



# z9 BC: a mainframe for the mid-range

**IBM's new low-end mainframe system, the z9 BC, is aimed primarily at emerging markets where it looks set to make a very big impression. But it also has a key role to play in maintaining confidence among smaller customers in the established zSeries user base.**

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Users of the IBM mainframe are a divided group, a fact highlighted by recent research from Arcati. We found that medium-sized and larger organizations (those running systems with capacity of more than 1000 MIPS) are generally firmly committed to the z/OS platform and are making significant investments in their existing mainframe infrastructure. Below the 1000 MIPS level, there are far greater competitive and political pressures, and customers are more inclined to migrate to other platforms or to focus new development on distributed systems. As shown in Figures 1 and 2 (overleaf), year-on-year growth varies significantly depending on the size of the installation, with the smaller users showing far greater variations in growth levels; similarly, smaller sites are far more likely to consider moving their existing applications to other platforms than their larger counterparts.

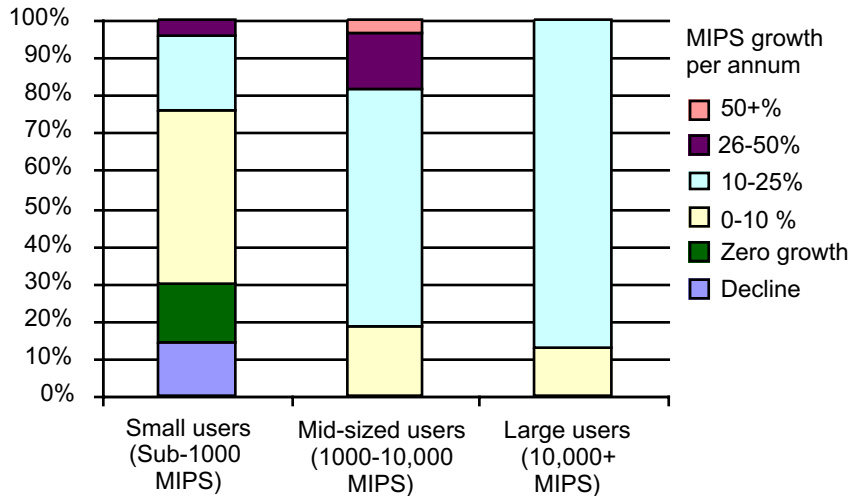
This is one of the main reasons why the lower end of the mainframe range is of such strategic importance to IBM and to the software vendors and service providers working in this area. The challenge for IBM is to make the 'small' mainframe platform as attractive and cost-effective for new development as possible, not just to reassure existing customers but also to make the System z9 a practical option for new users seeking a more reliable and scalable alternative to distributed servers.

There are many trends currently underway in the IT industry that have reawakened interest in the mainframe platform among customers who would previously have opted for a Unix- or Windows-based solution. Today's strategic applications - SOA, ERP, CRM - rely heavily on managing large amounts of corporate data effectively and securely, and moving it efficiently around the enterprise and between cooperating business partners. Arguably, the mainframe has always done this better than any other platform, and centralized management coupled with ultra-high availability would seem to make the decision a 'no-brainer'. Nevertheless there are a number of issues that make customers wary about investing heavily in IBM's large systems technology: first and foremost cost management, but also concerns over the limited availability of specific application packages and the apparently dwindling supply of technical specialists with appropriate skills.

