MULTITENANCY WITH TOTARA AND MOODLE

Addressing questions and defining features related to multitenancy in learning management

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WHAT IS MULTITENANCY?

Multitenancy is when different groups or organizations use the same infrastructure, applications, or databases[1]. In other words, one organization with different groups, each with their own courses, materials, and needs, uses one central learning management system. As an example, if you are an organization with 5 divisions or operating entities (these are what we would refer to as tenants in the LMS), you and each of your customers would use the same LMS, but would need to be separated within the system. The alternative to multitenancy is to have a separate Moodle or Totara system or installation for each group. This requires a lot of management, and can sometimes be quite a hassle.

WHEN IS MULTITENANCY REQUIRED?

It is likely that you will need multitenancy if you have multiple clients on Moodle or Totara, who have content that they do not want any of your other tenants to have access to. With multitenancy, users should not be aware that there are any other tenants on their LMS. The central administrator decides who local administrators (that is, the administrators for each tenant) will be, and therefore, will have control over who has access to the system.[3]

With multitenancy in Moodle and Totara, each individual tenant is centrally managed, meaning that all tenants are managed from one central site (also referred to as the master site) by a central administrator. An LMS can host a number of client organizations within one single instance of Moodle or Totara. This architecture allows the training organization to manage all activity on the site, across all tenants, including reporting and setting up client organizations. Individuals within tenants can be assigned to their company in the system so that when they log in using their authorization, they have access to all learning materials and courses they have been enrolled in. Each tenant can only view the courses they have been enrolled in, based on which organization they are a part of.[2]

1. http://whatis.techtarget.com/definition/multi-tenancy

2. http://webanywhere.co.uk/enterprise/wp-content/uploads/2011/03/A-multi-tenant-e-learning-approach-for-training-providers.pdf

3. http://www.slideshare.net/paradiso_solutions/moodle-multi-tenancy?related=1
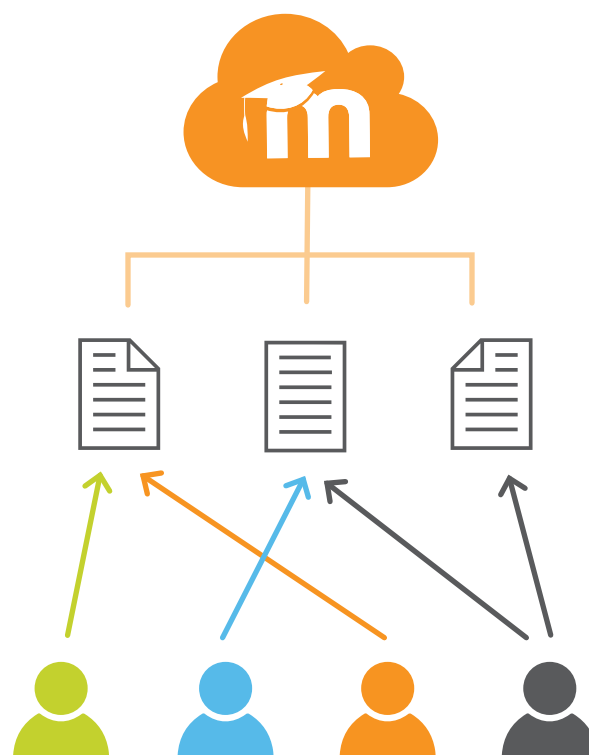
MULTITENANCY WITH TOTARA AND MOODLE

Totara supports multitenancy in the following ways:

There are management hierarchies within Totara that enable managers to assess and supervise learning. Management roles can be assigned, and there are development plans that are specific to each tenant organization available. Both of these options allow administrators to manage their own staff performance and progress. With Totara, users can be sorted by a variety of specifications, such as organisation, position, or country. Courses/programs can be set to specific tenants, with the possibility of scheduled reports that are automatically administered across the site.[4]

