

White Paper



Mainframe Continuity Planning

Reginald Harbeck
May 2005

Executive Summary

Mainframe computers are fast, powerful, production-proven and, to many of the world's largest companies, indispensable. In fact, today's mainframes hold an estimated 60 percent of the most important data used by businesses.¹

When businesses were threatened by the Y2K bug, awareness of the mainframe was elevated at all levels of the organization due to the potential impact of this system going down. Significant investments in planning, software redesign, testing and deployment resulted. Because of these investments, organizations were able to successfully mitigate the risk while continuing to leverage mainframes for business applications and data.

In 2004, the mainframe turned 40.²

Today, companies face another threat, not from the technology, but potentially from who will support it. Mainframe-savvy application and system programmers are fast reaching retirement age. A study by META Group found that 55 percent of information technology workers with mainframe experience are more than 50 years old.³

This is a people problem.

While technology advances improve the mainframe's capabilities, people continue to play a significant role in the solution and, more important, the business outcomes. This is the challenge of continuity. Who is going to support your mainframe, and who will be your keepers of the mainframe culture that made it the powerhouse of manageability, reliability and performance that it has become?

It is critical for IT executives to begin planning immediately for solutions to the continuity challenge.

This paper discusses the planning options available to IT executives and managers and outlines specific steps that can be taken to achieve success with a mainframe continuity strategy. What must be kept in mind is that the challenge lies within finding and implementing a strategy that lets the people manage the technology and not vice-versa.

The Mainframe Workforce: A Volatile Issue

Mainframe computers power many of the world's largest banks, insurance companies and other major organizations and run many of their most critical applications. The high reliability, scalability and data integrity of this asset are critical to the continuing operation of businesses that use mainframes. This has been the case since mainframes first became well established in the 1960s and 1970s, and it will continue to be so for the foreseeable future.

But the stability of mainframe applications — and of the businesses that depend on them — will soon be placed in jeopardy due to a disappearing technical support workforce and potential evaporation of the mainframe culture. Specifically, over the next several years many of today's mainframe technical personnel will retire. As a result, it will be increasingly difficult for IT managers to support their mainframe applications without incurring significantly higher costs or turning to unproven technical staff lacking the necessary understanding, experience and technical culture.

According to META Group, "Organizations will need to continue deploying their mainframes for at least the next 10 years... and it is therefore imperative that IT organizations begin to address this potentially volatile [workforce] issue now."⁴

Retiring mainframe support staff takes with them the culture, highly developed abilities and persistent sense of responsibility essential to the ongoing operation of the mainframe and, by extension, of the businesses that rely on uninterrupted mainframe availability for their continued viability. Consequently, organizations face the following distinct losses:

- The experience and judgment necessary to keep operating systems and infrastructure software maintained without costly and reputation-threatening unavailability of an organization's key operations
- The culture of technical responsibility (plus the awareness of business and technical context) that keeps the selection of software and the performance of the mainframe aligned with business needs
- In-depth familiarity with local hardware and software configurations and applications, allowing for proper support and rapid problem resolution while avoiding unscheduled service disruptions
- Knowledge of the numerous things not to do in a complex operating environment
- Historical awareness of the causes and reasons for current circumstances and their relevance and application going forward
- Proven persistence in properly and thoroughly undertaking regular operational responsibilities essential to business continuity, such as security administration, storage management and disaster preparedness
- The skills and background necessary to enable new distributed applications and interfaces (such as online customer self-service systems) to connect with mainframe data and applications

These are all human issues and the departure of key personnel and their abilities is clearly a threat to the reliability, data integrity and systems management that are the cornerstones of the mainframe.

If organizations don't begin to formulate solutions now, the potential problems created by mainframe discontinuity can become increasingly severe. Mainframe performance and reliability could drop precariously, while the costs for bringing in mainframe system programmers and other support personnel could rise exponentially.

