

Acquia

EXPERIENCE DIGITAL FREEDOM

ULTIMATE GUIDE TO DRUPAL 9

9.5 – December 2022



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Drupal 9: What It Is and What It Isn't

Drupal 9 was released June 3, 2020, building upon a new development process established in Drupal 8. Drupal contributors used this opportunity to clean up the codebase and ensure Drupal stays on supported versions of external dependencies.

With the release of Drupal 9, contributors aimed to keep the Drupal platform safe and its code up to date. Drupal 9 developers revised some third-party dependencies, including Symfony 3 and Twig 1. At the same time, it removed deprecated solutions, such as most of jQuery UI, from Drupal core.



Organizations currently using Drupal 7 and Drupal 8 will want to upgrade to Drupal 9 for various reasons, chief among them being continued support. Community support for Drupal 8 ended in November 2021 due to its dependence on Symfony 3, which also reached end-of-life that month. Community support for Drupal 7 has been extended until November 1, 2023.

Drupal 9's initial release did not offer new features, but did provide a leaner, more secure system and APIs that are easier to work with. These changes are most noticeable to developers. These new releases of Drupal 9 continued to make improvements and added new features following the six-month release timeline established with Drupal 8.

The bottom line for Drupal 9, according to project lead Dries Buytaert is this: "The big deal about Drupal 9 is ... that it shouldn't be a big deal."



SECTION 01

**From Drupal 8 to Drupal 9:
An Evolution**



Drupal 8 to Drupal 9: An Evolution

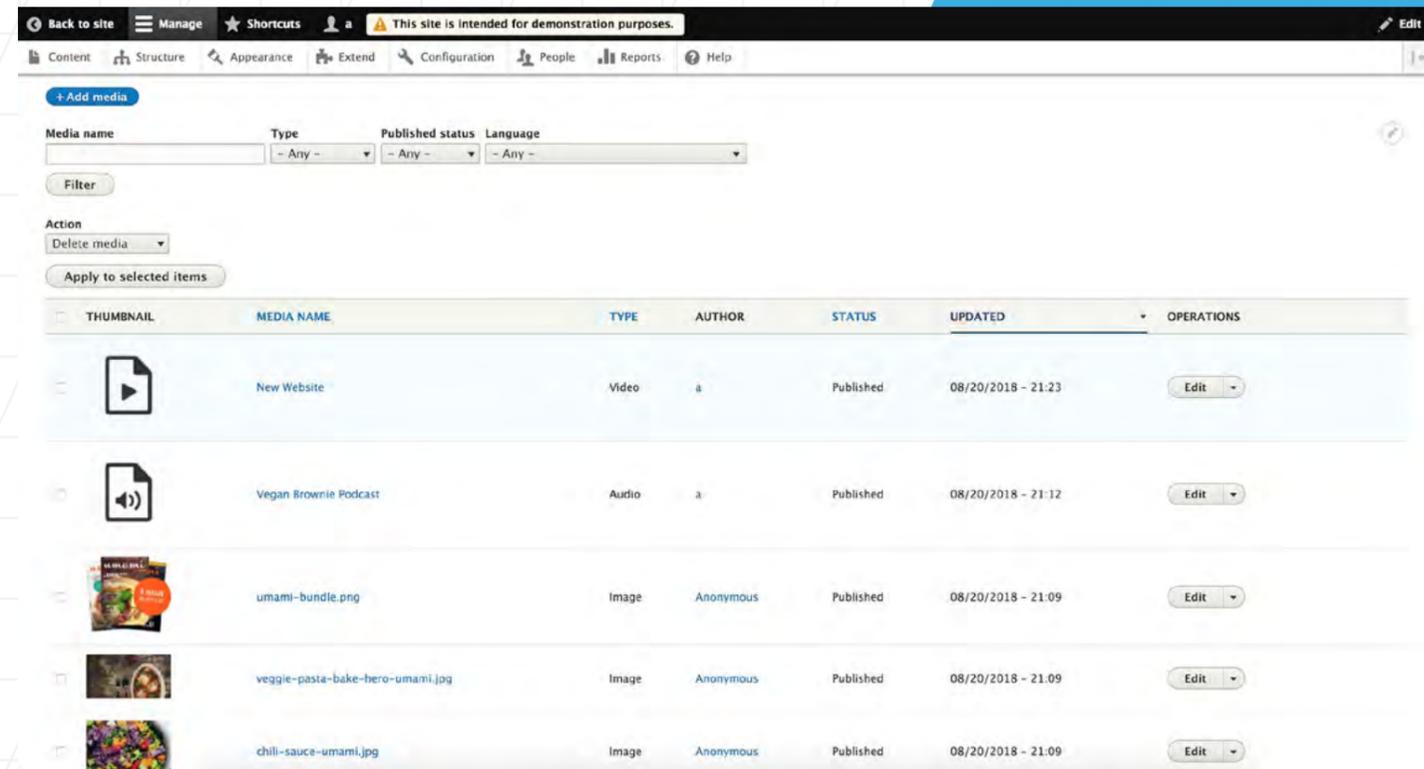
The next stage in Drupal's evolution, Drupal 9, was built in Drupal 8. Consequently, all the functionality that made Drupal 8 powerful has been retained in Drupal 9.

