Installing, Configuring, and Running the Open edX Platform

Release

May 28, 2015

Contents

1 For Your Information **3**
- 1.1 Change Log . . . 3
- 1.2 Read Me . . . 3
- 1.3 Preface . . . 3
- 1.4 edX Browser Support . . . 9

2 Open edX Birch Release **11**
- 2.1 What's Included in Birch . . . 11
- 2.2 What is the Birch Git Tag? . . . 11
- 2.3 Installing the Birch Release . . . 12
- 2.4 Upgrading from Aspen to Birch . . . 13

3 Open edX Platform Installation Options **15**
- 3.1 Open edX Developer Stack . . . 15
- 3.2 Open edX Fullstack . . . 15

4 Installing the Open edX Developer Stack **17**
- 4.1 Overview . . . 17
- 4.2 Components . . . 17
- 4.3 Knowledge Prerequisites . . . 18
- 4.4 Software Prerequisites . . . 18
- 4.5 Install DevStack . . . 18
- 4.6 Install Devstack using the Torrent file . . . 19
- 4.7 Troubleshooting the Devstack Installation . . . 19

5 Running the Open edX Developer Stack **21**
- 5.1 Connect to the Devstack Virtual Machine . . . 21
- 5.2 Set Up Ability to Preview Units (Mac/Linux Only) . . . 21
- 5.3 Customize the Source Code Location . . . 22
- 5.4 Run the LMS on Devstack . . . 22
- 5.5 Run Studio on Devstack . . . 22
- 5.6 Run Discussion Forums on Devstack . . . 23
- 5.7 Default Accounts on Devstack . . . 23

6 Installing Open edX Fullstack **25**
- 6.1 Overview . . . 25
- 6.2 Components . . . 25
- 6.3 Knowledge Prerequisites . . . 26
- 6.4 Software Prerequisites . . . 26

6.5 Install Open edX Fullstack . . . 26
6.6 Browser Login to Open edX Fullstack . . . 26

7 Configuring the Open edX Platform **29**
7.1 Guidelines for Updating the edX Platform . . . 29
7.2 Add the Google Drive and Google Calendar XBlock . . . 29
7.3 Enable Course Prerequisites . . . 30
7.4 Enable Entrance Exams . . . 30
7.5 Enabling Course and Video Licensing . . . 31

8 Installing edX Insights **33**
8.1 Overview . . . 33
8.2 What You Should Know Before You Start . . . 35
8.3 Planning Your Deployment . . . 35
8.4 Example Deployments . . . 36

9 Setting up the edX Mobile Applications **39**
9.1 Code . . . 39
9.2 Authentication . . . 39
9.3 Video . . . 40

10 Glossary **41**
10.1 A . . . 41
10.2 C . . . 41
10.3 D . . . 43
10.4 E . . . 44
10.5 F . . . 44
10.6 G . . . 44
10.7 H . . . 44
10.8 I . . . 45
10.9 K . . . 45
10.10 L . . . 45
10.11 M . . . 46
10.12 N . . . 46
10.13 O . . . 47
10.14 P . . . 47
10.15 Q . . . 47
10.16 R . . . 47
10.17 S . . . 48
10.18 T . . . 48
10.19 U . . . 48
10.20 V . . . 49
10.21 W . . . 49
10.22 XYZ . . . 49

Installing, Configuring, and Running the Open edX Platform provides instructions for using your own instance of the Open edX Platform and associated applications.

This document applies to the most recent version of the Open edX Platform; that is, it applies to the *master* branch of the edX Platform.

This document also contains instructions for instaling named releases of Open edX. The most recent named release of Open edX is *Birch*.

CHAPTER 1

For Your Information

1.1 Change Log

Date	Change
28 May 2015	Added *Enabling Course and Video Licensing*.
2 March 2015	Updated the *Preface* to include information about the *The edX Partner Portal* and the *The Open edX Portal*.
24 February 2015	Updated for the *Open edX Birch Release*.
	Added the section *Configuring the Open edX Platform*.
20 January 2015	Added the section *Installing edX Insights*
14 January 2015	Addition of the section *Setting up the edX Mobile Applications*
7 June 2014	Addition of the section *Installing Open edX Fullstack*
21 May 2014	The initial release of this guide, with the sections *Installing the Open edX Developer Stack* and *Running the Open edX Developer Stack*.

1.2 Read Me

The *Installing and Configuring the Open edX Platform* documentation is created using RST files and Sphinx. As a member of the community, you can help update and revise this documentation project on GitHub:

https://github.com/edx/edx- documentation/tree/master/en_us/install_operations/source

To suggest a revision, follow the GitHub Flow: fork the project, make changes in your fork, and submit a pull request back to the original project.

1.3 Preface

Course teams, researchers, developers, students: the edX community includes groups with a range of reasons for using the platform and objectives to accomplish. To help members of each group learn about what edX offers, reach goals, and solve problems, edX provides a variety of information resources.

To help you find what you need, browse the edX offerings in these categories:

- *The edX Partner Portal*

- *The Open edX Portal*
- *Release Announcements through the Open edX Portal*
- *Resources for Course Teams*
- *Resources for Researchers*
- *Resources for Developers*
- *Resources for Open edX*
- *Resources for Students*

All members of the edX community are encouraged to make use of any of the resources described in this preface. We welcome your feedback on these edX information resources. Contact the edX documentation team at docs@edx.org.

1.3.1 The edX Partner Portal

The edX Partner Portal is the destination for partners to learn, connect, and collaborate with one another. Partners can explore rich resources and share success stories and best practices while staying up-to-date with important news and updates.

To use the edX Partner Portal, you must register and request verification as an edX partner. If you are an edX partner and have not used the edX Partner Portal, follow these steps.

1. Visit partners.edx.org, and select **Create New Account**.
2. Select **Request Partner Access**, then fill in your personal details.
3. Select **Create New Account**. You will receive a confirmation email with your account access within 24 hours.

1.3.2 The Open edX Portal

The Open edX Portal is the destination for all edX users to learn about the edX roadmap, as well as hosting, extending the edX platform, and contributing to Open edX. In addition, the Open edX Portal provides product announcements, the Open edX blog, and other rich community resources.

All users can view content on the Open edX Portal without creating an account and logging in.

To comment on blog posts or the edX roadmap, you must create an account and log in. If you do not have an account, follow these steps.

1. Visit open.edx.org/user/register.
2. Fill in your personal details.
3. Select **Create New Account**. You are then logged in to the Open edX Portal.

1.3.3 Release Announcements through the Open edX Portal

To receive and share product and release announcements by email, subscribe to announcements on the Open edX Portal.

1. Create an account on the Open edX Portal as described above.
2. Go to https://open.edx.org/announcements.
3. Under **Announcement Type** in the **Subscriptions** block, select the type of announcements that you want to receive through email.

4. Click **Save**.

You will now receive email messages when new announcements of the types you selected are posted.

Note: EdX partners can complete the same steps on the **Announcements** page in the edX Partner Portal.

1.3.4 System Status

For system-related notifications from the edX operations team, including outages and the status of error reports. On Twitter, you can follow @edxstatus.

Current system status and the uptime percentages for edX servers, along with the Twitter feed, are published on the edX Status web page.

1.3.5 Resources for Course Teams

Course teams include faculty, instructional designers, course staff, discussion moderators, and others who contribute to the creation and delivery of courses on edx.org or edX Edge.

edX101: Overview of Creating a Course

The edX101 course was built in Studio and is available for enrollment on edx.org. This course takes one to two hours to complete, and is designed to provide a high-level overview of the course creation and delivery process. It also highlights the extensive capabilities of the edX platform.

Documentation

Documentation for course teams is available on the docs.edx.org web page.

