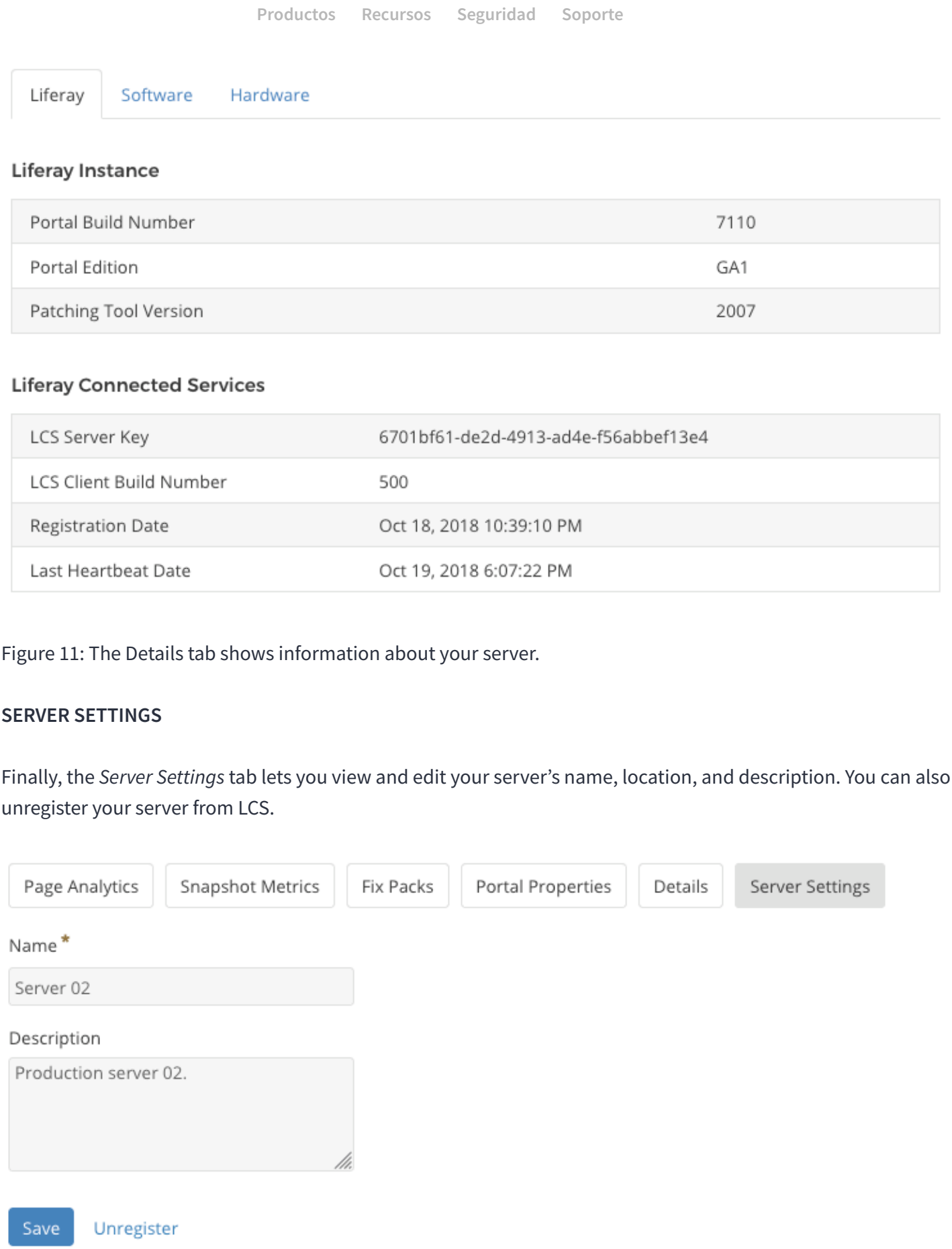


Figure 11: The Details tab shows information about your server.

SERVER SETTINGS

Finally, the *Server Settings* tab lets you view and edit your server's name, location, and description. You can also unregister your server from LCS.

Managing Your LCS Account

To manage your LCS account, select *My Account* from the user menu in the Dockbar. This takes you to a UI with four tabs:

Projects: Displays your LCS projects in a searchable table that lists the administrator's email address for each project.

Email Notifications: Configure LCS to send you emails when specific events occur in your LCS projects by adding rules that define what events trigger a notification. There are no rules by default. Click the *Add Rule* button to define one.

