As usual our annual mainframe survey provides a snapshot of the System z user community’s existing hardware and software configuration, and also their plans and concerns for 2013.

This year we have continued to track the growth of mainframe integration with Web services, cloud computing, and other areas of new development, as well as gauging the extent to which BYOD, cloud computing, and Linux applications are changing the face of mainframe computing. In addition, we have continued to explore relative cost in more details, asking respondents how fast their distributed server costs are growing relative to the mainframe. And we have investigated how important “green” issues are to the mainframe community.

And, as always, we have invited comments from our respondents.

Profile of respondents
The mainframe user survey was completed by 100 individuals between the 1 November 2012 and the 7 December 2012. Survey respondents were either contacted directly by e-mail or other Web-based means and invited to complete the mainframe user survey on the Arcati Web site. Responses from large mainframe vendors and multiple entries from different people at the same site were excluded from the survey.

This year, there were no respondents from South America. The distribution of all respondents is shown in Chart 1. Just under half (48 percent) were from North America and just over a third (36 percent) were from Europe, with 10 percent from the Asia/Pacific region, and eight percent from the Middle East/Africa.

As usual, a wide range of industry types are represented in our sample (Chart 2). Banking and insurance, both accounted for 20 percent of respondents, with IT accounting for 16 percent, and retail 10 percent. Health and transport had six percent each, and manufacturing and government had four percent each. That left other categories with 14 percent.

A third way to categorize respondents is to look at business size. As shown in Chart 3, nearly half
(48 percent) of the companies have in excess of 10,000 employees worldwide. Below that, with 20 percent of respondents, are staff sizes of 1001-5000. With 12 percent of responses are staff sizes of 5001-1000. And with 10 percent each are staff sizes of 1 to 200 and 201 to 1000.

84 percent of our respondents were involved in running in-house data centres, which was the same as last year. Only six percent (down from last year’s 10 percent) of respondents said they were working in an outsourced operation.

Installed MIPS and capacity growth

As in previous surveys we have used MIPS as the principal measure of capacity size. We asked respondents to indicate the total mainframe MIPS installed on their systems, and the result is shown in Chart 4. 36 percent had 1000-10,000 MIPS, which is similar to last year’s figure of 40 percent. 22 percent had under 500 MIPS, which is the same as last year’s figure. Only six percent had 500-1000 MIPS. 14 percent had 10,000 to 25,000 MIPS, and 18 percent had over 25,000 MIPS.
installed. As in previous years, we use installed MIPS later in the survey to identify differences between small, mid-sized, and larger users.

Chart 5 shows the annual MIPS growth of respondents. 70 percent of sites (up from last year’s 62 percent) of mainframe installations are experiencing some growth, with two sites claiming growth in the region of 26-50 percent. Only six percent (down from last year’s 12 percent) of sites are reporting a decline in mainframe capacity growth. 18 percent of sites (the same figure as last year) are not expecting any kind of change in their MIPS this year. Looking at Chart 6, however, we can see that the picture varies considerably depending on the size of the system. None of the larger, more mature businesses (above 10,000 MIPS) are experiencing any kind of decline, but nearly a fifth (18.8%) are not growing. But this group is showing the most growth with over 6% of sites experiencing growth of 26 to 50 percent. For mid-range respondents, well over half (56 percent) were looking at growth of 0-10 percent, although none anticipated growth greater than this.
And nearly a third (31 percent) were anticipating a decline in growth. Half of the smaller sites, worryingly, predicted a decline in MIPS or no growth. Yet, counterintuitively, eight percent of sites expected a growth of between 11 and 25 percent.

As in previous years, the mainframe market appears to be more fragmented than one might think. We are definitely seeing competitive pressures at the lower end of the mainframe market. This, coupled with concerns about cost and the availability of skills and applications, goes some way towards explaining the mixed picture.
As is so often the case, we hear in the comments section why some of the smaller sites are moving away from mainframes, and it’s not because of any particular issue with the mainframe platform, but because managers are unfamiliar with the mainframe culture.