Looking at the Alternatives

To retain control of their mainframe strategy and avoid being forced into a less-than-optimal direction at the last minute, IT managers must choose from four alternatives, or a combination of them:

- Migrating to nonmainframe platforms
- Outsourcing mainframe activities
- Maintaining existing mainframe resources via expert consultants
- Maintaining existing mainframe resources via an in-house continuity strategy

As you look at which alternative is right for your organization, consider these important factors:

- The fact that mainframe continuity planning is primarily about people and culture
- The complexity and business value of your current mix of mainframe and distributed hardware, applications and management software
- How much time is available to deal with this issue before it would otherwise become a crisis
- Your organization's own internal demographics and the skills that are subject to imminent departure
- How and whether headcount can be proactively increased to develop the next generation of mainframe application and system programmers while cultivating cultural continuity
- The real costs and other factors inherent in the various continuity options, both short- and long-term, including data integrity, cross-application integration, performance requirements and transition costs
- How all this maps to your corporate and IT strategy

With these factors in mind, let's examine each alternative individually.

Migrating to Nonmainframe Platforms

Migrating to nonmainframe platforms typically involves moving applications or data to UNIX, Linux or Windows-based distributed systems and architectures. Reverse engineering software can be used to migrate existing COBOL applications to distributed architectures. Alternatively, readily available user data conversion tools can be used to move mainframe data into new, packaged application systems. The chief advantage of this approach is that it removes or reduces the need for future mainframe support.

At the same time, it carries certain risks — the migration process itself may involve significant time and costs and introduce even greater complexity into the enterprise. Additionally, the target systems might suffer from diminished system management, security, capacity and reliability levels, which are the characteristics that led customers to use mainframes in the first place.

Enter the people challenge, which is the biggest risk of this approach. Undertaking it without due care and appropriate personnel and tools is dangerous. Properly relocating mainframe applications and having them function at specified performance levels requires people who understand how things are already set up on your mainframe.

Ideally, migrating to nonmainframe platforms should result in equally good, if not better, functionality and performance in the distributed world as that which existed on the mainframe. Failing to achieve this "zero sum equivalent" can be quite costly, including the training and personnel efforts that would need to be relaunched.

Outsourcing Mainframe Activities

Outsourcing is a popular solution for organizations that wish to capitalize on its promises, such as reduced IT complexity and unpredictability. It offers advantages to organizations that want to reduce their involvement with mainframes but still want to retain the mainframe's strengths of system management, security and reliability.

When considering this option, it's necessary to determine which applications are best suited for outsourcing. Typically, companies outsource their noncore or noncritical functions. However, this poses a dilemma, since most mainframe applications are considered critical and are closely allied with the organization's core competencies.

In any case, outsourcing must be approached with care, outsourcing vendors must be chosen with caution and important questions must be answered, including:

- What impact will this have on your long-term service levels?
- What are the implications for your organization's customer and public reputation and trust?
- Will there be sufficient expertise to help ensure continuity of culture and awareness of your technical and business context?
- Will the outsourced data be stored in a secure location?
- Does the vendor employ tight security controls and policies?
- What measures will the vendor take to provide services profitably at a price you are willing to pay?
- Is there multilevel redundancy protection?

These considerations are essential, even in noncritical application handovers. For mission-critical data and applications, they are imperative.

Finally, it is important to recognize that there are no “silver bullets” and outsourcing is no exception. Only time and attention from properly trained staff can perpetuate awareness of your company’s IT and business context. To rely on being able to simply hand over your systems and applications to uninitiated technologists with insufficient transition time and no involvement of the personnel currently responsible for them won’t solve any problems it will just transfer them to an organization that will have to learn from scratch what your current application and system programmers already know.

Maintaining Existing Mainframe Resources via Expert Consultants

This alternative entails hiring the most talented technologists available, either by contracting with independent consultants, bringing experts in-house, or both. Since existing mainframe resources are retained, this solution avoids the risks of software- and system-level migration or transfer discussed in the first two alternatives.

This alternative’s challenge lies in the fact that the talent pool is shrinking and costs are rising. As the number of experienced mainframe technologists declines and demand increases, prices are likely to increase indefinitely.