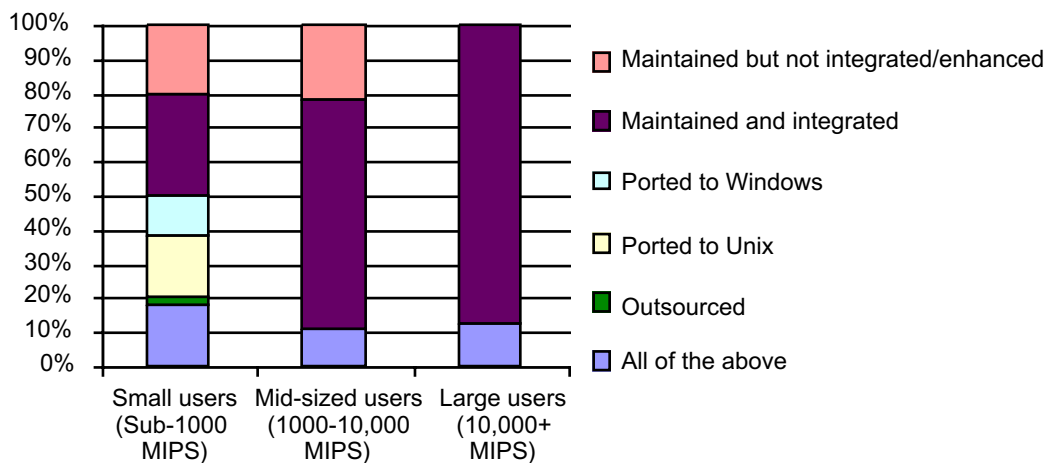


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With growing enthusiasm for server consolidation, SOA making increased systems management demands, and regulatory compliance demanding ever tighter centralized control over corporate data, there are very clear signs that smaller business users are seriously considering the mainframe option. Clearly, though, they need strong pricing incentives as well as long-term support to make the significant cultural step into a different IT environment.



**Figure 1: How fast is your mainframe capacity growing?**  
**Source: Arcati Mainframe User Survey 2006**



**Figure 2: What do you expect to happen to your legacy applications on zSeries over the next three years?**  
**Source: Arcati Mainframe User Survey 2006**



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### z9 BC: the IBM response

With the restructured z9 BC (2096) family, IBM appears to be tackling the issues outlined above head-on. The new systems, which replace the two-year-old z890, are divided into two ranges - the R07 and the S07 - between them offering an impressive 73 capacity settings and any-to-any upgradability within each range.

The R07 provides a highly cost-effective (and financially flexible) entry-point to the mainframe platform, clearly geared to channel sales and with the granularity to allow smaller business users to grow at a realistic pace. Offering between one and three general-purpose business engines and a further four slots for 'specialty' engines (such as the IFL, the zAAP and the zIIP), the R07 brings the entry-level price down to \$100,000 for a 26 MIPS configuration. While this may still be a significant price ticket for the smaller business users who are clearly being targeted, this is a very substantial drop in price compared with the z890 series, and IBM has indicated that channel partners will be permitted further leeway in deals with new customers. Moreover, the R07 does provide a very fine level of granularity, one of the big problems with entry-level mainframes in the past, so that smaller users can grow at their own pace rather than having to justify capacity leaps that do not reflect the needs of the business.

For mid-sized users, the S07 offers impressive capacity and bandwidth flexibility and a straightforward upgrade path to the high-end z9 EC systems. Once again the architecture extends to seven engines, up to four of which can be general-purpose processors - the remaining slots being reserved for specialty engines. Unlike the R07, though, there is no minimum limit on the number of business engines and the whole box can be configured as a Linux or ICF server. This gives the S07 a dual role, since it will be equally attractive to medium-sized customers *and* larger enterprises that need a dedicated box for offloading new application development and testing work.

I/O performance has also been substantially enhanced with a bandwidth improvement of 170%; the z9 BC and the top-end mainframe systems (now rebadged as the z9 EC) can both take advantage of 4Gbps FICON connectivity. The S07 can support up to 112 FICON channels (a 40% hike) with up to 64 concurrent I/O operations on the channel. As a whole the BC range offers up to 37% more capacity than the z890, scaling to 1785 MIPS, and supports up to 64GB of main memory.

Whether the announcements really spell "a System z9 for Everyone" as IBM claims remains to be seen, but there is now very little to deter smaller businesses from taking advantage of the mainframe's legendary resilience and manageability.