We also compared the rate of growth of the mainframe with that of other IT platforms within the enterprise. As shown in Chart 7, the System z looks relatively strong in the slow-to-medium growth range. Neither Windows or Linux are expected to decline. When the “don’t know” results have been excluded, we find 72 percent of mainframes are experiencing a growth of 1-25 percent per year, which is up on last year’s 65 percent. Three percent of Unix sites reported growth greater than 50 percent per year – similar to last year’s figure. 12.5 percent of Windows sites were still expecting over 50 percent growth, with the majority of sites in the 11-25 percent growth range. Apart from a few mainframe sites expecting a decline, we find around Four percent of IBM i sites are expecting a decline, six percent of other mainframe sites are, with the bulk (66 percent) expecting no growth at all, and six percent of Unix sites anticipating a decline.

**Hardware and software currency**

The IBM mainframe hardware range continues to receive a regular makeover, with new high-end and low-end systems generally being announced on alternate years. 2010 saw the new zEnterprise z196 processors, 2011 saw the z114 arrive, and this year it was the zEC12. Delivery dates for each range are provided in the *Technical Information* section of the Yearbook.

Our research suggests that, traditionally, users upgrade on a regular basis to the most recent hardware to take advantage of capacity increases and cost benefits. Bearing in mind that the new zEC12 machines are only just being delivered, Chart 8 shows that 31 percent of respondents are currently using z196s, followed by 31 percent on the two z10 machines. 5 percent are already using the new zEC12s, with 13 percent on z114s. 27 percent are still on older “z” mainframes. It is perhaps worth pointing out here that many respondents had more than one processor in use.
at their site with quite a few having three different processor models in use.

Software currency (Chart 9) presents a more mixed picture and tends to lag a little behind hardware. This year’s survey finds 44 percent of sites using Version 1.13, and 24 percent of sites using Version 1.12. With 12 percent of sites using Version 1.11. That still leaves 12 percent of respondents using older versions of the z/OS operating system, with 2 percent on 1.07, which stopped being serviced by IBM in 2008!

Mainframe strategy
We asked respondents what, in their opinion, are the main benefits for their organization of the mainframe over other platforms. 88 percent highlighted the benefit of availability, with 74 percent identifying security as a benefit. Scalability and manageability came next with scores of 68 and 66 percent respectively.
We then went on to find out what are the main obstacles to mainframe acceptance within the enterprise. 82 percent thought mainframes are too expensive (or appear to be). 58 percent thought that there are cultural barriers between mainframers and other IT professionals. 24 percent identified concerns about future availability/support for mainframe applications, 18 percent said difficulty in obtaining or retaining the necessary skills, and 12 percent thought mainframes are too complex (or appear to be). Sadly, only two percent thought there were no obstacles to mainframe acceptance.

Within the industry as a whole, opinion is clearly divided over the role of the mainframe in new applications. For some companies the mainframe remains a separate legacy environment while others are leveraging the strengths of large systems by using them to deploy new workloads and technologies.

We asked respondents whether their z/OS systems participate in Web services and SOA environments, and the results are shown in Chart 10. 58 percent of organizations said that their mainframes participate partly or fully in Web services, down from last year’s 64 percent. It may well be that SOA and Web services has now reached maturity because the number of sites planning to integrate them in the future was 6 percent (slightly up from 4 percent the previous year).

36 percent (down from last year’s 40 percent) went on to say that they run Java-based applications on the mainframe, with a further 20 percent planning to do so in the future (well up from last year’s 4 percent). Again a sign of maturity in the technology. 34 percent of respondents (down from last year’s 44 percent) said that they run Linux on the System z (with another 16 percent, up from last year’s 6 percent, at the planning stage). There are considerable cost and management benefits of consolidating distributed Linux workloads onto the mainframe, and IBM made the IFL (Integrated Facility for Linux) specialty processor available in 2001. Running Linux on a mainframe seems well on its way to becoming a mainstream technology.

