



# Closing the Mainframe Skills Gap

How Organizations Can Cultivate the  
Next Generation of Mainframe Talent

**Growing numbers of experienced mainframe employees are at or nearing retirement age, presenting a serious challenge to organizations that rely on mainframes as their foundational platform. Increasingly, many of these organizations are hiring young millennial employees to replace retiring veterans.**

## Mainframes Have Enduring Relevance for Modern Business

Mainframe computers have been around for more than 50 years and still form the core IT systems in many industries, including healthcare, banking, insurance and airlines. Mainframes are a fundamental organizational asset that underpin mission-critical activities which generate large and irreplaceable revenue streams for a cross-section of industries. Mainframes currently support:

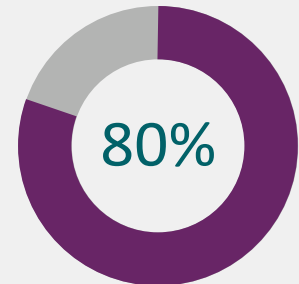
- 90 percent of all credit card transactions and nearly \$8 trillion payments a year<sup>1</sup>
- 29 billion ATM transactions each year, worth nearly \$5 billion per day<sup>1</sup>
- Four billion passenger flights each year<sup>1</sup>
- More than 30 billion transactions per day—more than the number of Google searches every day<sup>1</sup>

It's estimated that 75 percent of all corporate data resides or originates on mainframes.<sup>2</sup> Mainframes constitute the main IT systems of 90 percent of Fortune 500 companies and nine out of 10 of the largest health insurance companies in the U.S.<sup>2</sup> Despite the rise of cloud computing, it's clear mainframes remain entrenched in many businesses that provide products and services crucial to everyday lives. An estimated 20,000 mainframes are still in operation and will need to be continuously supported for the foreseeable future.<sup>2</sup>

## Mainframe Talent Trends Demand Immediate Attention

In recent years, timing and circumstances have combined to create a disconcerting trend as growing numbers of the experienced IT employees who maintain the software that runs mainframes are reaching or moving toward retirement age. Nearly 20 percent of the mainframe workforce is expected to retire over the next five years.<sup>3</sup> In a survey recently conducted by IBM, retirement and attrition of mainframe employees was the top concern among IT leaders. Meanwhile, recent estimates point to up to 80,000 new mainframe positions expected to open up worldwide by 2020.<sup>3</sup>

### ENDURING RELEVANCE FOR MODERN BUSINESS



It's estimated that 80 percent of all corporate data resides or originates on mainframes.

Source: Gartner

“From a business standpoint, the mainframe will continue to be a relevant IT platform on a global scale, playing a vital role in existing and expanding IT environments.”

-Ken Harper,  
Ensono IT Director and Product  
Leader for Mainframe Services  
and Products

These trends present challenges to organizations that rely on mainframes as their foundational platform. Ken Harper, Ensono director and product leader for mainframe services and products, has been speaking about this challenge for the past year. “The concern for replacing the rapidly retiring mainframe veterans is more apparent than ever before as each year brings them closer to retirement age,” says Harper.

For example, Harper notes, six mainframers, all at least 20-year veterans, have retired from Ensono in the past 18 months. At the same time, Ensono signed 12 new mainframe clients, which doubled MIPs and LPARs. Ensono has also added Mainframe Remote Hosting and Mainframe DBA application services during this time.

While pundits have been predicting the supposed death of the mainframe for some time, Harper says mainframes aren’t going away anytime soon. “From a business standpoint, the mainframe will continue to be a relevant IT platform on a global scale, playing a vital role in existing and expanding IT environments,” he says. “So, it’s critical that organizations take active steps to solve the mainframe talent challenge.”

## Cultivating a Solution Through Millennial Mainframers

Increasingly, many organizations are hiring young millennial employees to replace retiring mainframe veterans. This includes Ensono. “The competing dynamics of landing a dozen new mainframe clients while a half-dozen mainframe veterans were retiring really stretched our succession plan to the limit,” says Harper. “But we were able to fill each of those positions with a well-prepared, able-bodied next generation mainframer.”