- Building and Running an edX Course is a comprehensive guide with concepts and procedures to help you build a course in edX Studio, and then use the Learning Management System (LMS) to run a course.

  When you are working in edX Studio, you can access relevant sections of this guide by clicking **Help** on any page.

- Using edX Insights describes the metrics, visualizations, and downloadable .csv files that course teams can use to gain information about student background and activity.

- edX Course Staff Release Notes summarize the changes in each new version of the edX Studio and LMS software.

- Creating a Peer Assessment describes features for students to provide peer- and self- evaluations of responses to a question. Note that this new feature is in limited release.

- edX Open Learning XML Guide provides guidelines for building edX courses with Open Learning XML (OLX). Note that this guide is currently an alpha version.

These guides open in your web browser. The left side of each page includes a **Search docs** field and links to that guide's contents. To open or save a PDF version, click **v: latest** at the lower right of the page, then click **PDF**.

Note: If you use the Safari browser, be aware that it does not support the search feature for the edX documentation. This is a known limitation.

Email

To receive and share information by email, course team members can:

- Sign up to receive monthly newsletters.
- Sign up to receive release notes for every release.
- Join the openedx-studio Google group to ask questions and participate in discussions with peers at other edX partner organizations and edX staffers.

Wikis and Web Sites

The edX product team maintains the Open edX Product wiki, which includes the Open edX Public Product Roadmap.

The edX Author Support site hosts discussions that are monitored by edX staffers.

1.3.6 Resources for Researchers

Data for the courses on edx.org and edX Edge is available to the "data czars" at our partner institutions, and then used by database experts, statisticians, educational investigators, and others for educational research.

Documentation

The edX Research Guide is available on the docs.edx.org web page.

This guide opens in your web browser, with a **Search docs** field and links to that guide's contents on the left side of each page. To open or save a PDF version, click **v: latest** at the lower right of the page, and then click **PDF**.

Note: If you use the Safari browser, be aware that it does not support the search feature for the edX documentation. This is a known limitation.

Email

To receive and share information by email, researchers can join the openedx-analytics Google group to ask questions and participate in discussions with peers at other edX partner organizations and edX staffers.

Wikis

The edX Analytics team maintains the Open edX Analytics wiki, which includes links to periodic release notes, the Open edX Public Product Roadmap, and other resources for researchers.

The edx-tools wiki lists publicly shared tools for working with the edX platform, including scripts for data analysis and reporting.

1.3.7 Resources for Developers

Software engineers, system administrators, and translators work on extending and localizing the code for the edX platform.

Documentation

Documentation for developers is available on the docs.edx.org web page.

- The edX Platform Developer's Guide collects information directly from edX platform python docstrings. The topics in this guide include guidelines for contributing to Open edX, options for extending the Open edX platform, using the edX public sandboxes, instrumenting analytics, and testing.
- Installing, Configuring, and Running the edX Platform provides procedures for getting an edX developer stack (Devstack) and production stack (Fullstack) operational.
- XBlock: Open edX courseware components provides preliminary documentation on the XBlock component architecture for building courses.
- edX Open Learning XML Guide provides guidelines for building edX courses with Open Learning XML (OLX). Note that this guide is currently an alpha version.
- edX Data Analytics API provides tools for building applications to view and analyze student activity in your course.
- edX Enrollment API provides tools for building applications to view user and course enrollment information, and to enroll users in courses.
- edX Platform API provides tools for building applications to view course information and videos.

Note: If you use the Safari browser, be aware that it does not support the search feature for the edX documentation. This is a known limitation.

GitHub

These are the main edX repositories on GitHub.

- The edx/edx-platform repo contains the code for the edX platform.
- The edx/edx-analytics-dashboard repo contains the code for edX Insights.
- The edx/configuration repo contains scripts to set up and operate the edX platform.

Additional repositories are used for other projects. Our contributor agreement, contributor guidelines and coding conventions, and other resources are available in these repositories.

Email and IRC

To receive and share information by email, developers can join these Google groups to ask questions and participate in discussions with peers and edX staffers.

- For conversations about the code in Open edX, join edx-code.
- For conversations about running Open edX, join openedx-ops.
- For conversations about globalization and translation, join openedx-translation.

Additional Google groups are occasionally formed for individual projects.

Note: Please do not report security issues in public. If you have a concern, please email security@edx.org.

EdX engineers often monitor the Freenode #edx-code IRC channel.

Wikis and Web Sites

The code.edx.org web site is an entry point for new contributors.

The edX Engineering team maintains the Open Source Home wiki, which provides insights into the plans, projects, and questions that the edX Open Source team is working on with the community.

The pull request dashboard is a visualization of the count and age of the pull requests (PRs) assigned to teams at edX. Click the bars in this chart to get more information about the PRs.

The edx-tools wiki lists publicly shared tools for working with the edX platform, including scripts and helper utilities.

1.3.8 Resources for Open edX

Hosting providers, platform exenders, core contributors, and course staff all use Open edX. Starting with the Birch release of Open edX, the following release-specific documentation is available on docs.edx.org.

- Open edX Release Notes provides information on changes in Open edX releases.
- Installing, Configuring, and Running the edX Platform provides procedures for getting Devstack and Fullstack installed and operational.
- Building and Running an Open edX Course is a comprehensive guide with concepts and procedures to help you build a course in Studio, and then use the Learning Management System (LMS) to run a course.

  When you are working in Studio, you can access relevant sections of this guide by clicking **Help** on any page.

Note: If you use the Safari browser, be aware that it does not support the search feature for the edX documentation. This is a known limitation.

1.3.9 Resources for Students

Documentation

The edX Guide for Students is available on the docs.edx.org web page. Because students are currently only guided to this resource through the courseware, we encourage course staff to provide links to students as needed in course updates or discussions.

In a Course

All edX courses have a discussion forum where you can ask questions and interact with other students and with the course team: click **Discussion**. Many courses also offer a wiki for additional resources and materials: click **Wiki**.

Other resources might also be available, such as a course-specific Facebook page or Twitter feed, or opportunities for Google Hangouts. Be sure to check the **Course Info** page for your course as well as the **Discussion** and **Wiki** pages.

From time to time, the course team might send email messages to all students. While you can opt out of these messages, doing so means that you can miss important or time-sensitive information. To change your preferences for course email, click **edX** or **edX edge** at the top of any page. On your dashboard of current courses, locate the course and then click **Email Settings**.

From edX

To help you get started with the edX learning experience, edX offers a course (of course!). You can find the edX Demo course on the edX web site. EdX also maintains a list of frequently asked questions and answers.

If you still have questions or suggestions, you can get help from the edX support team: click **Contact** at the bottom of any edX web page or send an email message to info@edx.org.

For opportunities to meet others who are interested in edX courses, check the edX Global Community meetup group.

1.4 edX Browser Support

The edX Platform runs on the following browsers.

- Chrome
- Safari
- Firefox
- Internet Explorer

Note: If you use the Safari browser, be aware that it does not support the search feature for the edX documentation. This is a known limitation.

The edX Platform is routinely tested and verified on the current and previous version of each of these browsers. We generally encourage the use of and fully support only the latest version.

This information is updated as new major operating system and browser versions are released. All point releases are supported unless noted; occasional exceptions are based on specific bug fixes or feature updates.

1.4.1 edX Learning Management System

The following table shows operating system and browser support for the edX learning management system (LMS), which learners and course teams use to interact with course content.

	Chrome	Safari	Firefox	IE 11	IE 10
Windows 8	Yes	N/A	Yes	Yes	Yes
Mac OSX Mavericks or Yosemite	Yes	Yes	Yes	N/A	N/A

For more information about the LMS, see Building and Running an edX Course.

1.4.2 edX Studio

The following table shows operating system and browser support for edX Studio, which course teams use to build a course.