Here's a quick overview of this functionality:

Richer Media Management

Drupal has long supported images and generic files, but 9 expands on this functionality with a generic Media field supporting local audio, video, images, and additional files.

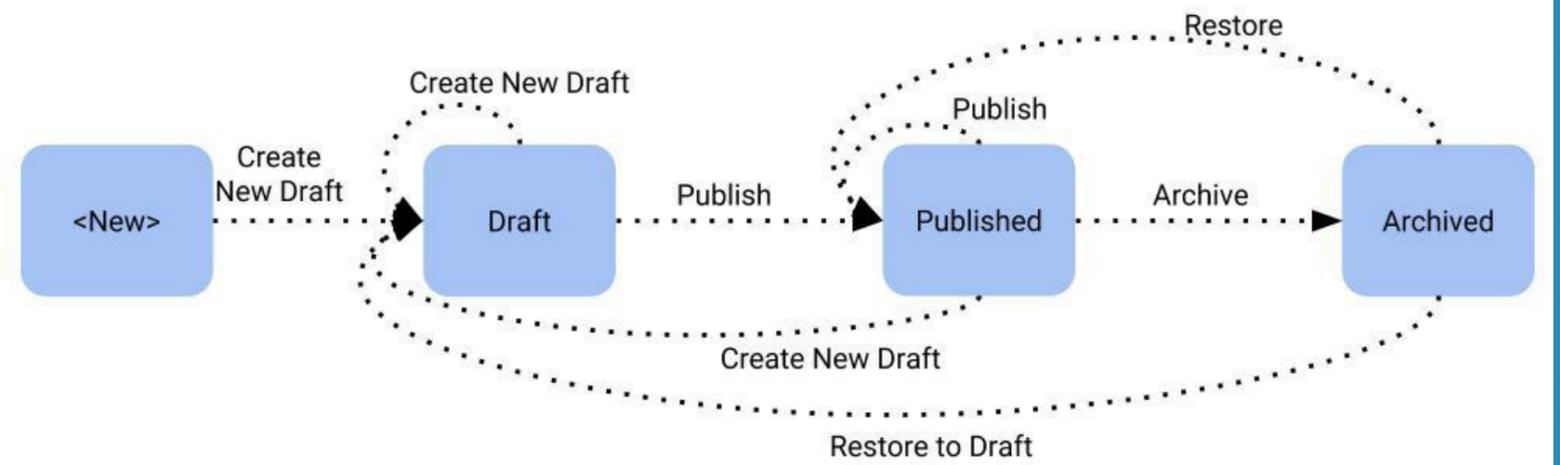
This iteration of Drupal also gives users the ability to embed remote content such as YouTube and Vimeo videos. Additionally, it features a Media Library module that allows users to add existing media assets to a site as well as upload new items directly into the library.



Content Workflow

The Workflows module allows users to define multiple workflows, and show the content workflow states and transitions allowed between them. The Content Moderation module allows users to create content revisions that are not live yet, but have received updates since the last version.

Finally, a promising experimental feature that is still under development, Workspaces, allows for staging and publishing multiple content changes (article text, sidebar blocks, menu entries, and so on) at once and previewing how they will look in their entirety. Users can even prepare site content around multiple “scenarios,” such as election results or Oscar winners, and publish the appropriate version when the time comes.



