Skills Development on the Mainframe Platform

How major players in the mainframe world are helping companies act to have a sustainable talent pipeline.

Analyst Perspective

The Mainframe is alive and well and is a key technology component in many enterprises

The mainframe is a key part of the IT landscape and will continue to be so well into the future

While IBM Z is not as dominant as it was in the 1970s and 1980s, it is a major platform that excels at performing enterprise functions that require speed, power, reliability, and security. We are well past the early 1990s prognostications of its demise. There is a very engaged mainframe community driven by IBM itself and major software vendors such as Broadcom and BMC.

Some firms are feeling the pressure of a skills gap, but it doesn't have to be that way. There are partners in the mainframe ecosystem that can help and continue to support this vital infrastructure asset.

Rick Pittman
Vice President, Research
Info-Tech Research Group

Overview

The purpose of this research is to **outline the state of the mainframe support and training environment** and to **assess the training programs** offered by top vendors in the space.

We looked at five significant players in the mainframe ecosystem and evaluated their capability in partnering with clients to ensure they have a skilled mainframe workforce well into the future.

The area we looked at is a specific aspect of the mainframe world, and we are not casting aspersions on any company that has decided not to focus on this aspect.

We found that **IBM** and **Broadcom** are leading in the area of mainframe skills development and that **BMC** has acquired necessary pieces to emerge over the next two years. The leaders in this space are not surprising in that they are the market share leaders in the mainframe software market, which represents an estimated $7 billion in annual revenue.

While Micro Focus and Rocket Software are strong participants in the mainframe ecosystem, they do not focus on the education and training aspects we reviewed.

In this report, we first briefly look at the current state of the mainframe and the perceived mainframe skills gap. We then evaluate specific companies in the mainframe skills development space. In appendices, we provide more detail on the offerings of IBM, Broadcom, and BMC and then present some information on related topics.

Report Structure

1 **State of the Mainframe**

A brief look at current thinking on the future of mainframe computing

2 **Mainframe Skills Gap**

An overview of the perceived skills gap on IBM Z and apps running on the platform

3 **Partner Evaluation**

Evaluation of major partners that help mitigate the skills gap

4 **Appendix: Feature Detail**

A closer look at apprenticeship, instructor-led training, and web-based training

5 **Appendix: Other Resources**

Other relevant topics related to mainframe skills

1

State of the Mainframe

A brief look at current thinking on the future of mainframe computing

Mainframe continues to have wide enterprise usage

The consensus among analysts covering the mainframe space shows the continued dominance of the platform in large enterprises.

Below are some of the numbers:

90%	**87%**	**67%**	**80%**	**70%**
of the top 50 banks run on IBM Z.	of all credit card transactions run on IBM Z. This represents 30 billion transactions per day.	of Fortune 100 companies are mainframe customers.	of the top 5 airlines use IBM Z for critical workloads.	of the top 10 global retailers use IBM Z for critical workloads.
IBM 2021 Annual Report	**IBM 2018 Annual Report**	**Evercore, 2022**	**Evercore, 2022**	**Evercore, 2022**

The mainframe remains a critical part of long-term infrastructure plans

We referenced five "state of the mainframe" reports that surveyed people from organizations with mainframes. Both IT and non-IT staff were included.

A common conclusion from all five reports is **that the mainframe is critically important to their organizations**. This is significant in that it indicates mainframes will see continued investment.

86%	**96%**	**92%**	**80%**	**74%**
see the mainframe as **critical or important** to the operation of their organization.	say mainframe applications are **important** to their organization.	see the mainframe as a **platform for long-term growth** and new workloads.	say that the mainframe is **critical** to their organization's business operations.	believe that the mainframe has **long-term viability as a strategic platform** for their organization.
EMA, 2021	LzLabs, 2021	BMC, 2021	Rocket Software, 2022	Forrester/Deloitte, 2020

# The Current State of the Mainframe at IBM

Investment Continues

IBM Z now constitutes a vast majority of the world's mainframes. There are some other mainframe systems in existence, but in 2022 Fujitsu announced that it will discontinue mainframe sales in 2030 and support services in 2035. This leaves IBM essentially alone in this space.

IBM continues to invest in new IBM Z models and platforms. While it does not explicitly say what its revenue for the IBM Z platform is, it does report revenue increases each time it introduces new models. In recent years, it has introduced new models every 25 to 30 months. The most recent was the launch of the Z16 in April 2022.

Mainframe revenues were estimated to be about $2 billion last year, but IBM doesn't report its results in a way that makes it obvious how much revenue is ultimately associated with mainframe systems. It's safe to say that mainframes remain a critical part of its business.

IBM has been very active in promoting IBM Z as a key piece of hybrid cloud implementations in many companies.
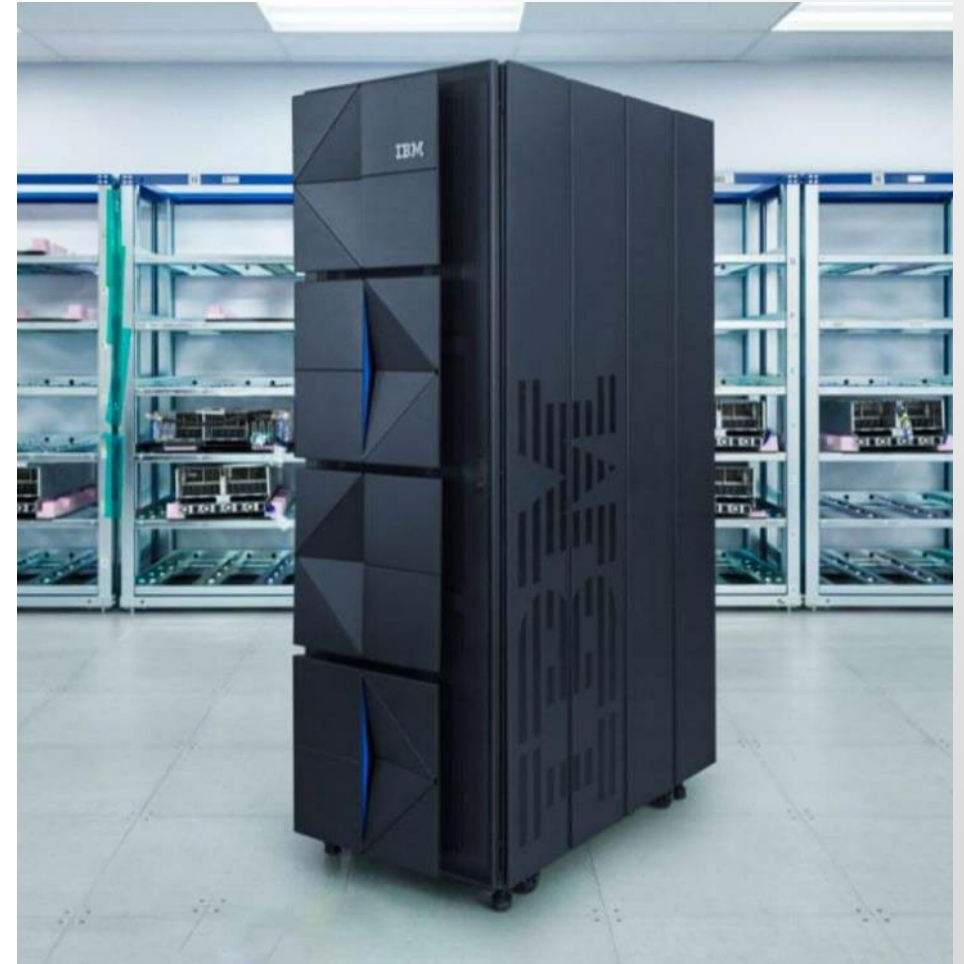

IBM z16 mainframe. Source: IBM.

2

Mainframe Skills Gap

An overview of the perceived skills gap on IBM Z and apps running on the platform

Is the skills gap fear or fact?

The Fears

1   Staff with IBM Z skills are retiring and there will be no one left to take their place in supporting the infrastructure that so much of the world relies on.

2   Most universities and colleges don't teach mainframe skills and, in fact, show little awareness that mainframes exist.