Additionally, Totara already has the following features that support multitenancy: Organization and position framework, audiences, audience visibility, audience dashboard, and roles assigned to different categories and courses.[5]
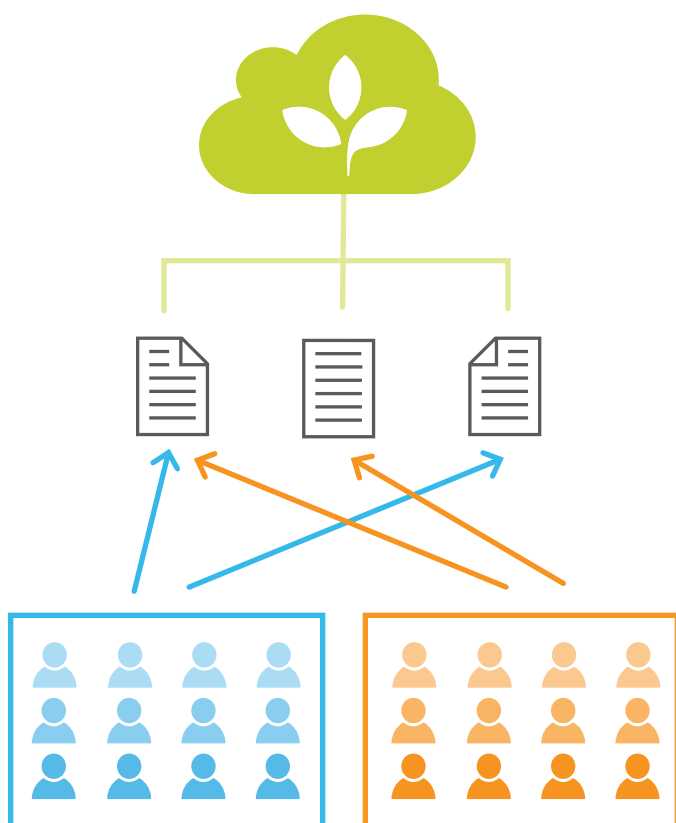
MULTITENANCY WITH MOODLE

MULTITENANCY WITH TOTARA

Moodle does not fully support multitenancy as well as Totara, but it does have a few capabilities. Moodle has a pseudo-multitenancy capability which combines Front-page settings with the use of Course Categories. This can be done by configuring the "Front page items when logged in" setting to Enrolled Courses. With regard to branding courses to specific departments or business units, the Course Categories can be named after the department, and Subcategories can be labelled as Course Topics. Each Category and Subcategory can then be themed separately from the Corporate/Organizational theme. Roles and capabilities can be assigned to specific categories to allow access to edit courses. Additionally, this can be done by inheritance to the Subcategories and courses.

4. http://webanywhere.co.uk/enterprise/wp-content/uploads/2011/03/A-multi-tenant-e-learning-approach-for-training- providers.pdf

5. http://api.ning.com/files/JcikeZL6OiI*UtxNrgIE7ytGYdde6SxJURB*LjPaSD0WdBvfl7YZXQ8DXPj0gXBetj6vI8LWVdu9cdvOPbFxiOcDYzjktaA/ MTpresentationfinalv2.pdf

WHAT CAN YOU DO WITH MULTITENANCY, AND HOW CAN IT ADDRESS YOUR ORGANIZATION'S ISSUES?[6]

One common request that organizations have is **privacy**. They do not want their tenants to be able to see each other within the Totara site, or even for their tenants to know that there is anyone else on the same LMS. With multitenancy in Totara, you can create individual organization framework for each tenant, as well as different themes and home pages for specific users organizations, in order to segment your tenants and create an individual experience. You can also create separate courses, categories, subcategories, and tenants within the Totara site, with individual themes for each one.

For organizations who have a large number of tenants with many users and courses, you can create categories, and subcategories with their own administrators within each category. This breaks up the tenants and users into smaller, more manageable units. You can also allow all tenants to manage their own users and courses, put tags

and levels into place to distinguish and identity courses and areas, have unique themes for each tenant, and have options for global themes for smaller tenants.

For global organizations with different offices across different locations in different countries, you can enable increased customization, as well as allow the creation of new roles within the organization to fill the need to manage users and courses.
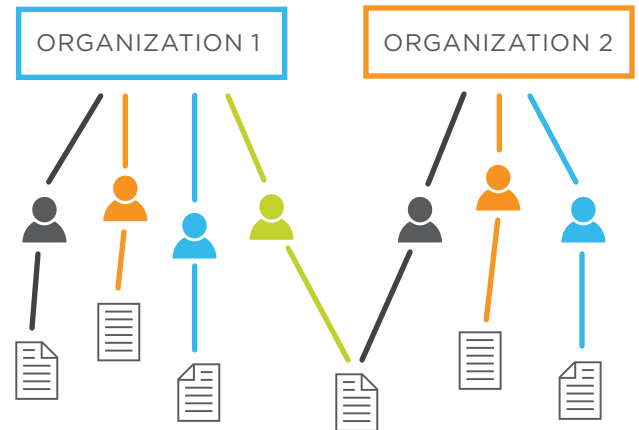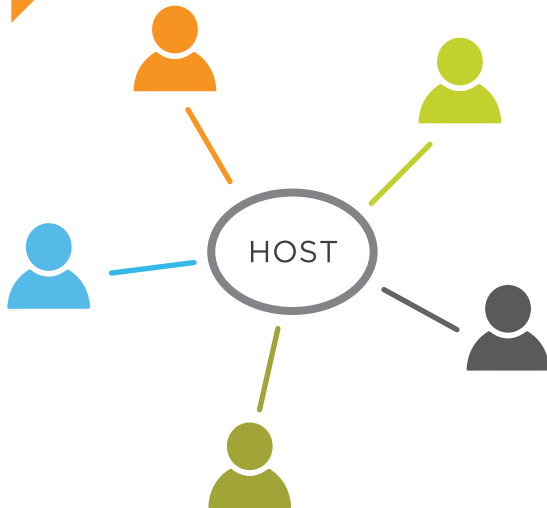

