



The Mainframe Talent Drain:

How a Baby Boomer Exodus is Impacting Mainframe Operations and What Organizations Can Do to Adapt

OVERVIEW

The demographics of the IT workforce are changing as Baby Boomers retire and are replaced with young Millennial employees. This trend is hitting mainframe operations especially hard, since many young computer science graduates are unaware of mainframe career opportunities or received little mainframe training in college.

This white paper explores the mainframe talent shortage that has resulted from this Baby Boomer IT exodus and strategies organizations can implement to deal with the challenge.

The demographics of the U.S. workforce are changing slowly but surely as the Baby Boom generation nears and enters retirement. The oldest of the Baby Boomers reached the traditional retirement age of 65 in 2011, and approximately 10,000 Baby Boomers now turn 65 every day, according to the Pew Research Center.

This demographic trend is having a significant impact on the IT industry. Many IT veterans are retiring and being replaced by Millennial employees, who are generally defined as being born between 1982 and 2004. The impact is especially being felt in mainframe operations, where it's estimated that up to 84,000 new mainframe positions could emerge worldwide by 2020.

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DEATH OF THE MAINFRAME?

While the supposed "death of the mainframe" has been predicted for some time, the reality is that mainframe workforce demand is not going away anytime soon. The core systems of thousands of banks, insurers, healthcare providers and retailers are mainframes, and hundreds of billions of lines of COBOL code help support the world economy. In addition, 90 percent of the Fortune 500's core systems are mainframes.

“Continued mainframe growth, development and integration are happening today and will only scale upward,” says Ensono IT Director Ken Harper.

“Mainframes will continue to play a vital role in existing and expanding IT environments to accommodate the Big Data, analytics and high transaction volumes of organizations worldwide.

“From a business standpoint, the mainframe will continue to be a relevant IT platform on a global scale as we all try to go faster, cheaper, better and more secure,” Harper adds. “Your piece of the mainframe talent puzzle will remain critical to the success of your business.”

IT'S SIMILAR TO Y2K

Harper compares the mainframe talent shortage to the Y2K scare experienced at the turn of the century. And it's not just IT organizations that are affected. “The mainframe is a thriving industry with vendors, business partners, developers and suppliers who provide services and products for the mainframe platform,” says Harper. “Resources are needed to support this external community. Organizations that have not started to plan or implement a program may already be at risk.”

When thinking about this situation, it's important to note that retiring mainframe employees take with them more than just technical skills. They also possess intellectual knowledge and process collateral that need to be transitioned to the next generation of young mainframe employees.

“This is a non-technical cultural and social change with a new generation of employees who think and communicate differently than the traditional legacy systems programmer,” says Harper. “The next-gen mainframers are highly adaptable, eager to learn and love technology. Most of them have an appreciation and understanding that non-technical skills are just as important as technical skill sets.”

“Mainframes will continue to play a vital role in existing and expanding IT environments.”

- Ken Harper,
Ensono IT Director

SOLUTIONS TO THE SHORTAGE

So what are some potential solutions to the mainframe talent shortage?

Harper believes there are four main options for technology owners:

SOLUTION 1: MOVE OFF THE MAINFRAME

While this may be a viable solution for some organizations, “it’s often easier said than done,” says Harper. “This is especially the case when you consider that a fair amount of mainframe application support has been outsourced and/or offshored with limited to no history of how the apps interact.”

SOLUTION 2: DEVELOP TALENT FROM WITHIN

With the evolution of the mainframe over the past 40 years, many entry-level jobs have been eliminated. Harper says this has severely compressed job progression. “This strategy is especially challenging for smaller mainframe shops, and it might be moot for workloads destined to be sun-setting,” adds Harper.

The strategy requires an ongoing commitment of time and resources to develop and manage a plan for internal talent development. “But when done proactively and in the right situation, it’s an investment that can pay off with solid dividends,” says Harper.

SOLUTION 3: SOURCE TALENT EXTERNALLY

The dynamics of talent supply and demand make it more challenging than ever to find experienced and qualified external mainframe talent. And when you find the talent, you’ll have to invest money and time to hire and transition these employees into your organization. “Staff augmentation, or renting bodies in the short term, may be a viable solution for some organizations,” says Harper.

