

# Optimizing Mainframe Success by Simplifying Mainframe Ownership

## Scott Fagen

PRINCIPAL ARCHITECT, MAINFRAME 2.0  
CA MAINFRAME BUSINESS UNIT

## David Luft

SENIOR VICE PRESIDENT, SOFTWARE ENGINEERING  
CA MAINFRAME BUSINESS UNIT

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# Executive Summary

## Challenge

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The mainframe offers unique value in today's enterprise computing environments, where growing workloads, constrained resources, regulatory imperatives and corporate "green" mandates are intensifying the pressure on IT organizations to do more with less. However, as the industry's most skilled and experienced mainframe professionals approach retirement, organizations are facing an unacceptable choice: either scale back on their use of the mainframe — thereby forfeiting its uniquely valuable capabilities — or spend inordinate amounts of time and effort building staff to support their growing mainframe environments.

## Opportunity

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CA's Mainframe 2.0 initiative eliminates this IT management conundrum by simplifying mainframe ownership — helping you effectively handle your growing budget, staffing and technology challenges, so that you can realize the unique business benefits that only the mainframe can offer. The Mainframe 2.0 initiative delivers significant across-the-board enhancements to the acquisition, deployment, usability and integration of CA's leading mainframe management solutions, along with new turnkey mainframe management services. Together, these solutions and services will enable you to more effectively leverage your investment in the IBM mainframe platform, so that you can readily satisfy growing business computing demands — despite limited budgets, a graying mainframe workforce and pressure to control energy consumption.

## Benefits

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By taking advantage of the Mainframe 2.0 initiative, you will be able to simplify mainframe ownership and optimization by:

- Empowering less-experienced support staff to maintain, optimize, secure and govern your mainframe environment
- Providing your staff with a uniform browser-based interface for all mainframe management functions
- Leveraging the automation and operational intelligence built into CA solutions to insulate your staff from the underlying complexities of the IBM z/OS platform
- Reducing complexity through the consistent conformance of CA's solutions to IBM's software installation standards
- Providing turnkey services that address gaps in internal skills and control staffing costs

## Supply and Demand in the Mainframe World

### The Mainframe Is Alive and Thriving

With all due apologies to industry naysayers, the reports of the mainframe's demise have been greatly exaggerated.

Contrary to the multiple predictions of experts over the last 25 years, the mainframe has never gone away. It remains a veritable workhorse that is simply too valuable and too dependable to be replaced by alternative technologies. In fact, enterprise IT organizations are embracing the mainframe as much or more than they ever did. And they're entrusting the platform with an ever-increasing volume of both traditional and non-traditional workloads.

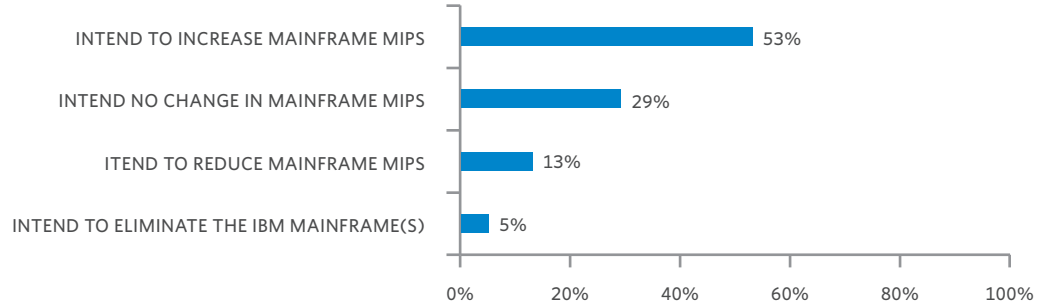
Across industries and around the globe, organizations are rediscovering the benefits of the mainframe and are recommitting to the platform. One factor driving the mainframe's renaissance is that the platform offers a lower cost per transaction than distributed technologies. But there are other reasons as well. The mainframe is uniquely manageable, reliable, scalable and secure. It provides organizations of all sizes with unmatched resource efficiency and price/performance characteristics. That's why approximately 70 percent of the world's critical information continues to reside on mainframes. It's also why there has been a dramatic increase in worldwide mainframe capacity.