3   Young people are not interested in mainframes.
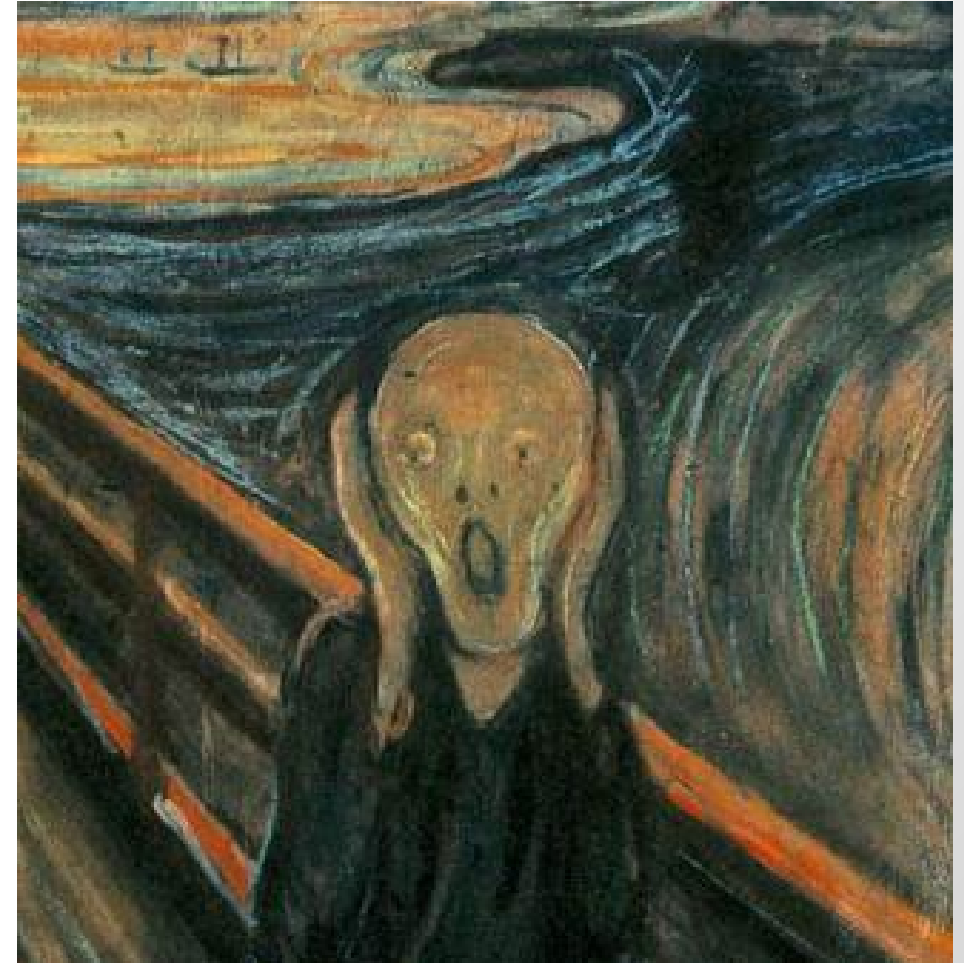
Results on the skills gap are not consistent

Some people are experiencing issues with the mainframe skills gap and others are not.

86%

of respondents **can acquire the talent** necessary for their mainframe.

EMA, 2021

57%

of respondents **are concerned** about loss of necessary skill to operate the platform.

LzLabs
Research Report

93%

of respondents are **experiencing a skills gap**.

BMC Report

71%

of respondents think that their mainframe team is **understaffed**.

Rocket Software Report

Info-Tech Insight

There is evidence of an IBM Z skills shortage, but there is help available, and companies with an intentional strategy are succeeding.

There is a path to mainframe support!

BROADCOM®

"You can build a talent pool and pipeline if you make it a priority to do so. It's not just a sit, stand by, or wait-it-out situation. The skills crisis is really about inaction. Those who are willing to take action and have a plan will have a talent plan now and well into the future."

Greg Lotko
SVP and GM Mainframe Software Division at Broadcom Inc., in a public Broadcom call

IBM

"Clients and business partners have a common awareness that there's a shortage of available mainframe skills. They're worried that the people with mainframe expertise are leaving the workforce and that it will be costly and difficult to replace them. Often, what fuels these concerns is the belief that the mainframe requires unique skills and that these skills are distinct from others within the organization. What we're saying to them is that they have to look at things differently."

Meredith Stowell
Vice President, Ecosystem at IBM, quoted in TechChannel

MICRO FOCUS®

"The problem isn't that students aren't interested. It's that we're not explaining it to them. At all. And people are not explaining what's really good about it."

Misty Decker
Mainframe and COBOL Evangelist at Micro Focus

Info-Tech Perspective

We agree with all the quotes on the left, with Greg Lotko's being the best summation. Companies with mainframes can cultivate skilled staff pipelines into the foreseeable future, but they need a plan, and there are partners available to help.

The quotes from Meredith Stowell and Misty Decker are also very relevant. This is a solvable problem both now and in the future. Acceptance of the status quo is the primary barrier.
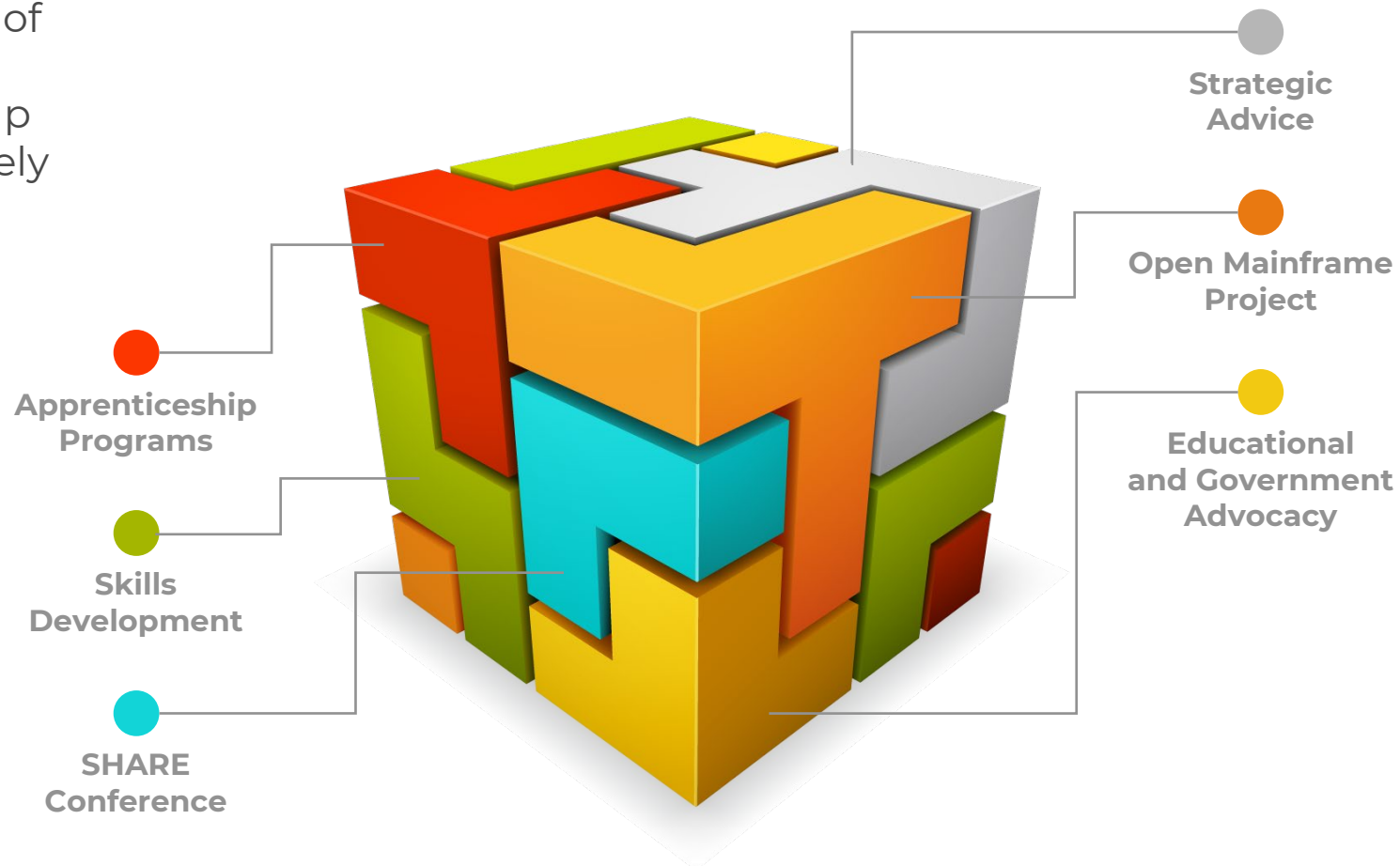
3 Partner Evaluation

Evaluation of major partners that help mitigate the skills gap

The mainframe ecosystem is strong

There is a passionate and engaged group of people and organizations that fuel the mainframe ecosystem. There is a lot of help available. The parts we'll look at most closely are apprenticeship programs and skills development.

