



Drupal Multi-site Efficiencies

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Drupal Multi-site efficiencies and Benefits

Introduction and Purpose:

The purpose of this document is to provide use cases for implementing a multi-site Drupal approach within a shared common infrastructure. Drupal multi-site architecture provides users with a common Drupal codebase that can support multiple websites. Although each website shares a common Drupal codebase each site will have the capability to have unique features and functionality to align with Business Requirements. Furthermore, a multi-site structure is considered an Industry Best Practice by Drupal.org. Multi-site architecture reduces code debt, provides a better operation and maintenance cost optimization, and improves the overall security of all websites. The following paragraphs will provide additional details for multi-site architecture, how to best deploy multi-sites, architecture diagrams, and the benefits of leveraging a multi-site architecture. As an industry innovator and Drupal implementation experts, CTAC will help your agency adopt a multi-site architecture and fully realize the technical and cost benefits of this solutioning approach.

About Drupal

Drupal is an open source Web Content Management System (WCMS) solution that is highly adaptable, scaleable, and cost effective. Drupal provides a proven technology solution for Agencies to use and manage public and internal content which can be hosted on numerous Platforms as a Service (PaaS) solutions including Acquia as well as directly on all Cloud Platforms including Amazon Web Services (AWS). This provides agencies with a cost effective infrastructure hosting option that is highly available and secure. Leveraging Drupal provides numerous additional benefits to users through its innovative community driven approach and support. The Drupal community leverages thousands of developers and contributors world wide to enhance, secure, and optimize the platform. Inherent within Drupal are critical out of the box functionality integrating with third party systems including: Search appliances, Mail servers, Single Sign On, Virus Scanning, Newsletters, Analytics, and Multilingual support.

Drupal Multi-site Advantages

Drupal provides agencies with a highly flexible Content Management System whose versatility is demonstrated through its wide implementation across the Federal Government. This is due to the ease and versatility that Drupal and Drupal multi-site provide to organizations. By leveraging a multi-site approach agencies will gain the following advantages and benefits:

1. Cost-effective: Utilizing a single installation for multiple sites reduces costs for hosting, maintenance, and updates.

2. Centralized management: Updates and configurations can be made from a single location, making it easier to manage multiple sites.
3. Consistency: A common code base ensures consistency across multiple sites, allowing for easier maintenance and support.
4. Reusable components: Common components such as themes, modules, and user accounts can be reused across multiple sites, reducing development time.
5. Easy to scale: Adding new sites is easy with a multi-site setup, making it ideal for growing organizations.
6. Increased security: With multiple sites sharing the same code base, security updates only need to be applied once, increasing the overall security of all sites.

Technical Details

Drupal multi-sites will provide agencies with a proven and highly flexible solution for hosting and managing a common set of websites that can be configured to be publically accessible or controlled through network access controls for internal websites. As discussed above, Drupal is an Open Source Content Management System, with more than 40,000 available contributed by tens of thousands of developers worldwide who create, update, and maintain these functional modules to remain secure and aligned with the underlying infrastructure dependency requirements. The technology requirements for Drupal include:

1. Web server: Drupal requires a web server such as Apache or Nginx to run.
2. PHP: Drupal requires a minimum version of PHP 7.3 or higher.
3. Database: Drupal requires a database management system such as MySQL or PostgreSQL to store its content and configuration data.
4. Memory: Drupal requires a minimum of 128 MB of memory, although more is recommended for larger sites.
5. Disk space: Drupal requires a minimum of 32 MB of disk space, although more is required depending on the size and complexity of the site.
6. Operating System: Drupal can run on various operating systems such as Windows, MacOS, and various Linux distributions.
7. Web browser: Drupal can be accessed and managed using a web browser, such as Google Chrome, Mozilla Firefox, or Microsoft Edge.

It's important to note that the technology requirements for Drupal can vary depending on the size and complexity of the site, as well as the number of users and the volume of traffic it receives.

Drupal releases new versions of Drupal every couple years, and provides stakeholders and developers with weekly security patches. Major security patches for Drupal core are typically released every month, but critical vulnerability mitigation will happen outside of normal patch releases to allow stakeholders to mitigate critical vulnerabilities mitigating the time that a vulnerability may be exploited. The following graphic is a simple illustration of architecture and components leveraged in a Drupal multi-site configuration.