First specify the project, environment, and server for the notification. Note that you have the option of selecting all environments and servers in a project. Then check the checkbox for each event that you want to trigger an email notification. For example, if you create a notification rule with *The server unexpectedly shuts down* selected for all servers and environments in your project, then LCS sends you an email if any server in your project goes offline without a normal shut down event. Click *Save* when you're done defining the notification rule. It then appears in a table along with other existing rules. Each has Edit and Delete Action buttons.

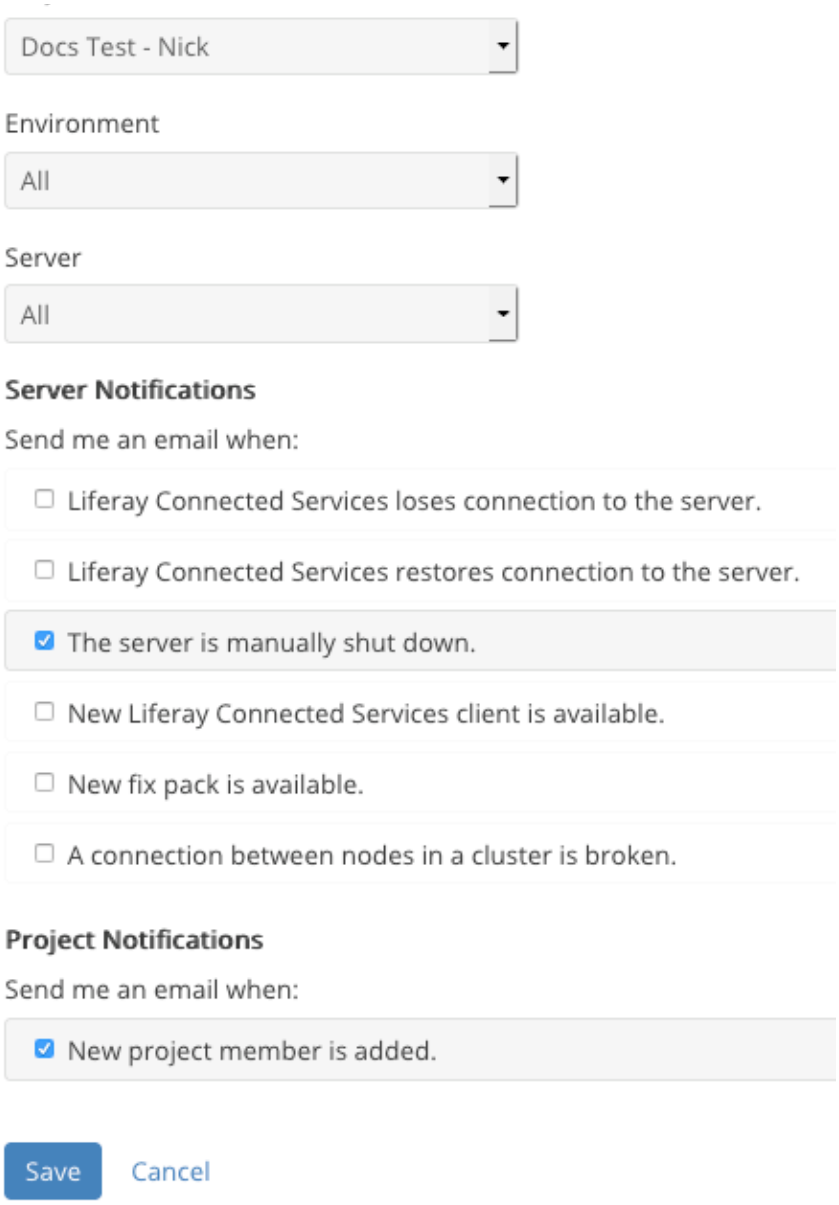


Figure 13: You can add rules to determine the events that trigger notifications.

Notification History: Displays your web notification history in a searchable table. You can also select the date range from which to display notifications.

Preferences: Manage your LCS account's preferences. You can change your account's language, time zone, and default LCS project. Your default LCS project is the one shown each time you log in to LCS.