And while we were thinking about Linux on mainframes, we asked how many sites were running Oracle under Linux on System z. Eight percent of sites surveyed said that they currently run Oracle on zLinux, and another eight percent plan to use it.
74 percent of organizations said that they are Web-enabling their CICS subsystems (Chart 11), which is slightly down from 78 percent last year. 72 percent of sites are Web-enabling DB2, which is just up from last year’s 68 percent. 32 percent of sites are Web-enabling IMS, slightly down from last year’s 36 percent, and WebSphere Application Server rated 38 percent (up slightly from last year’s 34 percent. 10 percent of sites are Web-enabling SAP. This low figure probably reflects the smaller number of sites using the product on a mainframe rather than a reluctance to consider Web-service enabling it.

We asked whether respondents currently used their mainframe for cloud computing. Only 4 percent of respondents said they did (down from last year’s 12 percent). 90 percent said they didn’t (up from 84 percent). We also asked whether respondents were planning to adopt cloud computing as a strategy. 40 percent (the same as last year) said they weren’t at present. 22 percent (up from last year’s 18 percent) thought some mainframe applications would be cloud enabled in the future. 14 percent (down from 22 percent) claimed that some of their applications are using the cloud model.

As for the future of legacy systems, once again the answer depends to a degree on the size and maturity of the installation. As shown in Chart 12, 75 percent of the largest sites see integration as the way forward and predict a positive strategic direction – pretty much the same as last year’s figure of 73 percent. In the mid-range (between 1000 and 10,000 MIPS), the pro-integration contingent drops to 50 percent (down from 54 percent last year) with 5 percent (last year it was 4 percent) considering porting to Unix or Linux. 15 percent of medium-sized sites are considering porting to Windows. Below 500 MIPS, about a fifth of sites (21 percent) plan to integrate (a value up from last year’s 11 percent).

Relative cost
There are many ways of comparing the costs of mainframe systems with those of other platforms, but none of them are straightforward and few are meaningful. CIOs and finance directors all too

![Chart 12: Legacy application plans over the next three years](chart12)
often have little experience of the factors that contribute to mainframe total cost of ownership and there is still little published data available to help them make informed comparisons. It is beyond the scope of this short survey to go into detail on cost, but the following questions explore
some areas where financial comparisons can be made between large centralized systems and distributed servers.

We asked respondents how fast their System z-related expenditure is increasing, in terms of the technology itself and the people needed to support it. In Chart 13, we compare these results with the growth in mainframe capacity. The vast majority of respondents said that their people and technology costs were seeing single-digit growth at the most (with 13 percent of sites seeing a decline in technology costs and 15 percent of sites seeing a decline in people costs). 30 percent (well up from 18 percent last year) of respondents reported capacity growth higher than 10 percent, whereas only 10 percent reported technology costs increasing by that amount, and only 2 percent (down from 6 percent last year) reported people costs increasing above 10 percent. Perhaps these sites are expecting to make savings on head count through the use of more modern technology.

We went on to ask what proportion of the total IT budget is absorbed by mainframe-related costs, and what proportion of enterprise data resides on the mainframe (Chart 14). The result was, again this year, more than half of our respondents use other platforms to manage the lion’s share of the corporate data. 46 percent of sites have more data on mainframes, and 54 percent have more on other platforms. Their spend on the mainframe and distributed systems are disproportionate to the data split, with over three-quarters (76 percent) of budgets going off mainframe. The figures absolutely dismiss the view that System z soaks up financial resources without providing a good return on investment.

Again this year, we asked how fast respondents believed their acquisition/maintenance and support costs for distributed platforms were growing relative to the mainframe, for an equivalent amount of capacity or size of user population respectively (Chart 15). In other words, did they think that their mainframe costs were increasing faster or more slowly than their Unix, Linux, Windows, and IBM...
i costs. Of course, these numbers have to be treated with great caution because we are asking respondents to make direct comparisons, which, as we have just stated, are very complex. Once again, this chart can be used only as an indication of a general trend, but it’s a very interesting trend nevertheless! Anything above the green block in each column suggests higher costs for alternative platforms. Again this year, a substantial number of respondents felt that their Unix, Linux, and Windows user-support costs were increasing faster than the mainframe for an equivalent amount of capacity or support.