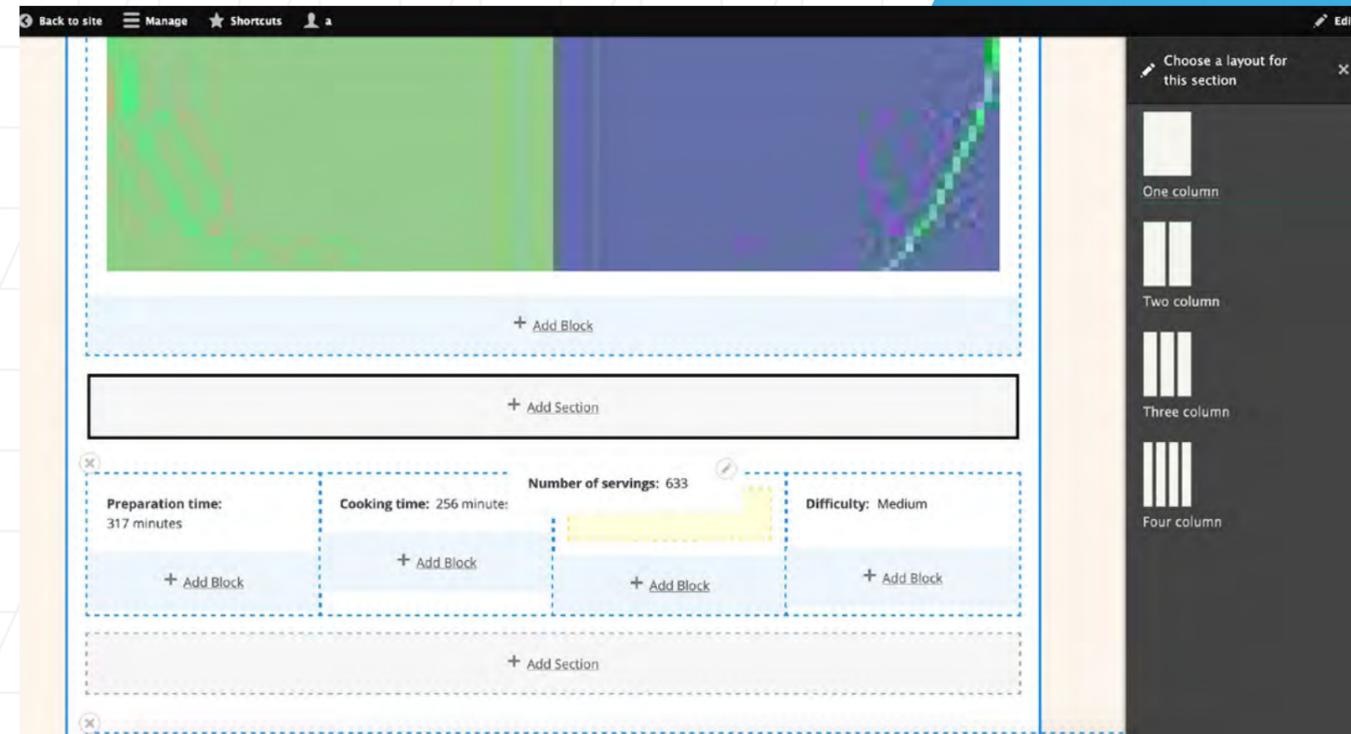
Layout Builder

The Layout Builder core module provides layout capabilities for content. Layout Builder is unique in offering a single, powerful visual design tool for the following three use cases:

- Layouts for templated content
- Customization for templated layouts
- Custom pages

BigPipe

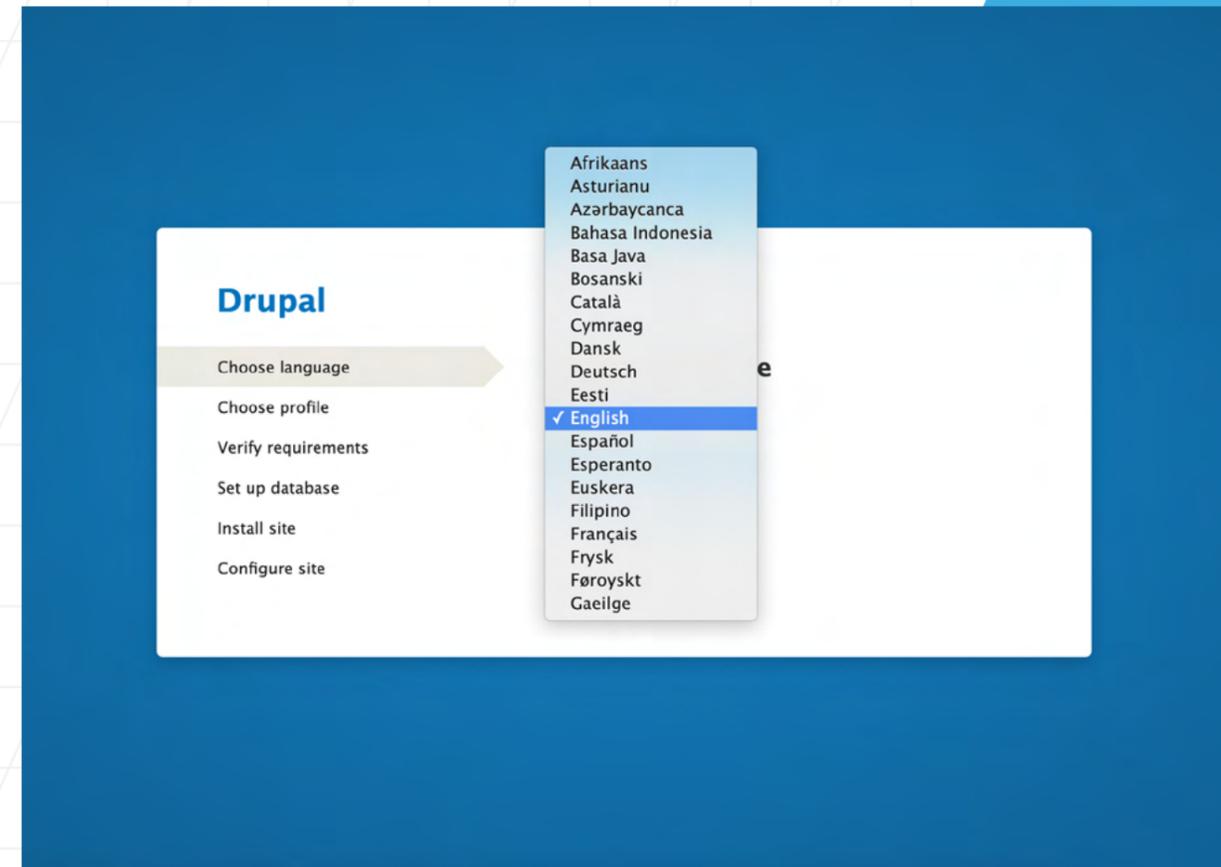
Another feature that many users will appreciate is BigPipe, a module that increases page view performance by sending the main “content” area of a page while sidebars and other auxiliary content are still being generated.



