

Case study

Morrisons modernises with HP Converged Infrastructure



Expansion from 100 to 400+ stores necessitates IT evolution for supermarket

Industry

retail

Objective

Replace the ageing mainframe technology with an enterprise infrastructure that provides the agility needed to compete more effectively in the retail market and respond to business growth.

Approach

Initiate an in-depth selection process to identify a “one-stop-shopping” technology partner to help evolve IT

IT matters

- New infrastructure with higher efficiency and scalability supports fourfold growth
- High-availability servers and storage reduce risk of system failure and the impact on customer service
- IT team reduces dependency on legacy skills needed to support the mainframe environment
- Ongoing HP Mission Critical Partnership helps insure best-in-class service levels
- Virtualisation of in-store systems reduces IT space and power consumption in all 400+ stores

Business matters

- Enables Morrisons to offer new customer services and differentiate itself in the marketplace
- Provides the scalability and flexibility to enable business growth amid changing customer demands
- HP system reliability and Mission Critical partnership support combine to deliver high availability in the data centres and at the point of sale, strengthening customer satisfaction
- Greater efficiency in time and resources reduces operating cost by multimillions of pounds per year

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– Chris Hemsley, UNIX and Linux systems manager, Morrisons

Morrisons—the fourth-largest supermarket in the United Kingdom—needed to replace its ageing mainframe technology and home-grown software, both of which lacked the flexibility and scalability to support business growth. The company selected the Oracle Retail software platform running on an HP Converged Infrastructure. This solution not only provides immediate cost savings, but also the basis for future expansion and flexibility.

Expansion from 100 to 400+ stores—all at once

Founded in 1899, Morrisons is now the fourth-largest supermarket in the United Kingdom, with more than 461 stores, a dozen distribution centres, its own manufacturing facilities, and over 132,000 employees. In 2004, the company acquired the UK Safeway—and with that, Morrisons grew from a regional group of 100 stores, mostly in the North of England, to a four-times-larger group with stores across the United Kingdom.

The company was losing—through staff retirement—the skills to run its legacy systems. Recognising that the existing IT processes and infrastructure could not cope with the expansion, Morrisons instituted an IT transformation called Evolve. Its goal was to update its technology, tools, and skills to do new things and develop different sales channels.

Chris Hemsley, UNIX and Linux systems manager at Morrisons explains: “We looked at the requirements to compete in a very competitive retail market. We had bespoke code and a mainframe. We had invested a lot in tuning systems. But going forward, to offer new services we needed to move away from homegrown systems toward a buy-not-build strategy.”

Choosing the right platform

The first step in the Evolve transformation was to select a retail software platform. When Morrisons took over Safeway, it adopted Safeway’s Oracle® PeopleSoft Human Resources (HR) software, so they had a track record with Oracle. “We looked closely at Oracle and SAP®,” says Hemsley, “talked to lots of people, and chose to go with Oracle Retail for the wider enterprise platform.”

To find the right hardware platform to run the Oracle software, the company issued a request for proposal. Based on Morrisons’ intensive review, which included reference calls and site visits, HP came out on top. Because Morrisons had been an IBM shop, the selection of HP was a surprise. “But from the hardware, software, and service point of view, HP convinced us with regard to functionality, scalability, and support,” Hemsley says.

Besides the technology, Hemsley explains, the reasons for choosing HP included total capability, system scalability, comprehensive service, cost, a good fit with Oracle, and, finally, relationships. “Morrisons feels it’s important

to build long-term relationships, and HP struck a chord.” Barry Slinger, systems management and storage manager at Morrisons, concurs. “HP emphasised their good relationship with Oracle,” he says, “and we have seen that. This is a complex project, and there are going to be problems. The Oracle, HP, and Morrisons teams worked together as one team. It is a good three-way relationship.”

For example, at the start of the project Morrisons worked with HP and Oracle on system sizing, using HP sizing tools to make sure that the systems were big enough and had the scalability to meet Morrisons’ short- and longer-term requirements. Most impressive to Morrisons was the way HP made them the highest priority, and was willing to work closely with any partner to identify the right way forward with the best possible solution available.