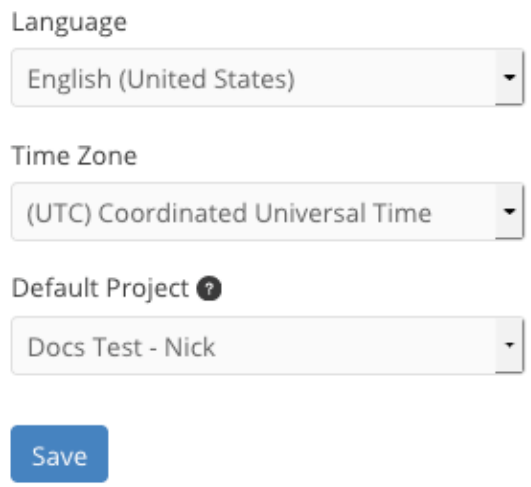
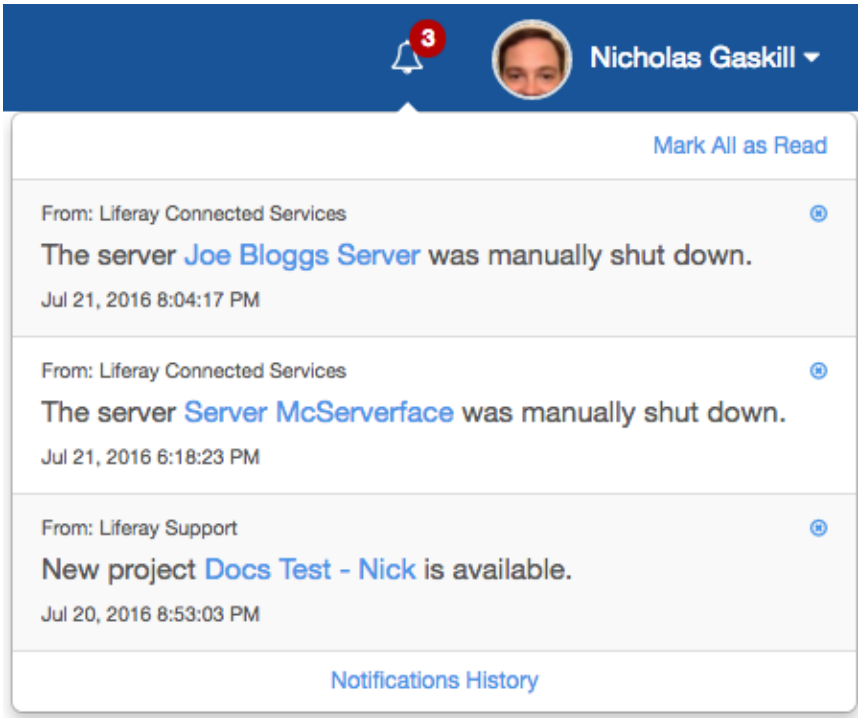


Figure 14: You can change your LCS account's general preferences.

USING WEB NOTIFICATIONS

LCS also displays web notifications under the bell icon in the Dockbar. A red badge on this icon shows your unread notification count. LCS and Liferay Support send these notifications. For example, LCS generates notifications when a server shuts down or some other event requiring your attention occurs. To mark a notification as read, click the small *x* icon next to it. To mark all notifications as read, click the *Mark All as Read* button. To mark notifications as unread again, click the *Undo* button that appears. To see your notification history, click the *Notifications History* button. You can also access your notification history by selecting *My Account* from the user menu in the Dockbar.



Managing Liferay DXP Subscriptions

LCS lets you use and view your Liferay DXP subscriptions. Recall that when you create an environment, you assign its subscription type and choose whether LCS activates servers that connect to that environment. If you use LCS for activation, registering a server in that environment consumes an activation key from the environment's subscription type. You can also view your project's available activation keys and see how they're being used.

Depending on your subscription agreement, LCS also lets you register servers via *elastic subscriptions*. Elastic subscriptions let you register an unlimited number servers. This is invaluable in auto-scaling environments, where servers are automatically created and destroyed in response to load. Note that to use elastic subscriptions, you must set the environment as elastic when you create it. Also note that LCS only uses elastic subscriptions for servers that exceed the number that the environment's subscription type allows. In other words, LCS uses the environment's regular subscriptions before any elastic subscriptions.

You can access these features from the *Subscriptions* tab on the upper-left of the LCS site. This tab contains two other tabs: *Details* and *Elastic Subscriptions*.