	Chrome	Safari	Firefox	IE 11	IE 10
Windows 8	Yes	N/A	Yes	Provisional	Provisional
Mac OSX Mavericks or Yosemite	Yes	Yes	Yes	N/A	N/A

For more information about Studio, see Building and Running an edX Course.

1.4.3 edX Insights

The following table shows operating system and browser support for edX Insights, which course teams use to review and download data about their courses and learners.

	Chrome	Safari	Firefox	IE 11	IE 10
Windows 8	Yes	N/A	Yes	Provisional	Provisional
Mac OSX Mavericks or Yosemite	Yes	Yes	Yes	N/A	N/A

For more information about edX Insights, see Using edX Insights.

CHAPTER 2

Open edX Birch Release

Chapter Contents:

- *Open edX Birch Release*
  - *What's Included in Birch*
  - *What is the Birch Git Tag?*
  - *Installing the Birch Release*
    - *Download the Vagrant Box*
    - *Download the BitTorrent File*
    - *Set the OPENEDX_RELEASE Environment Variable*
    - *Install the Vagrant Box*
  - *Upgrading from Aspen to Birch*

2.1 What's Included in Birch

The Open edX Birch release contains several new features for students, course staff, and developers. See the Open edX Release Notes for more details.

Note: There are several new features in the Birch release that are available, but not configured in new installations. For details, see the following topics.

- *Add the Google Drive and Google Calendar XBlock*.
- *Enable Course Prerequisites*
- *Enable Entrance Exams*

2.2 What is the Birch Git Tag?

The Git tag for the Birch release is **named-release/birch**. You use this tag to identify the version of Open edX code that is the Birch release.

The following Open edX Git repositories have the Git tag **named- release/birch**:

- edx-platform
- configuration

- cs_comments_service
- notifier
- edx-certificates
- xqueue
- edx-documentation
- edx-ora2
- XBlock

2.3 Installing the Birch Release

You can install the Open edX Birch release using *Devstack* or *Fullstack*.

Review the prerequisites and instructions for each option, then choose the option that best meets your needs. Ensure you install the required software to run the edX Platform.

If you are upgrading from the Aspen release, see *Upgrading from Aspen to Birch*.

For new installations, follow the steps below.

1. *Download the Vagrant Box* or *Download the BitTorrent File*.

   Caution: The Vagrant boxes have a large file size (about 2.5GB). If you have a slow or unreliable Internet connection, use BitTorrent to download the Vagrant box you need.

2. *Set the OPENEDX_RELEASE Environment Variable*.
3. *Install the Vagrant Box*.

2.3.1 Download the Vagrant Box

If you have a fast and reliable Internet connection, you can download the Vagrant box directly or by running `vagrant up` when installing *Devstack* or *Fullstack*.

Use one of the following links to download the box directly.

- Birch Devstack
- Birch Fullstack

See Vagrant's documentation on boxes for more information.

2.3.2 Download the BitTorrent File

You can also download the BitTorrent file for the option you selected. BitTorrent is recommended if you have a slow or unreliable data connection. You then use the BitTorrent file to download the Vagrant box. If the Internet connection is temporarily lost while you are downloading the Vagrant box through BitTorrent, you can later continue the download without data loss or corruption.

- Birch Devstack BitTorrent
- Birch Fullstack BitTorrent

See BitTorrent for more information.

If you download the Vagrant box through BitTorrent, you must add the box to Vagrant before continuing with the installation process.

- For Devstack installations, run the following command.

```
$ vagrant box add /path-to-downloaded-box/vagrant-images-20150224-birch-
devstack.box --name birch-devstack
```

- For Fullstack installations, run the following command.

```
$ vagrant box add /path-to-downloaded-box/vagrant-images-20150224-birch-
fullstack.box --name birch-fullstack
```

2.3.3 Set the OPENEDX_RELEASE Environment Variable

Before installing the Vagrant box, you must set the value of the *OPENEDX_RELEASE* environment variable to the Git tag for the Birch release:

```
export OPENEDX_RELEASE="named-release/birch"
```

2.3.4 Install the Vagrant Box

When you have completed the previous steps, install the Birch release by following the installation instructions for *Devstack* or *Fullstack*.

2.4 Upgrading from Aspen to Birch

You can upgrade your Open edX instance that is running the Aspen release to the Birch release, using the `migrate.sh` script in the configuration repository, available here.

Note: The upgrade scripts provided are verified only for upgrading instances running the Aspen release. If you are running any other version of the Open edX Platform, the upgrade scripts might not work.

Caution: Before upgrading your Open edX instance, back up all data and configuration files. Then verify that you can restore your Open edX instance from the backup files.

On the computer or virtual machine running the Aspen release of Open edX, run the upgrade script for your type of installation:

- For Devstack, run `./migrate.sh -c devstack`.
- For Fullstack, run `./migrate.sh -c fullstack`.
- You can also run `./migrate.sh -h` to see which other options the script accepts.

The script creates a temporary directory in which it upgrades Open edX, then cleans up extra files and directories when it finishes running.

After upgrading Open edX to the Birch release, run the edX Platform and verify that course content and data was migrated correctly.

CHAPTER 3

Open edX Platform Installation Options

Chapter Contents:

- *Open edX Platform Installation Options*
  - *Open edX Developer Stack*
  - *Open edX Fullstack*
    - *Ubuntu 12.04 64*

3.1 Open edX Developer Stack

The Open edX Developer Stack, known as **Devstack**, is a Vagrant instance designed for local development.

Devstack is in the edx configuration repository on GitHub.

This guide includes the following sections about Devstack:

- *Installing the Open edX Developer Stack*
- *Running the Open edX Developer Stack*

Additional sections are planned for future versions of this guide.

See the edx configuration repository wiki for information from edX and the Open edX community about Devstack and other installation and configuration options. This wiki contains two pages with more information about Devstack.

- Devstack
- Developing on Devstack

3.2 Open edX Fullstack

Open edX Fullstack, known as **Fullstack**, is a Vagrant instance designed for deploying all edX services on a single server.

Fullstack is in the edx configuration repository on GitHub.

This guide includes *Installing Open edX Fullstack*.

See the edx configuration repository wiki for information from edX and the Open edX community on Fullstack and other installation and configuration options.

3.2.1 Ubuntu 12.04 64

You can install Fullstack on a single Ubuntu 12.04 64-bit server.

Ubuntu information is planned for future versions of this guide.

See the edx configuration repository wiki for information from edX and the Open edX community about Ubuntu and other installation and configuration options.

CHAPTER 4

Installing the Open edX Developer Stack

This chapter is intended for those who are installing and running the Open edX Developer Stack.

Chapter Contents:

- *Installing the Open edX Developer Stack*
  - *Overview*
  - *Components*
  - *Knowledge Prerequisites*
  - *Software Prerequisites*
  - *Install DevStack*
  - *Install Devstack using the Torrent file*
  - *Troubleshooting the Devstack Installation*

4.1 Overview

The Open edX Developer Stack, known as **Devstack**, is a Vagrant instance designed for local development.

Devstack Uses the same system requirements as *Open edX Fullstack*. This allows you to discover and fix system configuration issues early in development.

Devstack Simplifies certain production settings to make development more convenient. For example, nginx and gunicorn are disabled in Devstack; Devstack uses Django's runserver instead.

See the Vagrant documentation for more information.

4.2 Components

Devstack includes the following edX components:

- The Learning Management System (LMS)
- edX Studio
- Discussion Forums
- Open Response Assessments (ORA)

Devstack also includes a demo edX course.

4.3 Knowledge Prerequisites

To use Devstack, you should meeting the following knowledge requirements.

- Understand basic terminal usage. If you are using a Mac computer, see Introduction to the Mac OS X Command Line. If you are using a Windows computer, see Windows Command Line Reference.
- Understand Vagrant commands. See the Vagrant Getting Started guide for more information.