The following paragraphs will provide information for hosting options and then provide an overview of each of the 6 Drupal multi-site advantages and how CTAC incorporates each into our award winning approach and service delivery.

Drupal Hosting:

Drupal multi-site implementation has numerous advantages, however one of the biggest advantages is the cost savings and security available through hosting the multi-site environment through the Acquia platform or directly on Cloud Providers such as Amazon Web Service. Both provide managed Drupal environments hosted using AWS cloud-based infrastructure. Acquia is a FedRAMP approved, secure network, server, database, file storage, and content distribution Platform as a Service (PaaS). No matter the hosting platform, an agency can leverage automated deploy tools. This allows the team to deploy updates without disrupting the Production environment (providing zero downtime if the environment allows). Leveraging Drupal's administration tracking, stakeholders will easily be able to understand what is going on in the system from integrated logging functions which capture all user actions performed. This flexibility provides agencies with the ability to migrate the database and content without requiring a full rebuild. All content and infrastructure requirements are built into Composer scripts for versions of Drupal after Drupal 8. This flexibility allows agencies to adapt to infrastructure offerings and select the most cost effective solution without long term commitments or vendor lock-in.

Cost-effective

As mentioned above, utilizing a Drupal multi-site provides an agency with numerous cost benefit opportunities. These benefits are realized through reduced costs associated with hosting (reducing the number of servers and compute services required), licensing, development, and maintenance, making it a cost-effective solution for organizations that manage multiple websites. Cost savings for hosting are realized through deploying a single instance of Drupal and MySQL database rather than multiple databases on separate servers. Licensed tools and products can be shared across all sites reducing the overall costs as only one license will be required to serve all sites within the multi-site architecture. Development time and costs are reduced as developers can work on a single database and numerous features and underlying administration only needs to be done during the initial build and then can be applied for multiple sites. Maintenance costs are reduced as Developers can complete security updates and mitigation one time and that update can be applied across all sites. Furthermore, by centralizing the management of your multi-site can further reduce costs and increase efficiency.

Centralized Management

Through the centralization of Drupal administration and correct implementation of Drupal multi-site approach agencies can gain greater efficiencies for developing, enhancing, and modernizing all sites. Development resources such as developers, designers, and testers can work on multiple sites simultaneously, making the most of their time and skills, reducing costs associated with managing multi-sites. By consolidating internal or external websites, an agency is better able to leverage optimized resources supporting their sites, as well as leverage existing proven solutions such as US Web Design Standard Drupal templates (USWDS). USWDS templates have been developed for numerous agencies to form the base of a website and provide an immediate benefit to agencies for centralized management because US Web Design Standards

has already developed numerous Drupal template options for most government agencies which come with built in functionality.

Consistency

By implementing a USWDS theme and template, all sites inherit a consistent look, feel, and functional elements across all sites. Configurations within the Admin allow for each site to have customized and nuanced features such as social media integrations, video players, or other unique features that may not be required across the other sites while still maintaining the consistency for look and feel with the other sites. Each website will then be able to have its own content organized into a unique Information Architecture which is easily accessible and developed to provide the most critical information to stakeholders. Additionally, each site can be modified to support custom modules and unique edge cases that may vary between the sites.

Reusable Components

Implementing a well architected Drupal multi-site allows for numerous components to be reused across sites simplifying maintenance and reducing costs. Reusable components include the theming (discussed above), codebase, custom modules, and user lists. By reusing these core components agencies are able to improve development efficiency and reduce costs and technical complexity. Out of the box functionality include components and elements that are Section 508 compliant, compliance with the 21st Century IDEA Act, and Plain Language Guidelines. Furthermore, the Drupal theme provides an out of the box style guide and site elements that are then enhanced and customized to meet the business requirements of the agency. Once the theme has been selected, Drupal developer(s) will work with the agency to implement the initial site structure including content types, taxonomies and views. Additionally, the views and page elements for navigation and the overall Information Architecture (IA) can be customized for each site but having a common set of established content types, taxonomies and views reduces the amount of work required to maintain the site and ensure new functionality can be more easily implemented. Another significant advantage and best practice is to integrate the multi-sites with a code deployment tool such as Jenkins or other open source code management and code deployment platforms.