Mainframe capacity has grown from 4.5 million MIPS deployed worldwide as of the third quarter of 2001 to nearly 14 million MIPS today — an annual compounded growth rate of 30 percent<sup>1</sup>. Much of this capacity is used to deliver the time-tested, high-volume transaction processing and database functions needed to satisfy business and organizational requirements. However, a growing volume of mainframe MIPS are being allocated to new business workloads that leverage the latest in hardware and software technologies, such as zAAP and zIIP specialty engines, Java and Web Services.

**FIGURE A**

Over the next two years, more than half of the respondents to a survey conducted by TheInfoPro plan to increase their mainframe MIPS.

**MAINFRAME MIPS CHANGES IN TWO YEARS**



The mainframe is also especially environmentally friendly, further enhancing its business appeal. Its green properties include:

- A dense chip design with minimal current leakage that helps maximize the computing capacity delivered per unit of power consumed.
- A highly efficient built-in cooling system that minimizes external heat generation, thus reducing external cooling requirements and associated power costs.
- A 100 percent utilization rate, available 24x7, which consumes a similar amount of energy as a distributed server running at 50 percent of its capacity.
- A time-tested, hardware-assisted virtualization capability that facilitates dense server consolidation scenarios, so that hundreds — or even thousands — of virtual servers can be hosted on a single machine.

### The Graying of the Mainframe Workforce

Recommitment to the mainframe platform is driving resurgent demand for mainframe expertise. Mainframes, of course, operate quite well with limited human intervention. Unlike distributed servers — which require near-linear growth in staff for any growth in processing capacity — mainframes allow IT organizations to keep headcount flat as MIPS increase. However, mainframes do require at least some consistent onsite presence of skilled professionals for best practices, maintenance and optimization.

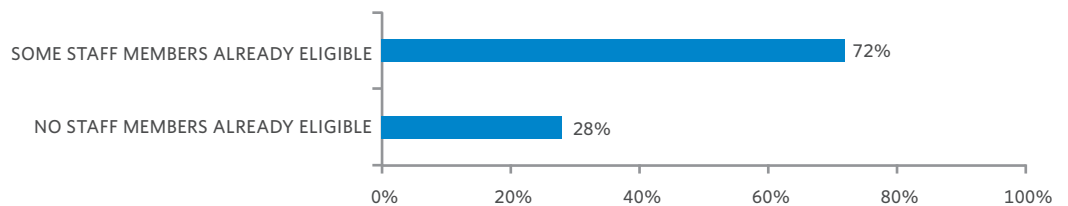
Unfortunately, we are seeing the available pool of skilled mainframe professionals decrease on two fronts. On one front, the influx of new mainframe professionals has been limited by the popularity of distributed platforms over the past two decades. Entry-level IT professionals have little incentive to acquire mainframe skills because distributed platforms seem to offer the most lucrative career opportunities.

On the other front, an entire generation of the industry's most seasoned and skilled mainframe professionals is nearing retirement. Indeed, in a recent survey conducted for CA by TheInfoPro, 72 percent of respondents said that their organizations have mainframe staff members already eligible for retirement.

FIGURE B

Nearly three-quarters of the organizations surveyed by TheInfoPro stated that they have key mainframe employees who are currently eligible for retirement.

### MAINFRAME STAFF RETIREMENT ELIGIBILITY



While there has recently been a modest increase in the number of students enrolled in the few available mainframe education programs, the incoming talent is hardly enough to meet current and future demand.

Moreover, mainframe experts who do remain in the workforce are often specialists who command premium compensation. This has led to a shift in the historic cost model for the mainframe — where staff costs were relatively low in proportion to other acquisition and ownership costs. The management of mainframe environments is, of course, a fairly straightforward matter for these experienced platform experts. These environments, however, are often comprised of hundreds of software products that, for less experienced personnel, can be very time-consuming to install, configure and maintain. Mainframe solutions are not inherently user-unfriendly — though many are highly specialized and utilized infrequently enough that they can be daunting for inexperienced staff. They do, however, tend to possess user interfaces that are substantially different than those with which the majority of today's IT personnel are familiar.