Strategic Advice

Open Mainframe Project

Educational and Government Advocacy

Apprenticeship Programs

Skills Development

SHARE Conference

The ecosystem

As mentioned, the mainframe ecosystem is strong. There are two very important aspects of the ecosystem that will not be dealt with directly in this paper but are notable.

SHARE

SHARE started in 1955 as the first ever enterprise IT user group. According to its mission and vision, SHARE is an independent volunteer-run information technology association that provides education, professional networking, and industry influence. SHARE enables its members and partners to continually shape the future of the enterprise technology ecosystem. SHARE conferences are held semiannually. SHARE is supported at the board, program, and committee levels by BMC, Broadcom, IBM, and Rocket Software.
https://www.share.org/

Open Mainframe Project

Open Mainframe Project is a collaborative project managed by the Linux Foundation to encourage the use of Linux-based operating systems and open-source software on mainframe computers. Projects include ZOWE, which narrows the skills gap between new and legacy z/OS developers. Broadcom, IBM, Micro Focus, and Rocket Software all support this project through participation at the board level as well as other committees. A notable example of support is that Broadcom donated an IBM Z15 available for use by all Open Mainframe Projects and the open-source community at large beginning in 2023.
https://www.openmainframeproject.org/

Partners help in skills development

Objective

We seek to provide an objective overview of the training programs offered by mainframe market leaders. This research is intended to help users and prospective buyers feel comfortable with continuing to invest in mainframe technologies by delving into the training options that are available for the next generation of IT talent.

Providing an analysis of the offerings of BMC, Broadcom, IBM, Micro Focus, and Rocket Software, this research will compare each vendor against key criteria, outlining a summary of overall themes toward support, education, and training in the mainframe marketspace. Info-Tech Research Group will leverage analyst experience, secondary research, and information garnered from vendor briefings to complete this report.

Vendor Criteria

In evaluating the market space for mainframe training programs, Info-Tech's analysts looked at the following vendor attributes:

- Breadth and depth of offering
- Vendor footprint (vendor market presence, vendor mindshare, vendor stability, and long-term viability)
- Program delivery model
- Geographic coverage
- Affordability transparency

Partner top-level capabilities

Vendors were rated for the breadth and depth of their offerings across the three delivery models as well as for the cost of the offerings.

Feature Name	Description
Apprenticeships	These are intended to be comprehensive vehicles to assist clients in long-term development of mainframe skills.
Instructor-Led Training (ILT)	ILT is an invaluable tool in development of skills. The ratings of this feature pertain to ILT outside of apprenticeship programs.
Web-Based Training (WBT)	WBT is an essential and scalable approach to skills development. The ratings of this feature pertain to WBT outside of apprenticeship programs
Cost	Will a customer incur any additional charges or fees for training and developing employees?

Key players in the mainframe skills development space

We compared five vendors for this report. The vendors are listed in alphabetical order. Including Micro Focus and Rocket Software in this analysis is somewhat unfair; they both have a strong presence in this ecosystem but contribute in different ways outside of bridging the current mainframe skills gap. With that in mind, BMC, Broadcom, and IBM are the focus of this report.

Market Leaders

BMC

American multinational company offering information technology services and consulting

Broadcom Inc.

Acquired by CA Technologies in 2018; the leading ISV in mainframe software.

IBM

Computer software and hardware manufacturer offering consulting services for mainframes.

Secondary Players*

Micro Focus

Enterprise software provider delivering technology and supporting services.

Rocket Software

Software company that empowers organizations by providing continuous innovation to legacy technologies.

* Not ranked in quadrant

Vendor Quadrant

This quadrant is an unbiased overview of the landscape. The results are based on the expert opinion of the analyst and detailed primary and secondary research. We chose not to put Rocket and Micro Focus on the quadrant as they don't participate significantly in the areas evaluated
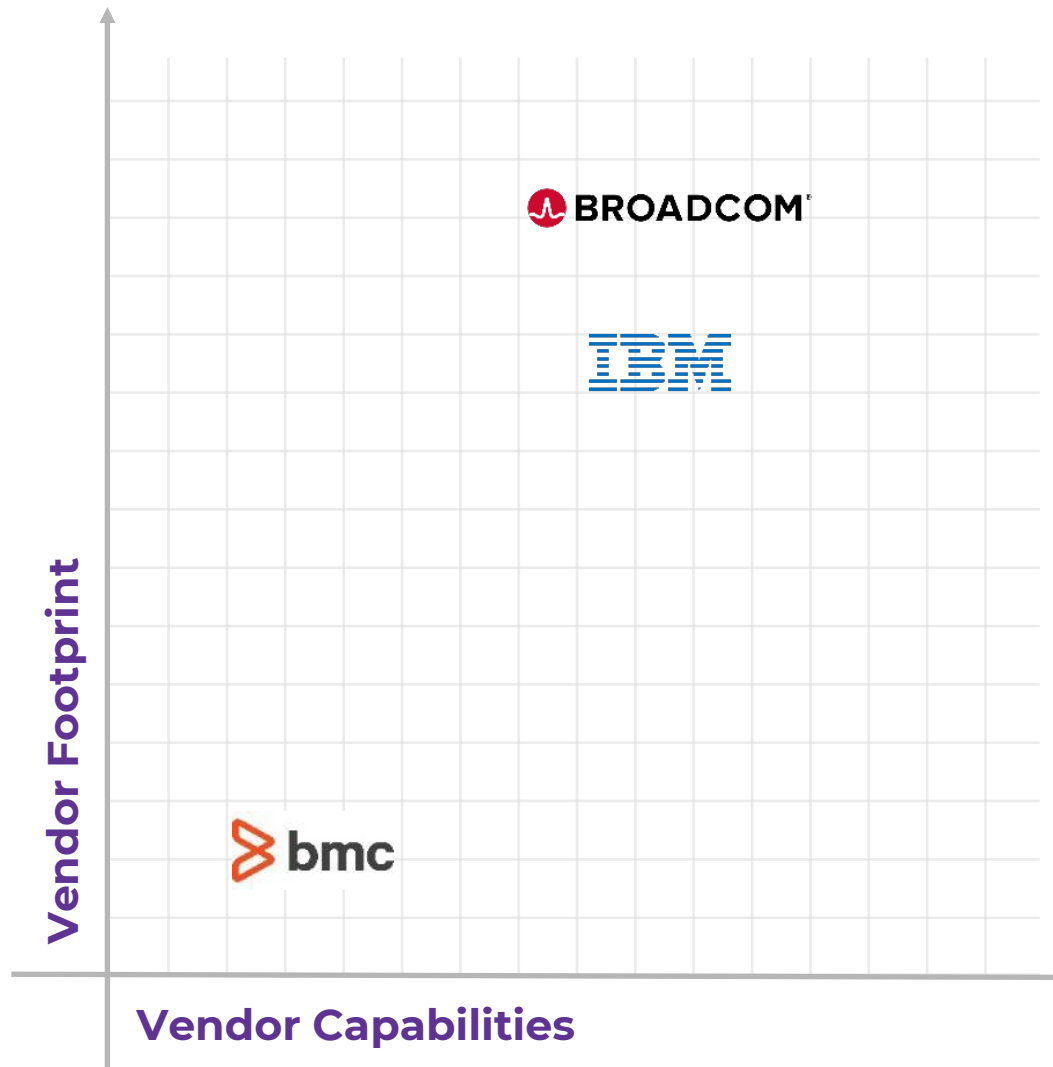
Vendor Capabilities

Does the vendor have a strong breadth and depth of capabilities in the marketspace?