4.4 Software Prerequisites

To install and run Devstack, you must first install the following required software.

- VirtualBox 4.3.12 or higher
- Vagrant 1.6.5 or higher
- A Network File System (NFS) client, if your operating system does not include one. Devstack uses VirtualBox Guest Editions to share folders through NFS.

4.5 Install DevStack

To install Devstack directly from the command line, follow the instructions below. You can also install DevStack using a Torrent file, as explained in the next section.

Before beginning the installation, ensure that you have the administrator password for your local computer. The administrator password is needed so that NFS can be set up to allow users to access code directories directly from your computer.

1. Ensure the `nfsd` client is running.
2. Create the `devstack` directory and navigate to it in the command prompt.

```
mkdir devstack
cd devstack
```

3. Download the Devstack Vagrant file.

```
curl -L https://raw.github.com/edx/configuration/master/vagrant/release/devstack/Vagrantfile > V
```

4. Install the Vagrant `vbguest` plugin.

```
vagrant plugin install vagrant-vbguest
```

5. Create the Devstack virtual machine.

```
vagrant up
```

   The first time you create the Devstack virtual machine, Vagrant downloads the base box, which has a file size of about 4GB. If you destroy and recreate the virtual machine, Vagrant re-uses the box it downloaded. See Vagrant's documentation on boxes for more information.

6. When prompted, enter the administrator password for your local computer.

When you have completed these steps, see *Running the Open edX Developer Stack* to begin using Devstack.

For help with the Devstack installation, see *Troubleshooting the Devstack Installation*.

4.6 Install Devstack using the Torrent file

1. Download the Devstack Torrent file.
2. When you have the file on your computer, add the virtual machine using the following command.

```
vagrant box add box-name path-to-box-file
```

4.7 Troubleshooting the Devstack Installation

In some cases, you see an error when you attempt to create the Devstack virtual machine (`vagrant up`). For example:

```
mount.nfs:  mount to NFS server '192.168.33.1:/path/to/edx-platform' failed:
timed out, giving up
```

This error situation arises because Vagrant uses a host-only network in Virtualbox to communicate with your computer. If a network does not exist, one is created on `vagrant up`. If this network is created with the VPN up, it will not work. You must recreate the network with the VPN down.

To resolve the error, follow these steps.

1. Stop the VPN.
2. Type `vagrant halt`.
3. Open Virtualbox.
4. Navigate to **Preferences > Network > Host-only Networks** and remove the most-recently-created host-only network.
5. Type `vagrant up`.

CHAPTER 5

Running the Open edX Developer Stack

Chapter Contents:

- *Running the Open edX Developer Stack*
  - *Connect to the Devstack Virtual Machine*
  - *Set Up Ability to Preview Units (Mac/Linux Only)*
  - *Customize the Source Code Location*
  - *Run the LMS on Devstack*
  - *Run Studio on Devstack*
    - *View Available Studio Commands*
  - *Run Discussion Forums on Devstack*
  - *Default Accounts on Devstack*

5.1 Connect to the Devstack Virtual Machine

1. To connect to the Devstack virtual machine, use the SSH command from the *devstack* directory.

```
vagrant ssh
```

2. To use Devstack and perform any of the tasks described in this section, you must connect as the user **edxapp**.

```
sudo su edxapp
```

   This command loads the edxapp environment from the file `/edx/app/edxapp/edxapp_env`. This puts `venv python` and `rbenv ruby` in your search path.

   This command also sets the current working directory to the edx-platform repository (`/edx/app/edxapp/edx-platform`).

5.2 Set Up Ability to Preview Units (Mac/Linux Only)

If you are installing Devstack on a Linux or Macintosh computer, in order to use the preview feature in edX Studio, you must add the following line to the `etc/hosts` file.

```
192.168.33.10 preview.localhost
```

5.3 Customize the Source Code Location

You can customize the location of the edX source code that gets cloned when you provision Devstack. You may want to do this to have Devstack work with source code that already exists on your computer.

By default, the source code location is the directory in which you run `vagrant up`. To change this location, set the `VAGRANT_MOUNT_BASE` environment variable to set the base directory for the edx-platform and cs_comments_service source code directories.

5.4 Run the LMS on Devstack

When you run the LMS on Devstack, the command updates requirements and compiles assets, unless you use the `fast` option.

The command uses the file `lms/envs/devstack.py`. This file overrides production settings for the LMS.

To run the LMS on Devstack, follow these steps.

1. *Connect to the Devstack Virtual Machine*.
2. Run the following command.

```
paver devstack lms
```

   Or, to start the LMS without updating requirements and compiling assets, use the `fast` option.

```
paver devstack lms --fast
```

   The LMS starts.

3. Open the LMS in your browser at `http://localhost:8000/`.

   Vagrant forwards port 8000 to the LMS server running in the virtual machine.

5.5 Run Studio on Devstack

When you run Studio on Devstack, the command updates requirements and compiles assets, unless you use the `fast` option.

You run Studio on Devstack with the file `cms/envs/devstack.py`. This file overrides production settings for Studio.

To run Studio on Devstack:

1. *Connect to the Devstack Virtual Machine*.
2. Run the following command/

```
paver devstack studio
```

   Or, to start Studio without updating requirements and compiling assets, use the `fast` option.

```
paver devstack studio --fast
```

   Studio starts.

3. Open Studio in your browser at `http://localhost:8001/`.

   Vagrant forwards port 8001 to the Studio server running in the virtual machine.

5.5.1 View Available Studio Commands

To view all available commands for Studio, enter the following command.

```
./manage.py cms -h --settings=devstack
```

5.6 Run Discussion Forums on Devstack

To run discussion forums on Devstack:

1. *Connect to the Devstack Virtual Machine*.
2. Switch to the discussion forum account by entering the following command.

```
sudo su forum
```

3. Update Ruby requirements.

```
bundle install
```

> **Note:** If you get a message for entering a password to install the bundled RubyGems to the system, you can safely exit by entering `control+c` on a Macintosh or `Ctrl+C` on Windows. The RubyGems will still be installed correctly for the forum user.

4. Start the discussion forums server.

```
ruby app.rb -p 18080
```

The discussions forum server starts. You can access the discussion forums API at `http://localhost:18080/`.

5.7 Default Accounts on Devstack

When you install Devstack, the following accounts are created.

Account	Description
staff@example.com	An LMS and Studio user with course creation and editing permissions. This user is a course staff member with rights to work with the demonstration course in Studio.
verified@example.com	A student account that you can use to access the LMS for testing verified certificates.
audit@example.com	A student account that you can use the access the LMS for testing course auditing.
honor@example.com	A student account that you can use the access the LMS for testing honor code certificates.

The password for all of these accounts is `edx`.

CHAPTER 6

Installing Open edX Fullstack

This chapter is intended for those who are installing and running Open edX Fullstack.

Chapter Contents:

- *Installing Open edX Fullstack*
  - *Overview*
  - *Components*
  - *Knowledge Prerequisites*
  - *Software Prerequisites*
  - *Install Open edX Fullstack*
  - *Browser Login to Open edX Fullstack*

6.1 Overview

Open edX Fullstack is a Vagrant instance designed for deploying all Open edX services on a single server.

See the Vagrant documentation for more information.

6.2 Components

Open edX Fullstack includes the following edX components.

- The Learning Management System (LMS)
- edX Studio
- XQueue, the queuing server that uses RabbitMQ for external graders
- Discussion Forums
- Open Response Assessor (ORA)
- Discern, the machine-learning-based automated textual classification API service.
- Ease, a library for the classification of textual content.

6.3 Knowledge Prerequisites

To use Fullstack, you should meeting the following knowledge requirements.