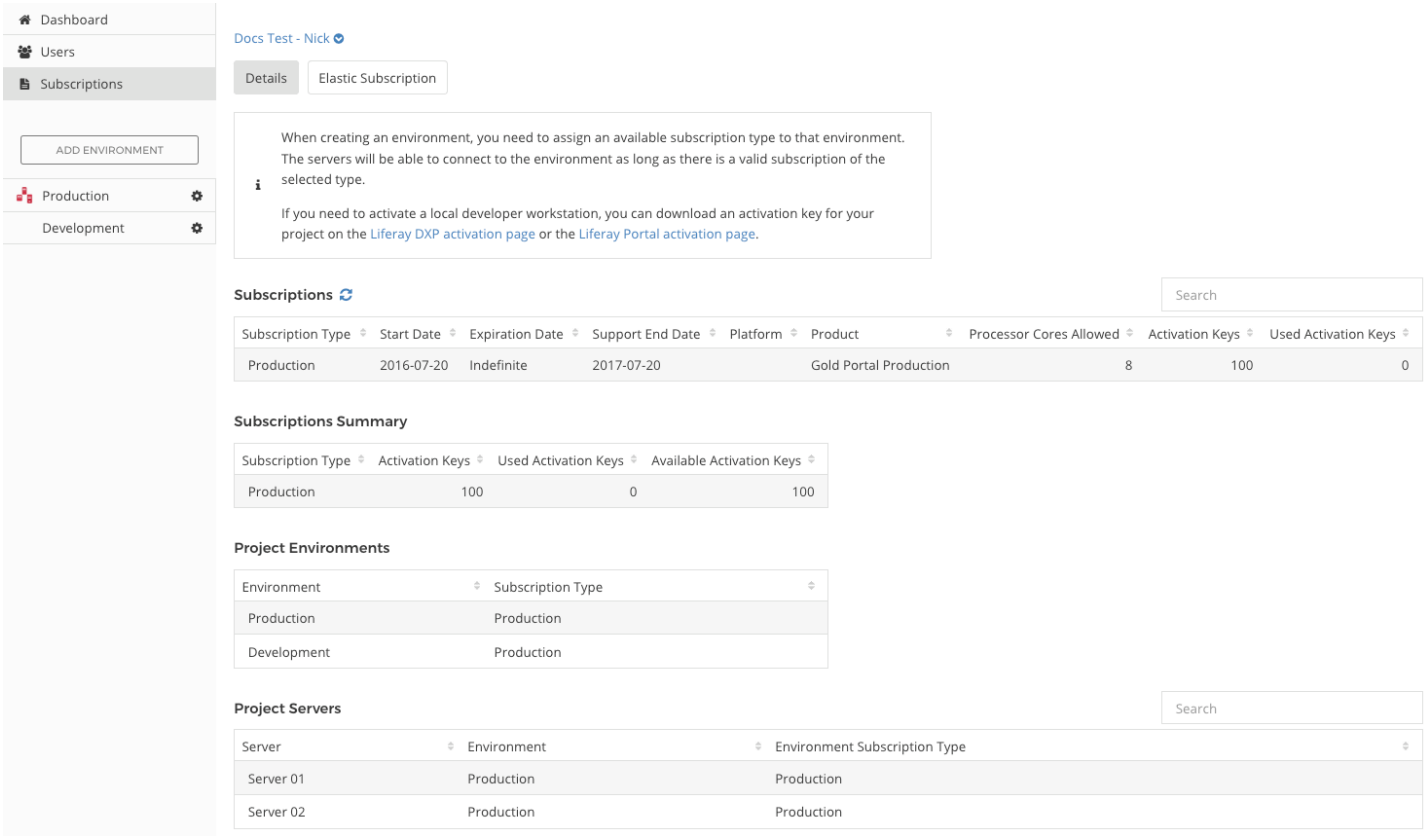


Figure 16: LCS lets you view and manage your subscriptions.

1. **Subscriptions:** Shows a list of the available subscriptions in your LCS project. For each subscription, this table shows the following information:

    - Subscription Type
    - Start Date
    - Expiration Date
    - Support End Date
    - Platform
    - Product
    - Processor Cores Allowed
    - Activation Keys
    - Used Activation Keys

    Note that *Processor Cores Allowed* shows the number of processor cores that the subscription allows for each server.

2. **Subscriptions Summary:** Shows how your subscriptions are currently used in your project. For each subscription type, this table shows the number of activation keys allowed, used, and available.

3. **Project Environments:** Shows your project's environments and their assigned subscription types. Each environment must have a subscription type.

4. **Project Servers:** Shows the environment and subscription type for each server in your LCS project.

If any of the information in these tables is missing or incorrect, contact Liferay Support.

Note: If you don't use LCS for activating your servers, then you can register as many servers as you want in LCS.