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6. http://api.ning.com/files/JcikeZL6Oil*UtxNrgIE7ytGYdde6SxJURB*LjPaSD0WdBvfl7YZX-Q8DXPj0gXBetj6vl8LWVdu9cdvOPbFxiOcDYzjktaA/MTpresentationfinalv2.pdf

THERE ARE A FEW DIFFERENT METHODS OF MULTITENANCY[7]

1 Category Tenants

You separate your users into categories, and in those categories, you can distinguish course creators who have the freedom to manage their own users, within the courses they have created. This method provides privacy to each tenant.

ORGANIZATION 1   ORGANIZATION 2

2 Hierarchy Tenants

This method utilizes the organizational hierarchies that are available within Totara. You can place users into one of the multiple organizations and categories that you have. This method offers privacy in reporting at the course level, as it distributes reports site-wide, but only for your own users.

3 Federated, or Distributed

In this method, users have separate sites. This method is sometimes necessary when there are higher levels of configuration required for each tenant, and where tenants are managing their own users.
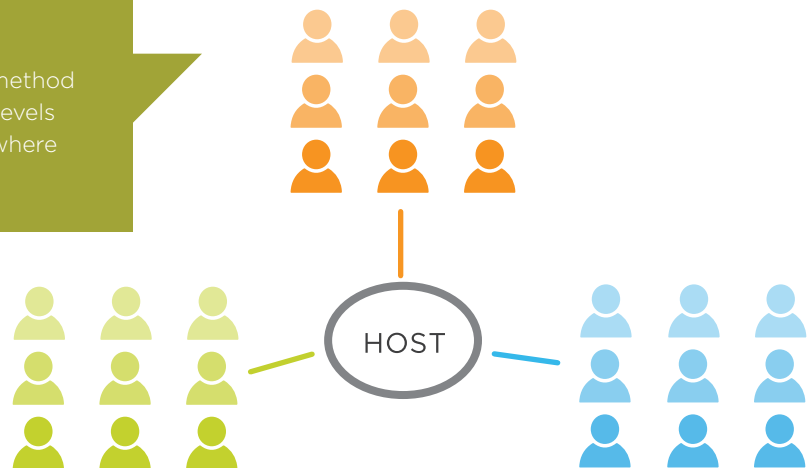
7. http://api.ning.com/files/JcikeZL6Oil*UtxNrgIE7ytGYdde6SxJURB*LjPaSD0WdBvfI7YZX-Q8DXPj0gXBetj6vI8LWVdu9cdvOPbFxiOcDYzjktaA/MTpresentationfinalv2.pdf

3 AREAS OF MULTITENANCY

There are three distinct areas of multitenancy that are important to consider[8]:

1 User and Course Management

2 Admin and Code Management
(involves settings, modules, codes)

3 Miscellaneous Management
(involves themes, reporting, and backup)

There are a few important things to consider when thinking about user and course management. Ask yourself the following questions: Will each tenant require its own administrator to manage their users? Where will courses be managed from - either centrally (by the organization) or locally (by the tenant)? Will users from different tenants need to enroll in any of the same courses? Must usernames be different for each tenant, or is it possible to have multiples of the same username. Does there need to be a limit on the number of users each tenant has? Should users from different tenants see and communicate with one another, or should they remain separate? The answers to these questions will determine which type of multitenancy set-up you will need.

With admin and code management, the first thing to think about is how administration will be managed. If you have a **centrally managed** administration setting, all items will be managed by the super administrator. If you have a **locally managed** administration setting, items are managed by the local, that is the tenant administrator. If you have an **inherited managed** administration setting, values are centrally set (by the central administrator), but can be modified and altered by the local admin. Consider what your needs and requirements are, and select your management style accordingly.

A key feature of Moodle is module and code management, which provides the ability to source code. The problem here is that even the slightest changes to the core standard system will highly increase the amount of maintenance required when it comes time to update. With an already

sensitive system, it further complicates things when multiple tenants are added to the equation. In order to make things go smoothly, the decision of what modifications are to be made (including the extent of modification) should be done first. Here are a few questions to ask yourself: Will there be modules, third-party plugins, and/or modifications in coding? What will the alterations be, and to what extent will they be made? Consider these questions and make the necessary modifications before going into multitenancy.

