



CASE STUDY

BT Operate Boosts Service Levels and Lowers Management Costs by Standardizing on Oracle Database 11g for Consolidation onto a Private Cloud

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CRIMSON CONSULTING GROUP



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Executive Summary

British Telecommunications plc (BT) is one of the world's leading telecommunications companies, with almost 93,000 employees serving customers in more than 170 countries worldwide. Its BT Operate division is charged with internal IT and network management as well as delivery and problem resolution for all products and services.

Like any modern corporation, BT depends heavily on its database infrastructure to support critical business applications. But the complexity of managing thousands of databases representing a mix of products, versions, operating systems, and hardware was taking a toll. Application deployment was too slow, operations were too expensive, resource utilization too low, and the workload on the IT team too high. BT Operate struggled to reach its twin goals of making British Telecommunications number one for customer service and itself "amazing for service and cost reductions," as BT Operate CTO Core Technologies Suren Partabh puts it.

As part of its Virtual Data Centre program, and its drive towards ever greater agility and innovation, BT is consolidating its database infrastructure onto a Database as a Service (DaaS) private cloud using Oracle Database 11g. Oracle Real Application Clusters enables BT to standardize their deployment model, reducing the deployment time for a fully-tested, highly available (HA) database from two to three weeks down to only 19 minutes: on the order of a 1000x improvement. Other Oracle Database 11g features and options, such as Clusterware, Automatic Storage Management (ASM), Advanced Compression, and Partitioning also play an important role in BT's private cloud consolidation, letting the company's IT team manage 30% more databases with 20% fewer database administrators. "Our Oracle Database 11g consolidation has enabled us to reduce our server sprawl, deploy databases faster, and operate with 20% fewer DBA's," says Partabh.

BT relies on an Oracle "stack" for the cloud, down to Oracle Enterprise Linux running on HP blade servers. The company's IT team is working with Oracle on further consolidation using the Oracle Exadata Database Machine, starting with the company's enterprise data warehouse. According to Partabh, BT Operate also expects further gains in operational efficiency and utilization with Oracle Enterprise Manager 12c. He is looking forward to investigating how Oracle Exalogic can help his team offer Middleware as a Service (MaaS), and how Oracle Exalytics can accelerate and streamline business intelligence.

The World's Oldest Telecommunications Company

London-based BT is one of the world's leading telecommunications companies, and one of the oldest, dating its origins back to the incorporation of The Electric Telegraph Company in 1846. Today BT's almost 93,000 employees serve customers in more than 170 countries worldwide. In the UK, the company provides broadband products and service to almost six million customers, as well as fixed-line, mobile, and TV offerings to millions more consumers. BT also provides communications and networking products and services for small-to-medium enterprises and the public sector in the UK.

Worldwide, BT sells wholesale products and services to leading communications providers and supplies managed network services to a wide range of corporations and government organizations. These include 3400 multinationals, 25% of the world's financial market traders, and some of the world's most data-intensive enterprises, such as Thomson Reuters, NASDAQ, and the New York Stock Exchange.

BT Operate is the internal service unit responsible for managing BT's IT and network infrastructure platforms, as well as delivery and problem resolution for all products and services sold to BT customers worldwide, retail and wholesale. Its staff includes over 13,000 IT professionals in more than 20 countries. BT Operate's responsibilities also cover field engineering, testing, the operational integrity and security of all data and operations centers, and business operations and transformations. Under its supervision, the reliability of BT's network and systems improved 28.2% in Q4 2011 compared to the fourth quarter of 2010.

“What stands out head and shoulders above the many other benefits of our Oracle Database consolidation onto a private cloud is the astonishing agility it gives us. Dropping our database deployment time down to 19 minutes from the weeks it used to take has brought us much closer to the customer service levels our business goals demand. Being able to manage 30% more databases with 20% fewer DBAs further confirms that standardizing on Oracle Database 11g was the right choice.”