With the environment and environmental issues getting so much coverage in the media these days, we wanted to know whether IBM’s green initiatives on things like power consumption and cooling had made the mainframe more or less attractive to our respondents. 78 percent of respondents (up from 56 percent last year) said that IBM’s green initiatives made no difference at all. No-one said that the initiative made the mainframe less attractive. 20 percent felt it made the mainframe a little more attractive (down from last year’s 24 percent), and only two percent (down from last year’s 12 percent) felt it made the mainframe a lot more attractive. Clearly “greenness” isn’t much of a selling point for mainframes. Or perhaps our target audience would have a mainframe whatever!

**IBM versus the ISVs**

The mainframe independent software vendor (ISV) business is continually evolving, and there have been a number of small companies acquired by larger organizations, but, on the whole, not any obvious shifts in the landscape. There was some talk in June about BMC Software being a takeover target, but it came to nothing.

IBM regularly argues that some ISVs are too inflexible and need to change their software pricing strategies, while the third-party suppliers respond that IBM is placing excessive pressure on them by using its size and influence to win over their customers. Mainframe management is now sold as a way of allowing customers to maintain the quality of the service they get from the mainframe without the reliance on experienced mainframers.

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**Chart 16: What are the most important reasons for replacing mainframe tools and applications?**
In other words, the software will identify a problem and, as well as informing a less-qualified human, will take the necessary steps to negate the problem. In addition, vendors are beginning to use GUI-type screens, that younger IT people are more familiar with, to display important information.

We asked respondents what makes them consider a change of vendor for their mainframe tools and utilities. It’s clear from Chart 16 that cost is by far the biggest driver, even though cheaper tools often offer limited functionality. ISVs will be pleased to know that although 20 percent of sites said they rarely if ever change their software, this figure is down from last year’s 36 percent.

We also asked how much of users’ mainframe software budget is spent on IBM/Tivoli software, and how much on products from other vendors. This year (see Chart 17) we found that 72 percent of respondents pay more to IBM/Tivoli for software than to other vendors. This is a massive increase from last year’s 54 percent. Does this mean that IBM’s software has become cheaper or more appealing to purchasers, or both, over the past year?

Other issues
We asked about IBM’s ‘specialty’ processors such as the Integrated Facility for Linux (IFL), the Application Assist Processor (zAAP) intended for Java applications, and the Integrated Information Processor (zIIP) intended primarily for DB2. We asked respondents which specialty processors they had. 12 percent of sites had all three (down from last year’s value of 16 percent) and a further 22 percent of sites had two of the three specialty processors (up from last year’s 20 percent). More sites had zIIP processors (52 percent) than any other. 36 percent had IFL processors, and 24 percent had zAAP specialty processors. 26 percent of sites don’t have a specialty processor installed. The full results are shown in Chart 18. We also asked whether respondents thought that these specialty engines made the mainframe more attractive in terms of reducing costs and
cost-justifying new applications. 50 percent said a little more attractive, 44 percent said much more attractive, and six percent said that it made no difference.

In the USA, regulations such as Sarbanes-Oxley Act (SOX), HIPAA (Health Insurance Portability and Accountability Act), and BASEL II, plus what’s estimated to be over 150 state and federal laws dictate the length of time that Electronically-Stored Information (ESI) needs to be retained. These regulations, and they do depend on the industry, have greatly increased data retention periods. Similarly, outside the USA there has been a growth in regulation affecting the length of time that data needs to be archived. 43 percent of sites were compliant or nearly compliant with these new regulations (lower than last year’s 59 percent). The figure for sites not having an archiving strategy is 27 percent, slightly lower than last year’s 33 percent. Clearly, compliance is an important issue and one that many organizations are making sure that they are (or will be) fully compliant. The full results are shown in Figure 19.

According to the IBM Web site: “PureSystems combine the flexibility of a general purpose system, the elasticity of cloud and the simplicity of an appliance. They are integrated by design and come with built in expertise gained from decades of experience to deliver a simplified IT experience.” We were interested to see whether sites were taking advantage of this new technology. Only two percent of respondents said they were and, similarly, two percent said they planned to. We were also curious about the take up of business analytics (IBM’s Smarter Analytics). Here the take up was slightly higher with four percent of sites saying currently using the technology and another four percent planning to.
There’s been a huge growth in the use of social media in recent years, and we wondered whether those people “using their dad’s technology” found social media (Facebook, Twitter, Youtube, etc) useful for their work on the mainframe. 20 percent said that they did, with eight percent not sure, and the rest not using it at all. IBM have Facebook pages dedicated to IMS, CICS, and DB2, it seems a shame if they’re not being used.