Vendor Footprint

How big is the vendor?

What's the viability of the vendor? And does it have a valid roadmap?

Partner top-level capabilities

Vendor	Apprenticeship	Instructor-Led Training	Web-Based Training	Cost
BMC	◵	◑	◑	◔
Broadcom Inc.	●	●	●	●
IBM	◔	●	●	◔

Info-Tech Perspective

IBM and Broadcom have high ratings. Both of their Apprenticeship offerings are slightly less robust outside the US. While Broadcom scored as exemplary in each category, there are areas where there is still room for growth, which will be outlined in the detailed explanations that follow.

Legend

● – Exemplary   ◑ – Good   ◐ – Adequate   ◔ – Inadequate   ○ – Poor / N/A

Capability: Apprenticeship

BMC

While BMC has a Mainframer in Training (MIT) program that has been in place for several years through its subsidiary RSM, it has primarily been an internal program, and at this point public offering is still aspirational.

Broadcom

Broadcom has invested heavily in its Vitality Program. It absorbs significant cost and risk on behalf of its clients. It provides in-depth instructor-led training. To take advantage of this program, you do need to be a Broadcom client. To date, the program has not reached high scale and Broadcom must think about how it can do that.

IBM

The IBM Z Apprenticeship Program is offered in partnership with Franklin Apprenticeships and leads to certification with the US Department of Labor. It can operate at a high scale. It is mostly WBT-based, and the client pays for the resources throughout the program.

Vendor	Capability
BMC	◕
Broadcom Inc.	●
IBM	●

Capability:
Instructor-Led Training

BMC

BMC has a comprehensive ILT offering through RSM Partners, which it purchased in 2020. The offerings are expensive – a theme for BMC.

Broadcom

Broadcom's ILT offering outside of its Vitality Program is available via three avenues: no-cost Mainframe Foundations & SysProg Foundations courses, no-cost product-specific ILTs offered globally via Broadcom subject matter experts, and additional at-cost product ILTs offered via its preferred education partner, ProTech.

IBM

IBM offers a few no-cost courses but most are at a cost. IBM makes extensive use of partners for creation and delivery of these courses.

Vendor	Capability
BMC	◕
Broadcom Inc.	●
IBM	●

Capability:
Web-Based Training

BMC

BMC has partnered with Interskill as almost everyone in the industry does. Going through BMC to Interskill yields a cost markup, so it's best to go directly through Interskill.

Broadcom

Broadcom offers WBT on its products to its clients at no cost. For general Mainframe WBT, it partners with Interskill.

IBM

IBM offers a few no-cost courses but most are at a cost. IBM makes extensive use of partners for creation and delivery of these courses.

Vendor	Capability
BMC	◕
Broadcom Inc.	●
IBM	●

Capability:
Cost

BMC

BMC charges the client for all skills development products. Its ILT courses are quite costly.

Broadcom

Broadcom consistently seeks to offer skills development services to its clients at no or low cost. This is a forward-thinking approach that shows a belief that assisting clients in skills development and in having the capability to staff its mainframe systems will benefit Broadcom in the long term.

IBM

IBM has made an investment through its highly scalable apprenticeship program. Outside of that program, it uses an extensive network of providers, and those services are offered for a cost.

Vendor	Capability
BMC	◕
Broadcom Inc.	●
IBM	◔

Product Context

BMC's MIT program could be a strong mainframe training initiative but is largely an internal program at BMC. BMC recruits individuals with the right "attitude and aptitude" rather than focusing solely on those with previous tech experience. This program covers all key mainframe disciplines, with graduates gaining accredited qualifications in their mainframe specialty. Despite the recent refinement of the program, it is still described as a journey of 24 to 36 months, which is a large commitment.

VENDOR NAME
BMC

HEADQUARTERS
TX, USA

EMPLOYEES
5,001 – 10,000

FINANCIAL MARKET
Private Equity

Product Highlights

Strengths	Areas for Improvement	Pricing Transparency
Offers its Mainframer in Training (MIT) program, a structured education and work experience initiative.	The program is primarily used internally; currently only offered to clients sparingly.	Vendor pricing was opaque ✓✓✓
Designed to accelerate the building of in-house teams to effectively respond to staffing challenges and address the mainframe skills gap.	It has recently been "refined and streamlined" from its typical three-year length; potential for early onboarding issues.	
Combines mainframe schooling with practical project work and mentoring from experienced professionals; trainees are paired with a "technical buddy" for mentorship/guidance six months into their journey.	Cohort size is quite limited.	
The program is offered globally. Talent is always sourced local to clients with a focus on promoting diversity and inclusion.		

bmc

📁 Company Profile

History

In the late 1970s, BMC Software founders began a contract programming partnership in Houston, Texas. By 1980, the company was incorporated and officially became BMC Software, Inc.

In 2013, a consortium led by Bain Capital and Golden Gate Capital purchased BMC for $6.9 billion, and it became a private company.

KKR purchased BMC in 2018.

Estimated annual revenue is $2.1 billion.

Place in the Mainframe World

According to a 2020 Gartner report, BMC has a 19% share of the $7 billion+ mainframe software market, putting it behind only Broadcom and IBM.

BMC is very engaged in the mainframe ecosystem. The company publishes an annual mainframe survey report and is very involved with SHARE, the main user group in the industry, participating in many of its committees.

Recent Events

In 2020, BMC purchased RSM Partners, which is described as a global provider of unique services, software, and expertise with a 100% focus on IBM Z mainframes.

In 2020, BMC also purchased Compuware, which is described as empowering the world's largest companies to excel in the digital economy by taking full advantage of their mainframe investments.

Info-Tech Perspective

BMC is quite committed the mainframe ecosystem as evidenced by purchases such as RSM and Compuware. It has a non-trivial share of the mainframe software market. With the skills development pieces it has put in place, it can be a strong partner in the future. It will be interesting to see how well BMC executes on its mainframe education strategy. It is currently behind Broadcom and IBM but has potential. Unlike IBM and Broadcom, BMC seems to charge high rates for its educational offerings, which is a disadvantage.

Product Context

Broadcom's Mainframe Vitality Program is a comprehensive mainframe training initiative. Its investment in this program is second to none. The size of the cohorts is still very small. Hires are recruited from universities with a mainframe curriculum as well as from the workforce. A college degree isn't required, and diversity is actively sought. The program is currently offered throughout North America and EMEA (with some contingencies), with a current extension taking place in Japan.

VENDOR NAME	HEADQUARTERS
Broadcom Inc.	**CA, USA**

EMPLOYEES	FINANCIAL MARKET
20,000	**AVGO (NASDAQ)**

Product Highlights

Strengths	Areas for Improvement	Pricing Transparency
Offers its Mainframe Vitality Program, a skills development program aimed at cultivating the next generation of mainframe talent.	Cohort size is limited.	Offered at low to no cost.
Offers both onsite and online instructor-led training; the pandemic shifted the focus to virtual training, with a plan to offer hybrid in the future.	Clients are limited to how many individuals Broadcom can hire from the program per cycle.	During residency, Broadcom pays trainees' salary, puts them in a corporate apartment (covering housing costs), and provides a meal stipend.
The program goes into great depth: mainframe fundamentals and blended learning lasts up to 13 weeks, product training is 4 to 6 weeks, and residency runs anywhere from 3 to 6 months.	EMEA clients can't hire from the program; they can only send their new hires to the product training.	✓✓✓
Trainees come from two sources: first, Broadcom sources and hires talent directly; second, customers send in their own new hires.		
Connects students with technical experts in a mentoring relationship.		

BROADCOM®

📁 Company Profile

History

Broadcom was #128 on the Fortune 500 List for 2022, with revenues of $27.45 billion. It has 20,000 employees.

It began in 1961 as the semiconductor products division of Hewlett-Packard and through various incarnations remained primarily a semiconductor company until the purchase of CA Technologies in 2018 for $18.9 billion.

Analysts were confused and skeptical of the CA purchase, wondering why a prominent chipmaker would buy a mainframe software company. Analysts are now more positive about this company that is very focused on large enterprise accounts.