- Understand basic terminal usage. If you are using a Mac computer, see Introduction to the Mac OS X Command Line. If you are using a Windows computer, see Windows Command Line Reference.
- Understand Vagrant commands. See the Vagrant Getting Started guide for more information.

6.4 Software Prerequisites

To install and run Open edX Fullstack, you must first install the following software.

- VirtualBox 4.3.12 or higher
- Vagrant 1.6.5 or higher
- A Network File System (NFS) client, if your operating system does not include one. Fullstack uses VirtualBox Guest Editions to share folders through NFS.

6.5 Install Open edX Fullstack

To install Open edX Fullstack directly from the command line, follow the instructions below.

Before beginning the installation, ensure that you have your local computer's administrator's password. The password is needed so that NFS can be set up to allow users to access code directories directly from your computer.

1. Ensure the `nfsd` client is running.
2. Create the `fullstack` directory and navigate to it in the command prompt.

```
mkdir fullstack
cd fullstack
```

3. Download the fullstack Vagrant file.

```
curl -L https://raw.githubusercontent.com/edx/configuration/master/vagrant/release/fullstack/Vag
```

4. Install the Vagrant `hostsupdater` plugin.

```
vagrant plugin install vagrant-hostsupdater
```

5. Create the Fullstack virtual machine.

```
vagrant up
```

   The first time you create the Fullstack virtual machine, Vagrant downloads the base box, which has a file size of about 4GB. If you destroy and recreate the virtual machine, Vagrant re-uses the box it downloaded. See Vagrant's documentation on boxes for more information.

6. When prompted, enter administrator password for your local computer.

6.6 Browser Login to Open edX Fullstack

1. In your browser, go to Go to `preview.localhost`, which is an alias entry for 192.168.33.10 that was created in your `/etc/hosts` file.

The latest version of fullstack has the demo course pre-loaded and dummy accounts, you can log in to the website as:

- staff@example.com / edx
- verified@example.com / edx
- audit@example.com / edx
- honor@example.com / edx

CHAPTER 7

Configuring the Open edX Platform

Read the following chapters for information on Open edX Platform configuration options.

7.1 Guidelines for Updating the edX Platform

When you update the edX Platform, you should not change configuration files on a running server. Doing so can result in unpredictable problems.

If you need to change settings on a running server, take the following steps.

1. Provision a new server that matches the running server.
2. Make configuration changes on the new server.
3. Start the new server.
4. Reroute traffic from the old server to the new server.
5. Decommission the old server.

7.2 Add the Google Drive and Google Calendar XBlock

In the Open edX Birch release, course staff can embed Google calendars and Google Drive files in courseware.

To enable this feature on your instance of Open edX, you install the Google Drive XBlock.

For information about using Google calendars and Google Drive files in courses, see the *Building and Running an Open edX Course* guide.

Note: Before proceeding, review *Guidelines for Updating the edX Platform*.

To install the Google Drive XBlock, follow these steps.

1. In the edX Platform installation directory, edit the file `requirements/edx/github.txt`
2. Add a line to include the XBlock utilities.

```
git+https://github.com/edx-solutions/xblock-
utils.git@349d6e05dbd553e1f18d3ad1f7ca02c0497f39d7#egg=xblock-utils
```

3. Add a line to add the Google Drive XBlock.

```
git+https://github.com/edx-solutions/xblock-google-drive.
git@138e6fa0bf3a2013e904a085b9fed77dab7f3f21#egg=xblock-google-drive
```

4. Save the `requirements/edx/github.txt` file.

After you configure the edX Platform, to use Google Drive files or a Google Calendar in a course, you must add the XBlock to the advanced settings for the course. See the following documentation:

- Enable Google Drive Files in edX Studio
- Enable Google Calendars in the Course

7.3 Enable Course Prerequisites

In the Open edX Birch release, a new feature allows course staff to set prerequisites for a course. Learners must complete the prerequisite courses before participating in the course.

To use this feature on your instance of Open edX, you must configure the Milestones application, then enable prerequisites in Studio and the Learning Management System.

For information about prerequisites, see the *Building and Running an Open edX Course* and *Open edX Learner's* guides.

Note: Before proceeding, review *Guidelines for Updating the edX Platform*.

7.3.1 Configure the Milestones Application

1. Set the value of `MILESTONES_APP` in the `/cms/envs/common.py` and `/lms/envs/common.py` files to `True`.

```
# Milestones application flag
'MILESTONES_APP': True,
```

2. Save the `/cms/envs/common.py` and `/lms/envs/common.py` files.
3. Run database migrations.

7.3.2 Enable Prerequisite Courses in Studio and the Learning Management System

1. Set the value of `ENABLE_PREREQUISITE_COURSES` in the `/cms/envs/common.py` and `/lms/envs/common.py` files to `True`.

```
# Prerequisite courses feature flag
'ENABLE_PREREQUISITE_COURSES': True,
```

2. Save the the `/cms/envs/common.py` and `/lms/envs/common.py` files.

7.4 Enable Entrance Exams

In the Open edX Birch release, a new feature allows course staff to create an entrance exam for the course. Learners must pass the entrance exam before participating in the course.

To enable this feature on your instance of Open edX, you must enable entrance exams in Studio and the Learning Management System.

For information about entrance exams, see the *Building and Running an Open edX Course* and *Open edX Learner's* guides.

Note: Before proceeding, review *Guidelines for Updating the edX Platform*.

7.4.1 Configure the Milestones Application

1. Set the value of `MILESTONES_APP` in the `/cms/envs/common.py` and `/lms/envs/common.py` files to `True`.

```
# Milestones application flag
'MILESTONES_APP': True,
```

2. Save the `/cms/envs/common.py` and `/lms/envs/common.py` files.
3. Run database migrations.

7.4.2 Enable Entrance Exams in Studio and the Learning Management System

1. Set the value of `ENTRANCE_EXAMS` in the `/cms/envs/common.py` and `/lms/envs/common.py` files to `True`.

```
# Entrance exams feature flag
'ENTRANCE_EXAMS': True,
```

2. Save the `/cms/envs/common.py` and `/lms/envs/common.py` files.

7.5 Enabling Course and Video Licensing

Course staff can specify licensing options for course content as well as for each video in a course.

Course staff can select one of the following license options.

- All Rights Reserved
- Creative Commons

By specifying the license, course staff communicate to learners whether and how they can reuse course content.

To enable this feature on your instance of Open edX, you must enable licensing in both Studio and the Learning Management System.

Note: Before proceeding, review *Guidelines for Updating the edX Platform*.

7.5.1 Enable Licensing in Studio

1. In the edX Platform installation directory, edit the file `/cms/envs/common.py`
2. In the `FEATURES` dictionary, add `'LICENSING':True`:

```
FEATURES = {
    'LICENSING': True,
    . . .
```

3. Save the `/cms/envs/common.py` file.

7.5.2 Enable Licensing in the Learning Management System

1. In the edX Platform installation directory, edit the file `/lms/envs/common.py`
2. In the `FEATURES` dictionary, add `'LICENSING':True`:

```
FEATURES = {
    'LICENSING': True,
    . . .
```

3. Save the `/lms/envs/common.py` file.

CHAPTER 8

Installing edX Insights

This chapter is intended for those who are interested in running edX Insights and its dependencies in a production environment. Work to prepare complete installation procedures for edX Insights is in progress. Introductory material is available now.