– Suren Partabh,
CTO Core Technologies, BT Operate

A Database Infrastructure “Falling into Legacy”

Suren Partabh, CTO Core Technologies of BT Operate, heads a team focused on databases, middleware, web services, and other aspects of BT's IT infrastructure. “Our job is to find ways to improve operations and processes for all our customers so that we can fulfill the demand and expectations of our business.

However, like most mature companies, BT had a large and growing database infrastructure that Partabh characterizes as “rapidly falling into legacy due to the pace of technology innovation we see in the world.” The company's burgeoning range of products and services had inevitably led to a sprawling set of application and operational silos dependent on thousands of databases comprising a diverse mix of products, versions, operating systems, and hardware. Just keeping current with upgrades and patches was an onerous job, day-to-day management was difficult, and hardware was not being used efficiently. It was increasingly difficult to keep up with customer expectations and competitive demands.

“Application deployment was slow and expensive, and low utilization was pushing down the return on our IT capital investments and keeping environmental costs high,” says Partabh. The ever-growing complexity of the company's database infrastructure was raising operational costs and staffing requirements, with the IT workload soaring. “We had DBAs begging to retire, but we couldn't afford to let them go.”

Database Consolidation onto a Private Cloud with Oracle Database 11g

Part of the company's transformational agenda was to make BT number one in telecommunications customer service. "That required BT Operate to consolidate and rationalize our database estate," says Partabh. "I think that order is important: first look for ways to reduce your hardware footprint—and thus both capital and operational costs—and then figure out which databases aren't relevant anymore and should be shut down."

About 5000 databases in the company's infrastructure—a significant percentage of the total—were already some version of Oracle database. The company decided to build a DaaS platform using the features and options of Oracle Database 11g to create a private cloud. "Oracle Real Application Clusters is the driving force behind our new infrastructure," says Partabh. "We start with HP blade servers running Oracle Enterprise Linux. Oracle Clusterware and Automatic Storage Management let us consolidate our storage, and then RAC pulls the blades together into a cluster." Partabh also calls out Oracle Advanced Compression for using database resources more efficiently and lowering storage costs, and Oracle Partitioning for improving the manageability of large databases.

The standard unit of BT's new private cloud pool is a pre-provisioned six-node RAC cluster hosting 50 Oracle Database 11g databases each up to two terabytes in size. Each of these is actually delivered as a pre-tested pair of clusters linked by Oracle Data Guard for high availability. "Right there you have tremendous consolidation, going from 100 servers hosting 50 databases with high availability to only 12," says Partabh. But he points out that this is only part of the footprint reduction that occurred. "That's also fewer network cards and cables, lower power and cooling requirements, less of all the stuff that costs money and can go wrong. Less to deploy and manage, too. Everything got smaller except performance."

Now, as legacy hardware and software reaches end of life, or is determined to be no longer cost-effective, BT will move the applications on them over to the Oracle Database 11g private cloud.

Accelerated Deployment, Astonishing Agility

The resulting infrastructure is a database-as-a-service private cloud that has transformed BT Operate's ability to provision and manage databases. "Spinning up a database, a process that used to take two to three weeks, now takes us only 19 minutes, something like a 1000 percent improvement in deployment time," says Partabh. "We start with an absolutely bulletproof configuration as our gold image. It's already pre-provisioned and pre-tested: storage, networking, clustering, failover and everything else ready to go." This automation also eliminates the many opportunities for error in the company's former manual provisioning process.

"What stands out head and shoulders above the many other benefits of our Oracle private cloud is the astonishing agility it gives us," he says. "Accelerating deployment to this degree has brought us much closer to the customer service levels our business goals demand." Partabh also points to the liberating effect of BT's Oracle First unlimited license. "It does more than just ease the movement of legacy applications to the cloud," he says. "There was a lot of pent up demand for databases to bring new services to market. Now I can say 'Alright guys, come on. We've got as many as you want, in an infrastructure that can turn it around fast.'"

