



Case Study

El Banco de Credito del Peru on Mainframe Costs: Mainframes Are NOT Our Most Expensive Platforms!

Executive Summary

When speaking with mainframe users, *Clabby Analytics* always asks three questions:

1. Are mainframes “old technology”;
2. Do mainframes cost too much; and,
3. Do you have any issues trying to find mainframe managers and administrators to run your mainframe?

And, very often, some surprising answers come back. Such was the case when *Clabby Analytics* interviewed Jorge Torres, the manager of continuity and infrastructure planning at Lima, Peru’s El Banco de Credito del Peru (BCP). For instance:

- When asked “do mainframes cost too much?” Mr. Torres responded “According to our TCO [total cost of ownership] studies, our Non-Stop, Windows, and Unix environments all cost more to operate and maintain than our mainframes.” He went on to state: “think about it this way — it takes far few administrators to manage 4-6 partitions as compared with hundreds of partitions on distributed systems”.
- When asked “are mainframes old technology?” Mr. Torres answered “we looked at mainframe alternatives many years ago [back in the 1990s when the whole industry was looking at mainframe migration options]. We considered migrating but could find nothing that offered the amount of computing capacity that our mainframe offers. And now, in our parallel sysplex configuration, we also benefit from strong security, mainframe reliability, business continuity — and overall availability is superior when compared with other systems”.
- When asked “do you have trouble finding mainframe management resources?” Mr. Torres indicated that BCP grows mainframe skill sets organically — taking the best managers from their own Windows and Unix worlds and teaching them how to manage mainframe environments. “Our older people are happy to introduce our younger people to mainframe technology. And we provide our younger people with better salaries for managing the mainframe. But, even though we pay them a bit more, we still come out ahead because it takes far fewer people to manage a mainframe environment than it does to manage distributed environments”.

In this *Case Study*, *Clabby Analytics* shares more of its findings based upon our interview with Peru’s leading credit corporation — Banco de Credito.

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Background: The Banco del Credito

Peru's BCP is a banking institution that provides savings and loan, mortgages, debit and credit card, financial assessment, and cash management services for individuals and businesses. BCP has over 200 branches, more than 750 ATMs, and over 10,000 employees. With earnings in excess of \$200,000,000 annually, BCP holds a 40% share of the country's credit market.

BCP's Jorge Torres

Jorge Torres is BCP's manager of continuity and infrastructure planning. He has been working with BCP for over 12 years, starting as a member of Novell's service/support organization, where he was initially charged with the networking and deployment of Novell file and print servers throughout the bank. After joining the bank in 1996, Mr. Torres built skills in Windows server deployment (including SQL Server and Exchange server deployment) — and eventually became involved in Unix application and database server deployments as well as mainframe operations. Today, his responsibilities range from strategic continuity planning and implementation through data center administration.

With hands-on experience on every leading platform at BCP, Mr. Torres is qualified to provide comparative commentary as well as analysis regarding the bank's use of its multiple information technology (IT) platforms (that include HP NonStop, IBM AIX [Unix] servers, numerous x86-based servers, and two IBM z9 mainframes.

BCP's Message is Consistent With Other Banks: Mainframes Offer the Best TCO

BCP is not the first bank or banking services organization that *Clabby Analytics* has interviewed that makes the claim that mainframe cost less to operate than distributed computing environments. Last year, *Clabby Analytics* interviewed Charles Inches, First Vice President in charge of Service Delivery and Logistics for Cornè Banca in Lugano, Switzerland, and Mr. Inches indicated the same thing: *mainframes cost less to operate than distributed computing environments*. And, in a recent interview by *Clabby Analytics*, Uwe Katzenberg of Finanz Informatik (a company that services the banking industry in Germany) also concluded the same thing: *mainframes cost less to operate than distributed computing environments*.

How is it that IT leaders at all of these organizations are all coming to the same conclusion about mainframe platforms? The key is to look at each company's model for evaluating total cost of ownership.