Place in the Mainframe World

According to a 2020 Gartner report, Broadcom has a leading 37% share of the $7 billion+ mainframe software, even ahead of IBM itself.

They are very involved in the mainframe ecosystem. With IBM, they were the top-level sponsor of the most recent SHARE conference. They are very active in all SHARE committees and are active in the Open Mainframe Project.

Recent Events

In May 2022, Broadcom announced an agreement to purchase VMware, Inc. for approximately $61 billion.

In September 2022, Broadcom CEO Hock Tan said, "As far as the regulatory process around VMware goes, we're in the thick of it. It's making good progress. Just to reiterate, we expect to close on this in fiscal 2023" (CRN).

In October 2022 Broadcom donated a z15 mainframe to the Open Mainframe Project.

Info-Tech Perspective

In CA Technologies, Broadcom purchased a significant player in the mainframe software market. In the fiscal year prior to being purchased, CA reported revenue of $2.182 billion in mainframe solutions. Since then, Broadcom has focused on 600 strategic accounts and on providing value-added services to benefit these clients. The depth and low cost of its offerings such as the Vitality Program are industry leading. If these programs grow in popularity as they should, we expect Broadcom will need to share some costs with its clients.

Product Context

The IBM Z Apprenticeship Program is a scalable mainframe training initiative. This program has proven to be successful, leading to global clients pushing for this program to be offered worldwide. The first cohort started in January 2021 and already 111 apprentices have been hired. Local recruitment services target underrepresented populations and veterans, with a focus on finding "new collar" talent. Upon completing the program, participants receive a nationally recognized credential from the Department of Labor and 45 credit hours that can be used toward a college degree.

VENDOR NAME
IBM

HEADQUARTERS
NY, USA

EMPLOYEES
280,000

FINANCIAL MARKET
IBM (NYSE)

Product Highlights

Strengths	Areas for Improvement	Pricing Transparency
Offers its IBM Z Apprenticeship Program, targeted at helping employers create a diverse, sustainable workforce in mainframe. Employers commit to number/location/role of resources to hire for a one-year apprenticeship; candidates are then recruited locally to meet those requirements. Candidates are vetted through a mainframe pre-apprenticeship program; pre-apprenticeship graduates are then hired by employers. Employers provide mentorship and on-the-job training; online learning with SMEs continues throughout the apprenticeship (4 to 5 hours per week); dedicated "success managers" are assigned to each apprentice.	Currently only offered in the US, although the Global Skills Accelerator Program (equivalent of the Apprenticeship Program offered globally) was scheduled to roll out in 2022. IBM won't recruit/hire for the Global Skills Accelerator Program; companies will hire for themselves, and IBM will then intake, manage, and train those hires. Employers pay their own apprentices.	Training is offered at no cost to employers. Employers pay talent during apprenticeship, with incremental salary increases. ✓✓✓

IBM

📁 **Company Profile**

History

IBM was #49 on the Fortune 500 List for 2022 and had revenues of $57.35 billion and profit of $5.74 billion. It has 280,000 employees. This is a far cry from its Fortune 10 days from 1965-2005, but it is still a significant organization.

IBM began in 1911 and changed its name to International Business Machines in 1924. The beginning of mainframe computing can be traced back to the introduction of the IBM System/360 in 1964. This was followed by the IBM/370 in 1970. This was the dominant computing platform in business into the 1980s.

Place in the Mainframe World

While the dominance of the mainframe has diminished, it still has a very strong presence in its current incarnation as IBM Z. As noted by TechChannel in 2022, the community is the driving force behind the ecosystem, with IBM supported by independent software vendors (ISVs) such as Broadcom, BMC, Microfocus, and Rocket Software.

IBM is strongly involved in all industry initiatives and partners with all major players.

Recent Events

In 2021, IBM spun off its managed infrastructure services business as Kyndryl. The spinoff involved approximately one-quarter of IBM's staff.

IBM CEO Arvind Krishna noted in an April 2022 call that "we saw over the last three years more growth and better adoption of Mainframe than we have seen in prior cycles. We expect from early signals that we are going to see that continue over the next couple of years."

Info-Tech Perspective

IBM is, almost by definition, the center of the mainframe world. As noted, it relies heavily on its partners. The IBM Z Apprenticeship Accelerator Program has been popular, and we expect it to continue to grow. It is certainly not as comprehensive as the Broadcom Vitality Program, but it is very scalable, limited only by how much effort clients can put in.

Product Context

With Micro Focus' Academic Program, courseware and software are made available to educators and their students, no real-world working experience is offered as part of the programs. Employers who are members of the Academic Program and become part of the "Micro Focus Academic Alliance" are put in touch with local universities to have access to their talent, and they can also advertise internships and careers on Micro Focus' site to help streamline the search for new talent, but it is not a direct feeder program by any means.

VENDOR NAME	HEADQUARTERS
Micro Focus	**Berkshire, England**

EMPLOYEES	FINANCIAL MARKET
10,001+	**MFGP (NYSE)** **MCRO (LSE)**

Product Highlights

Strengths	Areas for Improvement	Pricing Transparency
Offers Micro Focus Academic Programs, including the Micro Focus COBOL Academic Program. Provides educators with toolkits ensuring they have everything they need to teach industry-relevant IT courses; students gain the skills, knowledge, and experience required to meet the needs of employers. There are membership opportunities within the Academic Program; member organizations are put in touch with local universities to access the IT talent of tomorrow. Globally offered with academic partners throughout the Americas, EMEA, and APAC.	Relies on educational institutions and their educators to teach the programs. Doesn't provide students with paid, real-world work experience (i.e. a residency or apprenticeship). Only targets those already pursuing computer science/a career in IT.	Courseware and software are free to universities. Educator access to online web support and Micro Focus web-based training courses is free. Membership pricing is opaque. ✓✓✓

📂 **Company Profile**

History

Micro Focus is not a US company, but it would be in the Fortune 1000 if it was, with $2.899 billion in revenue in 2021.

The company was founded in 1976, and in 1981 it developed CIS COBOL, a standard implementation for PCs.

It has acquired several companies over time, including Borland, Attachmate (including Novell), and several companies with COBOL products.

Major product divisions include Application Modernization & Connectivity and Application Delivery Management.

Place in the Mainframe World

In 2021, Micro Focus reported revenue across five product groups, with divisions related to mainframe focused on modernization, cloud, and SAAS-based projects. Its mainframe focus is helping the future rather than the current state.

Micro Focus is involved in the mainframe ecosystem particularly in educational and government advocacy and in engagement with cloud providers.

Recent Events

On August 25, 2022, Open Text and Micro Focus announced they have reached agreement for Open Text to purchase Micro Focus for an estimated $6 billion.

The joint press release described it as "Creating One of the Largest Software & Cloud Businesses Enabling Digital Transformations."

The implications of this are not yet known.

Info-Tech Perspective

Micro Focus is very focused on digital transformation, and its modernization paradigm largely involves moving workloads from on-premises mainframe to the cloud. As a result, it doesn't generally focus on current mainframe staffing issues and gaps. It does focus on educational and government initiatives with a vision of the future that involves hybrid cloud. Its view likely has more cloud and less mainframe than Broadcom and BMC envision.

Rocket software

Product Context

Rocket Software does not offer a mainframe training program. Its focus lies on mainframe innovation, not on providing training and educational services. While its Open-Source Languages and Tools offering does provide some benefits, including eliminating the need to spend time — and money — on learning a new skill (i.e. COBOL), it brings value only to those with a background in IT who already possess a knowledge of modern coding languages.

VENDOR NAME

Rocket Software

EMPLOYEES

1,001 – 5,000

HEADQUARTERS

Massachusetts, USA

FINANCIAL MARKET

Private

Product Highlights

Strengths	Areas for Improvement	Pricing Transparency
Offers Rocket Open-Source Languages and Tools, aimed at ensuring that developers are capable of coding on mainframes.	Focuses on application modernization to address the skills gap, not training.	Vendor pricing was opaque
Eliminates the requirement of needing to spend substantial time learning new skills; enables the new generation of IT talent to be proficient in mainframe without learning COBOL.	No applicable education aspect.	✓✓✓
More than 30 open-source languages and tools are offered, including Git, R, and Python; any developer familiar with these modern languages and tools can harness the power of the mainframe.	Provides no value to the new-to-mainframe workforce; beneficial only for those with a background in computer science and preexisting knowledge of modern code languages	
Created in partnership with IBM; investment in mainframe development increases by double digits every year.		

