

# Powering Modern Commerce in the Cloud

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## INTRODUCTION

Technology enables consumers to connect with brands in almost every imaginable way, but the inherent complexity and rapidly fluctuating scale in this digital environment also present challenges for commerce executives. Modern commerce requires a new type of infrastructure to support multiple, diverse and fluctuating customer channels.

This paper illustrates why a cloud model is the best choice for economic scalability, broad availability and security required for a modern commerce organization. The cloud enables the rapid and innovative business initiatives necessary to stay competitive and grow.

The cloud model helps technology managers get out from under non-revenue generating infrastructure support and focus the organization on what it does best – building stronger customer relationships and growing the business.

## KEYS TO SUCCESS IN THE NEW COMMERCE ENVIRONMENT

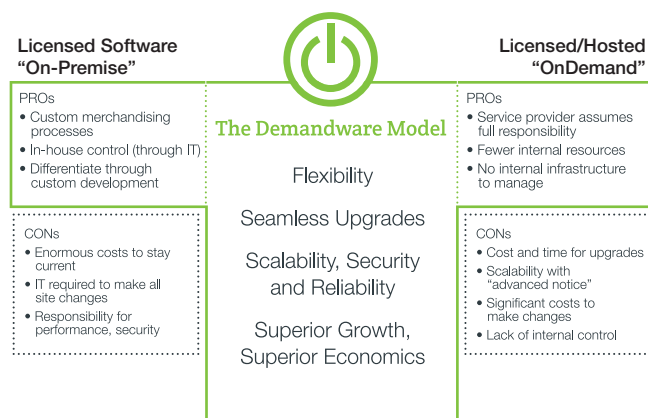
Internet and mobile technologies have enabled today's consumers to instantly connect with information and opinions that drive their buying decisions. Giving consumers more choice in how, where and when they transact has changed the customer relationship, pace and potential scale of commerce.

But with change comes new opportunities. New consumer behaviors and technologies allow line of business (LoB) managers to drive truly innovative brand messaging and merchandising that meet and even exceed the expectations of prospects and customers. Commerce infrastructure must be flexible to incorporate new systems of transaction and interaction and, at the same time, integrate with systems of record.

### Technology leaders must drive decisions in three areas critical to the success of operational and LoB initiatives:

- Provision infrastructure that can **scale** on demand to meet widely varied performance requirements—and support expansion into new geographies and new channels
- Build an environment that encourages rapid **innovation** for continued growth
- Ensure the environment is **reliable and secure** as business grows

On-premise solutions and cloud services offered by all-purpose Managed Service Providers (MSPs) do not deliver on these critical success factors. A commerce platform designed specifically for the cloud, and managed by retail experts, maximizes the ability to scale and innovate—while meeting the needs of the enterprise in a predictable, cost-effective manner.



*A true cloud platform provides the best of both worlds. All the "pros" of on-premise/on-demand software while leaving the "cons" behind.*

## SCALE FOR PERFORMANCE AND EXPANSION

A commerce operation that scales effectively goes beyond adding infrastructure to meet fluctuating performance requirements with on-demand bandwidth, computing and storage capacity. Scalability also requires the ability to rapidly and economically expand into new geographies and new channels—with the level of reliability and security commerce now demands.

### Scaling for Performance

On-demand capacity is "table stakes" for engaging in successful commerce. Retailers simply can't stay in the game if their infrastructure is unable to reliably support the peaks and valleys of commerce in a dynamic, and global, retail enterprise.

That support requires constant choices regarding the hardware and software of the technology stack -- and the resources to maintain them. There are regular cost/benefit decisions around database optimization, memory allocation and caching (including the use of content delivery networks), routing and load balancing, network bandwidth and computing power, i.e. all the infrastructure components that challenge scalability while maintaining performance.

### On-Premise

It is difficult and expensive to optimize and maintain infrastructure for licensed commerce applications running on-premise. Investment must be made in infrastructure for peak loads and capacity that is typically used only for brief periods of time. It is important to plan for and ramp up these efforts long in advance (design, order equipment, stage, test, etc.), making it difficult to respond quickly to changing line of business requests. And no matter how well executed, there is always the risk of disruption to the technology commerce operations.

Ultimately there is little control over the commerce application itself. IT teams do not own the code and cannot determine how it is engineered to run – let alone adjust and recompile for better performance. These limitations restrict how much IT teams can take advantage of new technologies and change components in the technology stack.