As the available pool of experienced mainframe professionals enters a period of rapid decline, many companies are facing a crisis that threatens their ability to take full advantage of the single platform best suited for the computing challenges of today and tomorrow. This also happens to be the platform on which much of the world's most business-critical data and applications presently run.

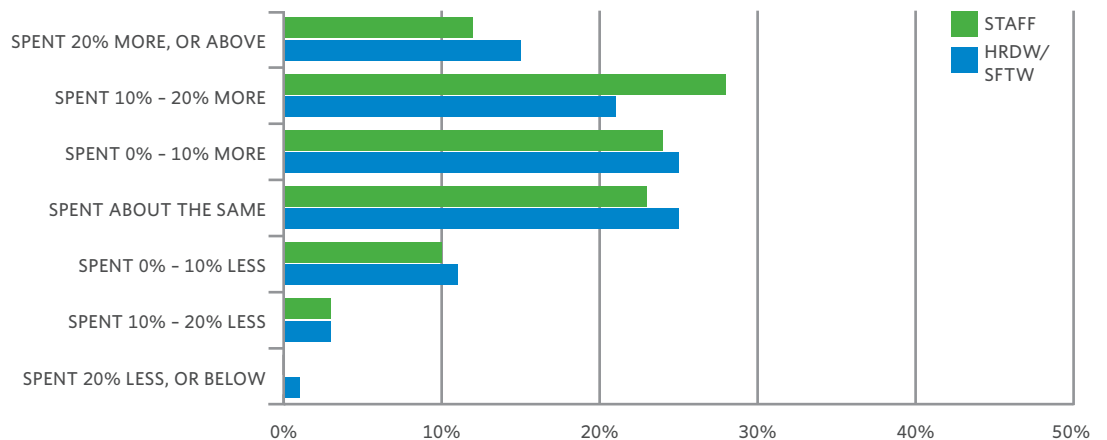
This combination of tight budgets, a scarcity of mainframe talent and rapidly increasing workloads is forcing IT organizations to reconsider how they manage their mainframe environments. Specifically, they are trying to determine how to fully realize the business value of the mainframe in light of dwindling staff and the difficulty of replacing skilled technicians with qualified new hires.

As budgets tighten and executives reaffirm their faith in mainframe technology, the available mainframe workforce is decreasing rapidly just as the market is entering into a period of growth. This creates a near perfect storm that challenges an organization's ability to operate an efficient data center that supports business growth and drives innovation. In fact, according to the survey performed for CA by TheInfoPro, a staggering 80 percent of organizations are grappling with some portion of their mainframe staff planning to retire in two years or less<sup>2</sup>. But the survey also found that during this same two-year period, 68 percent of enterprises intend to increase their mainframe hardware and software expenditures up to 20 percent or more.

FIGURE C

Many organizations currently operating mainframe environments intend to aggressively increase spending over the next two years.

MAINFRAME SPENDING GROWTH: TODAY VS. TWO YEARS FROM NOW



IT organizations that recognize the strategic importance of the mainframe are entering into a new and critical phase as they evaluate their operations. They need to mitigate the skills issues precipitated by this sea change. Clearly, the mainframe is an invaluable tool for addressing reliability, scalability, cost and governance issues — but who is going to keep it up and running? Specifically, how will an organization realize the benefits of the mainframe when attrition rates are skyrocketing and qualified replacements are scarce?

1 Gartner, Inc. "IT Operations Management Software by Platform: Mainframe Management Software Still Showing Growth," July 2006.  
 2 TheInfoPro, Inc. "The Mainframe Conundrum: Escalating Workloads, Declining Staff," November 2008.