Many IT buyers make a major mistake when performing their own TCO studies. Often, these buyers look at the total cost of acquisition (TCA) for systems, storage, network, operating environment, and infrastructure products — and mistakenly conclude that distributed platforms cost less than centralized mainframe environments. But what these buyers are failing to consider are additional costs related to network management (mainframes have internal, high-speed busses that do not require network managers); security (access points proliferate in distributed computing environments — each representing a possible intrusion point); high availability (mainframes have incredible meantime between failure measured in decades); systems management (fewer managers are required to manage mainframes than distributed systems environments); and so on. Corner

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Banca, Finanz Informatik, and BCP all look well beyond TCA at operational, security, continuity, and other costs that more truly represent the actual cost to run a given computing environment.

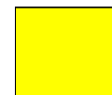
What Elements Should Be Found in a Good TCO Study

Figure 1 (below) illustrates both TCA (in the yellow box) as well as TCO. IT managers whose TCO studies only look at TCA costs are failing to account for a myriad of operational, availability/continuity, security, and facilities costs that, included in a more comprehensive TCO study, would show mainframe architecture as less expensive than Windows- and Unix-based distributed computing architectures.

Figure 1: A More Comprehensive View of “Absolute” Cost

TCO: A Range of IT Cost Factors – Often Not Considered

- **Availability**
 - High availability
 - Hours of operation
- **Backup / Restore / Site Recovery**
 - Backup
 - Disaster Scenario
 - Restore
 - Effort for Complete Site Recovery
 - SAN effort
- **Infrastructure Cost**
 - Space
 - Power
 - Network Infrastructure
 - Storage Infrastructure
 - Initial Hardware Costs
 - Software Costs
 - Maintenance Costs
- **Additional development/implementation**
 - Investment for one platform – reproduction for others
- **Controlling and Accounting**
 - Analyzing the systems
 - Cost
- **Operations Effort**
 - Monitoring, Operating
 - Problem Determination
 - Server Management Tools
 - Integrated Server Management – Enterprise Wide
- **Security**
 - Authentication / Authorization
 - User Administration
 - Data Security
 - Server and OS Security
 - RACF vs. other solutions
- **Deployment and Support**
 - System Programming
 - Keeping consistent OS and SW Level
 - Database Effort
 - Middleware
 - SW Maintenance
 - SW Distribution (across firewall)
 - Application
 - Technology Upgrade
 - System Release change without interrupts
- **Operating Concept**
 - Development of an operating procedure
 - Feasibility of the developed procedure
 - Automation
- **Resource Utilization and Performance**
 - Mixed Workload / Batch
 - Resource Sharing
 - shared nothing vs. shared everything
 - Parallel Sysplex vs. Other Concepts
 - Response Time
 - Performance Management
 - Peak handling / scalability
- **Integration**
 - Integrated Functionality vs. Functionality to be implemented (possibly with 3rd party tools)
 - Balanced System
 - Integration of / into Standards
- **Further Availability Aspects**
 - Planned outages
 - Unplanned outages
 - Automated Take Over
 - Uninterrupted Take Over (especially for DB)
 - Workload Management across physical borders
 - Business continuity
 - Availability effects for other applications / projects
 - End User Service
 - End User Productivity
 - Virtualization
- **Skills and Resources**
 - Personnel Education
 - Availability of Resources



Routinely Assessed
Cost Factors

Source: IBM Corporation — August, 2008

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Why Mainframes Are Beating Distributed Computing Architectures in TCO at BCP

Some of the reasons that mainframe TCO is less than distributed computing TCO at BCP include:

- *Distributed environments are harder to manage.* In most geographies throughout the world systems management is the number one cost in operating a datacenter — often representing 50% of datacenter operations cost. For enterprises looking to reduce the cost of computing, proliferating distributed computing designs is not the answer — consolidating distributed computing designs into more easily managed scale-up environments is.
- *Distributed environments require constant refreshes.* BCP finds that it needs to update and refresh software and infrastructure on its distributed servers every six months or so, versus every three years on mainframe. The constant test and validation cycles in the distributed world are time consuming and thus costly.
- *Distributed environments are hard to secure.* Distributed computing designs necessitate multiple access points because they rely on networking tens, hundreds, or thousands of devices together. Mainframes reduce the number of access/-intrusion points in a given computing environment — and therefore makes securing that environment significantly easier while reducing security exposure and risk.
- *Distributed environments waste computing capacity.* The industry practice for provisioning distributed tower servers is to load these servers somewhere in the 5%-20% range. This leaves at least 80% (but sometimes 95%) of a given server's processing capacity unused most of the time! This practice wastes capacity and energy — and forces enterprises to acquire more computers that do less work than consolidated scale-up servers (mainframes) or consolidated scale-out servers (blades). Mainframes, by the way, frequently operate at greater than 85% of capacity.

Another Major Advantage: Mainframe Architectural Design

There are several strong architectural advantages that mainframe architecture offers over distributed systems designs. These are:

1. *Internal network backplane/in-memory processing* — IBM's System z has a massive internal systems bus capable of supporting large volumes of high-speed network message traffic, as well as capable of transferring large volumes of data between service-oriented applications. IBM System z10, for instance, can transfer data between processor books (banks of processors contained in a "book" module) at a rate of 1.5 GIGABYTES per second! Knock-off the overhead associated with issuing remote procedure calls (because procedure calls are issued locally); and knock-off the overhead associated with encryption because local sharing doesn't require network-level encryption) and messaging/data transfer takes place even more quickly.
2. *SOA infrastructure integration* — IBM SOA infrastructure (Web services, XML, automated provisioning, development tools, etc.) is closely integrated with System z operating environments — and optimized for performance on System z

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architecture. These tools and software products can be found in IBM's Rational, Tivoli, WebSphere, and DB2 product lines.

3. *Advanced Virtualization* — Virtualization is the ability to pool and exploit unused physical/logical computing resources. IBM's z/VM operating environment is recognized by users, competitors, and analysts alike as “the gold standard” for virtualization. With z/VM and the z10 “shared-everything” architecture, IT managers and administrators can manage the virtualization of processors, memory and input/output (I/O) better than any other commercial system on the market today — bar none.
4. *Energy consumption characteristics* — Which scenario uses less energy while delivering the most computing power: 1) hundreds of servers running at 15% of capacity? or, 2) hundreds of servers located inside a mainframe running at 95% capacity? (The answer is #2).
5. *Manageability* — as enterprises shift from tightly-coupled applications to loosely-coupled service-oriented architectures, service interactions — as well as underlying systems/storage/networking functions — will need to be monitored and controlled. IBM offers a bevy of sophisticated business process management, intelligent orchestration (and associated libraries), automated provisioning, workflow management, service-level management, energy monitoring and management, and dozens of other products that are well-integrated and well-suited to manage service-process flows over underlying, automatically provisioned, virtualized systems infrastructure. Many of these are part of IBM's Tivoli product offerings.
6. *Real-time workload handling responsiveness* — The System z has been architected as a scalable, non-disruptive environment that enables capacity increases to take place transparently to handle unexpected workloads. In distributed system environments, managers and administrators usually handle this activity manually — significantly driving-up management costs.
7. *Security* — Distributed computing environment often have thousands of access points; a variety of disparate network, computing, and storage systems; and no centralized point of control. IT departments, accordingly, spend a lot of time and budget locking-down security access points, performing cross-system security integration, on security software site licenses to cover hundreds or thousands of distributed nodes, and on higher salaries and related benefits for IT security personnel.

System z offers IT executives a chance to centralize IT security under IBM mainframe control. Integrated mainframe security significantly reduces security software licensing and integration costs; greatly reduce your human resource-related security management costs; simplifies compliance testing; and eliminates the need to purchase extremely expensive external public keys.

IT executives can expect to save hundreds of thousands (if not millions) of dollars in hardware, software, testing and human resource-related costs by using IBM's mainframe security architecture.