Managing More with Less

BT Operate is concentrating on the first phase of its database consolidation, moving legacy applications to the far more efficiently-managed Oracle private cloud. Combined with the rising demand for new databases, this strategy is actually increasing the company's total database footprint faster than legacy applications can be retired. But Partabh isn't worried. "Consolidation onto a standard Oracle Database 11g cloud has made management so much easier that we're

managing 30 percent more databases with 20 percent fewer personnel hours. This includes not only DBAs, but also the staff responsible for storage, networking, and other supporting aspects. “At a company like BT, there’s always more than enough for IT to do,” he says. “Increased management efficiency frees up personnel resources for critical projects and tasks elsewhere.”

Standardization on Oracle Database 11g improved management in other ways, as well. Partabh says that an important aspect of consolidation is the opportunity it provides to standardize much more than just hardware and software. “Harmonizing your management tools, processes, and methodology as well gives you more predictability and a lot less wasted time.” He notes that having a graphical management console such as Oracle Enterprise Manager on top of the database stack is important for getting the most from a private cloud. “The easier it is to see what’s going on from top to bottom, the less people you need to manage it.” Standardization can also be leveraged for more accurate chargeback to LoBs.

Next Steps in Consolidation

Partabh says the company has made significant progress towards its ultimate consolidation goals as far as databases are concerned. “The first step was legacy migration, where we’re well along in the process,” he says. “That sets us up to prune away old databases that aren’t relevant anymore, and eventually look at schema migration.” But he sees opportunities for far more with the company’s Oracle cloud. “We’re particularly excited with what we’ve seen of Oracle Enterprise Manager 12c, and the improvements it will make possible in configuration management, provisioning, cloning, compliance, batch automation, and the like that are critical to an efficient cloud.”

The computing workload supported by BT Operate includes both OLTP and business intelligence operations, as well as an increasing number of hybrid databases. “Business intelligence based on transactional data has always been critical to telecommunications companies,” says Partabh. “But everything the company does generate data that’s useful for the what-if analysis that’s fundamental to both market leadership and process improvement. We want to be able to scale up for business intelligence wherever it’s needed.”

BT Operate is already consolidating its enterprise data warehouse onto private cloud on Oracle Exadata Database Machines platform, and will consolidate more applications as appropriate. “Exadata brings us to a cloud-in-a-box level that represents something like an order of magnitude jump in consolidation density and the related management and reliability benefits,” says Partabh. “Oracle will help us identify other clusters that are good candidates and construct a business case—we’ll be looking for the highest ROI. Exadata will complement our RAC-based DaaS platform, which will continue to host our OLTP applications for now.”

Partabh has his eye on Exalytics for increasing BT Operate’s ability to crunch business data and deliver actionable information with in-memory speed. “The amount of data any organisation collects today is significant, and we are focused on making reports and analytics available faster. We’ve taken it from days to hours to minutes, but as far as I’m concerned even five minutes is too long in such a fast-moving business.”

Partabh’s team is also responsible for middleware best practices. He says that Exalogic will likely play a major role in ongoing consolidation. “I see it as the logical next step in getting our enterprise messaging past the enterprise service bus phase. It may yet prove to be the consolidation platform for middleware as a service (MaaS).”



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Summary

To BT, standardizing on Oracle Database 11g means greatly improved business agility, better customer service, and reduced costs. By consolidating their database infrastructure onto a Database as a Service (DaaS) private cloud using Oracle Database 11g with Real Application Clusters, BT has been able to reduce the deployment time for a fully-tested, highly available database from two to three weeks to only 19 minutes, on the order of a 1000% improvement. This consolidation also enables the company's IT team to manage 30% more databases with 20% fewer database administrators. As a result, BT is complementing this RAC-based DaaS platform with Oracle Exadata Database Machine for further consolidation focused on business intelligence, starting with its enterprise data warehouse. It plans to use Exalogic as its middleware as a service platform and Exalytics to accelerate business analysis and reporting to further improve customer service, find new markets, and respond faster to competitive challenges.

About Crimson Consulting

We help executives achieve market leadership.

Crimson is a management consulting firm focused on marketing for leading technology brands. We are experts in the marketing of technology solutions

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