A jump-start on application transformation from HP Consulting Services

HP Services played a major role in the Evolve project from the beginning. “We had no HP or HP-UX knowledge, and limited non-mainframe knowledge. So HP sent the consultants we needed here on-site—and they did it all,” says Hemsley. This included design and deployment of servers, storage arrays, and the SAN; development of acceptance testing criteria; and prepping the operating system and hardware to be application ready.

A key element of the Evolve project was to transform Morrisons’ application environment from ageing, inflexible applications based on a mainframe to a contemporary suite of packaged applications running on an HP Converged Infrastructure. This not only provides immediate cost savings but also provides the basis for future expansion and flexibility.

To implement this transformation, multiple applications had to be migrated—with each migration requiring a set of environments for change, test, preproduction, and production. Initially, the IT team used HP Superdome servers as the test platform, but soon realised it was an expensive approach.

That’s when HP Consulting stepped in. Based on close collaboration, Morrisons was able to identify the best test platform: Integrity server blades running HP Virtual Machines on HP-UX. Four BladeSystem c7000 Enclosures hold a total of 16 server blades—a mix of Integrity BL870c and the latest BL860c i2 server blades.

“HP Virtual Machines let us oversubscribe the hardware,” Hemsley explains, “and give us flexibility and ease of standing up virtual servers much more easily and quickly.”

An HP Converged Infrastructure emerges

When it took on the Evolve transformation, Morrisons had hoped to find a one-stop-shop technology partner for its servers, storage, system management tools, and service. Within about a year, Morrisons' legacy IT platform was completely transformed to Superdome- and HP-UX-based enterprise infrastructure that could support the new application landscape. The HP Converged Infrastructure comprises eight HP Integrity Superdome servers and four HP StorageWorks XP24000 Disk Arrays as well as the Integrity server blades for development and test, 1,000 ProLiant server blades in its stores, and HP Mission Critical Services.

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The Superdome servers scale to 64 processors and 128 cores each, with up to 2 terabytes of memory and 192 I/O slots in a single server, while the maximum external storage that may be virtualised by the XP24000 disk arrays is 247 petabytes. The Superdomes are replacing Morrisons' current mainframe, an IBM Z9 model 704, rated at 2,158 MIPS.

Trusted services and high availability

Beyond the software and hardware, a crucial part of the new enterprise infrastructure is ongoing HP support. Morrisons relies on HP Mission Critical Partnership, which allows reactive and proactive support features to be selected on a per-device basis, based on the role and importance of the device—and under a single contract. HP Mission Critical Partnership includes a dedicated HP Account Support Manager, and day-to-day help with patches and firmware updates. David Godley, Head of service introduction and the Evolve infrastructure lead at Morrisons, says, “HP owns issues. We don't have to ask. With HP support services, we get the level of attention we need, and more so. We know we can trust HP to just get on with it.”

With the new infrastructure in place and ongoing HP support, Morrisons is assured it can deliver very high availability for enterprise services. For every application, there's a live system and a failover system. All applications and databases are spread over the eight HP Superdome servers, for which Morrisons estimates availability at 99.999 percent. The company's primary data centre is at Morrisons' headquarters in Bradford, West Yorkshire, with a secondary data centre and IT recovery site a few kilometers away. The Superdome servers are split 50/50 between the two sites.

The Superdome servers run Oracle production applications, including Oracle PeopleSoft HR, Oracle Database Enterprise Edition, Oracle E-Business Suite financials, and Oracle Retail Merchandising System (RMS). One Superdome is dedicated to the Oracle Database, and one is dedicated to Oracle Business Intelligence. The other Oracle applications are spread across the Superdome servers and replicated for high availability.

Taking the solution out to the stores

Evolve has lived up to its name—a multiyear transition from homegrown software on a mainframe to Oracle on UNIX®. The migration has occurred trading area by trading area, product category by product category (for example, wine and spirits, fresh produce). And for now, Oracle RMS still sends data to the mainframe, which in turn gets the data to the tills in the stores. But within the year, Oracle RMS will connect directly to the tills, and will eventually be the “master of everything,” controlling the various pricing from store to store, creating promotions, and getting data into the tills for some 150,000 products. This application transformation is helping Morrisons achieve agile service delivery and run applications and core services that are always available and can easily adjust to new opportunities.