SOLUTION 4: OUTSOURCE MAINFRAME OPERATIONS

You can choose from two mainframe outsourcing options: Managed Services and Remote Infrastructure Management (RIM). Harper says that Managed Services may be the only solution when there is minimal mainframe support staff and out-of-date software and hardware. “Then it’s ‘keep the lights on’ until the data, process and business requirements are no longer needed,” he says.

Meanwhile, RIM can be a quick tactical solution when business dynamics have accelerated timelines that impact IT — for example, when early retirement packages result in mass IT retirements all at once. RIM can also be a good solution for moving off the mainframe permanently. “It allows companies to develop an achievable and well-thought-out transition plan to another platform,” says Harper.

SAW IT COMING

IBM Worldwide z Skills Client Leader Christy Schroeder says IBM recognized that Baby Boomers would be retiring from their mainframe jobs and that new mainframe skills and talent needed to be developed to replace that retiring workforce. “As a result,” she says, “we created the global z Academic Initiative Program over 12 years ago with the specific mission to attract and grow enterprise systems talent.”

Since the program’s inception, IBM has worked with more than 1,400 schools in 70 countries and reached more than 180,000 students through curriculum, programs and contests. “We want to bridge the talent gap and build z skills at every step in the student’s education and early career path,” says Schroeder. “We need to build the talent pipeline through early exposure to enterprise computing.”

EXAMPLES CITED BY SCHROEDER INCLUDE:

- Content, courses, minors, majors and graduate degree programs.
- Capstone courses, research projects, co-op program and internships.
- Re-skill professionals via online accredited certificate programs, MOOCs and Master the Mainframe contests.
- Rotational assignments, exchange programs and mentorships.
- Training courses designed to deepen skills.

In addition, Schroeder encourages IT organizations to build relationships with colleges and universities “in your own backyard or wherever you’re recruiting. For example, you can teach, guest lecture, attend career fairs or sponsor technical events.”

When recruiting Millennial employees, Schroeder says candidates don’t necessarily need to have had mainframe training in college. “Look for students who love computer science, programming and problem-solving and have a passion to work with computers. Hire for potential, not just for a particular skill set.”

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- Christy Schroeder,
IBM Worldwide
z Skills Client Leader

A DISCONNECT BETWEEN COLLEGES AND BUSINESSES

Schroeder points to a disconnect between what colleges and universities believe about how well their institutions are preparing students for the IT workforce and what business leaders believe. According to a research paper titled “Pressure on the Provosts: 2014 Survey of Chief Academic Officers,” 96 percent of college and university chief academic officers think they’re providing students with the right skill sets to succeed, but only 33 percent of business leaders agree with this.

IBM has developed an academic initiative designed to educate students and Millennials about the mainframe and help equip colleges and universities to teach mainframe skills. **This no-cost training is available to help organizations bring new mainframe talent on board and includes the following:**

- Master the Mainframe Learning Management System
- z/OS Introduction and Workshop
- COBOL e-Learning curriculum
- IMS Customer Internship Program
- IBM z/OS YouTube videos
- Z Systems eLearning for IBM Customers

The initiative also includes Gen z, a community of passionate young mainframe enthusiasts with less than five years of experience on the z platform. “The community strives to create fun networking opportunities through free, interactive, one-day Gen z events, meet-ups, social media networks, and during technical conferences and z council meetings,” says Schroeder.

“The one-day workshop explores the vast capabilities of z Systems to inspire innovation,” she adds. “Attendees will better understand the global impact of mainframe technology while forging connections to create a next-gen network.”

LEADING WITH THE MAINFRAME

According to Harper, the mainframe is and will remain an essential part of Ensono’s business. “We lead with the mainframe,” he says. “The mainframe is essential to our business so it’s paramount that we maintain a sustainable mainframe workforce. We have a commitment to ensure that our client base is never at risk, and this includes the people skills required to support mainframe environments. And developing new staff is required to keep the machine working.

STUDENT SKILL SETS



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“The mainframe team’s mission is to continually replenish, improve and automate the technical support factory for our delivery teams to be successful with high levels of system availability for our clients,” Harper adds. “We would be in a precarious position trying to support our current mainframe clients, let alone being able to take on new mainframe clients, if we did not have a successful working plan in place.”

Ensono is using a three-channel approach for meeting the challenges of the mainframe talent shortage:

1. **Hiring and developing college recruits**, especially from Northern Illinois University.
2. **Developing a mentoring program** for employees working on the Operations and Monitoring teams.
3. **Creating an internship program** with the University of Central Arkansas in which UCA interns work with Ensono’s mainframe team in Conway, Arkansas.