Finally we asked about that current IT bête noire – BYOD (Bring Your Own Device). We wanted to know important sites thought it was to make mainframe data available to other platforms. 82 percent of sites said that it was very important to the way they work at the moment. Four percent are in the planning stage, and two percent expect to do some work on this in the future. When it comes to how important is the idea of people using their own devices (BYOD) to access mainframes, 10 percent of sites said it was very important to the way they work now – but 30 percent said it wasn’t important. 18 percent are in the planning stages, and 12 percent expect to be in the future. There were quite few “not sure” responses to this question.

Survey comments
At the end of the survey, respondents were invited to leave comments or other information. In the main, respondents are perfectly happy with their mainframes. No-one is ever happy about costs, but, usually, as long as they stay within the expected range, nobody gets too exercised about it. A big issue this year was sites were management are migrating off the mainframe. One respondent told us: “Management plans to be off the mainframe by second quarter 2014”.

Another respondent said: “Management is following Gartner’s recommendation to re-platform off the mainframe”. And a third respondent informed us: “Due to the financial crisis, our firm is decreasing in size and cutting in ICT costs!” So while not leaving the mainframe platform, certainly not in a position to grow it or, perhaps, even stay up-to-date. Pretty much the usual issues of management without a mainframe background moving the company to a weaker platform, but one that they understand. And mainframe costs adding to the recessionary feelings of doom and gloom.
CONCLUSIONS

We have been experiencing one of the longest periods of reduced trading – a euphemism for a depression – for a long time. We have watched European countries in the Euro, first Greece, but then Spain and Portugal, struggle to keep their financial head above the water. And depressing talk of a double-dip recession has happened in many countries, and yet our survey still found that users are experiencing steady growth in the mainframe environment. As is so often the case, this pattern of growth and commitment is more sustained among the largest sites (where investments are huge and experience is plentiful) than lower down the scale where the System z is exposed to more direct competition.

Having said that, there are clearly many reasons to opt for the mainframe to support new development. Despite the complexity of mainframe pricing, the majority of respondents believe that their Unix and Windows user-support costs were increasing faster than the mainframe. Similarly, most sites felt their maintenance and acquisition costs were higher on Windows and Unix than on System z. But, yet again this year, we found that sites no longer use the mainframe as their principal repository for corporate data.

It seems that integrating mainframe applications with Web services and service-oriented architecture is a project that is less uppermost in people’s minds with the figure for mainframes participating partly or fully in Web services slightly down this year. The cloud computing questions produced interesting responses. Despite the amount of press coverage, only 4 percent of respondents said that they currently use the mainframe for cloud computing and a healthier 22 percent thinking they might in the foreseeable future. In terms of specialty processors, nearly three quarters of sites had them installed and were making use of the obvious benefits associated with them. 12 percent had all three in use.

For sites with smaller mainframes, particularly below 500 MIPS, there is always the option or perhaps threat of migrating off the mainframe to some other platform. Again this year, our survey showed this to be a strong possibility and respondents’ comments confirmed this.

The bottom line is that the mainframe continues to offer a cost-effective, secure, and powerful platform for organizations with the necessary background and expertise in place to support it.

Moreover, there are strong indications that mainframe and non-mainframe professionals are still culturally divided within the enterprise. It seems that many sites using the z196, z114, and the new zEC12 are not making the most of the hybrid machine in terms of integration. The most successful integration projects seem to be at sites running Linux under z/VM. Vendors are realizing that younger people moving into the mainframe environment aren’t happy with green screens and expect to use GUI-based systems with a similar look-and-feel to Windows or Mac environments. It won’t be long before the Android-style interface (or iPad) with its touch screen and hand gestures will become the interface of choice – even for experience mainframe professionals.

Most importantly, non-mainframe IT staff and managers need to see the multitude of advantages that using a mainframe can bring an organizations – in terms of security, reliability, availability, flexibility, as well as understanding the true total cost of ownership figures for the platform.