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A guide to Drupal + Magento at enterprise scale

How to combine these solutions into a single,
powerful customer engagement platform.

Introduction

The idea of creating a hybrid Drupal CMS/Magento ecommerce store might sound like a complicated Frankenstein of a site, but it's actually a clean, powerful, logical way to go, particularly for any company with a large sales volume that's looking to implement clever marketing content. Think about it: Drupal's native ecommerce options have always lagged behind its unparalleled leadership in content in the enterprise market. Combine that content power with the best-in-class open source enterprise ecommerce platform—Magento 2—and you've got a market-leading system.

What does that mean, exactly? By uniting the strengths of both platforms, you get a much more powerful site, capable of—well, anything, really: moving massive sales volumes; personalizing content to ages, regions, whatever; selling products across across the globe, in various languages; handling huge publishing flows; and making it possible for someone in L.A. to write new content that can be instantly approved by someone in New York. It means that your cool new Christmas promotion can hit right when it should, and you can launch a new feature that helps shoppers pick jeans by body type, without having to check with IT to see if you're going to break the site first.

All this, plus you can still integrate with Salesforce, Avalara, Braintree, SAP, Authorize.net—whatever you need.

It's less Frankenstein's monster, and more a perfect hybrid machine, tailored to handle all of your content and ecommerce needs, and best of all, any needs you might have down the line.

This white paper will explain in detail how to plan and execute the technical architecture for an enterprise-scale Magento 2 Acquia + Drupal 8 platform, reduce institutional risk, and leverage the platform to achieve your business objectives.

Acquia Drupal and Magento integration history and new partnership

Though companies have built digital experiences by combining Drupal and Magento since at least 2012—Quicken, Dwell, Wilson Sporting Goods, among others—it was not until the fall of 2016 that Acquia and Magento **announced their formal partnership.**

A series of successful Acquia Drupal + Magento integration projects and increased evidence of content strategy ROI were the primary driving factors behind the formal partnership. The market is already combining Drupal and Magento manually; Acquia is making it easier by making combining the two systems a turnkey operation.

From the press release, it's clear that leadership from both organizations is invested in the success of a combined platform:

“Commerce as we know it has changed, and the imperative has emerged for brands and merchants to deliver powerful, personalized experiences. Acquia and Magento combine the best attributes of open source development—agility, speed, innovation and security. Together, we’re putting the power back in the hands of merchants and brands to allow them to control every pixel of the experience throughout the customer journey.”

Tom Erickson • CEO • Acquia

“At the heart of this partnership is a shared open-source heritage and vision for delivering on next-generation commerce and customer experiences that is unprecedented for the industry. The combined power of our respective technologies and our thriving global ecosystems will allow our customers to drive unbridled innovation, engage consumers like never before, and pave the way for the commerce experiences of tomorrow.”

Mark Lavelle • CEO • Magento Commerce

As an early adopter of the platform, Third & Grove continues to work closely with Acquia to implement Drupal and Magento integrations for a variety of clients.

June 2011

Magento shakes up the ecommerce world when Ebay acquires the ecommerce technology company for upwards of \$180 million.

September 2015

Large-scale Drupal+Magento integration gets vote of confidence when Wilson Sporting Goods launches new site, further validating the notion that Drupal's out of the box ecommerce tech may not be the **best option for the CMS**.

November 2015

Both Magento and Drupal get complete rewrites and major overhauls with the release of Magento 2 and Drupal 8, respectively.

January 2016

Third & Grove launches first headless integration with Drupal CMS and Hybris powered store for a global cosmetics brand. **View the case study**

July 2016

Third & Grove launches one of the first **major Magento 2 stores for a B2C retailer**, the site running headless with Drupal on top. This project would later get nominated for an Acquia Engage award.

September 2016

Work begins by Acquia, a SAAS technology provider co-founded by Drupal's creator, Dries Buytaert, on building a new commerce solution by integrating Drupal and Magento.