Multilingual Capabilities

Drupal comes with no fewer than four modules for language support, each performing a different role. These modules have enabled the following capabilities:

- The ability to install Drupal in 100 different languages from the get-go
- Translation for content items, such as nodes, taxonomy terms, menu items, and user profiles
- Configuration translation, which provides an interface to translate website configuration to multiple languages

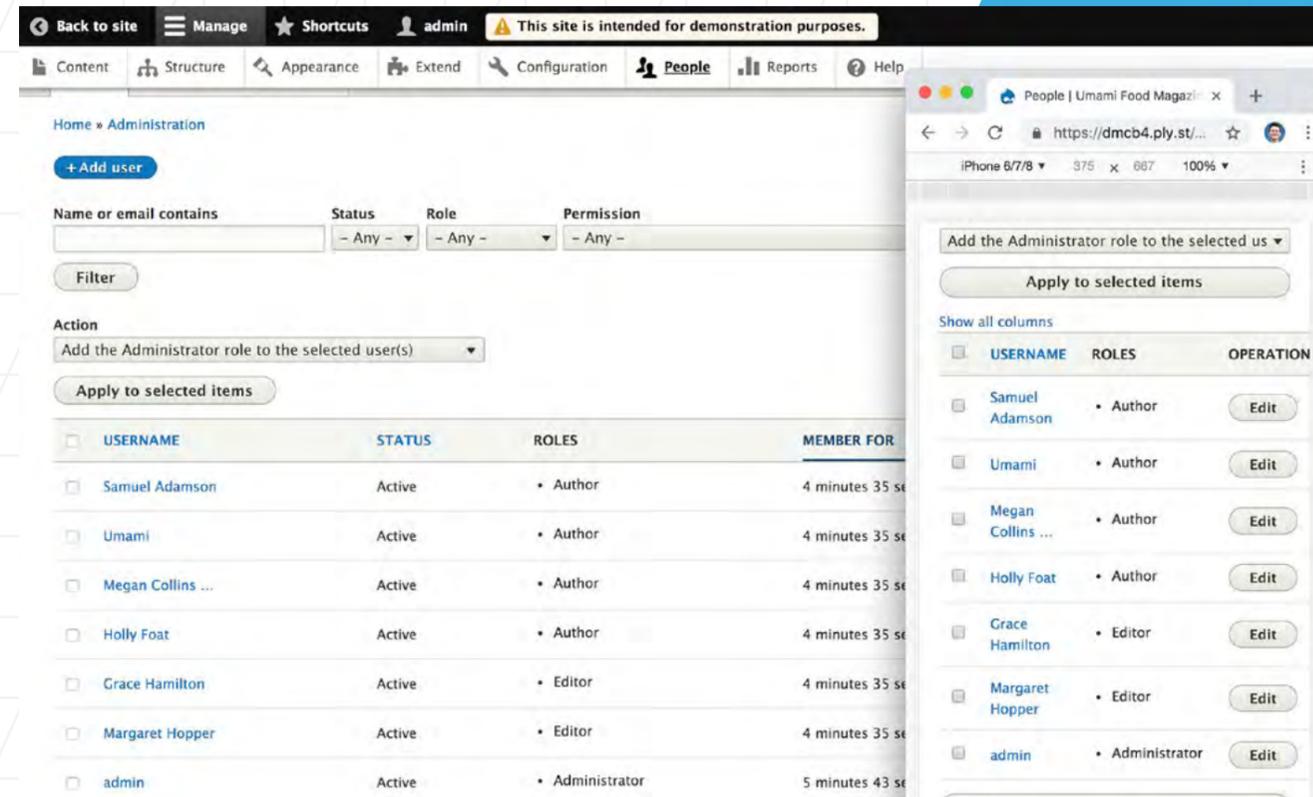


Mobile Experience

The newest versions of Drupal have been designed with mobile in mind, from the installer to the modules page. To support the wide range of internet-enabled devices that are available, Drupal incorporates responsive design into all of its functionality.

Drupal 9 includes a responsive administrative toolbar. On wide screens, the toolbar automatically expands and orients itself horizontally. On small screens, the toolbar collapses into icons and orients itself vertically.