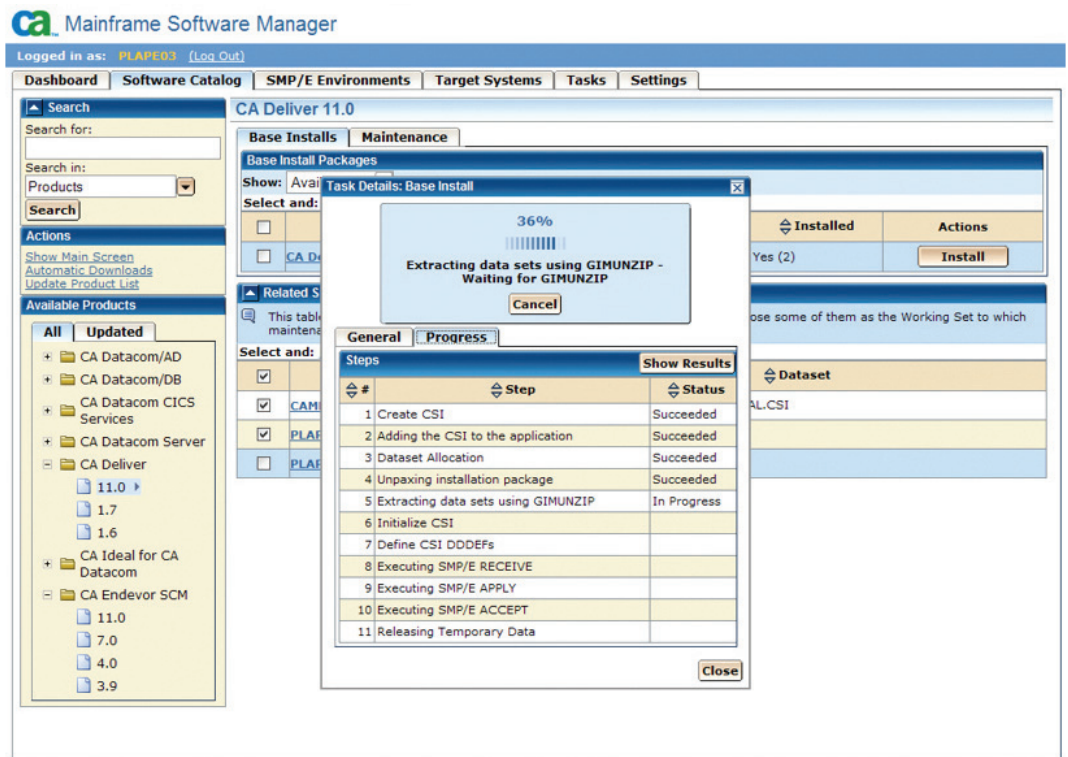
## Optimizing Mainframe Success by Simplifying Mainframe Ownership

CA is helping customers meet these emerging IT challenges by simplifying key aspects of mainframe ownership — including the acquisition, installation, deployment and configuration of CA's entire portfolio of mainframe management solutions. These capabilities will be delivered as an integrated set of tools employing a standardized user interface that will be highly familiar to systems administrators coming to the mainframe from other operating environments, such as Linux, UNIX and Windows.

FIGURE D

Mainframe 2.0 provides a standardized user interface and toolset that will be familiar to all mainframe system administrators, regardless of the operating environment with which they are most familiar.

MAINFRAME 2.0 USER INTERFACE



The objective is to make it easy for IT staff with limited or no mainframe expertise to use CA mainframe management solutions — and, by extension, to keep mainframe environments operating optimally. This ground-breaking initiative will also provide built-in support for mainframe management and include software patch management, system and software configuration and integration with configuration management solutions. As a result, even inexperienced mainframe staff will be able to extract greater value from both CA solutions and the mainframe platform as a whole.

### **Mainframe 2.0 Today**

Known as Mainframe 2.0, this phased development effort is aimed at standardizing and improving your staff's out-of-the-box experience with CA z/OS software. Presently, that experience includes:

- A single user interface component to federate all product management functions.
- The Software Acquisition Manager, which interfaces with CA Support Online to simplify obtaining CA products and CA Recommended Services (CARS) maintenance sets, as well as corrective maintenance.
- The Software Installation Manager, which controls the installation and maintenance of all z/OS mainframe products.
- The Software Deployment Manager, which distributes installed products across the z/OS systems.
- The Configuration Manager, which comprises a series of applets and wizards that provide simplified, Web-based configuration of CA products.