October 2016

Acquia announce major partnership with Magento Commerce, solidifying the technology maker's ecommerce prowess among platform providers.

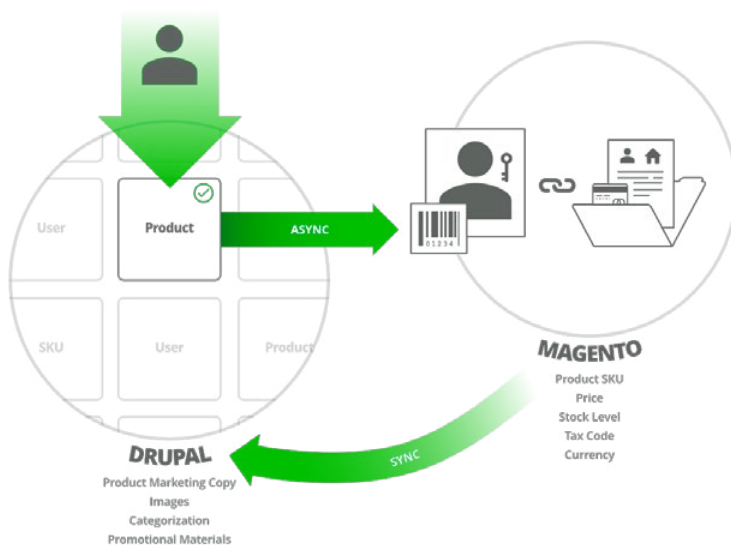
Understanding the technical architecture

When you start planning your Magento Acquia + Drupal platform integration, there's a critical decision to make upfront: to opt for a headless architecture, or go for side-by-side (SBS). These are the two technical architectural options for combining Magento 2 and Drupal 8 into a single framework. In the headless approach, Drupal 8 serves every page in your site—the end user only every interacts with Drupal, even in the shopping cart. In the SBS approach, both Drupal 8 and Magento serve pages of the digital experience to the end user.

Put simply, either Drupal serves to glass, or both platforms do.

In the first approach—headless Magento—Drupal communicates with Magento using Magento's REST APIs. Product data is synced between the two systems, but Magento remains the canonical source of truth for product data. To ensure scalability and stability, Drupal uses a combination of live API calls (only when absolutely necessary), caching data within Drupal, and background asynchronous processes that keep information up to date in Acquia.

There's a major security bonus with this approach. While the Magento store still takes care of all of the mechanics of the commerce experience, Drupal manages every page on the site. Magento is never actually on the live internet, so the store is restricted to only known traffic, dramatically reducing the attack surface.



The diagram above shows the network infrastructure for the headless approach.

Going headless can also result in cost savings. When you go for the Drupal + Magento mashup, you need to make sure that all theming—colors, logos, etc—are created in both systems. But when you go headless, all your users will ever see is Drupal. No need to put in the work in Magento.

In the SBS approach, where Drupal and Magento both serve pages on the site, Magento typically provides the product detail pages, category landing pages, and the cart and checkout flow. Drupal typically provides the homepage, marketing-driven landing pages, blog and lifestyle content, and the content widgets on Magento pages.

The main advantage of SBS is the ability to use existing Magento modules that have a frontend component (subscriptions, fancy custom forms for bundled/grouped products, etc.); with the headless architecture, this functionality needs to be crafted in Drupal. The drawbacks are the additional effort to maintain two themes (theming layers can't be shared between Drupal and Magento), increased attack vector (two platforms with their own security issues instead of one), and the need for a single sign-on, so the customer experience is fluid between pages.

In general, when sites focus more on content than commerce, a headless approach makes sense the most sense. In the opposite case, SBS tends to be the better choice. In the next section, we help you figure out the best approach for you.



The diagram above shows the network infrastructure for the side-by-side approach.

What is the glass?

