

Digital Systems & Technology

Industrializing Zero Application Maintenance

By applying a rigorous and automated approach to supporting applications, IT organizations can reduce spending, increase repair accuracy, minimize application debt across the portfolio, free up resources for more strategic business imperatives and improve application yield to deliver enhanced business outcomes.

Executive Summary

CIOs continuously struggle to balance two needs. The first is assuring applications perform with maximum speed and reliability at the lowest cost (i.e., are fit for use). The second is to ensure these applications meet the most pressing needs of the business and stay relevant (i.e., are fit for purpose). They walk this tightrope amid prohibitively high application maintenance costs, rapid technological changes, and an unforgiving and highly competitive global economy.

Ideally, CIOs can meet both these demands if applications run on “auto pilot” and deliver intended business outcomes without manual intervention and related maintenance costs. We call this state of maturity zero maintenance. While it may be very difficult to achieve, implementing a zero-maintenance strategy helps organizations drive quantum reductions in cost and increased business value.

Zero maintenance strategies typically focus on:

- Reducing technical debts, which frees cash and allows organizations to bootstrap investments on strategic initiatives.
- Improving the technical value of the portfolio by modernizing the application, thus making it digital-ready.
- Addressing critical bottlenecks in the applications that support business processes by improving application throughput, which in turn enhances business performance.

Zero maintenance delivers the greatest benefits when it is industrialized. This means establishing a structured, ongoing process to identify and

categorize technological debt that applications incur over time and minimizing them by quickly fixing defects, improving technical infrastructure and automating as much of the required remediation as possible. Such an industrialized process should also identify and optimize the workflows that are most critical to the business to deliver improved outcomes.

This white paper describes the importance of industrialized zero maintenance, its key components and best practices for achieving it. Businesses that bring rigor to zero maintenance can apply cost savings to fund more strategic initiatives while improving customer satisfaction and employee productivity.



The perpetual IT operations challenge

From the day they are put into production, applications begin incurring four kinds of debt:

- **Technical debt**, caused by substandard code and aging platforms, leading to outages, slowdowns and other service issues.
- **Functional debt**, caused by a failure to update software to meet new business requirements, leading to change requests.
- **Operational debt**, caused by inefficient operations management and a lack of administrative tools, leading to excess manual effort, configuration errors and increased cost.
- **Knowledge debt**, caused by insufficient documentation or a lack of user training, which increases support calls, tickets and costs.

Through proven, documented and reliable processes, an industrialized zero maintenance strategy can minimize both kinds of effort:

- Nondiscretionary effort required to keep applications and the business running.
- Discretionary effort required to update and improve applications to best meet business needs.

Reducing these debts allows the organization to:

- Minimize application maintenance costs.
- Increase funding for strategic application development and IT initiatives.
- Increase application service levels.
- Improve customer satisfaction through reduced outages and slowdowns.
- Increase employee productivity.

The keys to industrialized zero maintenance

Industrialized zero maintenance requires a platform to find, categorize and remediate problems in a repeatable, consistent manner that delivers predictable, verifiable results. This eliminates the need to constantly reinvent processes to identify the sources and costs of application issues, decide which are most worth addressing and individually fix multiple issues caused by common causes.

For reducing *nondiscretionary* spend, the platform must provide:

- Integration with existing IT service management tools to capture tickets and other operational data to identify normal usage patterns as well as common problems.
- Machine learning (ML) to create rules that automatically recognize issues and categorize the tickets into technical, functional, operational and knowledge debts. Such ML should also

categorize the issues as either avoidable (where permanent fixes are possible) or unavoidable (where permanent fixes are not possible or may not provide enough of a return to implement).

- Based on the debt classification, requests for the creation of automatic healing processes to permanently eliminate the root cause of defects and/or requests for the support team to automate common, unavoidable remediation chores.
- Recommendations about which problems deserve the most attention by estimating the current costs (the price of the debt) for each issue and the cost of a permanent fix (the cost to fix the debt).
- Governance mechanisms to track the entire debt lifecycle from identification to creation of a remediation plan, the status of remediation efforts and the measurement of benefits.

For reducing *discretionary spend*, the platform must provide:

- The capturing of application attributes to allow portfolio analysis, identifying opportunities for simplifying the IT landscape and modernizing platforms for greater agility.
- Categorization of applications into “contain” (low-criticality applications with high-ticket volumes that are expensive to maintain or scheduled for decommissioning), “maintain” (applications of medium or high criticality that must be retained) and “invest” (applications of medium to high importance based on legacy technologies that require overhaul or reengineering to reduce risk and grow the business).
- Recommendations for which transformation levers to apply to each application, such as retirement, modernization, cloud migration and app resiliency.