Rocket® software

📂 Company Profile

History

Rocket was founded in 1990.

It currently has 2,500 employees, who in company lingo are called "Rocketeers."

It has acquired several companies, including Aldon (2011), Zephyr (2012), and D3 (2013).

In 2018, Bain Capital took a majority position in Rocket with a $2 billion investment.

Place in the Mainframe World

Rocket is very connected to the IBM Z platform. It states, "The Rocket mainframe product portfolio includes tools for data management, performance optimization, catalog and system management, disaster recovery, storage management, VSAM backup and optimization, and business intelligence."

It is very involved in the mainframe ecosystem, including SHARE and the Open Mainframe Project.

Recent Events

In April 2021, Rocket acquired ASG Technologies and the purchase furthers its commitment to "grow its portfolio of enterprise software solutions that increase the value of legacy platforms across the technology domains of core infrastructure, security, data & AI, application development, open source, and hybrid cloud."

Info-Tech Perspective

Rocket Software, through development and acquisition, has an impressive portfolio of mainframe products and a close partnership with IBM. It is a strong contributor to the mainframe community. Its services and training appear to pertain primarily to product implementation and it offers neither ongoing education nor assistance to clients with general mainframe skills development.

Overall Results

Findings

The two most viable vendors from this list are: Broadcom and IBM

BMC is emerging in this space. It plans to expand its mostly internally focused Mainframer in Training program to clients. It also plans to expand its certification program to all its software products.

Micro Focus and Rocket Software are significant contributors in the mainframe world but don't participate meaningfully in the area this analysis focused on.

Next Steps

The next steps are to undergo a right-sized vendor selection process. This process includes:

1. Gathering and prioritizing granular requirements.

2. Shortlisting vendors.

3. Participating in vendor demonstrations.

4. Selecting the right vendor based on a weighted-average scorecard.

We encourage reviewing our relevant research:

→   The Rapid Application Selection Framework
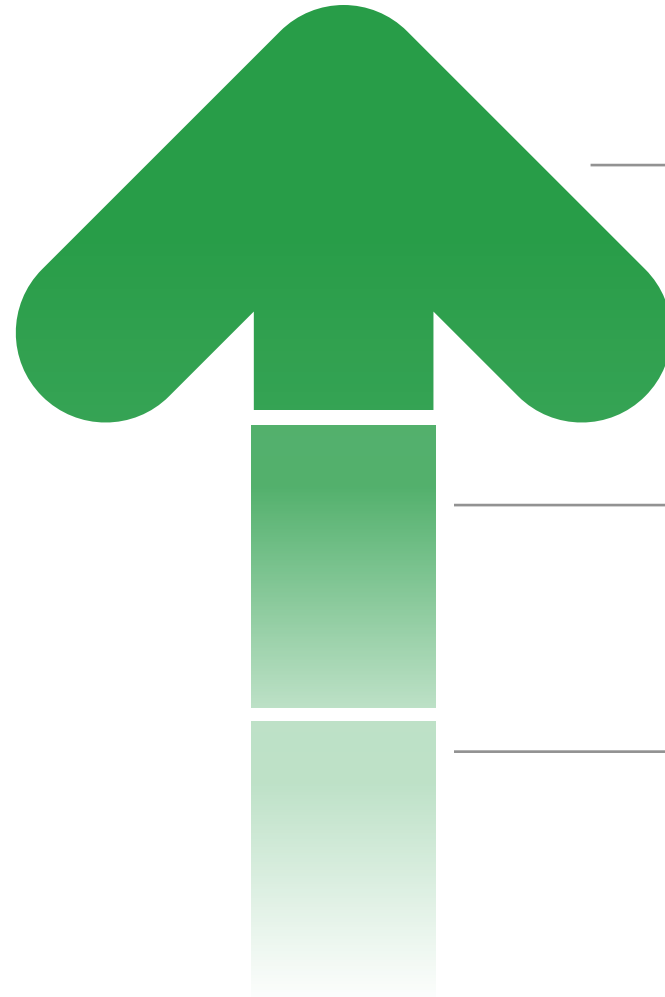
→   Improve Requirements Gathering

Appendix:
Feature Detail

4

A closer look at apprenticeship, instructor-led training, and web-based training

Skills Development Features

03 Web-Based Training

We will look in more detail into the BMC, Broadcom, and IBM offerings. We will also outline Interskill's role, as it is an important partner for all the firms listed.

02 Instructor-Led Training

We will look in more detail at offerings from BMC, Broadcom, and IBM.

01 Apprenticeship / Residency

Apprenticeship/residency programs are significant and distinguishing offerings by Broadcom and IBM. We will only briefly touch on BMC's program, but it will develop more over the next couple of years.

Apprenticeship Programs

Three vendors participate in this space, with Broadcom and IBM having solid offerings and BMC having an emerging offering. Comparison of offerings will focus on Broadcom and IBM.

BMC
Mainframer In Training Program

BROADCOM INC.
Vitality Program

IBM
IBM Z Apprenticeship Program

IBM Apprenticeship vs. Broadcom Vitality

IBM

🤝	Partnership with Franklin Apprenticeships that leads to Department of Labor Certification
◎	Focus is on "new collar" workers that would not normally be considered for IT careers
👥	Franklin finds candidates and presents them to employers following pre-apprenticeship
🎓	Employers hire candidates and allow for 4 to 5 hours of weekly training provided by IBM.
📈	Employers increase pay as candidates attain skills and competence. Program takes one year.

BROADCOM®

🤝	One class or cohort per year. Candidates are hired and training is paid for by Broadcom.
◎	Candidates do not need to have IT backgrounds. Focus is on candidates with diverse backgrounds.
👥	The program involves a significant training segment in IBM Z and Broadcom products.
🎓	After six months of training, candidates work at the client site. This is still at Broadcom's expense.
📈	At the end of the one-year program, the client chooses whether to hire the candidate.

Broadcom Vitality Program

Overview

In a very significant investment of time and money, Broadcom introduced its Vitality Program as a way to help its clients cultivate the next generation of mainframe talent at low to no cost. They currently run one cohort per year. The 2023 schedule is listed on the right.

Solution

This is a one-year program where Broadcom takes on most of the risk and cost. It finds talent and invests significantly in training candidates in mainframe fundamentals and then in one of six Broadcom products. Residency occurs at the client's site, and Broadcom continues to pay the candidate and will even pay for their living accommodations if necessary. At the end of the residency, the client has the option to hire the candidate.

Info-Tech View

This is a tremendous offering, and if you're a Broadcom client with a need for staff with mainframe skills then you should look to participate. The only drawbacks we see are scale and timing. With Broadcom taking on almost all the cost, this program doesn't scale infinitely in its current form. This year's cohort has nine candidates. We expect that as this grows, the financial model will need to change. In its current form, clients need to plan around Broadcom's annual schedule. The current model has been based on client demand.

Mainframe Vitality Program Training Schedule

Location	Course	Dates	Duration
North America	Mainframe Foundations	May 2023	6 Weeks
	System Foundations Programming	June 2023	6 Weeks
	Product Training	August 2023	4-6 Weeks
	Residency Begins	October 2023	3-6 Months
EMEA	Mainframe Foundations	August 2023	6 Weeks
	Product Training	October 2023	4-6 Weeks

IBM Z Apprenticeship Program

Overview

The IBM Z Apprenticeship Accelerator is in place in the US in partnership with Franklin Apprenticeships and the Urban Institute. The program is geared toward recruitment and development of candidates with no previous technology experience. M&T Bank signed on as the inaugural partner for this program. Because of significant interest, IBM is expanding this outside the US with its Global Skills Accelerator Program. The global program will be like the American one, but clients will need to source their own candidates and it will not have government certification.

