Accelerating Continuous Delivery with Perforce

An ENTERPRISE MANAGEMENT ASSOCIATES® (EMA™) White Paper
Prepared for Perforce
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Introduction

We live in an increasingly technology-fueled world. In today's fast-paced marketplace, the success or failure of a business can depend on how quickly it executes on delivering new products and services to market. By accelerating software development lifecycles, businesses become more responsive to changing market drivers, enabling them to stay ahead of competing companies and customer expectations.

Companies capable of innovating most rapidly are the first to market with new products and on the short list of every company requiring the new capabilities. In contrast, excessive time to market can reduce a previously successful company to an “also ran.”

A growing array of software-driven products is also forcing product companies to become more adept at delivering embedded code. For example, modern automobiles have been called “rolling data centers,” with critical systems such as braking and fuel management controlled by software versus mechanical systems. So regardless of the efficiency of traditional automotive engineering and assembly line processes, cars cannot be delivered until the software is complete. Furthermore, both software and automobile development must be synchronized to ensure that both are ready simultaneously. The product lifecycle is only as quick as the slowest link in the delivery chain.

So while one challenge is to accelerate the process of developing good ideas into delivered products, an equal challenge is to synchronize product and software development and to do so in a disciplined, governable manner.

At the same time, the products themselves are becoming increasingly, bewilderingly complex. Delivering a car to the showroom floor requires hundreds of thousands of parts, blueprints, requirements lists, schematics, software components and related artifacts—each of which must be versioned, tested, and deemed “production ready.”

The Perforce platform is designed to support Continuous Delivery of complex products. Whether the product is a software application or an automobile, the levels of complexity associated with the process require visibility, governance, collaboration and communication across diverse teams. Perforce provides these capabilities as a scalable, production-ready solution.

This ENTERPRISE MANAGEMENT ASSOCIATES® (EMA™) white paper outlines the value proposition of a Continuous Delivery pipeline supported by Perforce. As a combined repository supporting enterprise version management and collaboration for all types of digital assets, Perforce supports the Continuous Delivery paradigms, which are becoming key factors differentiating today’s most successful companies.

Continuous Delivery

Constant, ongoing, business and technology changes are expediting the growth of Continuous Delivery practices across multiple industries. The latest EMA research finds that more than 70% of companies are leveraging Continuous Delivery in some form. As Agile practices take hold, software code is being developed in smaller increments, released more often and deployed more frequently than in the past. As a result, some large companies deliver thousands of code changes per day and even smaller companies are releasing 50 or 60 daily updates, particularly in the online world.

1 Application Performance Management (APM) in the Age of Hybrid Cloud: Ten Key Findings available at: http://www.enterprisemanagement.com/research/asset.php/2667/Application-Performance-Management-(APM)-in-the-Age-of-Hybrid-Cloud:-Ten-Key-Findings-
At the same time, the term “Continuous Delivery” can itself be misleading, as it means different things in different contexts. At its most generic, Continuous Delivery encompasses an iterative and ongoing cycle of development, testing, and delivery of software to a targeted destination. In the enterprise, that destination is likely a production environment. For an Independent Software Vendor (ISV), the destination may be a software product package. And for an automaker, the destination is typically a staging area and, ultimately, the dealer showroom. Regardless, every element of the end product goes through multiple engineering phases, versions, and designs.

The Role of Perforce

Throughout this process, each element must be developed, versioned, tested, stored and managed in context to other elements included in the same release. From the Perforce perspective, “Incremental development requires meticulous tracking of changes to the state of the system. Each piece of code that is changed must be tracked with details including who, what and when. Each asset alongside code (graphics, for example) needs the same treatment. Finally, the deployed binaries must be tracked as well.” At the same time, this level of governance must be maintained across the lifecycle and across global teams in different geographies. The Perforce platform delivers these capabilities, providing a governed, scalable foundation for Continuous Delivery practices.