The “glass” refers to the platform building the web pages that the end user interacts with. In the headless approach, Drupal is serving the glass—the end user never directly interacts with Magento. The Drupal platform itself interacts directly with Magento via Magento’s excellent REST APIs on behalf of the user.

Headless versus side-by-side: How to decide

There's no right or wrong approach to combining these two systems. Both headless and SBS architectures have pros and cons. By using your digital experience and commerce business requirements to drive the technical approach, you will minimize the total cost of ownership for your organization over time and avoid the unnecessary accumulation of technical debt.

To start the decision-making process first categorize all of your major, high-level requirements into two categories: content requirements and commerce requirements. Now look at the number of requirements in each bucket. If there are far more commerce requirements than content, that may indicate a side-by-side approach is more ideal.

If the list is even, you need to look more deeply into the commerce requirements and understand which parts of the digital experience they impact. If you have commerce requirements that have significant interaction with the glass, lean towards a side-by-side approach; for requirements that are more backend-integration focused, go in the opposite direction. Sites that primarily have content requirements would also do well with a headless approach.

What is technical debt?

Technical debt is what happens when decisions made early in a project result in an accumulation of deferred effort. Technical debt eventually will have to be paid in the future of the project, as later work, phases, and enhancements may be made more complicated to implement (or in extreme cases so complex that it's not worth the effort). Typically, decisions that shortcut technical approaches for the sake of expediency or unsound technical decisions are the biggest contributors to technical debt.

The Pros and Cons

It's important to understand the pros and cons of each approach.

HEADLESS

Pros

- / Highly secure, as the ecommerce platform can be off of the public Internet
- / One platform to theme, instead of two (Drupal and Magento themes cannot be shared)
- / Does not require single sign on (SSO) between the two systems
- / More robust content marketing platform for editors
- / More powerful content workflow features

Cons

- / Forward-facing Magento extensions will assume Magento is controlling the glass and may require additional refinements to work
- / While Magento has a robust, modern API architecture at its core, headless isn't its most common use case

SIDE-BY-SIDE

Pros

- / Magento extensions are unlikely to be complicated by integration
- / Maximizes the value of both platforms, as both serve the glass at which they are good

Cons

- / Twice the attack surface as headless (two platforms)
- / Two themes must be built and maintained
- / Breakdown of which pages should be served by which platform is not always clear during development
- / Drupal needs full stack performance tuning, while Magento needs only API-level tuning.
- / Requires single sign on (SSO) integration

Architecture Decision Matrix

Use this decision matrix as a strategic planning guide to help determine if you should go headless or side-by-side. Acquia Drupal will now be taken as seriously as the existing market leaders and will win on price, largely driven by the open source cost savings that Sitecore and Adobe Experience Manager cannot match.

	YES	NO
Will the site have a very large number of SKUs?	You may want to consider having Magento host just the cart and checkout pages	Does not impact integration approach.
Is the product detail page complex, and will it be powered by many Magento extensions?	Headless will increase complexity of leveraging extensions involved in the product detail page. +1 for side-by-side	+1 for headless
Does the product display data or availability based on inventory fluctuate at a high rate?	Headless will generally increase complexity of updating product display in real time for high rates of product data or inventory. status changes.	Does not impact integration approach.
Is payment gathered via modern, fully-hosted providers?	Does not impact integration approach.	Headless will require additional consideration for secure handling and compliance for protected payment method data. +1 for side-by-side
Is the checkout flow highly customized?	You may want to consider having Magento host just the cart and checkout pages	+1 for headless
Will the site have a blog?	+1 for headless	+1 for side-by-side
Will the site have many content-driven landing pages?	+1 for headless	+1 for side-by-side
Do you need faceted search?	Both Drupal and Magento have strong support for faceted search with platforms like Solr, but Drupal likely will provide better tools for indexing, forming, and parsing your site's content—product, marketing pages, and otherwise— and more efficiency than Magento.	Does not impact integration approach.
Will there be a complex logged-in experience?	Drupal 8's framework for logged-in experiences will likely be more efficient to extend and build on than Magento 2.	Does not impact integration approach.
Are you using content personalization?	+1 for headless While market-leading personalization tools like Acquia Lift and Optimizely work with both platforms, having one platform to glass will simplify the integration.	Does not impact integration approach.
Do you need editorial workflows for marketing content?	+1 for headless Drupal is built primarily as a tool for editorial teams. This is where it excels.	Does not impact integration approach.
Are there CRM integrations?	Both Drupal and Magento have strong integrations with leading CRMs like Salesforce and SAP.	Does not impact integration approach.
Are there commerce ERP integrations?	Integration approach does not impact ERP integration complexity.	Integration approach does not impact ERP integration complexity.