Harper says the program focuses on three critical success factors:

1. Ensuring that candidates are **connected with a mentor who possesses good teaming skills.**
2. **Creating clear-cut objectives** with deliverables and providing adequate training.
3. **Allowing candidates to own their assignments.** “Giving candidates ownership of their work and letting them know that they are providing value is probably the most important success factor,” says Harper.

“By aligning our succession plans with our mainframe employees’ retirement dates,” Harper continues, “we have created opportunities for internal candidates and interns to transition into formal mainframe technical support positions.” Ensono currently has eight staff members who have joined the company as a result of these efforts.

Meanwhile, Ensono has chosen Remote Infrastructure Management as its solution for mainframe technical support staffing issues. “We put some thought leadership around this three years ago for mainframe support ‘as a service’ creating RIM, and signed our first dedicated RIM client two years ago,” he explains. “Over the past year, we’ve seen an increasing trend with mainframe RIM as a service and this does not appear to be slowing down. We now have six dedicated mainframe clients, five of whom have closed in the last six months.”

“The diminishing mainframe workforce has become a primary issue that IT leaders must confront and solve.”

- Ken Harper,
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PROBLEM REACHES CRITICAL MASS

“The problem is real and it’s here,” Harper says in referring to the mainframe talent drain. “The diminishing mainframe workforce has reached critical mass and become a primary issue that IT leaders today must confront and solve.”

FROM THE MILLENNIALS’ PERSPECTIVE

Andrew Meister graduated from Northern Illinois University in 2014 with degrees in Computer Science and Computer Aided Design. Two years ago, he started working for Ensono as a mainframe systems programmer. “I had no prior mainframe knowledge or experience before starting this job,” he says, “but working on the mainframe has been a big step in furthering my career.”

Luisa Martinez, who studied Computer Science at SUNY New Paltz and works in Unix System Services for IBM, echoes Meister: “I barely knew what a mainframe was before I started my job here at IBM,” she says. “Working on the mainframe has challenged me and pulled me out of my comfort zone.”

Luis Bonilla graduated from Northern Illinois University with a degree in Computer Science and joined Ensono in 2016 as an associate system mainframe programmer. He says he had some knowledge of the mainframe “but it was mostly just ideas and concepts. Working on the mainframe has opened my eyes to how powerful these machines really are.”

Chris Loers studied Computer & Systems Engineering at Rensselaer Polytechnic Institute and works in z/OS Unix System Services for IBM. He says he had never even heard of the mainframe before he started his job. “I’m impressed by the scale of mainframes and how prevalent they are in IT, and the fact that mainframes run at nearly 100 percent capacity at all times.”

Loers says a friend of his in college teased him about taking a job working on the mainframe. “But now that he sees how much we all rely on mainframes, he’s eating his words. He’s always asking me questions about the mainframe.”

When asked what have been the keys to their early career success working on mainframes, these Millennials all stressed the importance of having mentors who they could go to with questions and for counsel. “I can’t overemphasize how critical both technology and career mentoring have been for me,” says Martinez. Bonilla says his father is a mainframer. “He has kind of been my mentor — I ask him lots of questions.”

In terms of what employers should be doing to address the mainframe talent shortage, the Millennials suggested actively participating in IT events on college campuses, hiring college students as interns, and broadening their scope of what a qualified mainframe employee might look like.

“Get out there — show up at school events like hack-a-thons and career fairs,” says Bonilla. “And give students hands-on experience working on the mainframe in your internship programs.”

Loers says IT employers should look for candidates who are “hungry for knowledge and passionate about learning new things. And they don’t necessarily have to learn mainframe skills in college. Mainframe programming is a skill just like any other, and computer skills aren’t necessarily tied to any particular platform.”

ABOUT ENSONO

Ensono provides hybrid IT infrastructure management services that help clients optimize IT operations while engineering technology and business solutions for the ever-changing marketplace. Our services increase security and performance while reducing TCO by an average of 15 percent.

Our experience in managing business complexity distinguishes us from competitors. We have managed hundreds of complex migrations and have designed solutions that address a wide range of challenges that companies are facing today. We adapt to and work seamlessly within our clients' culture, and value the expertise of their employees. Our collaborative approach to meeting our clients' challenges keeps them with us for an average of 10 years. It's also why we're ranked #1 in customer satisfaction for IT outsourcing by Data Monitor's Black Book of Outsourcing.