## Managed Service Providers (MSP)

Running licensed commerce software with a generalized Managed Service Provider (MSP) can introduce another layer of complexity. They, too, are dependent upon the commerce application vendor and cannot optimize the application. They may be able to throw more hardware and bandwidth at a problem, but there can be unpredictability as they try to scale hardware to the licensed application that they do not control.

## Why Cloud Technology is a Better, Established Approach

Demandware Commerce, a cloud-based technology platform, is based on a modular, scalable infrastructure that delivers optimal performance and flexibility. The infrastructure is built around Points of Delivery (PODs), a purpose-built set of network, storage and security application and management components.

### GROW WITH DEMANDWARE

Demandware customers have experienced:

- > **40-60%** in conversion rate improvement
- > **25%** in year-over-year GMV improvement
- > **20%** traffic volume improvement
- > **4.5%** improvement in AOV
- > Ability to launch sites, products and site customizations 3.5 months faster than the competition

\*Understanding TCO When Evaluating eCommerce Solutions, Forrester Research, 2012

The technology stacks of these purpose-built PODs are optimized to run a unique commerce application – an application written from the ground up to run in the cloud. They provide scalable database and memory allocation, caching, compute power, network bandwidth and routing and load balancing uniquely designed for the performance requirements of a commerce business. The POD infrastructure provides plenty of capacity and performance “headroom” for customers to grow.

- PODs run “very cold” to accommodate fluctuations
- Hardware optimization for extremely large databases
- Caching on all tiers, with appropriate resource allocation
- Load demands are monitored 24/7 by operations staff

Furthermore, Demandware performance represents years of experience tuning the application to run more efficiently and reliably. For example, synchronization and clustering in PODs have been tuned and tested through years of use across multiple scenarios and loads. Improvement is continuous for storing data in NoSQL databases to provide better scale, caching (including content distribution networks), running transactions, load-balancing, and improving bandwidth with interconnections like InfiniBand.

## THE POWER OF DEMANDWARE

Demandware has the capacity, resources and experience to try new technologies, with no disruption to end users. Such resource allocation, coupled with broad experience and a focus on commerce, is incredibly difficult for any single enterprise or MSP to match. This includes faster solid state drives (SSD), better Secure Socket Layer (SSL) termination and self-organizing clustering to address shifting customer demand. These fixes and improvements are cumulative and benefit all users.

A cloud approach addresses problems before they impact the business. Effectively, commerce infrastructure scalability and performance – even during peak seasons or special initiatives – cease to become gating factors. IT leaders are better able to focus on strategic initiatives that can grow the business.

### Scalability Includes Flexibility for Rapid Expansion

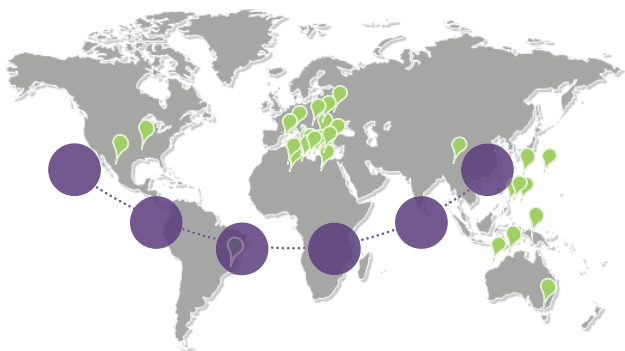
Designing and provisioning infrastructure for capacity and performance is one thing. Growth also requires the ability to quickly expand brand initiatives, namely additional websites, pages, or functionality, across geographies and channels (e.g. mobile)—without breaking the bank.

Expansion with licensed software requires the planning and purchase of additional hardware and software licenses accordingly. Support costs will increase, particularly if expanding into new geographies (staff, language, regulations, etc.) and deploying new or different technology. All this takes time, as businesses essentially ramp up new operations each and every time. Depending upon the degree of integration across the infrastructure, the *risk of disruption to existing commerce operations is unavoidable*.

Demandware Commerce runs on an already established worldwide infrastructure. The application itself was engineered

to run natively on the cloud. This helps roll out new brands, new sites and test new initiatives quickly and seamlessly, with minimal and predictable costs.

#### Plug into a Global Network



Demandware operates in more than 49 countries from 17 global points of delivery

Established integrations with existing systems of record, such as ERP pricing databases, can be more easily extended to accommodate new websites. These integrations do not need to be rewritten to accommodate new hardware and software configurations. Systems of transaction and interaction, like payment systems or large, dynamic product catalogs, can also be extended to new geographies and websites far more easily and quickly.