Chapter Contents:

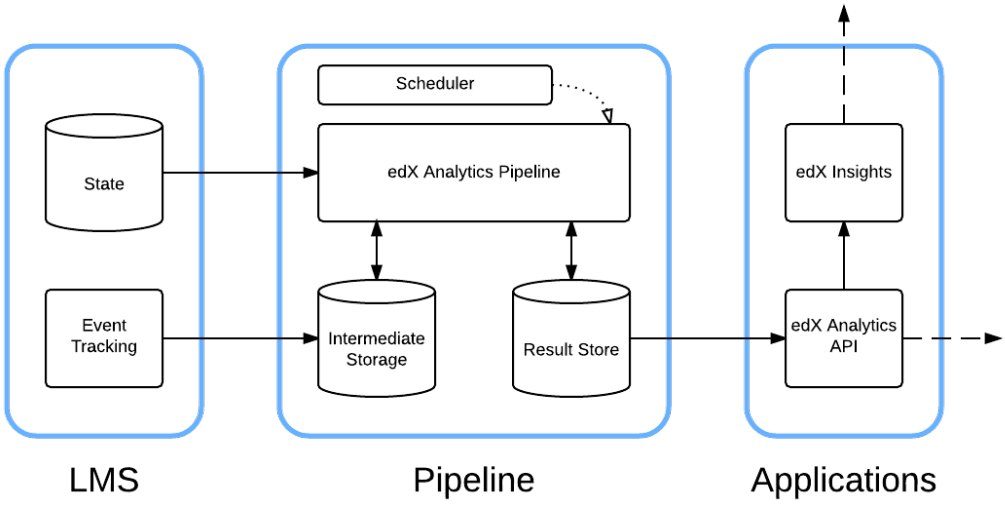
- *Installing edX Insights*
  - *Overview*
    - *Architecture*
    - *Components*
      - *LMS*
      - *edX Analytics Pipeline*
      - *Scheduler*
      - *edX Analytics Data API*
      - *edX Insights*
  - *What You Should Know Before You Start*
  - *Planning Your Deployment*
    - *Hadoop*
    - *edX Applications*
    - *Result Store*
    - *Scheduler*
  - *Example Deployments*
    - *Small Scale Using Elastic MapReduce*
    - *Large Scale Using Elastic MapReduce*
    - *Large Scale Without Using Elastic MapReduce*

8.1 Overview

Course teams use edX Insights to access to data gathered from active courses. Course teams use edX Insights to display charts, summary statistics, and data tables.

The Learning Management System (LMS) gathers data about student activity. This data is aggregated by the edX Analytics Pipeline. The aggregated data is exposed by the edX Analytics Data API. EdX Insights reads the data from the edX Analytics Data API and presents the data to course team members.

8.1.1 Architecture



8.1.2 Components

LMS

The LMS records student actions in tracking log files. The standard `logrotate` utility periodically compresses and copies these files into a filesystem that can be read by the edX Analytics Pipeline. The LMS also captures a lot of information in a MySQL database. The edX Analytics Pipeline connects directly to this database to extract information about students.

edX Analytics Pipeline

The edX Analytics Pipeline reads the MySQL database used by the LMS as well as the tracking log files produced by the LMS. The data is processed and the resulting summary data is published to the result store. The result store is a MySQL database.

Requirements:

- Hadoop version 1.0.3 or higher
- Hive version 0.11.0.2 or higher
- Sqoop version 1.4.5
- Python 2.7
- Either Debian version 6.0 or higher, or Ubuntu version 12.04 or higher.
- A MySQL server version 5.6 or higher

Scheduler

The Scheduler schedules the execution of data computation tasks. Data computation tasks are run by the edX Analytics Pipeline. Data computation tasks are used to update parts of the result store.

edX Analytics Data API

The edX Analytics Data API provides an HTTP interface for accessing data in the result store. Typically, the data in the result store is updated periodically by the edX Analytics Pipeline.

Requirements:

- Python 2.7

edX Insights

EdX Insights uses the edX Analytics Data API to present data to users. Users access the data using a supported web browser. EdX Insights communicates directly with the LMS to authenticate users, authorize users and read course structure information.

Requirements:

- Python 2.7

8.2 What You Should Know Before You Start

You must understand the following concepts to install edX Insights and deploy the edX Analytics Pipeline:

- Understand basic terminal usage.
- Understand how the LMS has been deployed and configured.
- Understand basic computer network terminology.
- Understand the YAML file format.
- Understand Amazon Web Services terminology.

8.3 Planning Your Deployment

All edX Analytics services are designed to be relocatable. This means that they do not require a particular configuration of virtual servers. You are free to choose how the services should be distributed among the resources you have available.

8.3.1 Hadoop

Most of the computation performed by the edX Analytics Pipeline is implemented as Map Reduce jobs that currently must be executed by a Hadoop cluster. You can scale your Hadoop cluster based on your current and projected data sizes. Hadoop clusters can be scaled vertically and horizontally as your data grows. For very small installations of Open edX, a single virtual server should be sufficiently powerful to process your data.

Amazon's Elastic MapReduce service offers pre-configured Hadoop clusters. If you are able to use Amazon Web Services, use of this service is recommended. Proper installation and configuration of Hadoop can be time consuming.

Additionally, vendors such as Cloudera and MapR offer simplified Hadoop administration experiences.

Hadoop is a distributed system that consists of several different services. It is worth noting that they are Java services and require a non-trivial amount of memory to run. The high memory requirement may prevent you from running all services on the same virtual server if it does not have enough memory available.

8.3.2 edX Applications

The edX Analytics Data API responds to a small number of requests every time a page is loaded in edX Insights. Small installations can probably host both services on the same virtual server. Larger installations will want to consider hosting them on more than one virtual server. A load balancer is recommended for each service that requires more than one virtual server.

8.3.3 Result Store

The results of computations performed by the edX Analytics Pipeline are stored in a MySQL database. Even small installations should use a different MySQL server than the one used by the LMS. The query patterns of the edX Analytics API are more I/O intensive than usual. Placing both databases on the same server may degrade performance of the Learning Management System.

8.3.4 Scheduler

Scheduling executions of the edX Analytics Pipeline can be accomplished in many different ways. Any tool that can periodically execute shell commands should work. The simplest tool that can perform this task is cron. Jenkins is also a good candidate.