Data entry in Drupal is seamless thanks to HTML5 form elements. These provide targeted user interfaces on mobile devices for fields such as date/time, phone numbers, and email addresses.



Building and Managing Your Site

Drupal also features a range of tools focused on site creation and management.

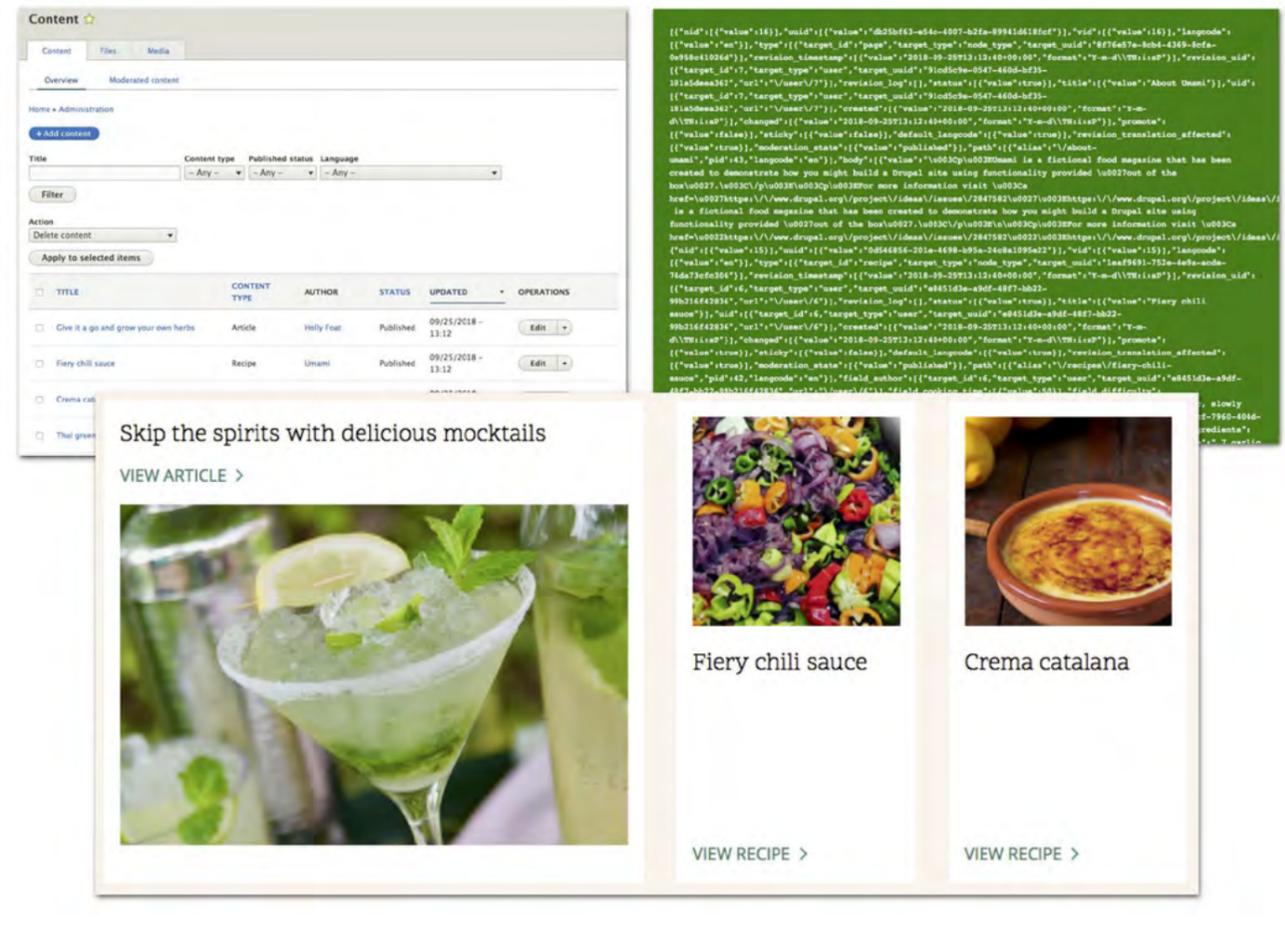
Views in Core

The Views module, a query-builder UI used for creating dynamic content listings in a variety of formats, is part of Drupal and is more tightly integrated than ever before. This facilitates improved content fetching from website databases, which can then display in any format or language.

Organizing Pages with Blocks

Most page elements are displayed through blocks, including breadcrumbs, site name, and slogan. This makes it easy to adjust page organization in the user interface. It also enables in-place editing and Settings Tray compatibility.

The Settings Tray allows users to adjust the most common configurations simply on the front end, which eliminates the need for going back and forth to the back end to make visual changes. Blocks can also be reused, both through Settings Tray and Layout Builder.



Structured Content

Drupal is built on the foundation of structured data management. Content, user profiles, and comments are examples of Entities. Users can add fields to all entities, including references to other entities. Drupal 9 ships with a wide range of available fields, including phone, email, date, and time.

