



## Case Study

### SAP on Linux on a Mainframe! The Colacem Case Study

#### *Executive Summary*

Colacem S.p.A., a maker of cement, concrete, and hydraulic binders, has deployed and is using several applications from SAP's financial application suite (including financial management, accounting, and supply chain management) on an IBM System z10 mainframe. The reasons why this installation is significant are:

- It proves that mainframes are capable of running next generation Linux-based application workloads;
- It illustrates why running Linux-based applications on mainframes makes good business sense;
- It provides insights into some of the differences between using a consolidated, centralized architecture (a mainframe) to run a business versus using a distributed computing architecture; and,
- It shows how moving from a custom financial applications environment to a standard, packaged environment has enabled companies like Colacem to save money and become more competitive.

In this *Case Study*, *Clabby Analytics* (that's me) describes a series of findings resulting from an on-site customer visit to Colacem's headquarters in Gubbio, Italy. These findings include:

- SAP does indeed run extremely well on Linux on mainframe architecture;
- Colacem has realized distinct business advantages by using SAP to support its policies of expansion through acquisition (SAP enables Colacem to integrate its information and communications technologies [ICT] across multiple geographies, making it easier to assimilate and manage companies that it has acquired);
- Colacem is so pleased with its SAP/Linux/mainframe application environment that it plans to implement a second phase to add new SAP applications to its application portfolio.

While at Colacem, *Clabby Analytics* also pressed for more information about mainframe cost, skill set, and service-related issues. Colacem executives and operators were very open and frank in these discussions. Their opinions on these topics are also reflected in this *Case Study*.

#### ***Background: Colacem S.p.A.***

Colacem SpA is part of Italy's Financo Group, a privately held financial holding company. Colacem makes cements, concrete, and hydraulic binders used in the construction industry

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— and operates 150 plants on a global basis. Its annual turnover (revenue rate) is now approaching €1 billion.

Colacem is headquartered in Gubbio, Italy, about two and a half hours northwest of Rome. Gubbio is a beautifully restored, extremely well maintained medieval/Gothic/renaissance village nestled up to rolling hills and surrounded by antiquities — including a first century AD Roman theatre. (Gubbio's location is particularly relevant because it is clearly “off-the-beaten path” — which should logically affect the availability of technical resources needed to run a mainframe environment — more on this later).

From an ICT perspective, Colacem has long believed in a centralized approach to information systems design. Five years ago, Colacem operated a Hitachi-based mainframe environment, but as Hitachi scaled-back its mainframe business, Colacem decided to eliminate its Hitachi servers and disks and move to an IBM mainframe environment. Since then, Colacem's need for additional capacity has increased significantly (thanks in part to acquisitions of competitors), and accordingly Colacem has upgraded from an IBM eServer zSeries z890 to an IBM System z9 — and now to an IBM System z10 Enterprise Class (z10 EC).

Colacem's decision to move to SAP's financial suite was driven by a number of business as well as technical factors. From a business perspective, Colacem has embarked on a plan to grow its business through acquisition. And, in order to smooth the assimilation of newly acquired companies, Colacem has determined that a common set of applications as well as policies, procedures and processes should be used across all of its plants. Colacem has further determined that SAP's financial suite of applications meets its application objectives — and Colacem has standardized on SAP to help it expand its global operations.

The decision to put SAP on Linux on a mainframe was a natural, logical decision for Colacem. Colacem's ICT management believes strongly that mainframes are the most reliable computer systems architecture in the industry; and Colacem engineers had already established that Linux could run successfully on its mainframes (Colacem was an early adopter of Linux on mainframe technology). Colacem's ICT department was, therefore, confident that it could install and operate an SAP environment on a mainframe.

At this juncture, Colacem had only one problem. Colacem had plenty of mainframe expertise but no SAP expertise. Colacem was, however, able to quickly rectify this problem when it hired Mr. Andrea Coccia from nearby Nestlé Corporation...

### ***Colacem's CIO: Mr. Andrea Coccia***

Mr. Coccia's background includes direct user experience with SAP supply chain applications — as well as SAP implementation experience (on a distributed server environment). During a one-hour interview, Mr. Coccia (pictured next page) shared his thoughts and perspectives on Colacem's implementation of SAP on Linux on a mainframe.

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As a supply chain manager during his tenure at Nestlé Italy, Mr. Coccia was very familiar with how SAP applications operated. On the other hand, because Nestlé had implemented SAP on a distributed architecture, Mr. Coccia had little familiarity with how mainframes operated. This, as it turned out, was not a major obstacle because the SAP applications themselves behave the same regardless of whether they run on Unix or Linux on a distributed architecture or a centralized architecture.