Mainframe 2.0 will utilize the Mainframe Interoperability System Test (MIST) — a new cross-product development environment for CA z/OS software that will enable CA to troubleshoot mainframe customer environments before general availability (GA) to end of service. From this environment, CA will also generate CARS, a preventive maintenance stream that corresponds to IBM's recommend services upgrades (RSUs). These developments will help IT managers reduce TCO and increase ROI by preempting problems and quickly resolving issues.

A comprehensive initiative, Mainframe 2.0:

- Standardizes delivery and enables the installation and management of all CA mainframe software with SMP/E, following the published IBM z/OS packaging standards — with additional CA qualities of service derived from analysis of the industry's best practices.
- Provides installation and deployment tools that simplify the use of CA solutions based on industry best practices. These tools leverage the latest browser-based user interface technology to make the environment as easy-to-use and familiar as possible.
- Performs software HealthChecks that periodically monitor CA solutions and automatically provide recommendations for improving their configuration. An installation and migration guide will also be built into the code of CA solutions to ensure that they operate reliably and with optimum efficiency.

- Delivers tools that automate key mainframe management tasks, thereby shielding IT staff from the intricacies of the platform and freeing up time and resources for higher-value activities.
- Includes a “control panel” interface that takes the complexity out of configuring CA solutions.
- Fills in-house skill gaps cost effectively, helping to control HR budgets by providing turnkey services that would otherwise be handled by experienced mainframe professionals.
- Offers tools with the intelligence to enable relatively inexperienced mainframe staff to effectively manage the mainframe environment.
- Provides tools with a common look and feel, making them more intuitive for the next generation of IT professionals.

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### SECTION 3: **BENEFITS**

## Equipping You to Better Perform, Compete, Innovate and Grow

With Mainframe 2.0, CA is delivering the software and services that enable you to more effectively tap into the tremendous business value the mainframe offers. As the leader in user experience for mainframe administration and operation, we have crafted the CA Mainframe 2.0 promise, which states that CA mainframe software will:

- Be significantly easier to use.
- Be smarter — with installation, configuration and tuning intelligence captured and embedded in our solutions.
- Sustain and enhance the fundamental value proposition and strengths of the mainframe platform.
- Enable the platform to be managed without a major skills investment — thereby facilitating the transition of staff and workloads from other platforms, while also allowing new hires to quickly become effective employees.

In this way, Mainframe 2.0 is specifically designed to help you:

- Enhance platform stability.
- Reduce the time necessary to install and deploy the software stack.
- Decrease the required levels of expertise and intervention.
- Reduce the need for, and level of, independent customer testing needed prior to production deployment.
- Significantly reduce the number and impact of software configuration-related issues.
- Reduce software TCO.

Mainframe 2.0 is a natural extension of CA’s Enterprise Information Technology Management (EITM) vision, which helps customers better perform, compete, innovate and grow.

### Improved Administrator Experience and Operations

Mainframe 2.0 provides a consistent and familiar interface for such varied software management activities as installation, deployment, configuration and maintenance. This simplifies the administration and operation of CA software solutions to such a degree that even novices can quickly become productive. By capitalizing on z/OS dynamic configuration capabilities and providing additional functionality, CA will help you significantly reduce the level of human intervention required to take a solution from delivery to execution. What's more, consistent packaging, delivery and planned release synchronization will further streamline ownership of all CA z/OS software.

### New Innovations for Proven Technologies

Mainframe 2.0 includes new service-oriented architecture (SOA)-based capabilities that enable software solutions to automatically manage system resources at a program-to-program level. This automation will eliminate the need for your systems programmers to spend time working out relationships between various products, subsystems, and components.

Mainframe 2.0 will also feature capabilities that encourage and complement best practices for:

- Software acquisition, installation and deployment, including:
  - Obtaining products and recommended service based on policy, not human activity.
  - Building the volumes that comprise the software stack required to run a system.
  - Maintaining and coordinating multiple levels of installed products and environments that expedite the process of rolling out change through the enterprise — such as migrating a set of installed software from test through production — while maintaining the previous level in case a backout is required.
- System and software configuration activities, including:
  - Flat file and utility file configuration management (for instance, PARMLIB or product control datasets).
  - Providing SOA-based mainframe services that enable integration with other management solutions.