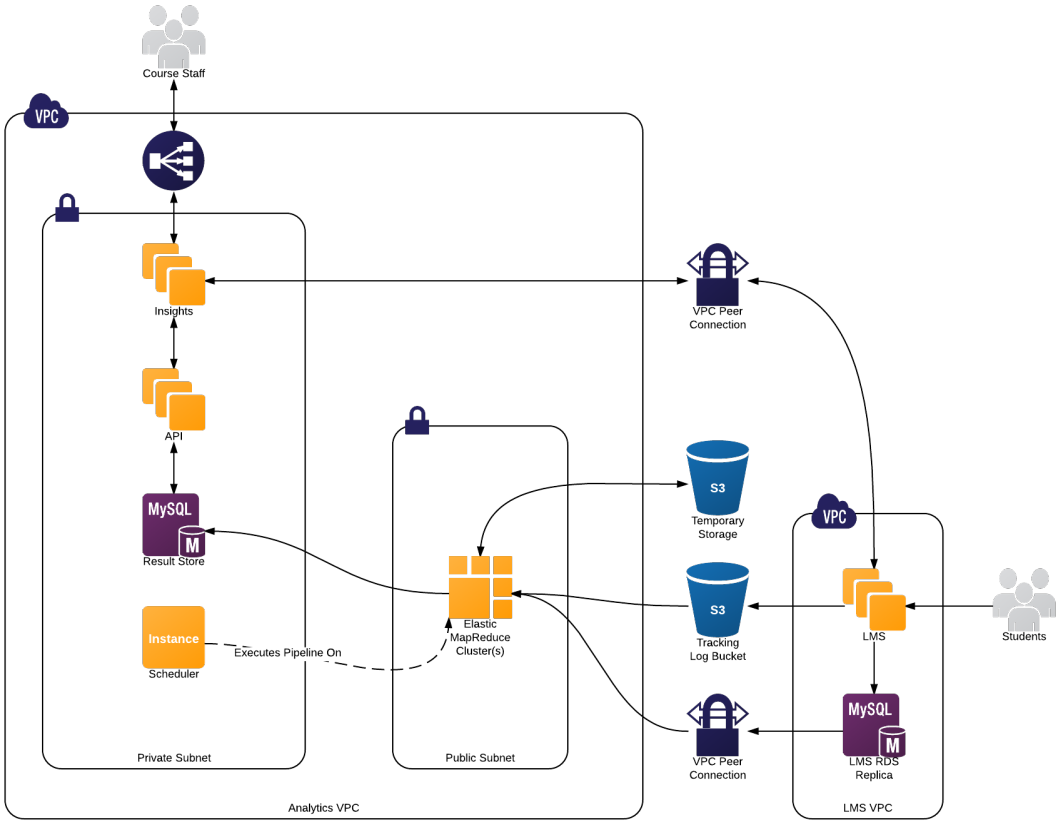
8.4 Example Deployments

8.4.1 Small Scale Using Elastic MapReduce

A small deployment might consist of a single master node and a single core node. The Scheduler is deployed to the master node and periodically executes the edX Analytics Data Pipeline on this server. Additionally, the edX Analytics API, edX Insights and result store are deployed to the master node. These services run continuously.

8.4.2 Large Scale Using Elastic MapReduce

A large scale deployment consists of a single master node, several core nodes, and many task nodes deployed into a public subnet of a Virtual Private Cloud.



The edX Analytics API and edX Insights are each deployed into an auto-scaling group behind an Elastic Load Balancer which terminates SSL connections and distributes the load among the application servers. The application servers are deployed into a private subnet of the Virtual Private Cloud. A single virtual server is deployed into a private subnet to host the Scheduler. The Relational Database Service is used to deploy a MySQL server into a private subnet. The MySQL database will be used as the result store.

8.4.3 Large Scale Without Using Elastic MapReduce

A large deployment that does not use Elastic MapReduce requires additional configuration steps to establish a properly configured environment. A Hadoop cluster is deployed. The master node is considered the node that is running the Job Tracker service for Hadoop 1.X deployments or the Resource Manager service for Hadoop 2.X deployments. Hive and Sqoop are deployed to the master node. Several servers are deployed outside of the Hadoop cluster that host the remainder of the infrastructure. The edX Analytics API and edX Insights services are each deployed to at least one server. The Scheduler is deployed to another server. A MySQL database is deployed to a server that is configured to host a relational database.

CHAPTER 9

Setting up the edX Mobile Applications

This chapter is intended for those are who are building the edX mobile applications and customizing their Open edX installation to support their use.

Chapter Contents:

- *Setting up the edX Mobile Applications*
  - *Code*
  - *Authentication*
  - *Video*

9.1 Code

There are currently two edX mobile applications, one for iOS and one for Android. You can find the source code and additional documentation for each:

- iOS: http://github.com/edx/edx-app-ios
- Android http://github.com/edx/edx-app-android

9.2 Authentication

The edX mobile apps require you to adjust your `edx-platform` configuration settings in `lms.env.json` to enable mobile API support.

In particular, you need to add the following under the features section:

```
"FEATURES" : {
    ...
    "ENABLE_MOBILE_REST_API": true,
    "ENABLE_OAUTH2_PROVIDER": true,
    ...
}
```

You also need to set the following configuration value at the top level of the configuration dictionary:

```
"OAUTH_ENFORCE_SECURE": ""
```

Additionally, you need to create an OAuth key and secret specific to your installation for use by the apps. You can do this by logging into the Django administration console at `<YOUR_EDX_INSTALLATION>/admin`. From there, choose **Clients** under the **Oauth2** section. If you don't already have any clients set up, you will need to add one. Choose **Add client** and create a client. The client id and secret that you see will need to be added to your mobile app configuration. For more information about how to do that, see the documentation for each app linked above.

9.3 Video

Courseware videos must be specifically prepared to ensure they're in mobile accessible formats. Video modules in mobile-available courses should have low resolution encodings that can be readily accessible by mobile devices.

To configure a video module with a low resolution encoding for mobile, enter the URL to the mobile-targeted video as the first URL in the "Video File URLs" list in the video module's Advanced Editor in edX Studio.

Alternatively, if the course is edited directly in XML, enter the URL to the mobile-targeted video as the first URL in the list of html5_sources.

CHAPTER 10

Glossary

A - C - D - E - F - G - H - I - K - L - M - N - O - P - R - S - T - V - W - XYZ

10.1 A

A/B Test

See *Content Experiment*.

About Page

The course page that provides potential students with a course summary, prerequisites, a course video and image, and important dates.

For more information, see The Course Summary Page.

Accessible Label

The descriptive, identifying name that you supply when you add a problem component to your course. All problems require accessible labels.

For more information, see Creating Exercises and Tools.

Advanced Editor

An XML-only editor in a problem component that allows you to can create and edit any type of problem. For more information, see The Advanced Editor.

Assignment Type

The category of graded student work, such as homework, exams, and exercises.

For more information, see Establishing a Grading Policy.

10.2 C

Capa Problem

Any of the problem types implemented in the edX platform by the `capa_module` XBlock. Examples range from text input, drag and drop, and math expression input problem types to circuit schematic builder, custom JavaScript, and chemical equation problem types.

Other assessment methods are also available, and implemented using other XBlocks. An open response assessment is an example of a non-capa problem type.

Certificate

A document issued to an enrolled student who successfully completes a course. Not all edX courses offer certificates, and not all students enroll as certificate candidates.

Chapter

See *Section*.

Checkbox Problem

A problem that prompts the student to select one or more options from a list of possible answers. For more information, see Checkbox Problem.

Chemical Equation Response Problem

A problem that allows the student to enter chemical equations as answers. For more information, see Chemical Equation Problem.

Circuit Schematic Builder Problem

A problem that allows the student to construct a schematic answer (such as an electronics circuit) on an interactive grid.

For more information, see Circuit Schematic Builder Problem.

Closed Captions

See *Transcript*.

Cohort

A group of students who participate in a class together. Students who are in the same cohort group can communicate and share experiences in private discussions.

Cohorts are an optional feature of courses on the edX platform. For information about how you enable the cohort feature, set up cohorts, and assign students to them, see Using Cohorts in Your Courses.

Component

The part of a unit that contains your actual course content. A unit can contain one or more components. For more information, see Developing Course Components.

Content Experiment

You can define alternative course content to be delivered to different, randomly assigned groups of students. Also known as A/B or split testing, you use content experiments to compare the performance of students who have been exposed to different versions of the content. For more information, see Creating Content Experiments.

Content Library

See *Library*.

Content-Specific Discussion Topic

A category within the course discussion that appears at a defined point in the course to encourage questions and conversations. To add a content-specific discussion topic to your course, you add a discussion component to a unit. Students cannot contribute to a content-specific discussion topic until the release date of the section that contains it.

For more information, see Working with Discussion Components and Creating Discussion Topics for Your Course.

Course Catalog

The page that lists all courses offered in the edX learning management system.

Course Handouts

Course handouts are files you make available to students in the Course Info page.

For more information, see Add Course Handouts.

Course Info Page

The page that opens first every time students access your course. You can post announcements on the Course Info page. The Course Handouts sidebar appears in the right pane of this page.

Course Run

The term or time frame in which a specific offering of your course takes place. You set the course run when you create your course. For more information, see Create a New Course.

Courseware

The page where students access the primary instructional materials for your course. Sections, subsections, units, and components are all accessed from the Courseware page.

Course-Wide Discussion Topic

Optional categories that you create to guide how students find and share information in the course discussion. Examples of course-wide discussion topics include Announcements and Frequently Asked Questions. Students can contribute to these topics as soon as your course starts.