Systems characteristics, however, differ widely. As Mr. Coccia pointed out, he was used to a “lower service level” from his previous distributed environment. “Mainframes” he emphasized, “have no single point of failure, so the level of service we get from our mainframes is consistently high. Distributed systems and architectures are designed differently — so failures do occur. Failures do not occur on our mainframes”.



“Another big difference between mainframe environments and distributed server environments is cost” acknowledged Mr. Coccia. “Mainframes can be comparatively more expensive”. But, after considering his statement, Mr. Coccia added “still, you have to consider other costs when comparing these different systems architectures. For instance, our mainframe runs at a 100% utilization rate almost all of the time — distributed servers are not even close to that. And we need about 25% fewer people to manage this environment than we would need in a distributed computing environment”. When comparing costs, Mr. Coccia emphasized that operational costs as well as acquisition costs need to be weighed. And he intimated that maybe the cost difference would not be that drastically different if each of these costs were weighed when evaluating systems architectures.

Another point of comparison versus distributed systems architectures is Colacem’s business (data) warehouse. “I can host my warehouse, my business applications, and my DB2 database all on the same machine. This gives me huge performance advantages”.

Mainframes also give Mr. Coccia a certain peace-of-mind knowing that his environment will just plain not fail. “We had an air conditioning problem not long ago — and our datacenter had minimal air conditioning for almost two days. The temperature in our datacenter reached 50°C (122°F) — yet we had no problem operating our air-cooled mainframe in that environment. This speaks for the robustness of this architecture”.

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### *The SAP Deployment: Not Without Obstacles*

Implementing SAP on any architecture is not a task to be taken lightly. Deploying a packaged application often means changes in the way that enterprises are used to flowing their business processes — and sometimes calls for changes in personal responsibilities, policies, and procedures.

Colacem faced an additional hurdle as it proceeded with its SAP implementation. Because the company had acquired other companies in disparate geographies — and because some of these companies had different process flows and practices in place — it was very difficult for both Colacem and IBM to size the amount of capacity that would be needed to operate Colacem's new SAP environment. Colacem purchased an IBM System z9 Enterprise Class (z9 EC) to handle its projected workload — only to find out that the company needed significantly more capacity (especially as Colacem expanded the number of SAP applications that it was running). Because Colacem was running out of capacity, the company slowed down its SAP implementation schedule while it considered what to do about its capacity restriction.

One solution to the problem would be to purchase another System z9 EC. But another, more attractive solution presented itself in the form of a brand new, even more powerful mainframe: the z10 EC. The z10 EC provides a faster processor and is capable of handling 50% more capacity than its predecessor (the z9 EC). Colacem did not wait long until it upgraded to a z10 EC.

Worthy of note is that Mr. Coccia stated that the failure to nail down the capacity issue up front was not solely an IBM issue. “We should have understood our workload requirements a bit better — and IBM should have had a better understanding of the impact of running so many SAP applications on its machine. We were both at fault for underestimating our capacity requirements. Colacem had to come up with more money for the upgrade — but IBM offered it to us at a price that we regard as very fair”.

### *Other Obstacles?*

*Clabby Analytics* pressed Colacem to identify any other obstacles that may have occurred during Colacem's SAP deployment. In particular, I was seeking to learn whether Colacem ran into problems trying to find the technical expertise and skill sets it needed to carry out its implementation — and whether IBM's professional service support met Colacem's expectations.