Solution

Candidates start with the Pre-Apprenticeship Program, which is approximately 100 hours of self-paced online learning. Following Pre-Apprenticeship, candidates are presented to employers for hiring into a one-year apprentice-ship program that includes 320 hours of virtual online technical training, resulting in IBM digital credentials. Participants also have access to IBM subject matter experts throughout the apprenticeship. IBM reported to the Department of Labor that, as of late July 2022, there were 111 people at various stages of the program, and the first M&T Bank class of seven staff had just graduated from the program.

Info-Tech View

This program requires more from clients than the Broadcom program does in both time and money. Franklin and IBM find candidates and work with them on an ongoing basis for the duration of the program. The client pays the candidates' salary, which increases as skills are acquired. This is quite flexible in that the client can enter the program at any time. It's also quite scalable as the clients absorb most costs and it is not limited by the budgets of IBM or Franklin.

- ✓ Paid Employment
- ✓ Related Tech Instruction
- ✓ On-the-Job Training
- ✓ Rewards for Skills Gains
- ✓ National Credentialing Through the US Department of Labor

BMC Mainframer in Training Program (MIT)

Overview

In early 2020, BMC acquired RSM Partners. RSM had a strong portfolio of mainframe training resources, including its internal program for training its own mainframe resources named "Mainframer in Training." As early as 2017, RSM noted on its website that "RSM Partners is doing its part in helping to ease the mainframe skills shortage by hiring and educating trainees under its own scheme called the 'Mainframer in Training (MIT) Programme." RSM refers to this as a two-to-year-year program and mention that it is "already engaged with major mainframe houses to develop their personnel pipelines, with MIT already delivering benefits."

Solution

In a BMC blog from early 2022, Mark Wilson wrote, "MIT is about laying the best foundations to not only underpin an individual's career but also provide the industry with that strong base and greater confidence that the skills they need do exist." He also noted, "Our clients trust us to provide the trained people and expert services they need, when they need them."

Info-Tech View

We discussed this program with BMC Education, and they noted that the RSM purchase has given BMC all the pieces it needs and that it will work over the next two years to put the pieces together. We'll be interested to see how BMC offers Mainframer in Training in addition to the other offerings from RSM. They certainly expressed an intention to develop this space.

✓ BMC will benefit by "developing our in-house skills and knowledge base and weaving BMC products and solutions into the training."

✓ Clients will benefit as the program "provides them with the talent they need through a pipeline of next-generation IT professionals with on-the-job experience."

✓ Trainees will benefit as "the MIT program is the start of a long and rewarding journey, taking them forward while they continue developing their skills and specialisations."

Source: BMC, 2022

Instructor-Led Training

Three vendors have mature offerings in this space and they all have different approaches, with some using partners and others providing services themselves. Their approaches may also differ depending on whether they are addressing general mainframe skills or specific product skills.

BMC
IBM Z programs through RSM and product training through BMC

BROADCOOM INC.
IBM Z programs through Protech and product training internally

IBM
Programs offered through IBM and a host of partners depending on topic

BMC Instructor-Led Training

BMC Product Training

BMC structures skills offerings for its products into learning paths, with mature learning paths consisting of a combination of web-based training (WBT) and instructor-led training (ILT). An example of a mature path is to the right. For its mainframe products such as Compuware and AMI, the paths are not yet mature, although BMC intends to build a mature learning path structure for all its products. For a few mature paths, it offers certifications at the Associate, Professional, and Expert levels. It intends to extend certification to all major products, although it has not yet done so for mainframe software families.

General Mainframe Training

For general ILT mainframe training, BMC relies on RSM, which it purchased in 2020. RSM has a comprehensive catalog of more than 45 ILT offerings, and most appear to be offered at regular intervals. The cost of these courses is over $1,300 per day per person.

Info-Tech View

For product training, BMC is building on a very structured approach. As Compuware was purchased in mid 2020, it is not surprising that this family has not yet reached maturity in the certification/learning path structure. The RSM purchase gives BMC a rich library to build upon. The main concern we have is cost. Some mainframe training is structured into subscriptions, but the subscriptions are quite expensive, with groups of 11 to 18 ILT courses for $16,380 to $44,590.
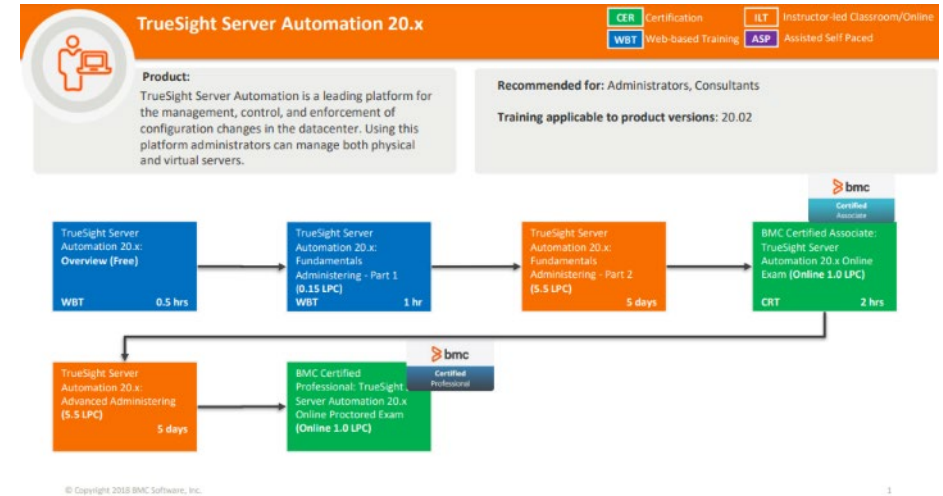
Certification Comparison Table

	Certified Associate	Certified Professional	Certified Expert
Validity	2 Years (legacy Accreditations unlimited but limited to product version)	2 years (legacy Certified Professional Practical exams 3 yrs)	2 years
Required Product Experience	3-6 months	6-18 months	18 to 36 months
Prerequisite	None	Certified Associate	Certified Professional
Exam type	Online exam - non proctored	Online exam - proctored	Online exam - proctored
Type of questions	Only multiple choice	Multiple choice and scenario based	Mainly scenario based
# of exam questions	40-60	60-90	50-80
Exam duration	120 min	120min	120min
Measured skills high level	Able to perform basic tasks for the tested product in the specific role	Able to perform all day to day tasks for the tested product in the specific role	Able to efficiently perform all tasks applying best practices in the specific role for BMC solutions

Broadcom Instructor-Led Training

Broadcom Product Training

Broadcom's ILT offering outside of its Vitality Program is available via three avenues: the no-cost Mainframe Foundations and SysProg Foundations courses, no-cost product-specific ILTs offered globally via Broadcom SMEs, and additional at-cost product ILTs offered via Broadcom's preferred education partner, ProTech.

General Mainframe Training

For general ILT mainframe training, Broadcom partners with ProTech, which offers many Broadcom Mainframe Software courses, and many appear to run at regular intervals. According to Broadcom's website, these courses cost about $650 per person per day. Broadcom also offers its clients access to its Mainframe Academy at no cost.

Info-Tech View

We see a continuing theme with Broadcom in that not only do they not attempt to profit from their educational offerings but they are willing to invest in this area. Analysts have observed that mainframe software is a high margin segment for Broadcom and it invests in this area as part of its value proposition. This theme is consistent with other offerings, such as its Expert Change Planning Program. While Broadcom has digital badging, it has not embraced the certification structure like BMC has. It has not yet seen demand for this.

ProTech

Broadcom Mainframe

CA AutoSys Workload Automation r11 Fundamentals
2 Days/Lecture & Lab   Course Code: PT6545

CA AutoSys Workload Automation r11.3 Upgrade Readiness
3 Days/Lecture & Lab   Course Code: PT8077

CA 1 Tape Management r12.6: Extended Users 200
2 Days/Lecture & Lab   Course Code: PT24642

CA Easytrieve v11.6 Report Generator 200
3 days/Lecture & Lab   Course Code: PT1322

IBM Instructor-Led Training

General Mainframe Training

As the company that created the mainframe market, IBM is still the dominant force. From an ILT and WBT perspective it sits at the center of a universe of partners. IBM has quite an extensive number of courses, certifications, and learning paths across its portfolio of products. As of September 2022, there were 2,863 available courses listed on its website that included 1,305 digital badges and 177 certifications.