### Specialty engines and TCO

Specialty engines (particularly the IFL for Linux consolidation, the zAAP for Java development, and the zIIP for speeding up new data-intensive workloads) feature very prominently in the z9 BC announcements, and it doesn't take much crystal-



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ball gazing to realize that they will play a key role in reducing mainframe-related costs in the years ahead. IBM needs a way of supporting and encouraging new applications on the System z9 without undermining the revenue stream from established mainframe systems. The flexibility of the specialty slots on the new machines will allow customers to create their own balance between core and 'special' workloads, and this should have a very noticeable impact on total cost of ownership. Although these engines carry a hardware cost (\$95,000 on the BC, down from \$125,000 on the z890), the offloaded applications carry no additional software cost from IBM. Once the initial investment is made, the apps are effectively running in free space. In our recent research, 85% of mainframe users said that they expected the IBM co-processors to help them reduce costs and encourage new development.

zAAPs have taken off rapidly, and eighteen months after their launch they were outshipping the more established IFLs. Only very recently have customers been able to quantify the cost savings attributable to zAAPs, but one user has told us that it expects to save over \$3 million over two years by implementing two zAAPs, not just through lower workload costs but because the offloaded code allows it to delay a major upgrade.

The zIIP is a relatively unknown quantity, and will only ship in quantity on the z9 BC and EC. It's clear, though, that IBM has serious long-term plans for its data engine, and will soon extend its role way beyond the limited DB2-related functions for which it is has been positioned hitherto. IBM is arguing convincingly that, with quantities of corporate data doubling every 12 months, many users will soon find that distributed systems are unable to offer the scalability and security needed to manage corporate databases effectively. Coupled with DB2 Viper's new features for managing unstructured data (the real nightmare of many large businesses), the zIIP will be promoted heavily on the z9 BC as a way of consolidating distributed databases onto the mainframe at a very acceptable level of cost.

### East versus West

The z9 BC was announced in Beijing, and it's no coincidence that IBM took the opportunity to talk about its System z9 software lab in Shanghai. IBM is just as determined as other IT vendors to cash in on the huge economic growth taking place in the Far East, but there are a number of reasons why the mainframe (as opposed to IBM's other hardware platforms) is being pushed particularly hard. First and foremost, Chinese customers are seeking scalability of a kind that is almost unprecedented in IT history and the end-to-end System z9 upgrade path now takes the user from 26 MIPS on the smallest BC R07 up to 18,000 MIPS at the top end of the z9 EC range, with far greater power available through the Parallel Sysplex. Of course there are some substantial jumps within that range but much of the detail in the BC announcements relates to the extraordinary granularity of the BC and the ease of transition from the BC R07 range to the S07, and from the S07 to the EC. There is nothing within the IT marketplace that comes close to that level of scalability for mixed commercial workloads.



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In the Eastern sector, there is relatively little concern with consolidation or re-centralization (the main drivers for new mainframe business in the West), but security, manageability, and above all an uncompromising expectation of availability at five 9s or above are high on the Chinese agenda. Again, this provides an excellent opportunity for IBM to promote its mainframe technology, particularly in businesses that support increasingly diverse workloads.

Perhaps the 'unofficial' reason for pursuing the new Eastern markets so fiercely is that they don't suffer from the cultural resistance to large systems that is so widespread in established Western enterprises. While the System z9 still dominates enterprise computing (all of the world's top 25 banks and 23 of the top 25 US retailers run DB2 for zSeries) and continues to make dramatic improvements in cost of ownership compared with distributed systems, it remains difficult to sell into businesses where senior management regard mainframes as legacy technology with no viable future. With the phenomenal growth experienced in China, companies are taking a more open approach in seeking out technology that will best serve their scalability and availability requirements - and in many cases the mainframe provides by far the closest match.

So the East is clearly where IBM expects to make a substantial proportion of its z9 BC sales and where, by the way, it continues to make the biggest investment in z/OS-related skills and education.

Nevertheless, while China may become the showcase for new System z9 applications, we predict a very hard push in Western markets as well. As explained at the beginning of this paper, the sub-1000 MIPS end of the established mainframe customer base in America, EMEA, and AsiaPac remains a challenge that the BC looks very well positioned to address. Smaller z/OS and VM/VSE customers need the reassurance of a strong and steady growth path from their existing systems - a path that offers the flexibility to take advantage of new applications without step-changes in technology or cost levels. This is where the z9 BC makes its most convincing argument.

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*The author, Mark Lillycrop, is Chief Analyst of Arcati Research Ltd and an Associate of Valley View Ventures, Inc. He can be contacted at [mark@arcati.com](mailto:mark@arcati.com)*