### *Skill Sets*

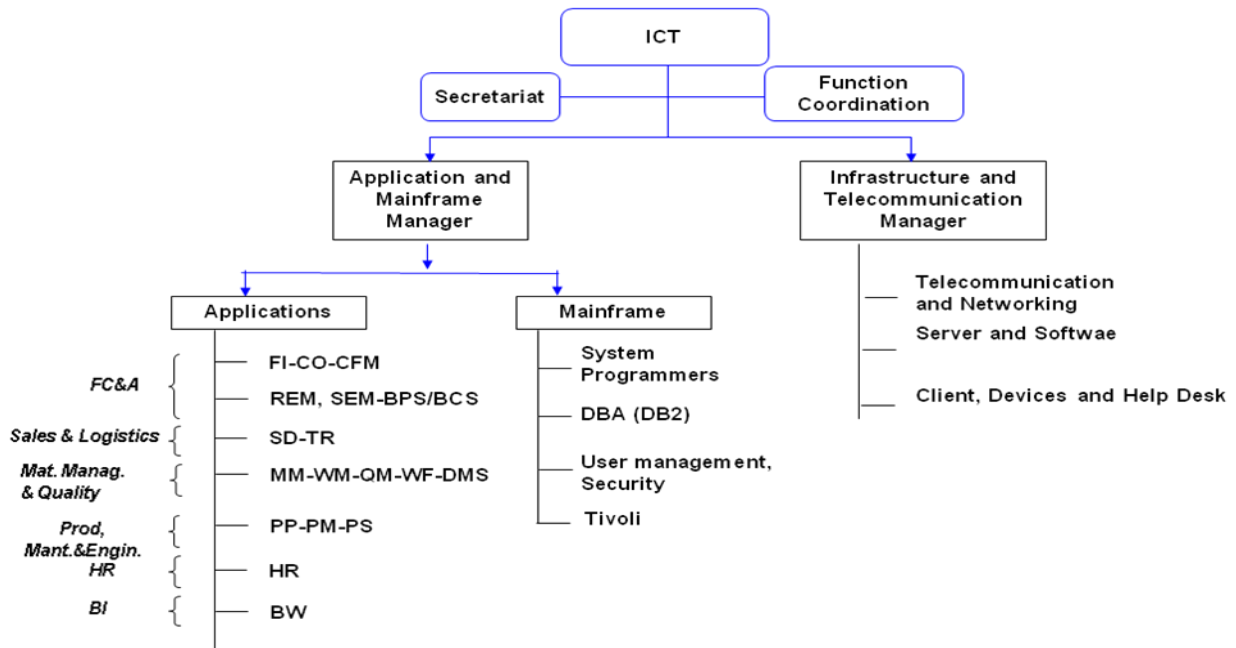
With respect to mainframe skill sets, I expected Mr. Coccia to say that finding mainframe skills in Gubbio, Italy was extremely difficult, if not impossible. But instead, Mr. Coccia looked out the window and said “look around here. This is a very desirable place to live. People like it here. So there's always somebody who will be willing to work on a mainframe in order to have this lifestyle”. (Incidentally, I heard almost the exact same comment when I visited a mainframe user in Lugano, Switzerland not long ago. Perhaps locating mainframes in picturesque locations is one way to solve skills shortage issues that may exist in certain geographies...)

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Mr. Coccia went on to explain that his ICT department had hired nine people over the past two years — three from his former employer, four from other IT firms, and two relocated internally. The opportunity to work in Gubbio was a big attraction for many of these people. It should be noted that most of these hires were assigned to manage the deployment and integration of SAP on the mainframe (applications people). The mainframe staff stayed close to static.

Mr. Coccia's ICT organization chart is shown in Figure 1 (below). Note how small this operations staff is — and then think about how big this staff might be if SAP were deployed on tens or hundreds of distributed servers. Further, consider the management cost savings that Colacem achieves by using an organization this size to manage a €1 billion business.

***Figure 1: Colacem's ICT Organization***



*Source: Colacem, December, 2008*

***The bottom line on finding SAP skill sets at Colacem was this: there are not a lot of SAP-skilled individuals in Gubbio, Italy. So finding SAPers can be a real challenge. To overcome this challenge, Colacem has recruited SAP-skilled individuals from other companies, has grown skills from within, and has supplemented its skills with external consultants.***

### *Professional Services*

Because Colacem was one of the first companies to adopt SAP on Linux on a mainframe, IBM professional services was heavily involved in this deployment from the outset. IBM Global Business Services unit, in conjunction with SAP, helped Colacem develop a phased roll-out plan and worked with Colacem to ensure that business process flow needs were met. Mr. Coccia reported that all three organizations (Colacem, SAP, and IBM) worked well together to meet the objectives that they all had established. Other than the sizing issue reported earlier, no other major obstacle occurred in this deployment.

## Running SAP on Linux on a Mainframe! The Colacem Case Study

### *Summary Observations*

Colacem has successfully deployed SAP on Linux on a mainframe. And by so doing, Colacem is able to meet its established business objectives by standardizing its operations, by quickly assimilating acquisitions, and by rapidly growing its revenue stream through acquisition and through efficiencies gained through streamlined business process flow.

Colacem believes that deploying SAP on Linux on a mainframe makes excellent business sense. By deploying SAP in this environment, Colacem is able to:

- Improve process flow and organizational efficiency;
- Reduce total-cost-of-acquisition (TCA costs) due to the introduction of open source components like Linux;
- Reduce its administrative/management costs as compared with distributed architectural approaches (as evidenced by the size of its ICT department);
- Modernize its application environment (by moving from custom to packaged applications);
- Reduce its systems cost (by using a centralized mainframe architecture that can do the work of hundreds of distributed Linux servers in a single box);
- Reduce overall systems complexity;
- Worry less about operational failures (“mainframes don’t fail”); and,
- Achieve performance benefits (by hosting SAP and data warehouse applications on the same machine).

When all is said and done, Colacem illustrates that mainframes are indeed capable of running business critical Linux workloads. Colacem bet its business that this would be the case. And Colacem is being well rewarded for that bet.

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