The last aspect to consider is miscellaneous management. Consider which of these features (if any) will be required for your tenancy. Much like with code management, with each of these components, the complexity is amplified when it comes to multitenancy. The three features we will discuss are branding, reporting, and backups.

Each tenant will have its own requirements for **branding**, which includes details like company colours and logos. There are two things to consider here. First, does each tenant require branding to be present initially on the login page, or once they have already logged in? Second, will the home-page need to be specific to each tenant, or can it be generic? These are modifications that need to be thought through first.

Lambda's Custom Themes

Reporting is necessary in any e-Learning system, and there are a few requirements people commonly have. These include the ability for cross-tenant reporting, as well as a solid separation of reports so that tenants cannot see each others reports.

Learn About Analytika™ Reporting

Backups are an essential component of security and there are two major questions to think about. First, will each tenant be in charge of their own backup setup, or will this be centrally managed? Second, where will backups be stored?

All of these features will affect what type of multitenancy setup approach you take, and what components of multitenancy you decide to take on.

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8. http://www.synergy-learning.com/wp-content/uploads/2012/05/Multi-tenancy-in-Moodle.pdf

9. http://www.synergy-learning.com/wp-content/uploads/2012/05/Multi-tenancy-in-Moodle.pdf

3 APPROACHES TO MULTITENANCY

Now let's go over the three approaches to multitenancy. They are monolithic, distributed, and federated. The approach you choose will entirely depend on what your needs are.[10]

MONOLITHIC

DISTRIBUTED

FEDERATED
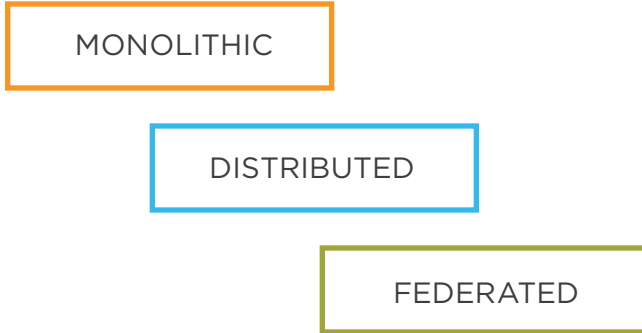
The **monolithic approach** is the simplest of the three options. Here you can create a focused theme for each category that can only be viewed once a user has verified their identity with a login and password. It is also possible to create and support categories for tenants, as well as subcategories, and sub-sub-categories The benefits here are centralized management of courses and users, reporting offered across the site, centralized backups for courses. The downside is that there is not much power at a local level. No administration settings or modules available locally, and source codes cannot be changed locally. As well, this approach does not allow much privacy for tenants, and it places the management of the LMS on the Central Administrator.

With the **distributed approach**, there is an individual Totara instance, with a single code base. With this approach, there cannot be any modifications at a local level, and all default module settings must be the same. The benefits of the distributed approach is that there is a single codebase, it provides a greater deal of privacy to tenants, it provides individual themes to separate tenants, allows organizational frameworks for each tenant, and localized reporting for different organizational frameworks. The shortcomings of the distributed approach is that modules are central, course backups are located centrally, and course and user management are shared between central and local sites.

Lastly, we have the **federated approach**, which fills the gaps that are present in the first two approaches. The weak-points of the first two approaches is that each of the tenants within one setup must run configuration of the LMS that are identical, which can be a deal breaker, as it simply does not work for some organizations. The federated approach fills this gap for users who need to have individual systems for tenants. This approach allows tenants to manage their own Moodle instances, with the capability to operate different modules and source code for the different tenants. The benefits of the federated approach are that full tenant privacy is possible, individual, separate themes for each tenant is possible, and that modules, administration settings, and source code changes can be managed locally. The downside is that user management, course management and course backups can not be managed centrally, and there is no centralized reporting across tenants since reporting is localized to maintain privacy.

10. http://www.synergy-learning.com/wp-content/uploads/2012/05/Multi-tenancy-in-Moodle.pdf

ABOUT LAMBDA SOLUTIONS

Founded in 2002, Lambda Solutions is a one stop shop that works to reduce the cost of your learning and training while increasing the value of your human capital. To help you achieve this, Lambda offers powerful, flexible and open source talent and learning management systems—Totara and Moodle—which are 80% more cost effective and match leading systems feature for feature. By managing your system in the most powerful cloud hosting environment worldwide, Lambda Solutions reduces your IT operating costs by more than 40%. And with responsive and proven expertise from over 600 customer implementations, our HelpDesk ensures fast and efficient Totara and Moodle set-up so your time to use is within weeks not months. More than half a million people learn on Lambda's managed hosting platforms everyday—let your learners be one of them!

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Contact Our Team

TOLL FREE	+1.877.700.1118
EMAIL	info@lambdasolutions.net
RESOURCES	lambdasolutions.net/moodle-resources
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