Demandware Commerce provides consistent global functionality, allowing multiple geographies to manage local languages, customs, preferences, cultures and other regional aspects from the same platform.

- **Multi-Site Management:** Operate, synchronize and differentiate multiple sites within one operating environment.
- **Multi-Currency:** Support international pricing requirements, including multiple currencies and tax systems.
- **Multi-Language:** Offers multiple languages, including double-byte characters.
- **Payment and Tax:** Access dozens of pre-integrated payment and tax technologies, making it even easier to service new geographies.

The platform also offers the flexibility to assign appropriate levels of governance (global and regional responsibilities) according to the way the business is run.

**Bottom line:** A dedicated, cloud commerce platform affords greater flexibility and speed in approaching new opportunities. Get to markets faster than the competition and increase traffic and gross merchandise volume (GMV) with highly tuned and consistent ecommerce functionality.

## PROMOTE AND ACCELERATE INNOVATION

To remain competitive in today's retail environment, both the business and IT must continue to innovate. There is a growing misalignment between line of business executives relying more and more on technology and what IT can deliver and support. Many IT departments are challenged by complex, outdated commerce systems. The majority of their time and budget is spent preventing or putting out fires. **The result? A growing backlog of innovative commerce initiatives and frustrated line of business managers.**

What's needed is the infrastructure, tools and environment that encourage inventive brand messaging, innovative merchandising initiatives and new ways of customer interaction. IT leaders want to protect these investments and prevent them from breaking as changes are introduced to the supporting infrastructure. As much as possible, they want a "future-proof" platform – a platform capable of addressing future consumer channels and demands.

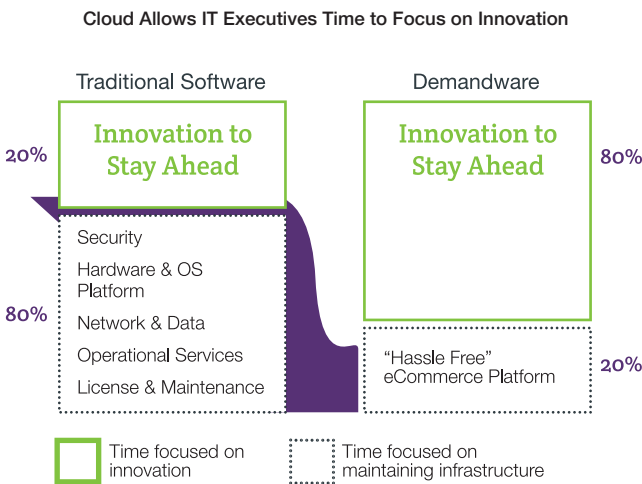
### Licensed and Homegrown Solutions – Upgrades vs. Innovation

Licensed software and homegrown solutions running on-premise make rapid innovation difficult. They quickly become too complex, rigid and costly to keep up with the changing needs of the business and the consumer. It is expensive to design and execute custom websites, pages or other unique customer engagement capabilities because of application upgrades. Upgrades often cause customized code running on top of the commerce application to break or require re-tooling.

Even mitigating this risk takes time. Testing and staging will slow down roll-outs and drain resources that could be used elsewhere. Upgrades to hardware or software can require re-tooling integrations with systems of record, ERP pricing systems or product catalog databases.

By and large, the upgrades themselves are more fixes than innovative feature enhancements. This environment hinders

both business units trying to promote the brand in a dynamic, competitive market and IT departments trying to go beyond status quo maintenance.



Initially, custom on-premise solutions might afford more control. But as companies scale and the platform becomes more complicated, it becomes inevitably hard to extend and more expensive to maintain. On-premise software may become so layered with expedient "patches" and custom code that it begins to feel more like supporting a "house of cards." Custom solutions also tend to be closed to swaps for innovative point solutions or, at best, hard to integrate quickly and reliably.

