

**Olivo Carli**

# Linux on System z Standardizes Leading Italian Olive Oil Company

BY GABE GOLDBERG

LEFT: Marco Gardini, Mainframe System Architect

RIGHT: Fratelli Carli's IT staff and z9 Mainframe



**A**mong images associated with a century-old, family-owned, consumer-facing, Italian olive oil firm, “high-tech” is likely missing.

But in fact, an IBM mainframe and other up-to-date technologies allow Fratelli Carli, one of Italy’s most prominent olive oil companies, to significantly grow its home-country business and begin serving several other countries.

### Two Million Delicacies Shipped Yearly

Established in 1911 and located in the northwest Italian region of Liguria, the most ancient region for olive oil, Fratelli Carli’s product is appreciated for its characteristic mild taste. The company directly serves more than 600,000 families throughout Italy, and in recent years has expanded distribution to France, Germany, Austria, and the U.K., reaching more than 100,000 additional families. The company’s Website, [www.oliocarli.com](http://www.oliocarli.com), which is accessible in four different languages, is a benchmark for e-commerce in Italy. The company’s historical headquarters, now the famous “Museum of the Olive” ([www.museodelloolivo.com](http://www.museodelloolivo.com)), receives more than 30,000 visitors per year and was 1993’s European Museum of the Year.

Fratelli Carli began mainframe data processing in 1970 with a now-venerable punch card-based IBM 360/20. During its dozen or so system migrations leading to the current z9 BC, it was likely the first Italian CICS installation.

Mainframe System Architect Marco Gardini joined the company in early 1990 when a three-person staff supported mixed Assembler and COBOL applications, along with two operators and a combination programmer/manager. Over the next 10 years, he moved from COBOL programmer to

mainframe systems programmer and database administrator; data now resides in a modern database management system, and the number of coax terminals greatly decreased with the arrival of the PC.

Today’s staff of 11 consists of Gardini, a new manager, three programmers, a DBA, two operators, and three people supporting a server environment consisting of Microsoft Windows and related software. The newest technology transformation has been the addition of Red Hat Linux on System z.

In addition to several varieties of olive oil, Fratelli Carli ships directly to consumers its specialty foods line, including such delicacies as olives in brine, Marsala and local wines, tuna fish, olive pate, and pesto sauce. The company’s Linea Mediterranea cosmetics line offers an assortment of facial and body treatments, inspired by the idea of extending olive oil’s extraordinary properties to cosmetic products.

Not surprisingly, annually shipping more than two million packages requires working closely with the postal service. As the customer database grew and more address variations were encountered, it became more essential to standardize addresses for sending packages, magazines, catalogs, and correspondence. The problem is both historical and ongoing, as the company needs to correct and update existing records and ensure that new addresses—arriving online and via telephone or letter—are entered in standard form. And growing international shipments add new address variations and raise the cost of using incorrect customer addresses.

### Subsecond Address Standardization Transactions

The company’s almost 40-year mainframe history led them to seek a solution built on their existing infrastructure and staff skills. But two years ago, neither IBM nor CA had a mainframe solution. Research located many Microsoft Windows solutions and a Ware Place address standardization product based on Java. Fortunately, Java could be added to the mainframe by installing Linux on System z, easily connecting to the existing z/VSE system that doesn’t directly support Java. And running Java on an Integrated Facility for Linux (IFL) offloads work from the primary central processor and adds computing capacity without increasing software licensing costs. The application has been in production for more than a year.

Ware Place uses a Java server in listen-mode under Linux on System z; when a client transaction needs to normalize an address, it queries the DB2 UDB in the Linux environment, returning corrected data to the client. Two clients are used today: a COBOL CICS Transaction Server SOAP program that makes a standard XML call to the server via HiperSockets, and a Windows program that calls the same Java server via the same method, XML SOAP.

Ware Place’s Egon suite was appealing, since it’s a standard Java service supporting DB2 UDB and Oracle, and it uses a Web service such as Tomcat, native to Linux on System z and sufficient without added products.

Gardini notes that the secret to achieving mainframe success is integrating the single environment’s components, exploiting each one’s unique strengths. He’s combined z/VM for virtual machines, the Open Systems Adapter/Support Facility (OSA/SF), z/VSE with CICS for the best and fastest transaction and batch manager, and Linux on



System z for its modern services such as Website and application serving. It's now all possible with the native solutions of CICS TS for z/VSE and the free-for-download VSE Connector building blocks.