In addition, like outsourcers, these consultants must still become familiar with the local IT environment if they are undertaking tasks with a high degree of customized content, such as application maintenance. A truly expert mainframe technologist has generally built his or her expertise over more than a decade. Should you contract with such experts, the local systems and process knowledge they build will leave with them when their contract ends.

An additional risk is that unqualified consultants might begin to come out of the woodwork once the incentive is sufficiently large. To avoid this, IT managers must choose their consultants carefully, dealing with trusted partners or employing comprehensive screening checks.

Maintaining Existing Mainframe Resources via an In-House Continuity Strategy

An in-house continuity strategy lets you maintain ownership and security of your proven computing assets and your business-critical mainframe applications and data.

Developing an in-house continuity strategy acknowledges the continuing importance of the mainframe and avoids the risks associated with migration, outsourcing and consultants. Nevertheless, this alternative presents its own challenges. First, it requires executive commitment to a strategic approach that enables the future success and business relevance of your mainframe environment. Just as important, however, is

the establishment of cultural continuity, not just continuity of technical abilities.

Such a strategy begins with proactive hiring and the necessary lead time for the education and apprenticeship-style cultivation of the next generation of technical staff.

The formation of the next generation of in-house mainframe technologists can be most effectively supported and achieved with the following considerations:

- Training on mainframe basics through on-site education/mentoring and CBT (computer-based training).
- Off-site, web-based, and CBT education courses on specific products to be used in the performance of duties (for example, Management Software).
- Staff Augmentation services to cover for your experienced mainframe technologists so they can dedicate time to mentoring the next generation.
- Support and enhancement of your local mainframe culture. This is a significant part of formation and, more so, of retention. A sense of belonging and relevance is an important defense against attrition during times of high demand.
- Healthcheck and upgrade services to get software to current and relevant levels of functionality for your business needs, so your next generation doesn’t start out bogged down in obsolete configurations.
- User conference attendance to fill in and expand awareness, ability and cultural relevance in the whole mainframe context.
- Current, highly-functional, integrated, easy-to-use and maintain management software that enables the next generation to focus on what matters.

This last point is of particular note because software that is obsolete, obscure or simply not designed to respond to business realities can easily become a permanent obstacle.

Choosing the proper software goes hand-in-hand with the hiring, training, and mentoring of new mainframe technical personnel.

Of course, the mainframe is no longer an island, so it is also important that the environment where your next generation of mainframe technologists develops takes that into account. Having an enterprise architecture that includes mainframe and distributed computing positions your organization for the future and brings breadth and relevance to technical staff coming from a non-mainframe background. By seeing and working with leading-edge technologies that bring the enterprise together, the next generation can take its skills to the next level rather than feeling limited to a single platform.

How CA Enables Mainframe Continuity Planning

As you consider how to handle mainframe activities in the future, CA is ready to help you meet the people and software aspects of the continuity challenge. With 28 years of experience in mainframe and distributed management software, services and education, CA is ready to assist you with modernized and simplified management software, packaged and customized services, and product education that support your technological needs and the development needs of your staff.

Renewed Development Focus

In response to today's mainframe landscape and IT challenges, which include mainframe staff continuity and succession, CA is moving forward with a new vision for transforming the management of the platform. CA has always been first and foremost a software company, specializing in enterprise management software with an industry-leading mainframe competence. CA Mainframe Management™ is comprised of a group of existing, world-class solutions that provide total management for the mainframe environment.

CA Mainframe Management solutions will make extensive use of advanced common technology and services and provide a deeper level of integration through shared data to deliver an efficient, encompassing mainframe management suite. CA Mainframe Management will address three strategic goals: lowering the cost of mainframe operations, simplifying the complexity, and integrating with enterprise infrastructure management solutions.

To assist the new workforce that will begin to operate mainframe systems as today's experts retire, CA Mainframe Management will deliver browser interfaces to augment 3270-type screens, simplifying administration and operational requirements. CA will deliver a wizard-driven EZ Install, intuitive navigation and online help, embedded best practices and self-management principles. This will enable your next generation of technologists to perform their duties (both mainframe and enterprise-wide) with a minimum of specialized training and experience.