For more information, see Creating Discussion Topics for Your Course.

Custom Response Problem

A custom response problem evaluates text responses from students using an embedded Python script. These problems are also called "write-your-own- grader" problems. For more information, see Write-Your-Own-Grader Problem.

10.3 D

Data Czar

A data czar is the single representative at a partner institution who is responsible for receiving course data from edX, and transferring it securely to researchers and other interested parties after it is received.

For more information, see the edX Research Guide.

Discussion

The set of topics defined to promote course-wide or unit-specific dialog. Students use the discussion topics to communicate with each other and the course staff in threaded exchanges.

For more information, see Managing Course Discussions.

Discussion Component

Discussion topics that course staff add directly to units. For example, a video component can be followed by a discussion component so that students can discuss the video content without having to leave the page. When you add a discussion component to a unit, you create a content-specific discussion topic.

For more information, see Working with Discussion Components.

Dropdown Problem

A problem that asks students to choose from a collection of answer options, presented as a drop-down list. For more information, see Dropdown Problem.

10.4 E

edX101

An online course about how to create online courses. The intended audience for edX101 is faculty and university administrators.

edX Edge

Edge is a less restricted site than edX.org. While only edX employees and consortium members can create and post content on edX.org, any users with course creator permissions for Edge can create courses with Studio on studio.edge.edx.org, then view the courses on the learning management system at edge.edx.org.

edX Studio

The edX tool that you use to build your courses.

For more information, see What is Studio?.

Exercises

Practice or practical problems interspersed in edX course content to keep the learner engaged. Exercises are also an important measure of teaching effectiveness and learner comprehension.

Export

A tool in edX Studio that you use to export your course or library for backup purposes, or so that you can edit the course or library directly in XML format. See also *Import*.

For more information, see Export a Course or Export a Library.

10.5 F

Forum

See *Discussion*.

10.6 G

Grade Range

Thresholds that specify how numerical scores are associated with grades, and the score a student must obtain to pass a course.

For more information, see Set the Grade Range.

Grading Rubric

See *Rubric*.

10.7 H

HTML Component

A type of component that you can use to add and format text for your course. An HTML component can contain text, lists, links, and images.

For more information, see Working with HTML Components.

10.8 I

Image Mapped Input Problem

A problem that presents an image and accepts clicks on the image as an answer.

For more information, see Image Mapped Input Problem.

Import

A tool in edX Studio that you use to load a course or library in XML format into your existing course or library. When you use the Import tool, Studio replaces all of your existing course or library content with the content from the imported course or library. See also *Export*.

For more information, see Import a Course or Import a Library.

10.9 K

Keyword

A variable in a bulk email message. When you send the message, a value that is specific to the each recipient is substituted for the keyword.

10.10 L

Label

See *Accessible Label*.

LaTeX

A document markup language and document preparation system for the TeX typesetting program.

In edX Studio, you can import LaTeX code.

You can also create a problem written in LaTeX.

Learning Management System (LMS)

The platform that students use to view courses, and that course staff members use to manage enrollment and staff privileges, moderate discussions, and access data while the course is running.

Learning Sequence

The horizontal navigation bar that appears at the top of the **Courseware** page in the LMS. The learning sequence contains an icon for each unit in the selected subsection. When a learner moves the cursor over one of these icons, the names of each component in that unit appear.

Left Pane

The navigation frame that appears at the left side of the **Courseware** page in the LMS. The left pane shows the sections in the course. When you click a section, the section expands to show subsections.

Library

A pool of components for use in randomized assignments that can be shared across multiple courses from your organization. Course teams configure randomized content blocks in course outlines to reference a specific library and randomly provide a specified number of problems from that library to each student.

For more information, see Libraries Overview.

Live Mode

A view that allows course staff to review all published units as students see them, regardless of the release dates of the section and subsection that contain the units.

For more information, see View Your Live Course.

LON-CAPA

The LearningOnline Network with Computer-Assisted Personalized Approach e-learning platform. The structure of capa problem types in the edX platform is based on the LON-CAPA assessment system, although they are not compatible.

See *Capa Problems*.

10.11 M

Math Expression Input Problem

A problem that requires students to enter a mathematical expression as text, such as e=m*c^2.

For more information, see Entering Mathematical and Scientific Expressions.

MathJax

A LaTeX-like language that you use to write equations. Studio uses MathJax to render text input such as x^2 and sqrt(x^2-4) as "beautiful math."

For more information, see A Brief Introduction to MathJax in Studio.

Module

An item of course content, created in an XBlock, that appears on the **Courseware** page in the edX learning management system. Examples of modules include videos, HTML-formatted text, and problems.

Module is also used to refer to the structural components that organize course content. Sections, subsections, and units are modules; in fact, the course itself is a top-level module that contains all of the other course content as children.

Multiple Choice Problem

A problem that asks students to select one answer from a list of options.

For more information, see Multiple Choice Problem.

10.12 N

Numerical Input Problem

A problem that asks students to enter numbers or specific and relatively simple mathematical expressions.

For more information, see Numerical Input Problem.

10.13 O

Open Response Assessment

A type of assignment that allows learners to answer using text and, optionally, an image, as in a short essay. Learners then evaluate each others' work by comparing each response to a rubric created by the course team. These assignments can also include a self assessment, in which learners compare their own responses to the rubric.

For more information, see Open Response Assessments.

10.14 P

Pages

Pages organize course materials into categories that students select in the learning management system. Pages provide access to the courseware and to tools and uploaded files that supplement the course. Each page appears in your course's navigation bar.

For more information, see Adding Pages to a Course.

Preview Mode

A view that allows you to see all the units of your course as students see them, regardless of the unit status and regardless of whether the release dates have passed.

For more information, see Preview Course Content.

Problem Component

A component that allows you to add interactive, automatically graded exercises to your course content. You can create many different types of problems.

For more information, see Working with Problem Components.

Progress Page

The page in the learning management system that shows students their scores on graded assignments in the course.

10.15 Q

Question

A question is a type of contribution that you can make to a course discussion topic to bring attention to an issue that the course staff or other students can resolve.

For more information, see Managing Course Discussions.

10.16 R

Rubric

A list of the items that a student's response should cover in an open response assessment.

For more information, see Rubric.

10.17 S

Section

The topmost category in your course outline. A section can represent a time period or another organizing principle for course content. A section contains one or more subsections.

For more information, see Developing Course Sections.

Sequential

See *Subsection*.

Short Course Description

The description of your course that appears on the edX Course List page.

For more information, see Describe Your Course.

Simple Editor

The graphical user interface in a problem component that contains formatting buttons and is available for some problem types. For more information, see The Studio View of a Problem.

Split Test

See *Content Experiment*.

Subsection

A division in the course outline that represents a topic in your course, such as a lesson or another organizing principle. Subsections are defined inside sections and contain units.

For more information, see Developing Course Subsections.

10.18 T

Text Input Problem

A problem that asks the student to enter a line of text, which is then checked against a specified expected answer.

For more information, see Text Input Problem.

Transcript

A text version of the content of a video. You can make video transcripts available to students.

For more information, see Working with Video Components.

10.19 U

Unit

A unit is a division in the course outline that represents a lesson. Learners view all of the content in a unit on a single page.

For more information, see Developing Course Units.

10.20 V

Vertical

See *Unit*.

Video Component

A component that you can use to add recorded videos to your course.

For more information, see Working with Video Components.

10.21 W

Wiki

The page in each edX course that allows students as well as course staff to add, modify, or delete content.

Students can use the wiki to share links, notes, and other helpful information with each other.

For more information, see Hide or Show the Course Wiki Page.

10.22 XYZ

XBlock

EdX's component architecture for writing courseware components: XBlocks are the components that deliver course content to learners.

Third parties can create components as web applications that can run within the edX learning management system.