### Cloud Enables a Focus on Innovation

Demandware offers a unique combination of technology and methodology to enable faster, sustainable innovation. Through an open-cloud architecture, businesses can innovate customer-facing initiatives how, where and when they want, without the worry of scale or changing infrastructure. This is accomplished by:

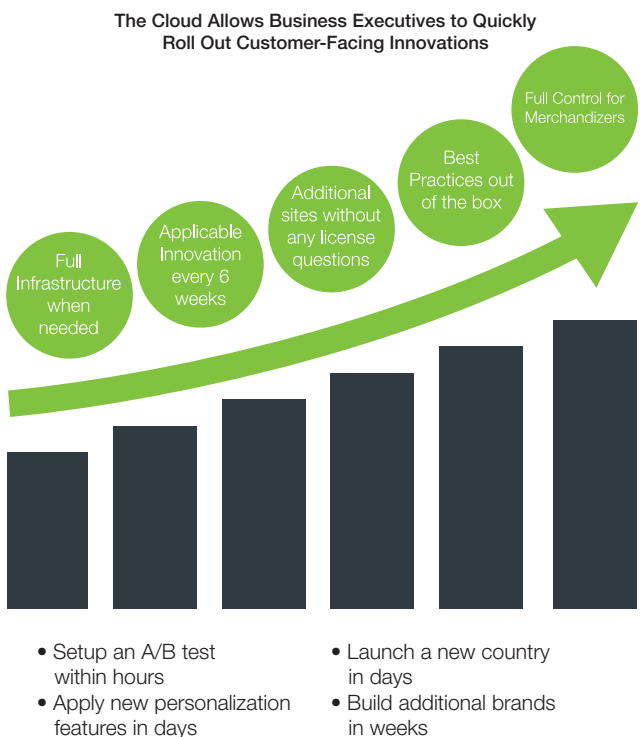
- Enforced Application Programming Interfaces (APIs) that insulate and protect customized brand and merchandising initiatives from infrastructure upgrades
- Intuitive development tools that employ a visual graphic user interface (GUI) and standardized language to provide the environment for merchandizing teams as well as web developers to easily customize for the brand and configure commerce operations.

## DEMANDWARE LINK PARTNER PROGRAM

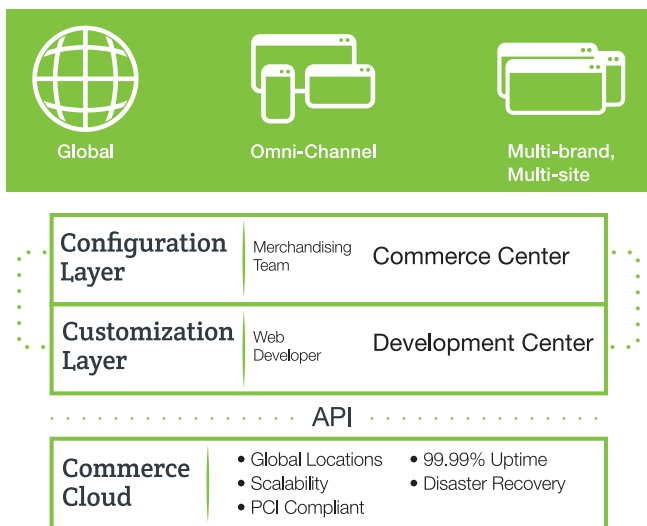
Successful innovation requires collaboration outside the organization. Demandware supports a community of third-party technology and business process partners that complement and optimize Demandware Commerce.

- > **Technology Partners:** Trusted third-party technology with pre-built, certified integrations -- think of it like Apple's App Store
- > **Solution Partners:** Expert third-parties that specialize in strategy, design, and implementation services focused on project excellence and client growth
- > **End-to-End Partners:** Partners that combine the power of our platform with a host of complementary business and technology capabilities to provide a comprehensive solution for digital commerce

In addition, Demandware Commerce readily accommodates a number of pre-built, certified integrations through the LINK Partner Program for initiatives such as email marketing, ratings and reviews, social media, tax reporting, advertising and payment methods.



An Open Cloud Architecture Promotes Innovation by Empowering Business and Technical Users



## EMPOWER BUSINESS EXPERTS

Business experts, those who work closest to the customer and market demand, need to be able to design and quickly launch new brand messaging and merchandising efforts. Demandware provides an easy-to-use application with visual GUI that empowers merchants, marketers and developers to collaborate while working independently, and protects the infrastructure through a consistent API. The **Commerce Center** allows business experts to customize and manage products, catalogs, pricing, promotions and customers, without reliance on IT. They can easily manage brand initiatives across channels by:

- Executing more than 50 types of configurable promotions through a comprehensive visual wizard using a simple, step-by-step process
- Configuring rules that control merchandise displays across search, personalization, promotions and catalogs
- Controlling and synchronizing product data across channels
- Increasing conversion with a comprehensive search engine that combines commerce data and merchant-driven rules to deliver the most relevant products to each consumer
- Dynamically segmenting customers for more accurate and personalized merchandising based on behavior, demographics and analytics, business rules and attributes
- Managing concurrent (A/B) business-driven tests to collect data and identify revenue-driving opportunities

Because the Commerce Center is built on a cloud platform, it can provide a single view of both front and back-office

functions: customer, inventory, content, promotions and other crucial data across channels and geographies. The business expert can better target customer interactions with a single customer record across multiple channels and touch points.