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8. *Shared everything (and ramifications on server availability)* — IBM System z's share everything including an enhanced I/O subsystem, main memory, and virtualized resources. Important resources are not wasted (as they are in distributed systems architectures).
9. *Superior systems and application management* — Advanced systems and applications management programs simplify service management, operations, security, and power management.
10. *Real estate/floor space* — Datacenters around the world are starting to run out of floor space. For IT buyers concerned about floor space, the System z packs a lot of processing power into a relatively small footprint (as compared to the floor space that dozens of networked SMP or PC servers might occupy if equivalently configured)..

Other Areas of Cost Saving for BCP

In addition to reduced operational cost savings, BCP also indicated that it has been able to save money using IBM software products such as IBM's WebSphere development tools. BCP had both Compuware and WebSphere tools in-house, but upon closer examination found that it could save over \$144,000 per year in maintenance costs if the company standardized on WebSphere. Because the WebSphere toolset offered functionality that was similar to the Compuware environment but at a lower cost, BCP has now standardized on IBM's WebSphere tool set.

Linux on the mainframe can help greatly lower software costs — and if there is excess capacity on the mainframe, the switch to the mainframe hardware platform is essentially free. (Clabby Analytics observed this same kind of scenario at KMD — an IT service provider in Denmark. KMD was able to use spare capacity on a mainframe to replace two HP PA-RISC-based servers — making the hardware replacement cost nil. For more details on KMD, please visit:

[http://www.clabbyanalytics.com/uploads/KMD Case Study Rev 1.pdf](http://www.clabbyanalytics.com/uploads/KMD_Case_Study_Rev_1.pdf)).

Note: The move to Linux based banking is an interesting story in and of itself. For more details about "Smart Banking", read Clabby Analytic's write-up on the future of Linux banking at:
<http://www.clabbyanalytics.com/uploads/SmartBankingFinalFinal.pdf>.

Additionally, Clabby Analytics has also written a critique of ACI's offerings on Linux. This can be found at:
http://www.clabbyanalytics.com/uploads/ACI_PundIT.pdf.

Summary Observations

According to its own TCO studies, BCP has determined that mainframes cost less to operate than commodity x86 servers, RISC-based Unix servers, and proprietary HP Non-Stop servers.

BCP's message is consistent with other interviews that Clabby Analytics has conducted. Last year, Clabby Analytics journeyed to Lugano, Switzerland to interview Corner Banca, a bank that regularly conducts internal TCO studies. Like Banco del Credito, Corner Banca has also evaluated migration to other

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platforms and has arrived at the same conclusion: IBM mainframes offer better TCO than industry standard systems when costs such as security, business continuity, reliability, and availability are added into the TCO calculations... Further, Clabby Analytics travelled to Cologne, Germany to meet with Uwe Katzenberg at Finanz Informatik (a banking service provider). And Finanz Informatik delivered the same message: mainframe TCO is a compelling reason to adopt mainframes.

But, if mainframe TCO is so compelling, why do so many IT managers resist adopting mainframe architecture? The answers are: 1) they believe that mainframes are old technology; 2) they think mainframes are too costly; and 3) they don't believe they have the skill sets (or can obtain the skill sets) to run mainframes. In response, consider these points:

- On the “old technology” issue, IT managers who believe that mainframes are aging dinosaurs are not doing their homework. *Clabby Analytics* suggests that IT managers who want a better understanding of mainframe technology visit http://www.clabbyanalytics.com/uploads/Systemz_Technology_Update_Final.pdf for a System z technology update;
- On the “mainframes are too costly” issue, mainframe customers who have conducted in-depth TCO studies constantly tell *Clabby Analytics* the opposite. These customers consistently indicate that mainframes represent their least expensive computing option.
- On the skill set issue, mainframe skills can be found or grown. For more insight on mainframe skills, please read: http://www.clabbyanalytics.com/uploads/The_Alleged_Mainframe_Skills_Shortage_--_Final_Final.pdf

In summary, El Banco del Credito del Peru represents yet another case study that proves IT manager who believe that mainframes are old technology, too costly, and hard to staff are wrong on all counts.

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