View Modes and Form Modes

Once entities are set up with fields, view modes make it possible to create multiple display options for content in different contexts. For example, a thumbnail image can be shown on the content's teaser view and a full-size image displayed on the default view.

Form modes make it easy to create data-entry forms. These components provide greater flexibility with more general purpose components.

The screenshot shows the 'Manage form display' configuration page for the 'Register' form mode. The page has a breadcrumb trail: Home » Administration » Configuration » People » Account settings » Manage form display. A 'Show row weights' link is visible in the top right. The main content is a table with two columns: 'FIELD' and 'WIDGET'. The table lists several fields with their corresponding widget types. A 'Save' button is located at the bottom left of the table.

FIELD	WIDGET
+ User name and password	
Disabled	
+ Hobby	Textfield ▼
+ Timezone	
+ Job title	Textfield ▼
+ Picture	Image ▼
+ Full name	Textfield ▼
+ Language settings	
+ Contact settings	

Migration

Drupal core has built-in support for migrating data to the system from third-party systems (e.g., WordPress), as well as specific solutions built to facilitate migration from Drupal 6 and 7 to Drupal 9.

Configuration Management System

This system allows sites that are following the best practice of having “development,” “staging,” and “production” environments to seamlessly move configurations from one environment to another.

Headless/Decoupled Support

Drupal ships with an implementation of the JSON:API specification. This allows developers to use Drupal as a central content store on a decoupled front end (mobile application, JavaScript framework, etc.).

The screenshot shows a modal window titled "OPERATIONS" with a sub-header "View changes of system.site". It displays a comparison between an "ACTIVE" configuration and a "STAGED" configuration. The "ACTIVE" configuration has a name of "Site Name", while the "STAGED" configuration has a name of "New, Improved Site Name". Other fields like "mail" and "slogan" are identical in both. A link at the bottom says "Back to 'Synchronize configuration' page."

ACTIVE	STAGED
uuid: 91a08812-63ca-4c4f-92fc-ace7f3cc774f	uuid: 91a08812-63ca-4c4f-92fc-ace7f3cc774f
- name: 'Site Name'	+ name: 'New, Improved Site Name'
mail: drupal@localhost	mail: drupal@localhost
slogan: "	slogan: "

[Back to 'Synchronize configuration' page.](#)

Front-End Developer Experience

Drupal contains many improvements for front-end developers, as well. These include HTML5, additional helper libraries, accessibility enhancements, enhanced base themes, UI elements, and better performance.

Back-End Developer Experience

Drupal 8 introduced numerous back-end developer improvements, including object-oriented code, improved caching, better integration with third-party services, and extensive built-in web services features.



SECTION 02

Drupal 8 to Drupal 9: What's New



Drupal 8 to Drupal 9: What's New

As mentioned, Drupal 9 features all the Drupal 8 functionality described above. Of course, Drupal 9 is also an evolutionary advancement over Drupal 8. Here's what's new:

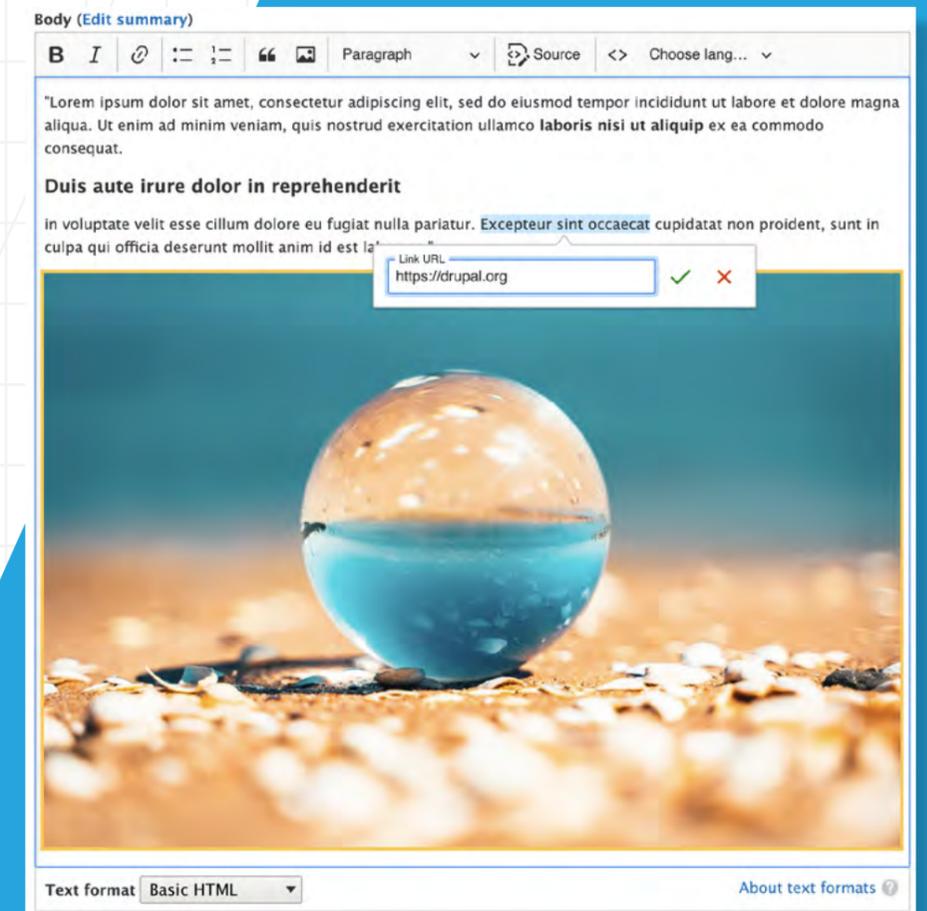
1. Drupal 9 relies on Symfony 4 and requires at least PHP 7.4 (though we recommend PHP 8.0), which results in improved security and stability
2. Drupal 9 moved from Twig 1 to Twig 2
3. CKEditor 4 remains in Drupal 9, but CKEditor 5 support was added as well and CKEditor 4 has been deprecated for removal in Drupal 10
4. Drupal 9 still relies on jQuery itself, but most jQuery UI components have been removed from core
5. Database version requirements have been increased for all supported database back ends within Drupal 9