Organize your stack like your team

When you integrate Acquia Drupal and Magento, you need to decide where product data lives and where marketing data lives. A common approach to generating this breakdown is to mirror the organization's team structure. If a content team handles promotional copy, images, and visual / editorial design, then these fields should be sourced from Drupal. If a merchandising team determines inventory and pricing, manages stock levels, and designs promotions, these fields should live in Drupal. Using a breakdown like this means that each team only needs a set of keys to one of the platforms. Also, any disruption in one of the systems is unlikely to affect the other.

The most common division is to store critical ecommerce fields like price, SKU, and stock in Magento, and put product information and marketing copy in Drupal. This mirrors organizational structures that have separate content marketing and product merchandising teams. Below is a sample breakdown of product fields by system that has worked well for clients whose organization is structured in this way:

	Drupal	Magento
UPC		★
Price		★
Stock Level		★
SKU Code		★
Variations (e.g., color, size)		★
Legal Data (e.g., hazardous materials)		★
Product Description	★	
Product Images	★	
SEO Keywords	★	
Product Category	★	
Product Videos	★	
Cross Sell/Upsell Products	★	

Instrumentation and digital strategy

Regardless of the approach, a critical requirement in the development phase that spans all teams is the proper implementation of analytics tracking code to the site experience. Whether you're using Google Analytics (via GTM), Adobe, Mixpanel, or a combo-recipe that also includes a testing/visualization platform like Optimizely or CrazyEgg, ensuring that all use cases are documented early will allow for a more straightforward build, and an improved optimization approach post-launch.

In the context of the previous decision matrix, the team(s) should be evaluating how data can help drive conversions at each step. For example, if the cart has a non-standard checkout flow, that will not only impact the technology approach, but also the data-gathering and data-analysis approach. If we assume a non-standard checkout—say custom flooring that also requires a scheduled in-home consultation—each element of the sequence (buttons, forms, tooltips, dropdowns, sliders, etc.) should be tagged so that the marketing and merchandising teams can understand the customer's journey, the elements that are creating friction, and where they need test improvements.

Similarly, if the shopping experience is content-heavy, tagging videos, interactions, and articles will help the marketing teams quantitatively understand if content (watching a video, reading an entire blog post, etc) helps drive conversion, and by what factor. With this data in hand, the teams will be much better positioned to create cohorts of users (example: Mac

users from promo_email who watch video1 are 25% more likely to convert), opening opportunities for fine tuned funnels, and for evaluating the value of marketing spend across channels like organic, display, PPC, etc.

A properly instrumented site will also help the technology team prioritize work that ties directly to conversion. Using the example above, if site data shows that your target users are primarily in an area with slower internet (maybe we're selling Franklin stoves or snow chains), tickets to help clean up CSS and optimize video loading would move to the top of the queue very quickly.

In each case, the gathering of requirements during the planning phase (i.e. looking at the Architecture Decision matrix through an analytical lens and planning for instrumentation) allows all teams to prioritize efforts for optimization after launch.