Technology Consulting Support

To assist you in evaluating your current situation so you can best plan your future, CA offers baseline planning services such as healthchecks and customized engagements that can help you determine the current release levels and configurations of your CA mainframe software. CA will help you determine the best mix of products and technology that meets your needs and achieves business objectives.

If you do opt to upgrade your mainframe software or to implement other recommendations from the baseline

planning, CA can help with consulting services and modern, easy-to-employ software. This presents a good opportunity to consolidate software vendors and move off obscure or undersupported software.

Alternatively, if you choose to migrate certain applications to a nonmainframe platform, CA can help with consulting services that can include reverse engineering existing applications using leading-edge, model-based development tools. As a result, your in-house applications will be much simpler and easier to maintain.

Whether the mainframe remains your central resource for production processing, or only part of your total computing environment, establishing an enterprise-wide IT management software architecture (for example, in job management, security, event management and other disciplines) can reduce complexity and help you manage your computing needs now and into the future. CA's state-of-the-art management software and professional services can play a central role in making this happen.

CA can also bring your staff up-to-speed with regard to the mainframe fundamentals.

On-Site Knowledge and Experience

While CA's management software can simplify your IT environment and requires a minimum of specialized mainframe knowledge, a basic understanding of the workings of the mainframe can still be beneficial. CA and our partners offer many courses, from instructor-led to computer-based, that help IT personnel further their expertise through the most effective and convenient training methods.

CA can provide consulting assistance to support our software, putting your experienced technologists in an excellent position to mentor. Whether you're developing a new generation of mainframe technologists or assisting consultants adapting to your local environment, mentoring is essential in relaying the benefits of accumulated experience. To help you free up your experienced mainframe personnel so that they can engage in mentoring, we recommend augmenting your mainframe support staff with temporary workers who can cover for your existing staff during this period.

Once the basics are in place, there's always additional benefit to be gained from on-going education. No matter which educational option you choose, your staff will return with insights and ideas for getting more from the software that supports your business.

CA also sponsors an annual user conference, caworldsm, which provides first-hand, in-depth exposure to the latest technology that can help you address your evolving business needs and successfully compete in an increasingly complex and challenging global marketplace.

Conclusion

Regardless of which alternative you choose, the bottom line is certain: mainframe continuity planning must be addressed, today. The longer you wait to make a decision, the more costs will rise while the number of choices will narrow. As important as the mainframe is to businesses today, the reality is that the mainframe's support workforce is retiring and organizations need to plan their mainframe continuity strategies.

Failing to act now merely postpones inevitable decisions until they must be made at a time of crisis rather than opportunity. With due care and attention to the real issues and costs involved, you can develop a strategy and migration path that can help you make the most of your mainframe computing resources and help ensure your organization's future success.

About CA Technology Services

CA Technology Services delivers IT management solutions for our customers to help achieve more efficient IT performance and better manage the IT enterprise which drives meaningful business value and financial results. CA Technology Services leverages its global expertise and certified professionals in security management, IT service management, IT operations management, storage management and life cycle management to maximize customers' IT investments.

For more information on how CA can help you with your business mainframe issues, visit ca.com/mainframe or call 1-866-466-3970

Endnotes

- 1 META Group, Inc., 2003 IT Staffing and Compensation Guide
- 2 IBM introduced the IBM System/360 mainframe computer on April 7, 1964
- 3 META Group 2004
- 4 META Group, Inc., 2003 IT Staffing and Compensation Guide

About the Author

Reginald (Reg) Harbeck is CA's Global Solution Manager for Mainframes and Linux. Since receiving his Bachelor's Degree in Computer Science, he has been working in IT for nearly two decades and has worked with operating systems, networks, security and applications on mainframes, UNIX, Linux, Windows and other platforms. Reg has been with CA for seven years, during which time he has met with and presented to technical and IS management audiences internationally and in many locations in North America.