Organizations face some obstacles when it comes to recruiting millennials to fill mainframe programming roles. These roadblocks often start with the perceptions of IT leaders about working on the mainframe.

“When talking to millennial computer science graduates, IT leaders often get caught up in over-emphasizing and even apologizing for legacy systems and mainframe platforms,” says Harper. “But millennial programmers aren’t really that concerned about the technical platform they work on. Most of them are more concerned about solving challenging problems and working in a supportive environment that offers a promising career path.”

Andrew Hicks, who joined IBM to work on the mainframe, says that building strong relationships with universities and technical colleges is key to recruiting millennials as mainframe talent.

“You need to make your company’s name prevalent on college campuses,” says Hicks, “For example, guest lecture in computer science classrooms and attend career fairs to get to know the students. This way, at career fairs, students will recognize your company and approach you to ask about some of the innovative projects and research you’re involved in.”

### TRENDS THAT DEMAND ATTENTION



# 80,000

Recent estimates point to up to 80,000 new mainframe positions expected to open up by 2020.

Source: Pew Research

“You want to try to provide as many opportunities as you can to help your millennial employees get engaged in their jobs.”

-Andrew Hicks,  
IBM z/OS Function Test



Steven Boyd joined Ensono as a mainframe systems programmer after graduating from Northern Illinois University with a computer science degree. While surprised to be recruited as a mainframe programmer, he loves the work so far. “Mainframe is a conglomeration of different tasks and goals that any computer science graduate can learn,” he says.

Boyd connected with Ensono at a job fair, where he says Ensono representatives “actually engaged me and talked with me for awhile, it really helped me with my perspective on working as a mainframe programmer at Ensono.”

## Making Proper Integration a Priority

Like Boyd, Andrew Meister also joined Ensono as a mainframe systems programmer with a computer science degree from Northern Illinois University. Meister stresses the importance of properly integrating millennial mainframers into your work environment once you’ve hired them.

Meister says, “Creating a collaborative environment for success is key. Not having one go-to person for every specific issue that comes up, but instead, extending the knowledge base. Mentors should be encouraged to address questions from millennials by engaging them and leading them to different subject matter experts so knowledge can be transferred accordingly.”

It’s also critical to properly evaluate new millennial employees’ skill sets and place them in the best positions to thrive. “When I was coming in, my mentor had me exposed to a lot of different divisions of the mainframe,” says Meister. “I had exposure to some IBM DB2 and to third-party software and client correspondences. Through that, I realized I personally enjoyed the third-party software management and maintenance end of things.”

Additionally, Meister advises companies to outline realistic expectations for millennials working on the mainframe for the first time. “You want them to feel engaged with the software and their day-to-day mainframe activities,” he says. “This way, they’ll be able to take ownership of their projects and cultivate a desire to dig deeper and explore the mainframe as a whole.”

## Expanding Your Requirements Beyond Mainframe Experience

Luisa Martinez joined IBM to work in Unix System Services after obtaining a computer science degree from SUNY New Paltz. She says she didn’t have any mainframe experience before starting work at IBM. “I barely knew what a mainframe was before I started this job,” she says, “So when companies are looking to hire millennials to work on the mainframe, they should focus less on graduates with mainframe skills and more on those with certain qualities like a willingness to learn and challenge themselves. Any computer science graduate who possess these qualities is going to enjoy working on the mainframe.”