The importance of using a conductor

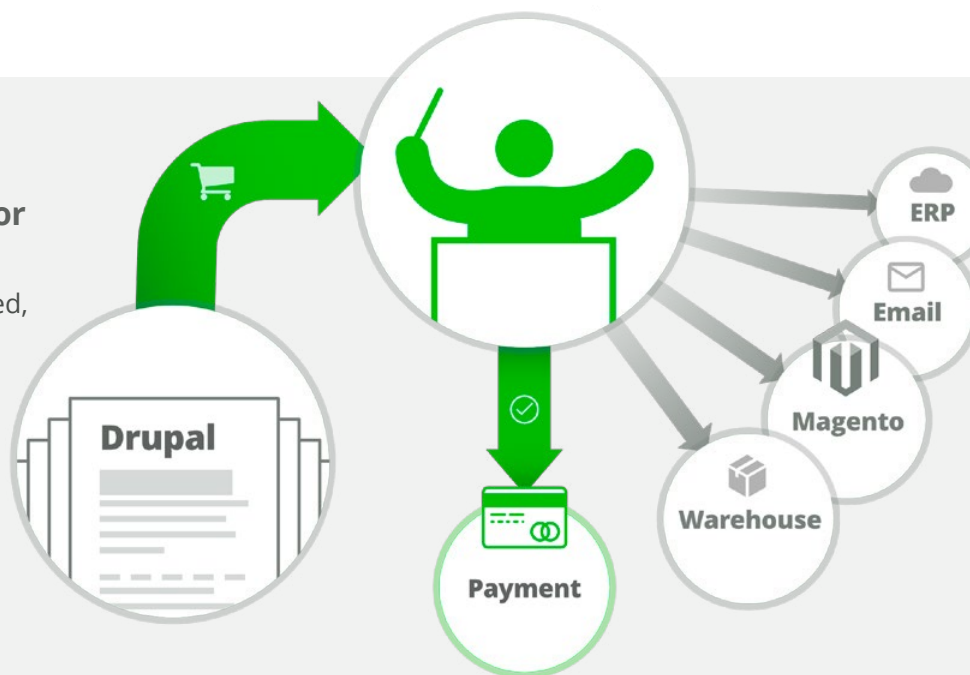
Acquia Drupal and Magento are both enterprise systems that have a proven record of scaling to handle large order volumes and traffic, authenticated or otherwise. However, a modern digital commerce experience involves a variety of integrations with third-party and internal systems for order processing, financial reporting, and customer service.

Conductor platforms are a critical component to ensuring fault tolerance in Acquia Drupal + Magento integrations. A conductor stands between Magento and every integration system that is not a checkout blocker, and holds requests until the system is available. Data doesn't slow as it's sent out of the store, and if third-party systems go down, they won't take down your store. In many cases, only the payment system is a blocker, and you can dramatically reduce your single points of failure.

For example, if your store needs to send order information to Salesforce so that your customer support team has the information it needs, a delay in sending that order to Salesforce of a few seconds is trivial and doesn't impact business. Salesforce can be down—the data sending request can fail for any reason, really—and your digital commerce stays online.

Acquia Commerce Platform Conductor

One of the exciting features in Acquia's Commerce Platform offering is a fully-managed, extensible, dynamically-scaled conductor. Conductors require thoughtful engineering, as they have to be built from scratch. You can dramatically reduce project risk and your implementation budget by using Acquia's Commerce Platform.



Drupal + Magento: Connector FAQs

Does this integration support multilingual sites and global platforms?

Yes! It's compatible with Acquia Drupal's and Magento's built-in support for multiple languages, multiple countries, and multiple stores.

Do the Magento connectors support every commerce use case?

That would be really hard! There are so many unique use cases that it's impossible for any connector set to support every case. But these connectors are built following best practices. They are designed to be extended to support your custom use case. They will get you 80% of the way there, but there is inevitable customization necessary for any modern, complex digital commerce effort.

