

Growth and Adoption of Cloud PLM Services

Deployment of Teamcenter on Cloud



The Rise of Cloud PLM

The long-term outlook of organizations today is the need to sustain business success in the face of technology changes. Companies are striving to bring innovative products to market fast and efficiently amid increased product complexities and cost pressures, stringent regulations, and globalization. The next-generation smart engineering and digital manufacturing initiatives are the driving force behind Industry 4.0 enabling innovation not merely for the R&D but engaging the extended enterprise. Organizations are investing efforts on effective strategies for the implementation of PLM (Product Lifecycle Management) to enable innovation. New technologies such as AI, analytics, and cloud are reforming the ER&D, manufacturing, and operations with a digital thread that connects and transfers enterprise product data across the product lifecycle.

While the large industry players have adopted PLM technologies, the majority of these implementations are traditional on-premise solutions that have limited capabilities in handling the present complex market dynamics. Most of the organizations are either in the midst of digital transformation or planning their roadmap towards digitalization. Industrial companies are looking at PLM solution with key capabilities including integrated data management, seamless integration with enterprise systems like manufacturing execution systems (MES), enterprise resource planning (ERP), supply chain management (SCM) and internet of things (IoT) platforms for a holistic strategy towards building a connected enterprise. Industries are increasingly embracing cloud computing and cloud-based technologies. With the advent of the cloud, we have entered a new IT paradigm.

Cloud services are transforming the entire landscape, changing the market in several domains, and PLM is poised to be next. To maintain an edge, companies have to leave the servers behind and embrace the cloud. Cloud-based PLM enables companies to make faster and better-informed decisions using data across the entire product lifecycle and drive digital transformation initiatives. Bringing people, product data and processes together at a given time around the world helps to eliminate the silos that lead to product design problems, quality issues, and production errors. These cloud solutions ultimately help to drive increased profits by helping companies deliver products on time and with optimized budget.

This point of view provides an overview of Teamcenter implementation on the cloud along with various approaches for its implementation and the key highlights of deploying Teamcenter on Amazon Cloud.

Teamcenter is the flagship PLM system from our partner Siemens Digital Industries Software and Amazon Cloud is the platform from our partner Amazon Web Services.



What Makes the Cloud so Significant

Minimal cost of ownership

On-premises PLM systems require vast quantities of expensive servers and huge on-premises infrastructure for storage and it needs upgrading every few years. They are a sinkhole for capital. Implementing Teamcenter on the cloud eliminates the cost of procuring necessary real-estate infrastructure, the costs of maintaining high availability, and the costs of disaster recovery.

Instant scalability

Instant scalability provides the ability and flexibility to dynamically scale infrastructure resources up and down according to business needs, i.e. scale up the infrastructure during peak business hours and lower them during off hours (weekends). The deployment of Teamcenter on the cloud is the same as on-premises deployment and it supports all clients with various CAD and ERP integrations and Tecnomatix.

Fast implementation

Every day counts when getting the product to market, that's why quick and flexible deployments of Teamcenter on AWS cloud require only configuration and user validation in order to implement PLM.

Greater IT flexibility

Implementing Teamcenter on the cloud provides cost-effective access to enterprise-grade IT infrastructure and resources without the need for capital expenditures. The overall cost of administration is reduced in a cloud environment. The operating expense is minimal for renting/leasing capacity from a cloud operator and it is easy to justify and manage.

Centralized expert resources

Implementing Teamcenter on AWS optimizes overall IT resources. A small number of administrators can manage many deployments.

The Limitation of Teamcenter on the Cloud

File management

Teamcenter is not just about metadata. The major chunk is data volume, which comprises various types (cad files, videos, office files, text files, etc.) of size in some hundred MBs also in GBs that is difficult to manage.

Data security

Companies are reluctant to have their core product knowledge information on the cloud. PLM system in organization is not a single software, it's a cluster of different tools, integrations of various software which make the overall PLM system in any organization. This cluster of tool and software can be varied from enterprise to enterprise.

Response times

Responses will generally be less consistent compared to an on-premises Teamcenter deployment due to variation of the public WAN connections and the variation caused by the nature of the VMs on which the cloud service is based. Standard deviations of response times were found to be two to three times that of an isolated on-premises deployment.

Key Features of Amazon Web Services (AWS)

Amazon Elastic Compute Cloud (EC2) is a service that provides re-sizeable computing capacity to build and hosts the software systems. In AWS, a "server" is one EC2 compute node.