Most customer programs operate in the CA Ideal for CA Datacom database. Since this system under z/VSE can't directly invoke Java, Gardini created a COBOL program, called from CA Ideal programs, which uses standard HTTP to call the Linux Java server. Despite the EBCDIC-to-ASCII transformation, XML translation of parameters, the actual address normalization under Java, and managing 6GB of DB2 data, the round-trip CICS transaction response time is less than one second.

The entire business runs on a large network centralized around z/VSE on the z9 BC R07, with the processor easily sustaining occasional 95 to 100 percent utilization; transactions spike around Christmas and Easter.

Mainframe network access is via two OSA cards connected to a z/VM virtual switch (VSWITCH), allowing sharing of the cards across multiple z/VSE and Linux on System z guest systems. Data resides on a new FICON-connected IBM DS8100 storage system.

### Mainframe Economies Lead to Services Growth

Mainframe project successes have built momentum for multiple projects to add services. Current efforts include adding CICS TS users, enhancing the

z/VSE CA Datacom database and DB2 UDB on Linux on System z systems to support new foreign markets, increasing the use of Linux in the IFL to manage printing products directly connected to IBM 4100 printers, and supporting e-commerce by connecting the Microsoft Windows-based Website directly to the mainframe to share z/VSE applications via Service-Oriented Architecture (SOA).

Fratelli Carli buys software products only when they can't be internally developed for reasons of time, expense, or performance. They've easily combined three environments—z/VM, z/VSE, and Linux on System z—using native capabilities of z/VSE and Linux on System z, including:

- z/VSE CICS TS with SOAP support
- Red Hat Linux on System z, using Tomcat and Java
- z/VM's HiperSockets networking for cross-platform information exchange.

IBM's Print Services Facility (PSF) manages the 4100 IBM laser printers; under Linux, DB2 UDB is used, with a DB2 connection from z/VSE planned. System z's HiperSockets function on the z9 connects z/VM, z/VSE, and Red Hat Enterprise Linux 5 on System z (RHEL5) in the

same manner as a normal Ethernet LAN, except with no cabling to deal with, and it operates faster than a hardware-based LAN.

The address standardization project's successful results continued Fratelli Carli's mainframe-based heritage by consolidating disparate functions and reducing environmental costs (i.e., electricity, cooling, and floorspace), providing capacity for transaction loads, and assuring reliable network connections.

The company is exploring ways to further exploit the IFL engine for tasks presently handled by z/VSE, such as print services and 3270 emulation via Tomcat with a Host On-Demand server. Gardini is helping users test the new account environment in Linux on System z instead of z/VSE COBOL CICS, and is studying the possibility of using Linux to better manage accounting-data pool files.

### Mainframe Renaissance

As demonstrated by the non-industry-specific address standardization application, mainframes are general-purpose industry workhorses. Gardini anticipates a general mainframe revival driven by integrated use of diverse computing components. He sees great promise in continued integration of z/VSE and z/OS with Linux on System z, enabled by tools such as the high-quality z/VSE Connectors. These building blocks perform utility functions such as reading data from z/VSE batch or CICS and using virtual tape (e.g., supporting a directory on your laptop instead of a cartridge).

Gardini suggests that an additional mainframe advantage is escaping the traditional distributed server world's jungle-like chaos and conflict, achieving control, order, efficiency, continuity, and security.

Gardini recognizes that mainframe installations greatly benefit from Linux on System z but notes that some large software companies haven't invested early and strongly enough in its support. He likes the popular concept it introduces to mainframes—free. But he's frustrated that while there are two dominant mainframe Linux versions, Novell's Suse and Red Hat, applications are split between them, some only certified for one or the other but not both. He notes that products from IBM supporting both Linux implementations would be ideal.

A family-owned business, Fratelli Carli has a relatively flat management structure, so it's easy for Gardini to explain the mainframe's necessity and advantages upward to decision makers. From outside the company, he sometimes hears—but never believes—that the mainframe is dead.

When new projects arise, he evaluates their implementation on the mainframe, since only with a machine of its magnitude can service continuity be assured. He and the company look forward to continuing to meet evolving and growing business needs with the mainframe's always-available technology. **ME**

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Fratelli Carli's  
mainframe 1970s  
Style-360/20