This “open” versioning, repository, and collaboration system can be deployed in a centralized, distributed, or hybrid model. It supports synchronization of delivery dates and governance functions by surfacing visibility to each critical element in the development process throughout the lifecycle. It acts as a “hub” for managing code and related artifacts necessary to deliver complex products to market. Finally, it functions as a collaboration platform enabling each user to work more efficiently as part of the larger enterprise.

There are a variety of factors which complicate Continuous Delivery efforts. Development teams are often geographically dispersed, multiple work streams must be executed in parallel, and time zone factors can make collaboration difficult. Each of these considerations impedes the requirement to synchronize product delivery to ensure that all components of a “package” are delivered concurrently.

To complicate matters further, many types of artifacts—not simply code—may be part of the “package.” In software development environments, web pages and components for Graphical Interfaces such as graphics, logos and templates must all be versioned and stored. In engineering environments, code-related artifacts and supporting documentation such as blueprints, documentation, change records, etc. must not only stay in sync, they must tie back to product development work streams.

Slow delivery of a single component can disrupt the entire product delivery chain. In aircraft manufacturing, for example, the software controlling aircraft functions is inseparable from the airplane itself. Multiple primary software systems such as landing gear, hydraulics, and fuel management must be delivered and maintained as a single unit associated with a given model. Avionics software must also be developed according to legally mandated regulations. “On the one hand, we have all these exciting new technologies, and on the other hand, we have concerns about how to meld those technologies with the requirements of certification while retaining confidence that our increasingly complex software will keep us up in the air.”

2 Quote from Perforce product management group

3 “Product Focus: Software”: Robert Dewar, co-founder, president and CEO of AdaCore quoted in Aviation Today at: http://www.aviationtoday.com/av/commercial/Product-Focus-Software_70310.html#.UtWyLPRDtXo
Finally, product and software development projects go through multiple stages as part of the full lifecycle, and each stage requires its own tools. Manufacturing projects rely on CAD/CAM, for example, while software developers utilize Open Source tools such as Eclipse and Git. Perforce integrates to a wide variety of external tools to enable seamless sharing of requirements and related components across multiple lifecycle stages.

In short, Perforce brings order and discipline into what has traditionally been an often ad-hoc and undisciplined set of processes. Perforce’s Versioning engine, along with the Swarm, Git Fusion, Commons and Insight products all build on and interact with the Perforce multi-site repository foundation (see Figure 1).

### Perforce: Proven Platform for Successful Continuous Delivery

**Capabilities include:**

- **Perforce P4D Versioning Engine:** Scalable repository, which can be centralized or distributed.
- **Perforce Git Fusion:** Enables Git-based development with functions such as repository consolidation, security, auditing, history and visibility to dependencies.
- **Perforce Swarm:** Supports collaboration across code and document reviews, incorporating in-context conversations, documentation of version differences and “hooks” for testing and deployment.
- **Perforce Commons:** Collaboration platform suitable for both technical and non-technical users. It supports document sharing for design collaboration, automated file management, and merging/difference identification across documents, images, art, and media.
- **Perforce Insights:** Provides code analytics and reporting including line of business metrics, stability predictions, dashboards, and system management metrics.

*Figure 1: Perforce platform and its components*
Key Differentiators and Value Proposition

While Perforce functions as a production-grade SCM solution addressing large scale development, it is not simply a code repository. It is also a consolidated, governed source of truth supporting collaboration and interaction across diverse groups such as Product Engineering, Operations, and Line of Business. This centralized versioning, repository and collaboration system supports Continuous Delivery practices by making each stage of the lifecycle more disciplined and efficient.

All digitized artifacts relating to the project are stored and version controlled. In addition to code, Perforce customers manage design documents, artwork, hardware specifications and many other asset types with the platform. Team members have universal visibility to the entire context of the project across multiple lifecycle stages and iterations.

As a project evolves, Perforce acts as a change and audit control vehicle as well. As a stand-alone product, it provides detailed insight into change; however, it also integrates with Open Source issue tracking and requirements management solutions such as JIRA and Rally. These integrations provide a link between multiple lifecycle stages (Design, Development, Testing, etc.) and enable code and version changes to be associated with requirements and “bug fixes.”