## Empower Technical Experts

Beyond business users, technical experts also play a key role in innovation. The **Development Center** allows technical experts to modify, configure, extend, create, debug and deploy custom business workflow and shopping logic across multiple channels and devices independently. These configuration changes can be separate from or intrinsic components of business initiatives.

Working in an open and standard environment, technical experts can create native applications, such as for mobile devices, which will not require re-writing as the infrastructure is upgraded. An API layer provides protection between custom client configurations and core platform functionality. They can execute logic for responsive design, or create custom objects and fields or connect quickly with external web applications.

- Leverage key capabilities and data across the enterprise with scalable **RESTful APIs** that allow external web applications and enterprise software to interface with all shopping functionality
- Extend the data model and create custom objects and fields, including numbers, dates, currency, text, pick lists, checklist, etc.
- Configure existing programming pipelines via an intuitive drag-and-drop interface. Quickly integrate to other applications and modify the customer experience as needed
- Create new logic and write custom code to meet the unique needs of the brand

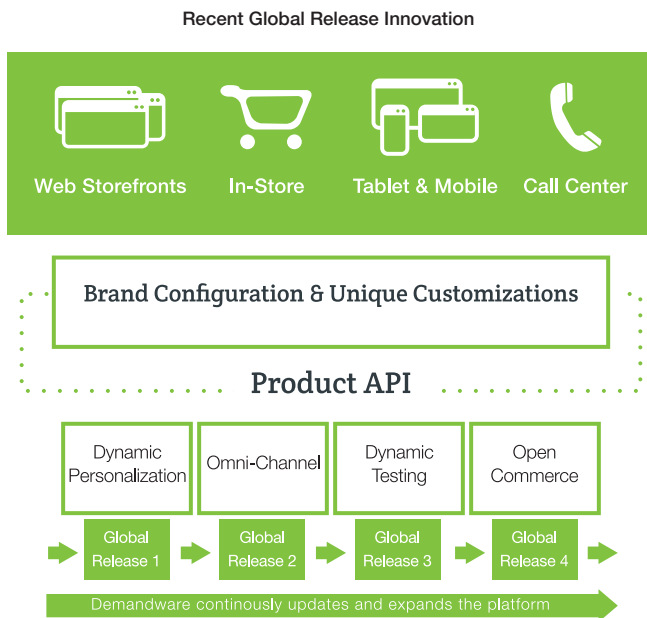
Through Development Center, technical experts also have the ability to monitor and debug storefront code. They can check storefront behavior, track specific code sections and monitor status. Developers can identify when specific conditions or errors occur, and quickly develop, iterate and modify the customer experience.

## Innovation without Disruption

Another advantage of an enforced API is the freedom to build innovative functionality in the infrastructure without disrupting existing commerce operations. POD performance has been tuned through years of use across multiple scenarios and loads. Demandware has the resources and experience to search for new ways to optimize data storage, caching,

transactions, load-balancing, and bandwidth improvements, as well as the incentive and ability to try new technologies.

Demandware Commerce is continually updated, with **six major global releases a year**. This functionality is available to all clients with minimal disruption to their existing implementations. Recent infrastructure upgrades have added support for dynamic personalization, dynamic testing, open commerce functionality and a new Digital Store Solution.



Teams can utilize and customize this stream of new functionality in their own initiatives, at their own pace. In the meantime, existing implementations remain intact.

## ENSURE RELIABILITY AND SECURITY AS BUSINESS GROWS

Customizing business and brand initiatives on top of a uniquely scalable cloud-based platform economically helps increase competitiveness and speed growth. But achieving a level of operational peace of mind must include security and reliability.

