

Vodafone UK

Executive Summary

CUSTOMER NAME

- Vodafone UK

INDUSTRY

- Service provider

CHALLENGE

- Vodafone UK's legacy infrastructure – consisting of multiple heterogeneous networks – was costly and hindered the company's competitiveness
- The 'One Vodafone' programme provided the impetus for innovation, and Vodafone UK partnered with Cisco Systems to develop a solution

SOLUTION

- The majority of Vodafone UK's legacy networks have been replaced with a single IP Converged Packet Network (CPN)
- Vodafone UK has transformed mobile service production and support using an 'IP Factory', which leverages the e-Telecommunications Operations Map framework

BUSINESS VALUE

- Vodafone UK is now carrying 3G data and voice services – and other mission critical applications – over the CPN, with 2G voice traffic to be migrated next
- The operating company has halved its time to market – with even greater speed still to come – and reduced related operational costs by 20 per cent
- The IP Factory processes and CPN architecture are set to become Vodafone's global standard and will be rolled out to the Group's operating companies around the world

Vodafone UK and Cisco Systems have created a new mobile service provider operating model using a highly innovative 'IP Factory' based on a transformed organisation, a Converged Packet Network IP platform, and the industry standard eTOM (e-Telecommunications Operations Map) business process framework. With Vodafone UK's data traffic and voice minutes for its 3G services running over the new network, the stage is set for a worldwide application of this model, which will help bring unprecedented speed to market, cost efficiencies and consistency of brand experience across the Vodafone Group.

CHALLENGE

With proportionate group turnover of over \$79.5 billion in the year to 31st March 2005, Vodafone is one of the world's largest companies. In its short history – Vodafone made the UK's first cellular mobile telephone call on 1st January 1985 – the company has grown to the point where it has some 430 million venture customers worldwide. That means that one in every four of the earth's mobile subscribers – one in every 15 of its total population – has a Vodafone mobile. And that's on a planet where an estimated two billion people have yet to make their first telephone call.

Over the past decade, the mobile industry has experienced explosive growth. With market penetration reaching saturation in many countries, mobile operators are focusing on next generation mobile data services to drive up average revenue per user (ARPU). Rapid time to market for these new services is a key driver of bottom line growth. In parallel, intense competition is forcing them to find new ways to achieve major operating cost reductions. Both of these pressures are keenly felt by

CISCO SYSTEMS



Prepared by Cisco Systems, Inc.
Internet Business Solutions Group

Vodafone. Operating in 27 countries, with a presence in a further 14 through Partner Networks, Vodafone's scope for global economies of scale is particularly compelling.

However – although Vodafone's main growth path has been organic, with highly successful in-country marketing to grow ARPU and customer numbers – there has also been significant acquisition activity. That means that operating companies have a wide variety of networks and – even within each operating company – there is a mass of legacy systems. Until 2005, the Vodafone UK operating company was no exception.

Vodafone UK's legacy infrastructure had consisted of two data network groups: the Packet Backbone Network (PBN) and the Enterprise Data Network (EDN). The PBN transported customer services traffic (such as 3G data transport) for corporate and consumer subscribers. The EDN carried Vodafone's enterprise IT services and support functions such as billing and retail applications.

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Kevin Paige, Director, Core Network and Transport Systems, Vodafone UK

Those two networks were physically separate and individually complex. For instance, the PBN consisted of a disparate number of organically grown data networks including Frame Relay, ATM and at least two IP MPLS variants (many using different vendors' hardware and software, and each with its own engineering and support teams). A key driver for simplification was the fact that their logical interdependence meant that, for example, launching a new service across the PBN inevitably required changes to the billing functionality provided through the EDN.

Kevin Paige, Director of Core Transport Systems at Vodafone UK, explains the problems: “This meant not only that new services were difficult to engineer, requiring labour-intensive and complex multi-level connections between the two networks, but also that they were increasingly difficult to grow and support. Furthermore, the two networks were expensive in terms of both cash and people, and availability was well below the optimum possible.”

SOLUTION

In October 2003, Vodafone had launched a five-year major business transformation programme called ‘One Vodafone’. A key concept within this programme was ‘design once, deploy many times’ under which the architecting of core enabling systems, technologies and business processes would be undertaken centrally and rolled out to multiple geographies – saving duplication of development costs in each country as well as ensuring global consistency of Vodafone products, services and brand experience.