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### Initial Feedback is Overwhelmingly Positive

Greg, the Lead Systems Programmer of a bank with assets of over \$150 billion, was one of the first customers to test drive Mainframe 2.0 — and he was very excited by what he saw. Due to attrition of mainframe talent in the current job market, Greg is being forced to grow staff from within the organization to support his mainframe management software. As such, he believes that the web-based GUI will “provide immediate value and return on investment.”

Furthermore, Greg also believes the standardization enhancements will be nothing short of life changing. In fact, he thinks the integrated software delivery and management tools, combined with new levels of product release and maintenance synchronization, will cut his installation time “down to a half-a-day or less.”

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## SECTION 4: CONCLUSIONS

CA's Mainframe 2.0 deliverables will empower you to capitalize on the unmatched and ever-evolving capabilities of the mainframe — which remains the most scalable, reliable, secure, cost-efficient, energy-efficient and auditable computing platform available today. Mainframe 2.0 will help a new generation of IT professionals effectively manage even the most complex mainframe environments utilizing their existing skill sets.

To this end, Mainframe 2.0 simplifies mainframe ownership by:

- Making CA's entire portfolio of mainframe management solutions easier for inexperienced IT staff to use.
- Creating a uniform, browser-based environment across all CA mainframe management solutions.
- Delivering automation and operational intelligence that insulates IT staff from the underlying complexities of the IBM z/OS platform.
- Rationalizing and streamlining the acquisition, implementation and integration of CA solutions, so they can be rapidly and effectively deployed with minimal skills.
- Conforming to IBM's software installation standards.
- Providing turnkey services that help remediate gaps in internal staff skills and control staffing costs.

## SECTION 5

### References

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Gartner, Inc. “IT Operations Management Software by Platform: Mainframe Management Software Still Showing Growth,” July 2006.

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TheInfoPro, Inc. “The Mainframe Conundrum: Escalating Workloads, Declining Staff,” November 2008.

**Scott Fagen**  
Principal Architect, Mainframe 2.0

## About the Authors

Scott Fagen, principal architect of the Mainframe 2.0 initiative with CA, leads the Mainframe Products Design Council (MPDC), the think tank that sets the technical direction for the mainframe development community. Scott began his mainframe career in 1986 with IBM, working on Sysplex support for what was then the MVS operating system. Over the next 21 years, Scott contributed to many different facets of the MVS, OS/390 and z/OS products, focusing on improving the reliability, availability and serviceability (RAS) characteristics of the operating systems and key subsystems.

Toward the end of Scott's tenure at IBM, he was the technical lead for the New Face of z/OS effort, working to improve the management and usability for z/OS. Scott is an acknowledged expert in distributed systems (Basic and Parallel Sysplex), design and configuration for reliability, availability, serviceability and scalability. In addition, Scott has advised many of the largest z/OS installations on best practices for high availability. While at IBM, Scott led the "Availability Workgroup" at the zSeries eBusiness Leaders Council, engaging IBM's design talent with leading-edge z/OS customers to improve the already impressive RAS capabilities of the System z and z/OS platform, and was a key resource to the zSeries System Design Council.

Scott received a bachelor's degree, with honors in engineering, and a master's degree in computer science from Stevens Institute of Technology.

**David Luft**  
Senior Vice President,  
Software Engineering

David Luft is the senior vice president of software engineering for CA's mainframe business unit. In this role, David is responsible for delivering solutions and technology that facilitate the management of CA's mainframe product lines.

A 21-year IT industry veteran, David joined CA in 1987 upon its acquisition of UCCEL Corporation and has held various positions of increasing responsibility within CA's research and development organization. He has managed development, quality assurance and support teams covering a variety of areas and products, including storage, workload and systems and security management in mainframe and distributed environments. In addition, David was responsible for the development of CA's Small and Medium Business (SMB) and Consumer products, focusing on delivery of enterprise-caliber CA technologies that addressed the unique IT needs of those markets.

David received a bachelor's degree in computer information systems from Northern Michigan University.

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To learn more about the Mainframe 2.0 architecture and technical approach, visit [ca.com/mainframe2](https://ca.com/mainframe2).

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