### Ensure Commerce Flows Continuously

Owning the commerce application code allows IT teams to make very low-level design decisions to have the platform run better and more reliably. They can configure hardware and adjust software to provide greater, faster flexibility. Demandware has built such capabilities into the architecture from the ground up and has improved operational

performance through continual innovations in hardware and software. Individual components of the platform were selected for their reliability—and component health is continuously monitored.

Through synchronization and clustering, for example, Demandware can scale horizontally and increase capacity very quickly, in less than a minute. This elasticity involves more than distinct clustering. It entails the full thread of communication: I/O frequency, disk speed, network and computing power. For commerce operations, the goal is transactional elasticity. This approach is proven by 10 years of run-time experience and ongoing international deployment success.

### Demandware Track Record

Despite a customer base that has expanded in size, variety and geography, **Demandware has delivered 99.99% historical uptime since 2005**. PODs themselves typically run “very cold,” providing plenty of “headroom” to accommodate fluctuations in traffic and disaster recovery scenarios. This modularity, capacity cushion and almost instant scalability provides for a distinctly reliable service.

### A PROVEN TRACK RECORD

- > **99.99%** average site availability since 2005
- > **125M** customers served monthly
- > **747k** peak orders taken daily
- > **16M+** items purchased monthly

Demandware’s top-tier datacenter co-locations feature redundant power, network and HVAC systems. As part of disaster recovery (DR) planning driven by other business considerations (such as customer growth), usage is spread across PODs. No single component can cripple the customer. Bandwidth and computing power is always undersubscribed.

DR scenarios are executed frequently. The clear advantage of such a unique cloud platform is that each customer not only leverages a huge capacity pool, which is typically more than they could afford and manage on their own, but this capacity is distributed, redundant and reliable.

## Protecting Commerce Operations

Retailers today are faced with a rapidly changing, overwhelming array of security threats and increasing scrutiny around data privacy. Using in-house staff to provide adequate levels of security, as well as achieving and maintaining compliance, is expensive and challenging.

With Demandware, there is no additional investment to achieve properly secured commerce operations. A dedicated security team, experienced with our infrastructure and application, provides our 24/7 expert operations staff and the engineering department with expertise and guidance on securing the platform. Security best practices relevant to ecommerce, such as checking for SQL injection, monitoring URLs and the ability to encrypt personally identifiable information (PII), are standard.

Security countermeasures are built into Demandware Commerce for defense-in-depth and remediation of advanced attacks like Distributed Denial of Service (DDoS) including:

- Logical and physical partitioning
- Firewalls and load balancers at all tiers
- Intrusion detection systems
- Comprehensive logging and alerting
- Vulnerability monitoring and mitigation with internal and external scanning
- Regular third party advanced penetration testing

A comprehensive security program that includes people, technology and operations addresses potential threats and vulnerabilities rising from established and emerging adversaries. As a global service provider to the commerce industry, Demandware complies with the most challenging industry and regulatory standards.

- **PCI-DSS:** Demandware complies with the rules for information security defined in the PCI-DSS standard since 2008 and undergoes third party certification/validation annually, as required for Level 1 environments with more than 300,000 credit card transactions per year. Unlike a bank, merchant, credit card processor or card vendor, Demandware is certified as a Service Provider, which simplifies merchant PCI assessment.

- **AICPA SOC 2:** Demandware provides a SOC2 report audited under AICPA AT101 standards for the “Trust Service Principles” for security, confidentiality, process integrity, availability and privacy. Unlike many vendors, which only address 2-3 principles, Demandware covers all five. SOC 2 reporting is done by an external independent auditor.
- **TRUSTe Privacy:** Demandware is TRUSTe privacy certified, with an annually reviewed privacy policy and participation in the US-EU Safe Harbor process.
- **Data Protection:** Privacy is managed to the highest standards, in compliance with EU DPA and country implementations like the German DPA.

## CONCLUSION

Help the organization focus on what it does best – building stronger customer relationships and growing the business. Demandware's cloud model is the most viable, cost-effective solution for real scalability, service reliability and security required for a modern commerce organization.

Get out in front of change, rather than staying mired in the challenges and complexity of provisioning and supporting a scalable commerce platform. Avoid the burden of building, buying and maintaining an on-premise solution or relying on a service provider running another vendor's static solution by getting more control and an experienced partner in innovation and growth.

Demandware minimizes the costs and complexities of building and running a global commerce operation that supports customers anywhere, anytime, from any device. Through its distinctive cloud platform, delivery model and application ecosystem, businesses can respond with speed, confidence and agility to new market opportunities and continually evolving consumer expectations.



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