Amazon Machine Image (AMI) is a template of software configuration (for example, an operating system, an application server, and applications) that can be instantiated in one or more EC2 servers.

Amazon Storage Options- Instance store, Elastic Block Storage (EBS), Amazon Simple Storage Service (S3).

On-premises Teamcenter vs Teamcenter on AWS Cloud

Let's take the example of the Amazon cloud platform with Infrastructure-as-a-Service (IaaS) to deploy Teamcenter by leveraging all the benefits of using a cloud platform.

A Sample Framework of Teamcenter in a Cloud Architect

Cloud computing is a promising technology, but when it comes to deploying of Teamcenter on the cloud, it may have a few limitations. An enterprise can leverage the advantages of the cloud by pursuing a step-by-step implementation approach rather than going live with the entire PLM on the cloud.

On-premises vault management environment

The vault management system can solve the problem of transferring data from the cloud to the local environment. It ensures that the application files are managed securely, and can be accessed quickly with high speed file transfers. A company will feel more secure when their core product information lies within the enterprise network.

Partial PLM on the cloud for collaboration

Partial PLM on the cloud can be an effective use for vendor collaboration as well as for a multi-site environment. It helps the enterprise better define access and share only specific information with multiple vendors rather than giving them core Teamcenter access.

Database on the cloud and other Teamcenter services in an on-premises environment

Database is a key component of Teamcenter and it is critical in maintaining a high availability and its backup, it needs a costly infrastructure. The organizations feel relieved and more secure as their core product information lies with in enterprise network.

A Sample Architecture for Teamcenter on AWS

The diagram below represents a sample of Teamcenter production-level architecture implemented on the AWS cloud.

People, Processes and Tools

Capgemini's approach to invest the right efforts and build automation scripts, frameworks, and accelerators gives us an edge over our competitors when it comes to achieving targets with high quality in less time. Focusing on the following aspects is always the key to achieve desired results at the right time.

Outlook

Cloud-native has resulted in the efficient use of resources for PLM. Using this approach, the perpetually running virtual machines can be replaced by on-demand and auto-scaling, demand-based virtual machines. Quick deployment of the Teamcenter test environment, on-demand use of AMIs, fewer manual interventions in the installation and deployment process are a few of the benefits of deploying Teamcenter on the cloud. Precise sizing of Teamcenter helps to achieve appropriate performance and avoids oversizing the infrastructure, resulting in cost reduction.

Cloud-based PLM enables the integration of processes to support data integration, collaboration, knowledge transfer, and predictive analytics across the entire product lifecycle from the initial idea to design, engineering, manufacturing, delivery, service, and quality, enabling companies to make faster and well-informed decisions. In addition, the cloud PLM solutions are speeding up the time by simplifying deployments, providing flexibility to scale up and down the resources as needed, and reducing the total cost of ownership. A close synergy between cloud experts, PLM experts, and vendor-provided architects provide the opportunity to design an optimum architecture from scratch. Selecting the right approach to deploying Teamcenter on the cloud helps to achieve all business needs. Reach out to us to learn more about how we help organizations move through multiple phases of digital maturity along their digital transformation journey.

Business Benefits

- ✓ Reduces total cost of ownership
- ✓ Speeds time to market
- ✓ Increases productivity
- Enhances product quality
- ✓ Drives innovation
- Real-time visibility into product data and changes
- Improves quality assurance and standards

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About Capgemini

Capgemini is a global leader in consulting, digital transformation, technology and engineering services. The Group is at the forefront of innovation to address the entire breadth of clients' opportunities in the evolving world of cloud, digital and platforms. Building on its strong 50-year+ heritage and deep industry-specific expertise, Capgemini enables organizations to realize their business ambitions through an array of services from strategy to operations. Capgemini is driven by the conviction that the business value of technology comes from and through people. Today, it is a multicultural company of 270,000 team members in almost 50 countries. With Altran, the Group reported 2019 combined revenues of €17billion.

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Capgemini's Digital Engineering and Manufacturing Services brings together deep domain expertise to lead the convergence of Physical and Digital worlds through technology, engineering and manufacturing expertise to boost our clients' competitiveness. A recognized leader with over 10,000 engineers across the globe and 30+ years of experience, Capgemini's comprehensive portfolio of end-to-end solutions enables global companies to unlock the true potential of their product portfolios and manufacturing efficiencies.

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