Do the commerce connectors support promotions?

They sure do. Promotion use cases are often unique, so if the promotion isn't supported out of the box, you can extend the promotions connector to make it happen.

Are these Magento connectors for Drupal 7 or Drupal 8?

We've built Magento 1 connectors for Drupal 7, and are currently building Magento 2 connectors for Drupal 8. The Hybris connectors are for Drupal 7, but we have a Drupal 8 version that will be released very soon.

Is it possible to scale the Magento connectors for enterprise commerce projects?

It is! We have clients using these connectors at scale, through traffic peaks like Black Friday and Cyber Monday, and promotions all year round.

Is headless commerce always the best method?

No. There are two primary ways to connect a commerce system with Drupal: side-by-side and headless. Both have pros and

cons. It's important to evaluate your requirements and plan a path forward based on your needs. See our Decision Matrix section above to help you decide.

Do the Magento connectors support commerce personalization tools like Adobe Test & Target, Acquia Lift, and Optimizely?

They do! These tools and others are fully compatible.

What is the source of truth (SSOT) for commerce data—Drupal or the commerce platform?

It depends. We recommend storing the data in the system that is better at handling that specific data, but the connectors are flexible, and you can customize them by project. In general, we recommend storing assets like images and descriptions in Drupal, and price and stock in the commerce platform.

Does Drupal make live API calls for data, or cache a copy of the data in the Drupal layer?

Both. When live data is absolutely necessary, the commerce connectors make highly efficient real-time calls. When it's not, we use background processes to store and cache data in Drupal to ensure a quick yet data-relevant experience at the glass.

Are the commerce connectors compatible with tax services like Avalara?

Yes, the connectors are fully compatible with tax service providers like Avalara.

How can I help?

Help would be awesome! The best way you can help is to use the platform and contribute back to the Magento project on [Drupal.org](https://www.drupal.org).

About the authors



Justin Emond

CEO, Third & Grove

Justin is the founder and original CTO of Third & Grove, a technology focused digital agency in Boston and San Francisco. Justin has worked on both sides of the technology world—on the inside of companies and as a consultant. Prior to Third & Grove, Justin served as Senior Digital Project Manager at a boutique agency in southern California and as adjunct faculty at the top-ranked USC Viterbi School of Engineering. He is the author of **Pro Web Project Management (Apress, 2011)**, a pragmatic guide to managing digital projects.



Tony Severo

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Anthony has led projects for major retailers including The Gap, Macy's, Williams Sonoma, and Sephora, and has also worked for startups including Demandforce, and Rocketlawyer. He is an expert in assessing business technology performance, and his work has been published in *Search Engine Optimization: An Hour a Day*.



About Third & Grove

Third & Grove is an independent agency of innovators, designers, and engineers. We work directly with incredible organizations to build complex systems and innovative digital experiences in technologies like Acquia Drupal and Magento.

We have a full-time team of 40 people and two offices in Boston and San Francisco. Our key discipline is delivering engaging digital experiences. We achieve this by breaking rules while remaining technologically sound.

Our company is organized respectively into two groups:

- / A strategy group that is responsible for digital strategy, user research, UX, and design.
- / A technology group that is responsible for code architecture, testing, and delivery.

TAG's strategy group consists of solution strategists, business analysts, content strategists, social marketing experts, SEO experts, visual designers, and interactive designers.

This team is responsible for interpreting a client's needs and delivering a solution through analysis, research, user testing, and forward-thinking design.

Our proven technology group is made up of architects, developers, and quality assurance resources. Together, we have delivered mobile and web solutions (on spec, on time and on budget) for Fortune 500 companies and startups alike.

"It's a rare opportunity that an agency like TAG can fit in so well with our in-house team. The support, partnership, and commitment to creating a custom solution for our multi-lingual sites made all the difference in our successful launch."

Steven Reichgut • Director of Engineering • Benefit Cosmetics