As part of the evolving in-stores solution, Morrisons launched a landmark project in 2009 that deployed about 1,000 servers across its hundreds of stores. HP Services worked with Morrisons to deploy these Intel®-based ProLiant BL460c blades in less than a year. HP Financial Services provided lease financing for VMware software, enabling Morrisons to spread the licensing costs over the roll-out period and match the payment schedule to server virtualisation milestones.

Customer at a glance

Application

Retail operations, including warehouse management, HR, and finance

Hardware

- 8 HP Integrity Superdome servers
- 4 HP StorageWorks XP24000 Disk Arrays
- 16 HP BL870c and BL860c i2 Integrity server blades in 4 HP BladeSystem c7000 Enclosures
- 1,000 HP ProLiant BL460c Server Blades
- HP StorageWorks 2200i G2 Modular Smart Array, MSA 2200i dual controller array

Software

- HP-UX 11i v3 operating system
- HP Integrity Virtual Machines
- Oracle Retail
- Oracle Retail Merchandising System
- Oracle Enterprise Database
- Oracle Business Intelligence
- HP Serviceguard
- HP Data Protector
- HP Operations Manager
- HP Service Manager 7
- HP StorageWorks XP Continuous Access replication software
- HP StorageWorks XP Performance Advisor
- Microsoft Windows Server operating system

HP services

- Enterprise infrastructure design and implementation
- HP/Oracle solution sizing
- HP Mission Critical Services for core enterprise infrastructure
- Installation of 1,000 in-store servers
- Break/fix service for in-store systems
- VMware support for in-store systems

HP Financial Services

- VMware lease financing

Today, each Morrisons supermarket has two HP server blades in an HP BladeSystem enclosure. The server blades run Microsoft® Windows® with VMware Virtual Infrastructure 3 (VI3), allowing virtualised machines to replace the previous back-office infrastructure, which included four tower servers in each store, and thus reducing physical space and power requirements.

The new in-store back-office platform provides resilience, agility, and headroom for future initiatives. According to Godley, "The failover capability in VMware gives our back-office systems high availability, by allowing us to do maintenance without shutting down systems and by reducing the infrastructure recovery time resulting from a total loss from days to hours." As far as agility, the new virtual servers can be provisioned quickly and easily to support new applications. And unlike with the old mainframe system, Morrisons can now manage different pricing of a product from store to store—and even create special offers for individual stores or groups of stores.

The blade servers are configured without spinning disks and rely on the HP StorageWorks MSA 2200i dual controller array to provide shared storage between the two servers. The Morrisons IT team worked with HP to design a disk configuration optimized to balance capacity requirements, performance, and cost. For greater resilience, they deployed a spare physical disk that hosts recovery templates and scripts. In the event of a data corruption, the in-store system can start instantly, without having to download configuration over the network.

Modernising and streamlining

The new infrastructure has provided advantages to just about every part of the company: The Oracle PeopleSoft HR system provides an improved payroll system that benefits Morrisons' 120,000 colleagues.

Warehouses are on the new Oracle Retail Warehouse Management system, which includes a voice pick system that is the first of its kind on Oracle. And manufacturing is going online with Oracle Process Manufacturing software, putting IT into the company's manufacturing for the first time.

In addition to these technology gains, Morrisons now has stronger management tools. Slinger explains: "To monitor our mainframe, you just have the console to look at—lots of blinking lights. With our new systems, we wanted a much higher level of centralised monitoring/management tools. We started deploying HP Operations Manager right away." Operations Manager consolidates infrastructure monitoring tools and gives the Morrisons team a single management console for the entire data centre environment.

While making extensive use of HP Operations Manager, Morrisons uses HP StorageWorks XP Performance Advisor for storage; HP StorageWorks XP Continuous Access replication software and HP Data Protector for backup and recovery; and HP Service Manager 7 for IT help desk management.

Godley adds, "By automating previously paper-driven processes, the new systems bring immense timing efficiencies and people resource efficiencies, which reduce costs by multimillions of pounds per year. The savings provide the return on investment that justifies the 100 million pounds that Morrisons is investing in IT."

Catching up with ... and passing ... the competition

A primary motivation for the Evolve project was to provide the IT infrastructure to support the new tools Morrisons needed to compete. "We were behind the competitors," says Hemsley, "but now I think we have caught up, and surpassed our supermarket competitors."

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4AA3-5148EEW, Created November 2011; Updated March 2013, Rev.1