Note: If you try to activate a server that exceeds the number of processor cores that your subscription allows per server, the activation fails and the server is locked down. A console error also indicates the server's core count. You can compare this with your subscription's processor cores allowed in LCS's Subscriptions table. To activate the server, you can either reduce the number of cores it uses (e.g., by deploying to different server hardware, or reducing the number of virtual processors in a VM or container), or contact Liferay Sales to increase the number of processor cores that your subscription allows per server.

DECOMMISSIONING SERVERS

To decommission a server and free its activation key for reuse, select the server's environment on the left and then select the server. In the server's *Server Settings* tab, select *Unregister*. Also note that when you shut down a server normally, its activation key is immediately freed for reuse. If the server crashes or its shutdown is forced (e.g., kill), its activation key is freed for reuse within six minutes.

ELASTIC SUBSCRIPTIONS

Elastic subscriptions let you register an unlimited number of servers. This is crucial for auto-scaling environments where servers are created and destroyed automatically. You can view data on your elastic servers from the *Subscriptions* tab's *Elastic Subscriptions* tab.

Note: To register elastic servers in an environment, that environment must be set as elastic when it's created. For more information, see the documentation on creating environments.



Figure 17: The *Elastic Subscriptions* tab shows details about your project's elastic servers.

The *Elastic Subscriptions* tab displays the number of elastic servers online and the uptime details for each. A graph shows the number of elastic servers online each day, while a table lists each elastic server's start time, end time, and duration. The total duration for servers is below the table. To download a report of the table's data, click *Download Report*. Also, you can use the *Environment* and *Month* selectors above the graph to select the environment and month to show data from, respectively. The data in both the graph and the table reflect your selections here.

Understanding Environment Tokens

To register a server in an environment, you must use that environment's token file. LCS Administrators and Environment Managers can generate and distribute this file. It contains all the information the LCS client app needs to register the server in the environment. When the server starts up, it uses the token to connect to LCS. If

interaction required.

Note: For instructions on using and managing your environment tokens, see the instructions on registering your server with LCS.

There are a few things to keep in mind when using environment tokens:

- Each environment can have only one token file. If you regenerate the token, servers using the old file are disconnected from LCS and can't reconnect until receiving the new file. If the server disconnects due to token regeneration and is running version 4.0.2 or later of the LCS client app, the server enters a 30-day grace period during which it functions normally. This gives the administrator time to use the new token file to reconnect to LCS. Servers running earlier versions of the LCS client app present users with an error page until the administrator reconnects with the new token.

- Use caution when distributing the token file, as anyone can use it to connect to your environment (and consume an activation key in your subscription if you're using LCS for activation).

- Minimal information (server name, location, etc…) is used to register a server with LCS. You can change this information from the server view in LCS at any time.

- Environment tokens connect using OAuth. Using an environment token overrides the OAuth authorization cycle. If LCS Administrators or Environment Managers have never registered servers in LCS, the first time they do so an OAuth authorization entry is created in LCS. If they've previously registered servers in LCS, their existing credentials are used when they create a token file.

- If the credentials of the LCS user who generated the token become invalid, you must generate a new token and use it to reconnect to LCS. An LCS user's credentials become invalid if the user leaves the LCS project or becomes an LCS Environment Manager or LCS Environment Viewer in a different environment.

So why bother with environment tokens at all? Besides simplifying the LCS connection process, environment tokens are valuable in auto-scaling environments where algorithms create and destroy servers automatically. In this situation, having clients that activate and configure themselves is crucial.

Note: If your auto-scaling environment creates new server nodes from a server in a system image, that server can't require human interaction during setup. When creating such an image, you must change any portal property settings that prevent automatic setup. By default, Liferay DXP's setup wizard requires human interaction. You must therefore set the `setup.wizard.enabled` property to `false` if you want your auto-scaling environment to create new nodes from the server.

« Registering Your Liferay DXP Server with LCS Troubleshooting Your LCS Connection »

¿Fue útil este artículo?

Sí No

Usuarios a los que les pareció útil: 0 de 0

¿Necesitas más ayuda?

Abre un ticket

Contacta con nosotros

Pregunta en la Comunidad

Liferay University
Forma a tu equipo en los puntos esenciales del uso de Liferay con videos detallados y ejercicios prácticos diseñados para simular una formación presencial

Liferay Global Services
Aumenta tu conocimiento sobre el producto y el desarrollo gracias a expertos que te ayudarán a maximizar tu ROI

activación

Soporte de la cuenta

Preguntas frecuentes a soporte

© 2023 LIFERAY INC. ALL RIGHTS RESERVED