Drupal 9.1.0 introduced the Olivero front-end theme which is used by default in a standard install as of Drupal 9.4.0. The previous default theme, Bartik, has been removed from Drupal 10. Olivero is a more modern, cleaner theme with various new features and a greater focus on accessibility.

Composer offers the most future-compatible solution for constructing the codebase of a Drupal 9 site. Drupal 9.1.0 released support for Composer 2, which is a massive improvement for memory usage and speed.

Drupal 9.4.0 made the new, modern, and more accessible Claro administration theme the default back-end experience. The previous back-end theme, Seven, was removed from Drupal 10.

Drupal 9.1 was compatible with the then freshly released PHP 8.0. Drupal 9.3 became compatible with PHP 8.1. Contributed modules may need work, but Drupal 10 requires at least PHP 8.1.



WHY NOT SYMFONY 5?

SOME MEMBERS OF THE DRUPAL COMMUNITY HAVE ASKED WHY DRUPAL 9 WAS BUILT ON SYMFONY 4 RATHER THAN SYMFONY 5.

This was due to Symfony's release process. Minor releases of Symfony are not supported for the same length of time as minor releases of Drupal. The long-term support version of Symfony 5, version 5.4, wasn't released until November 2021,

missing Drupal 9's development cycle by a considerable amount of time. However, the community kept updating Drupal to be compatible with Symfony 5's and even Symfony 6's API changes, preparing for the adoption of Symfony 6.2 in Drupal 10.0.

SECTION 03

Preparing for Drupal 9



Preparing for Drupal 9

In the last decade, upgrading from one major version of Drupal to another involved such extensive changes that it often required a complete site rebuild. With the introduction of Drupal 8, that has changed and upgrading has been radically streamlined.

So, what will you need to do to prepare for an upgrade to Drupal 9?



For Drupal 8 Users

Upgrading to Drupal 9 is relatively straightforward.

Even though Drupal 10 is also available, it is not possible to directly upgrade to Drupal 10, so you need to upgrade to Drupal 9 first. However, as you update to Drupal 9 now, many of the extension releases you update to will already be Drupal 10 compatible as well, making that next transition even easier.

First, make sure your environment is compatible with the requirements for Drupal 9. The key things to note here are that Drupal 9 requires PHP 7.4 or higher (though we recommend PHP 8.0) and that version requirements have been raised for MySQL (at least to 5.7), MariaDB (at least to 10.2), PostgreSQL (to 9.6) and SQLite (to 3.26). Also, for those using [Drush](#), Drush 10 is the last version that works with Drupal 8, so use that for the first part of the upgrade process. Next, update Drupal core to the latest version. Drupal 8's last minor release (8.9.0) became Drupal 9. You should also remove any dependencies you are not using at this time.

Make sure all your contributed modules are up to date. (We'll address custom modules below.) Beginning with Drupal 8.7.7, it is possible for modules to be compatible with Drupal 8, 9, and even 10 at the same time. In other words, you can update modules to later versions on Drupal 8 and still have a fully working site with modules that are already Drupal 9 compatible as well.



Upgrade Tools

To ensure you are using the most current versions of contributed modules, install and enable the [Upgrade Status](#) Module, which can be used either on the Drupal back end or the command line with Drush. Scan your contributed modules for compatibility issues and uses of deprecated code.

If a contributed project is not yet Drupal 9 compatible, use the [Lenient Composer Endpoint](#) to update the project on your site. If uncommitted patches are available to said project, you can use [cweagans/composer-patches](#) to apply patches where necessary and provide feedback to the patch authors and module maintainers about your experience with them.

Use Upgrade Status to analyze your custom modules and themes, too. Fixing problems found by these tools will result in code that is both Drupal 8 and Drupal 9 compatible.