■ Quantification of the business benefits generated by each transformation lever.

For delivering *business outcomes*, the platform must provide:

- Tracking of the right key performance indicators (KPIs) to measure the health of the business process each application supports.
- Automatic benchmarking of an organization’s performance on business KPIs against others in its industry, presented in an intuitive, easy-to-use way.
- “Slice and dice” analytics of application performance and its effect on the business, as well as identifying bottlenecks in business processes.
- Mechanisms to continually monitor business KPIs, identify deviations and report on progress of the remediation of both the business processes and the applications that support them.



Key platform requirements for industrialized zero maintenance


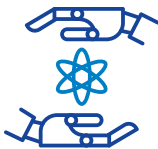




	What	Why	Business benefits
	Integration with IT service management tools	Capture tickets and operational data to identify normal usage patterns and common problems.	Understand the number and nature of technical issues to reduce the cost of the problems and of resolving them.
	Machine learning (ML)	Automatically recognize issues and categorize tickets by cause (technical, functional, operational and knowledge debt).	Reduce the time, cost and effort of resolving problems.
	Automatic healing processes	Permanently eliminate the root cause of defects and/or tell the support teams which remediation processes to automate.	Cut support costs and improve service levels by automating problem resolution.
	Problem prioritization	Recommend which problems to focus on by estimating their current cost (the price of debt) and the cost of a permanent fix (the cost to fix).	Cut cost and improve ROI by focusing on the most business-critical technology.
	Portfolio analysis	Classify applications by importance, recommend transformation levers to apply to each application based on target state (retire, modernize, migrate to cloud, etc.).	Reduce TCO and improve technical value of the portfolio.
	Governance and benchmarking	Compare an organization's performance against its peers, monitor business KPIs, identify deviations and track remediation.	Measure and prove the business benefits of zero maintenance and drive continuous improvement.

Figure 1

Industrialized zero maintenance: A strategic imperative

Standard, consistent and automated processes are driving down costs and improving service across the IT landscape. Businesses that bring the same rigor and discipline to their zero application maintenance

strategy can devote more funds to strategic initiatives while improving customer satisfaction and employee productivity.

How industrialized zero maintenance helps the business




	Traditional application maintenance	Industrialized zero application maintenance	Business benefits
	Few insights into why the number of incidents and problem tickets keeps rising.	Automated categorization of different forms of technical debt that cause incidents and tickets.	Reduced management costs by targeting underlying problems and automating proper repairs for them.
	Limited visibility into which application problems to solve first.	Portfolio analysis classifies applications by importance and cost.	Reduced capital and management costs by identifying which applications are worth repairing.
	Inability to drive consistent, long-term reductions in application maintenance costs.	Consistent, systematic approach to not only identifying and remediating problems but measuring progress.	Sustainable, ongoing reductions in cost and mean time to repair, improving employee productivity and customer satisfaction.

Figure 2

Quick Take

Fixing Application Problems for Good

A leading data and analytics services firm faced unacceptable high costs and delays in maintaining about 170 applications across four geographies. These applications generated approximately 6,000 service or trouble tickets every month, of which more than one-third were standard or repeat requests to fix the same problem. Genuine problems forced support teams to spend excess time resolving problems while other teams wasted time chasing frequent false alerts about system performance or overutilization that could cause performance or stability issues.

We used Cognizant AppLens™, our platform for gathering, analyzing and presenting the information required to implement a zero-maintenance strategy, to automatically identify and categorize the debts in the application portfolio and create automation and healing tickets to reduce those debts. Using data from this company's IT Service Management (ITSM) platform we analyzed tens of thousands of tickets and found close to half caused by functional debt, with most of the remainder split between technical and operational debt.

We reduced some of these debts and eliminated others through permanent fixes and enhancement as well as proactive problem management, to increase operational efficiency. For example, we reduced technical debt by about nine percent through proactive problem management and performance tuning in data supply chain applications and cut operational debt by about 5% through automation and self-help utilities and portals.