### TIPS FOR RECRUITING, HIRING AND RETAINING MILLENNIAL EMPLOYEES TO WORK ON THE MAINFRAME:

- ✓ Emphasize career advancement opportunities
- ✓ Focus on both technical and non-technical skills
- ✓ Enlist new hires in your recruiting efforts
- ✓ Don’t drown them in techno-babble
- ✓ Connect new hires with an effective mentor
- ✓ Give new hires clear and timely assignments and objectives
- ✓ Provide plenty of opportunities for continuous learning and growth
- ✓ Communicate, communicate and communicate some more
- ✓ Listen to their feedback and adapt, as necessary
- ✓ Foster a creative working environment

IBM Worldwide z Skills Client Leader Christy Schroeder agrees: “I always tell clients that if they’re posting a job and just putting in the acronyms JCL and DB2 they’re going to eliminate a huge pool of terrific talent. Instead, communicate what kinds of characteristics you’re looking for—team players, problem solvers, people who have a passion for learning and working with computers.”

“Hire for potential, not just for a particular skill set,” Schroeder adds. “That’s the key to hiring millennials to work on the mainframe.”

Martinez also suggests hiring new millennial mainframers in pairs, at a minimum, whenever possible. “When I started working at IBM, I came on board with a bunch of other new hires and it really made a big difference,” she says. “A lot of us were going through the same training and education and facing similar obstacles. Being able to help and relate to each other made a huge difference.”

In addition, Martinez says she was assigned a technical mentor during her first week. “It made me more comfortable knowing there was someone I could turn to if I had any questions, regardless of what they might be,” she says. “This is still the person I go to with most of my questions, even after working here for two years. We also have career mentors who help us discover new career paths we might not have thought of ourselves.”

## Increasing Millennial Engagement

Hicks recommends providing new millennial mainframers with interesting side projects as well. “For example, I write a lot of hack-a-thons and do a lot of Raspberry Pi work. You want to try to provide as many opportunities as possible to help your millennial employees engage in their jobs.”

Given the desire of many millennials to continue developing their skills, Martinez also suggests sending millennials to conferences and workshops whenever possible. “I remember the first time I attended a conference and met other millennials who work on the mainframe,” she says. “I loved hearing their perspective and experiences and it was amazing to hear they loved it as much as I did. And it’s always great meeting people who’ve been working in the field for a long time—it broadens your perspective.”

Meanwhile, Boyd stresses the importance of transparency with millennial employees. “Be open in sharing information about where the company is going in the future and what impact this will have on your millennial employees’ jobs,” he says. “Let them know how their jobs might look five years or so in the future.”

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Client Leader

## Proactively Taking on the Mainframe Talent Challenge

The issues created by the “mainframe talent drain” are real and the impacts will only continue to escalate in the next few years. “The retiring mainframe workforce is reaching critical mass,” observes Ken Harper. “This is a problem that IT leaders need to address head-on to avoid a major mainframe talent shortage in the years to come.” Yet, despite the strong demand for new mainframe programmers to replace retiring mainframe veterans, few universities and technical schools offer the kind of training and curricula that formed the core of a computer science degree two or three decades ago. Therefore, it’s often up to corporations to let universities and technical schools know about their need for well-trained mainframe employees. Most universities prioritize helping graduates get good jobs, so if corporations tell them that solid, well-paying jobs are waiting for graduates with mainframe training, they will more likely teach mainframe skills as part of their curricula.

In the meantime, corporations should plan on providing mainframe training to help get new computer science graduates up to speed. Being proactive and hiring young new programmers before veterans have retired will enable veterans and newbies to work together side-by-side for a period of time. This can foster a smoother transfer of knowledge by allowing new mainframers to tap directly into the decades of experience possessed by mainframe veterans and provide organizations with a sustainable strategy for supporting their ongoing mainframe requirements.

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-Steven Boyd,  
Ensono Mainframe Systems  
Programmer

Ensono delivers complete hybrid IT services from cloud to mainframe.  
Let us help you operate for today and optimize for tomorrow.

To learn more, visit [www.ensono.com](http://www.ensono.com).



<sup>1</sup> Source: [www.cobol.se](http://www.cobol.se)

<sup>2</sup> Source: IBM

<sup>3</sup> Source: Pew Research