Because of its versatility, Perforce customers use the platform in the development of virtually every type of complex product on a wide variety of platforms. Chip development, Cloud and device designs, games, animation, and media development projects can all benefit from Perforce’s capabilities.

Key differentiators include:

• **Enterprise Version Management and Collaboration on a single consolidated platform**: These capabilities support both hardware and software engineering projects, code reviews and collaboration across teams, as well as storage and versioning of virtually any type of digital asset. The result is a product that can be used enterprise-wide by any team in need of a collaborative digital repository.

• **Massively scalable, supporting thousands of users on a single repository.**

• **Supports globalization with a hybrid mix of deployment options for customers engaged in centralized or distributed development.**

• **Enterprise grade and commercially supported with a strategic path forward**: Strong customer support and ongoing feature development differentiate Perforce from free or Open Source options.

• **Integrates with a wide variety of existing tools and platforms (see Figure 2)**: Perforce continues to add integrations supporting Continuous Development, Integration and Deployment.

• **Supports both technical and non-technical users**: While the entire platform is suitable for use by virtually any knowledge worker, Perforce Commons, in particular, is an easy-to-use collaboration hub addressing the needs of both IT and Line of Business (LOB) users. This extends the value proposition to multiple types of projects, even those which aren’t necessarily engineering- or development-related.

• **Integrated security, governance, and auditability**: Perforce supports a common, governed security model across multiple iterations of the lifecycle. In terms of auditability, versions and history are part of the Perforce “system of truth” and have been used in legal actions involving Intellectual Property disputes.
“Universal visibility”: All digitized assets are stored, versioned and visible to every authorized stakeholder. This gives developers, managers and QA teams detailed insights into current status, changes and requirements, and helps surface “hot spots” requiring immediate attention.

• **Supports companies of virtually every size, with scalable growth over time:** With an emphasis on interoperability and scalability to massive numbers of users, this product can clearly meet the needs of large or midsized companies; however, companies with ten or twenty developers are valued customers as well. Per Perforce, “Thousands of companies use our free 20-user edition, which includes Technical Support. It’s our 20/20 program, so even smaller companies can start with the same version control platform they’ll be able to use as they grow larger.”

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Integrates with Your Pipeline

![Perforce Diagram](Image)

Figure 2: Perforce across the pipeline

EMA Perspective

Efficient product development has become an increasingly important core competency for businesses in virtually every industry. And agility has become a key factor in delivering products to market. However, for a business to become truly competitive in the modern marketplace, the entire engineering lifecycle must accelerate. Otherwise, companies fall behind competitors who can execute more quickly to respond to industry pressures and customer requests.

The role of Perforce is to ensure that the entire process ultimately results in a “state of readiness” necessary to deliver business value. This open, flexible platform can streamline software delivery to the point that much of the process can actually be automated. For companies that aren’t quite ready
to go that route, Perforce’s features – integration capabilities, scalability, stability and support for a wide variety of projects, content types and assets – are reason enough to seriously consider this product.

No product is right for every company; however, Perforce has built a platform that is suitable for companies of virtually any size and projects of any type. For those seeking to accelerate Continuous Delivery processes or to make them more efficient, Perforce is one of the few Continuous Delivery-focused vendors with this level of scalability, interoperability, and feature/function. With the availability of a free, “try before you buy” download at http://www.perforce.com/downloads/Perforce/20-User, Proofs of Concept (POCs) are within easy reach of interested prospects and well worth consideration.

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About Enterprise Management Associates, Inc.

Founded in 1996, Enterprise Management Associates (EMA) is a leading industry analyst firm that provides deep insight across the full spectrum of IT and data management technologies. EMA analysts leverage a unique combination of practical experience, insight into industry best practices, and in-depth knowledge of current and planned vendor solutions to help its clients achieve their goals. Learn more about EMA research, analysis, and consulting services for enterprise line of business users, IT professionals and IT vendors at www.enterprisemanagement.com or blogs.enterprisemanagement.com. You can also follow EMA on Twitter, Facebook or LinkedIn.