By integrating with a code deployment tool, development teams can make and deploy updates on any specified site for feature updates. Furthermore, security updates that are for the Drupal core, or support the selected theme, can be applied to all sites through a single deployment and update. This versatility and consolidated workflow allows for more versatility and freedom for development teams to quickly update content and reduces the operations and maintenance tasks by streamlining and optimizing deployments.

Easy to Scale:

Drupal multi-site approach provides agencies with the ability to scale easily and efficiently to create new or scale existing websites to meet the needs of stakeholders. As discussed in the reusability section, by utilizing a Drupal multi-site configuration, numerous core elements can be

quickly adapted and scaled for new websites. Additionally, by leveraging Cloud platform best practices and Infrastructure as Code, the underlying infrastructure can be modified to quickly add additional compute services, tools, or databases to align with business requirements. Furthermore, agencies will be able to manage and mitigate costs of additional infrastructure due to the reusable and scalable nature of the multi-site approach.

Increased Security:

Providing stakeholders with a highly secure platform, to ensure the availability of their sites is one of the key value points for implementing a Drupal multi-site. A multi-site approach allows an agency to establish and test security controls for multiple websites that can be managed under a single ATO. For Cloud hosted websites the Drupal core and configuration will be developed within a Virtual Private Cloud (VPC) whose configurations and Access Controls will be adapted to meet the agency's requirements (NIST 800-53) and best practices for Drupal. Additionally, role based permissions ensure the best practice of least privilege access and provides greater user controls for an agency where stakeholders may need to have higher permissions for one site and lesser permissions for the others.

CTAC's Drupal Multi-site personalized approach for Drupal Migrations for non-Drupal Platforms and Drupal Modernization and Enhancements:

CTAC's Acquia Certified Developers provide the expertise and experience to quickly and efficiently implement a multi-site migration and implementation. At the onset of a Drupal project, CTAC's Acquia-certified Drupal developers work with our Cloud Certified DevSecOps personnel to discuss the requirements, challenges, and opportunities that will be impacted by the project. Multi-site migrations provide a unique opportunity for agencies to increase efficiency by completing a pilot site, which will be used to satisfy applicable agency and NIST requirements. By implementing a pilot the environment can receive an Authority to Operate (ATO) which can then reduce future costs for additional sites being added to the environment. In addition to the reusable components, the infrastructure and underlying security protocols and configuration are also reused saving an agency nearly 70% of infrastructure costs when compared to stand alone websites and applications. CTAC's "Sync" Specialty team reviews all Drupal site architecture and looks for cost savings for all clients. Furthermore, CTAC's "Sync" team contributes new modules to the Drupal community in order to further Drupal's capabilities while supporting our clients. CTAC provides Drupal solutions to meet your agency's needs including Cloud migrations to Drupal, migration / modernization, optimization for existing Drupal sites. CTAC provides each client with a customized solution built upon our validated Structured Agile Approach (SAA) which has been independently validated by Capability Maturity Model Integration (CMMI) and International Organization for Standards (ISO) independent assessments.

Centralized Management Additional Migration and Hosting Options for Drupal Multi-site Solutions:

- **CTAC FastTrack Migrations:** CTAC's Fast Track Migration Service, provides turnkey Drupal migration for websites (external or internal) that are on older outdated technologies to the latest version of Drupal within 120 days. CTAC's Fast Track migrations team built the Fast Track content tool for Federal websites to automate migration of common content types including .pdf, doc(x), ppt., .jpeg, .gif, HTML, and other common file formats. The Fast Track content tool also supports frameworks such as legacy technologies including Dreamweaver, Sharepoint, and Wordpress. More information for CTAC Fast Track Migrations can be found on our website under the Solutions: ctacorp.com
- **Hosting Solutions:** CTAC has a Letter of Supply for AWS to host your site directly through us. Additionally, we are a Acquia partner for those agencies looking to leverage the Acquia platform. We have successfully built Drupal websites on both platforms for numerous agencies including HHS, FDA, GSA, DOE, DOI, CPSC, CFTC, and numerous state and local partners. Additional information can be found on our website in our clients and solutions sections: ctacorp.com