When the search was narrowed to IBM Z, there were 155 courses with 206 badges. The courses are split evenly between ILT and WBT.

There are a few no-cost courses, but most are at a cost.

IBM makes extensive use of partners for creation and delivery of these courses. A non-exhaustive list of partners for both ILT and WBT includes Interskill, Coursera, LearnQuest, and Tech Data.

Info-Tech View

IBM's course offerings cross many topics, using many partners. It is a rich library, but you will need help and advice to navigate it.

Filter by	Clear Filters
Learning Type	^
☐ Articles	2
☐ Badge	206
☐ Certification	4
☐ Course	155
☐ Learning Collection	7
More Filters	
Delivery	^
☐ Instructor-led	
☐ Self-paced with labs	
☐ Self-paced	
Category	^
☐ Analytics	24
☐ Cloud	23
☐ Data and AI	6
☐ Security	12
☐ Systems	260
More Filters	

373 Results found for 'IBM Z'

Show results based on my profile - OFF

Course - IBM Z: Technical Overview of HW and SW Mainframe Evolution
(Code: ITS-ES89G) Lecture-only version of ES82G. ES82G likely to be phased in in favor of this course.
★★★½☆ | Basic | 12 Hours | Multiple | Cost | Suggested Match

Course - IBM z/OS Bootcamp
(Code: ITS-ESZ0G) This basic class is intended for the technical professional that is new to the mainframe environm
★★★★★ | Basic | 80 Hours | Instructor-Led | Cost | Suggested Match

Course - IBM z/OS 2.4 Update
(Code: ITS-ESC9G) This course is designed to teach students the new features and enhanced functions provided in z
★★★★★ | Intermediate | 24 Hours | Instructor-Led | Cost | Suggested Ma

IBM IT Infrastructure - Delivering technical content for every phase of the client journey
IBM Z - Power Systems - Storage: Courses and credentials
Suggested Match

IBM Z Training courses & credentials
IBM Z Training & credentials
Suggested Match

Web-Based Training

We will focus the WBT section on Interskill Learning. All the major players in the mainframe software space partner with Interskill. According to Interskill's CEO, Darren Surch, it is because of its "meticulous attention to content." Interskill notes that over 80% of IBM Z training-related digital badges awarded by IBM are for Interskill course curricula completions.

BMC

Broadcom Inc.

IBM

Interskill Learning
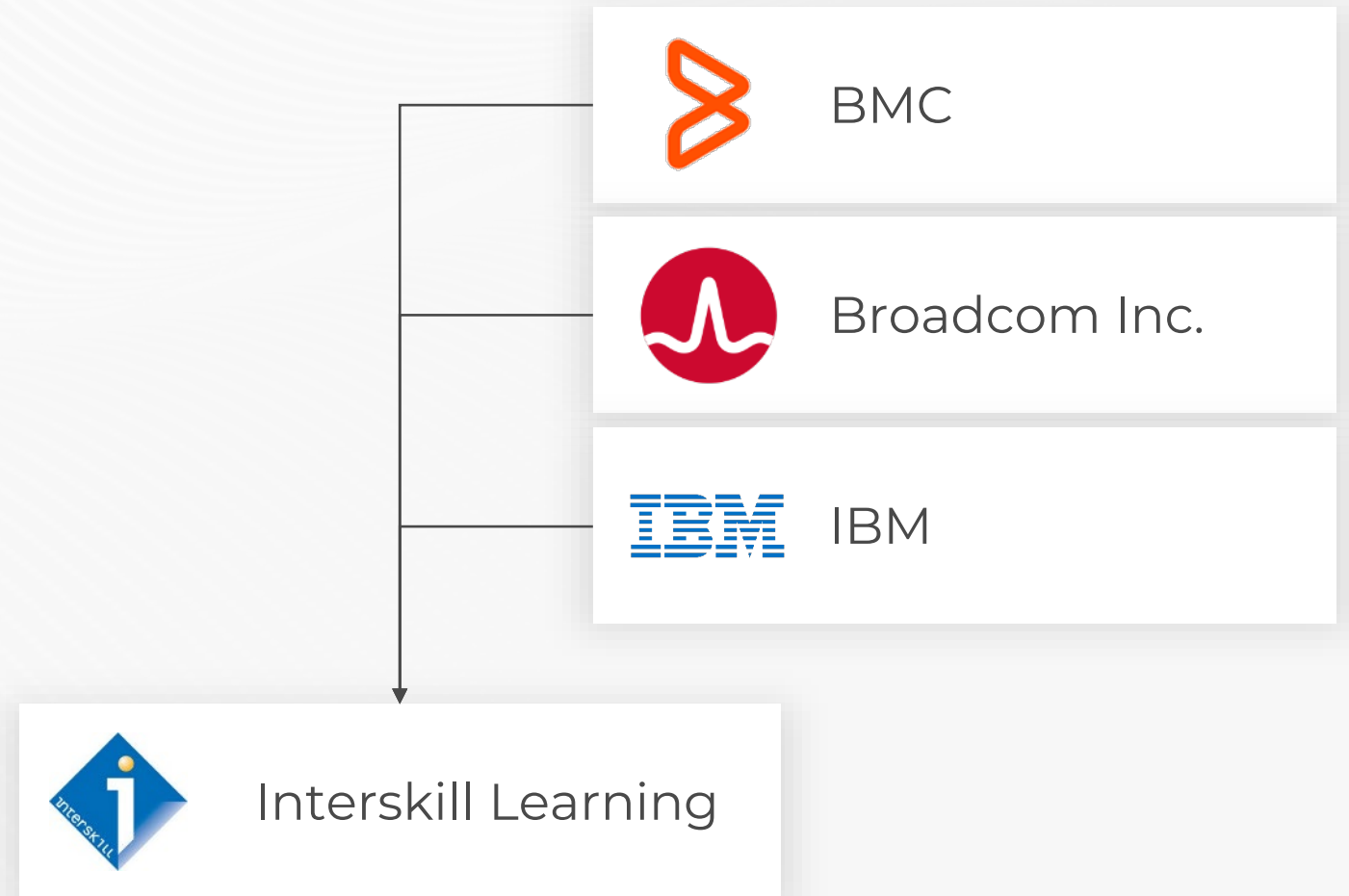
Web-Based Training by Interskill

Overview

Interskill entered the US market in 1991. It is focused on mainframe skills development, and it partners with major industry vendors. It notes that it trains the mainframe workforces of a majority of the world's mainframe organizations.

Mainframe Training

Interskill has more than 230 eLearning courses. It also offers expert videos, mainframe skills assessments, and learning plans. Its courses are organized into more than 45 curricula, such as z/OS Curriculum, COBOL Programming Curriculum, and Database Curriculum. It has a dedicated BMC Curriculum covering Control-M and Mainview. It has a dedicated Broadcom Curriculum covering CA1, CA7, CA11, CA OPS/MVS, and CA Endevor.

As of September 2022, individual access to the Interskill course library is available for $2,500 per user per year. There are discounts available for purchases of more than 10 users. There are also enterprise licenses available. Interskill's partners such as BMC offer connection to Interskill via their sites. Broadcom offers access to its WBT curriculum at no cost for Active Maintenance clients.

Info-Tech View

For mainframe WBT, Interskill is an **indispensable utility** for the industry. We expect that this will be the case for some time into the future.

1,000,000+
Mainframers trained globally

900,000+
Hours of training delivered in 2021

80%
Of all IBM Z training badges awarded

5

Appendix:
Other Resources

Other relevant topics related to
mainframe skills

Additional Resources

Government and Educational Initiatives

Education must be addressed if we are to nurture a pipeline of skilled people with enthusiasm for careers involving mainframes. There has been a focus on promoting the value of such careers.

See, for example, this initiative proposed by Congressman Matt Cartwright:

→ Grace Hopper Code for Us Act

COBOL

Many discussions around mainframes inevitably lead to COBOL, which is the language that underpins many enterprise systems running on mainframes. A 2022 survey commissioned by Micro Focus estimates that there are 800 billion lines of COBOL code running daily on business systems. For this analysis, we decided not to explore the connection between COBOL and the mainframe.

Micro Focus' Report:

→ Modernize on Strength: A Global #COBOL Survey

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