Quick Take

Sample AppLens™ screen shot

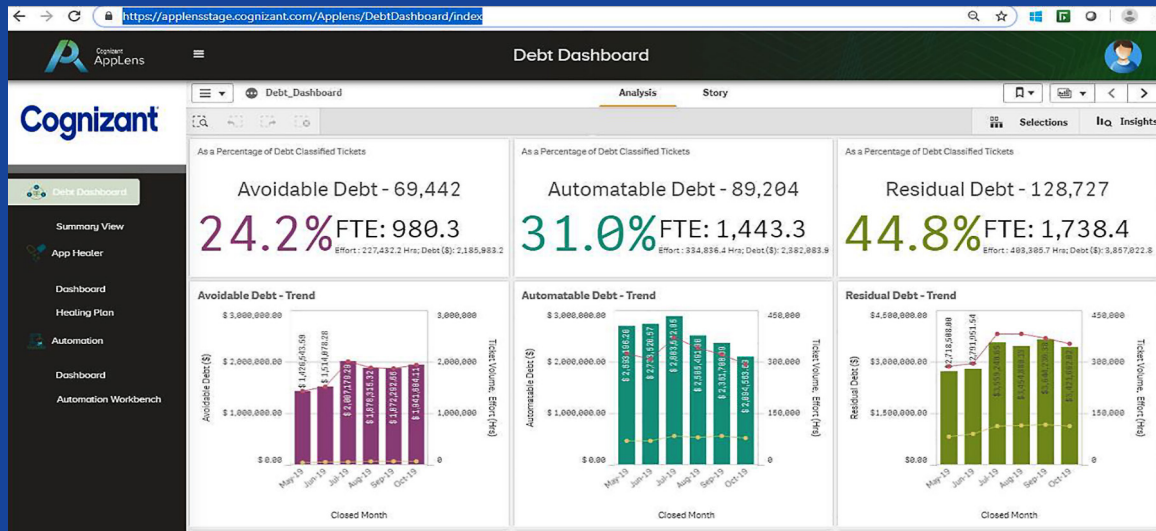


Figure 3

Cognizant AppLens™ provides intuitive insights into everything from the type and level of debt generated by applications to service analytics. It also provides a roadmap for simplification and digital transformation, as well as suggestions for improving critical business processes. This field-proven platform speeds organizations’ progress towards zero application maintenance. For this client, Cognizant AppLens™ helped industrialize the zero-maintenance framework by continually tracking debt information and using built-in dashboards to ensure the percentage of debt was continually reduced over time.

This industrialized zero maintenance program delivered \$2.7 million in savings to this client in 2018. We implemented more than 260 service improvements, such as automating service requests, health checks and data extracts), as well as permanent fixes — such as eliminating functional bugs, data and file/format issues and disk space issues. All this led to a 16% reduction in overall ticket inflow, a 16% improvement in mean time to repair, a 35% reduction in overall outstanding tickets and 100% SLA compliance.

Quick Take

Getting Started

Creating an industrialized zero application maintenance strategy requires not only the right technology, but the right organizational culture and processes.

One requirement is executive commitment to fund the underlying platform, and to ensure subject matter experts contribute their knowledge and experience to the program. Executive support is also required to fund and emphasize the importance of training on the why, what and how of a zero-maintenance strategy.

Another requirement is for IT to build alliances with business managers and users to understand which applications and processes are most critical to them. Such partnerships will help application maintenance strategists define the desired business outcomes and map business processes with applications to measure business outcomes and KPIs.

It is also vital to understand the existing applications, as well as the associated monitoring and diagnostic tools and processes, to access the information essential to a zero-maintenance strategy. A blueprint of the IT landscape and the relationship of various components within it helps identify bottlenecks and unmet requirements standing in the way of zero maintenance.

Quick Take

IT organizations must also establish end-to-end governance to continually manage the debt within the system, maintain the technical value of the portfolio and deliver measurable business benefits. While each organization's needs will differ, governance approaches we have found useful include:

- I Ensuring a strong gating mechanism to accept changes into production.** A well-defined service introduction process includes mutually agreed code quality benchmarks and policies such as allowing no manual maintenance activities in the production environment, early involvement of the support team in software development to ensure a closed loop feedback mechanism (the DevOps model!), and standard processes in areas such as release documentation and training. A feedback mechanism that tells developers which patterns of debts they are unwittingly building into their software helps prevent the creation of future debts.
- I Ongoing monitoring of all debts to ensure they are eliminated or that the necessary fixes are being automated.**
- I Periodic application lifecycle management to assure all applications are delivering technical and business value.** This helps the organization not only “deliver projects right” but also “deliver the right projects.”
- I Ongoing monitoring of business processes and implementing appropriate remediation to ensure they meet all required KPIs.**

Endnote

¹ <https://en.wikipedia.org/wiki/DevOps>.

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About Cognizant Digital Systems & Technology

Cognizant Digital Systems & Technology works with clients to simplify, modernize and secure IT infrastructure and applications, unlocking the power trapped in their technology environments. We help clients create and evolve systems that meet the needs of the modern enterprise by delivering industry-leading standards of performance, cost savings and flexibility. To learn more, contact us at simplify@cognizant.com. You can also visit us at www.cognizant.com/cognizant-digital-systems-technology, or e-mail us at Inquiry@cognizant.com.

About Cognizant

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