We recommend using [Drupal Rector](#) to generate fixes that address compatibility issues, rather than starting the code updates manually. Most common deprecated APIs are covered by Drupal Rector, so it can give you a good head start. Upgrade Status will guide you to use that when appropriate. Any remaining issues identified by Upgrade Status would need to be fixed manually, but the module provides directions to documentation about the changes.



At this point, your environment is suitable for Drupal 9 and all contributed projects have been updated to Drupal 9 compatible versions; your custom modules and themes have also been updated to be Drupal 9 compatible. However, you still have a fully operational Drupal 8 site you could run as it is.

Next, you can update Drupal core itself to Drupal 9 and run `update.php`. If you use Drush, make sure to update to Drush 11, as that is the only version that is still supported and works with Drupal 9.

Congratulations — you should now be fully switched to the latest version of Drupal!

A best practice to take away from this process for the future is to keep your Drupal core and contributed projects regularly updated as that will help you stay better prepared for the next major Drupal release. Drupal 10 was released on December 14, 2022, and you will use the same tools and process to get to that version from Drupal 9 later on.



Very likely, you will find that the time it takes to upgrade is remarkably shorter than any major Drupal updates you have done in the past decade.

For Drupal 7 Users

Migrating from Drupal 7 to Drupal 9 will require a rebuild. In case your timeline allows, you may want to look at moving to Drupal 10 directly, since Drupal 10 includes the same migration tools and solutions. There are numerous tools available that can get the right code in place and avoid migration challenges. These tools include:

[Upgrade Status](#) (Drupal 7 version) – to find out whether the contributed modules you use have Drupal 8/9 versions or replacements

[Drupal Module Upgrader](#) – to generate changes for custom code, enabling Drupal 8/9 compatibility

[Core Migrate Suite](#) – to move content, even supporting Drupal 6 data sources

[Acquia Migrate: Accelerate](#) – to expedite the migration from Drupal 7 to Drupal 9 by up to 50%

Additionally, there are a number of community add-ons aggregated in the [Migrate Tools](#) and [Migrate Plus](#) projects, not to mention a suite of command line tools (such as Drush) that help streamline development.

If you are not ready to upgrade to Drupal 9 and need longer term support for your Drupal 7 website, [Acquia will provide extended support for Drupal 7 once community support ends](#), until at least 2025.



SECTION 04

The Future of Drupal



The Future of Drupal

Drupal 9.5 is the final minor release with support until November 2023. That date reflects the support timelines of Drupal 9's two major dependencies: Symfony 4 and CKEditor 4. Drupal 9 will not receive new features. However, bugs will be fixed until the release of 10.1 in the middle of 2023 and security issues will be resolved up to Drupal 9's end of life.

Alongside Drupal 9.5, Drupal 10 was released on December 14, 2022. It is based on Symfony 6 and includes CKEditor 5 instead of 4. Functionally, Drupal 10 is identical to Drupal 9.5, other than some deprecated modules and themes that were removed. The Bartik default front-end theme is replaced by Olivero and the Seven back-end theme is replaced by Claro. The Aggregator, Color, HAL, QuickEdit, and RDF modules were moved to contributed projects.

Why invest in moving to Drupal 9 if Drupal 10 is here? If you are on Drupal 8, you need to first upgrade to Drupal 9 to be able to move to Drupal 10 afterwards. Contributed projects are being updated to Drupal 10, but it will take some time for most of them to get updated. The Drupal 8 to 9 update tools and process will be used for the Drupal 9 to 10 update too, so the process is more refined for that major update. Therefore the upgrade to Drupal 10 will be as easy (and likely even easier) than the move to Drupal 9 was.



In the future, exciting new features will be added to Drupal 10 only. The following three key initiatives are being worked on for core inclusion in Drupal 10 in the future. You can try these now as contributed projects.

Automatic Updates is a module that applies patch-level updates to Drupal core in a separate, sandboxed copy of your site. This will keep you up and running until the update is completely ready to be deployed. It can detect and report problems at every stage of the update process, so you don't have to find out about them after an update is live. It automatically detects database updates in an incoming update, and helps you run them during the process. It works with Composer in the background. As of this writing, the 2.0 stable version is available.

Project Browser makes it easy for site builders to find modules and themes. Once a project is selected, instructions are provided on how to install the extension on your site. The browser lives inside the Drupal site itself on a new Browse tab under Extend. This means you don't need to leave your site in order to look for projects. As of this writing, the 1.0.0-beta1 version is available to test.

Recipes are a new way to combine and ship Drupal features that will be simpler to maintain than distributions. They also allow functionality to be combined and applied on existing Drupal sites, unlike distributions.



Check out the following resources to stay up to date on Drupal:

<https://www.acquia.com/drupal>

<https://twitter.com/drupal>

<https://twitter.com/dropismoving>

drupal.org/about/core

And to learn more about Drupal 10, download the [Ultimate Guide to Drupal 10](#).

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