In tune with this strategy, Vodafone UK collaborated with potential suppliers to find ways to rationalise the operating company's infrastructure. Vodafone could see that the prize within its grasp could be to build on this UK initiative to standardise Vodafone's international network fabric and business processes on a pan-global basis, and thereby leverage huge Group-wide savings and service improvements.

Cisco Systems introduced its Internet Business Solutions Group (IBSG) to examine how best practice service provision business processes could be used to improve Vodafone's time to market and to drive down unit costs.

The bold strategy chosen by Vodafone UK was to collapse wide area PBN and EDN connectivity, at touch points with the core switching environment, into a converged multiservice IP-based network called the Converged Packet Network (CPN). The service production outcome of this network initiative became known in Vodafone UK as the 'IP Factory'. It has enabled Vodafone to manage complexity by transitioning from a network-centric to a service-centric approach, in which service component building blocks can be assembled and connected at both a local and a global level to rapidly create new products.

"WE FACED THE PROBLEMS OF ACHIEVING HUGE CULTURAL AND BEHAVIOURAL CHANGES TO REALISE THE IP FACTORY, AND IT IS OF GREAT CREDIT TO THE CISCO AND VODAFONE PEOPLE INVOLVED THAT WE ACCOMPLISHED WHAT WE DID. THE HONEST AND FRANK COMMUNICATION REQUIRED WAS TAXING BUT TOTALLY IN TUNE WITH THE TRANSFORMATION THAT WE WERE TRYING TO ACHIEVE."

Kevin Paige, Director, Core Network and Transport Systems, Vodafone UK

Hal Gurley, Director of the IBSG Service Provider Practice in EMEA, paints the picture: "In complex manufacturing industries, there is an inherent need to modularise production in order to manage complexity cost effectively. For example, you would never build engines directly on an automotive assembly line – instead you build engines in an engine plant and deliver them to the assembly line as fully finished units. The IP Factory is Vodafone UK's equivalent of an engine plant for their mobile voice and data service production."

Early work had largely been about sizing up potential suppliers for their ability to help Vodafone UK to innovate. In selecting a key partner to work with, Vodafone conducted a global benchmarking exercise. This showed Cisco with a clear advantage in terms of the power its organisation could bring in the areas of business value-add, design and implementation, and ongoing support.

The strategy was not without its risks: it is believed that no mobile service provider in the world has ever attempted such a sweeping IP transition at the very heart of its business. But the Vodafone UK and Cisco teams generated a business case incorporating precise risk mitigation strategies alongside detailed return on investment computations and – with the agreement of the main Vodafone board – they were set to launch this challenging venture.

Best Practice Service Production

Cisco fielded a multi-discipline team including experts in business process transformation and benefits realisation assurance. In providing thought leadership for the project, IBSG was able to contribute its deep understanding of the fixed and mobile global telecommunications industry.

Kevin Paige says: “The experience that the IBSG team was able to bring – and the way that they helped us to create and hold to a vision – was of inestimable value. IBSG people were instrumental in driving the team to innovate and helping us to benchmark our organisation against other mobile network operators. We brainstormed ideas and were then able to crystallise and realise those concepts through the professional services personnel that Cisco brought to the table.”

In that latter comment, Kevin is largely referring to the fact that, through its Customer Advocacy (CA) organisation, Cisco took on the prime contractor role for the IP transformation – providing end-to-end project management and network design and implementation services. (CA now provides ongoing support to the new multi-service IP network through a Cisco direct model, ensuring carrier class availability and security for the new infrastructure.)

“WE ARE DEFINITELY SEEING QUICKER TIME TO MARKET. MY ESTIMATE IS THAT WE ARE NOW TWICE AS FAST AND – BECAUSE WE CAN DESIGN ONCE AND RE-USE THE SAME COMPONENTS FOR OTHER SERVICES – THAT IS SET TO FURTHER ACCELERATE.”

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But, critical though it might have been, technical design and implementation was only part of a total solution. Vodafone UK faced other challenges in transitioning its entire service provision, support and application portfolio from the old world to the new IP Factory-based approach.

Service creation and provision had previously been organised around technologies, with separate teams responsible for functions such as service design, fulfilment and assurance – as well as non-technology-specific functions such as billing. The IP Factory approach helped drive a total organisational transformation, with service production integrated under a single team, utilising horizontal processes to design and launch new products and services by assembling pre-designed building blocks of IP service components.

Additionally, whereas service creation and service support had previously been totally separate functions, in-life management is also embraced by this new organisation. This will ensure that Vodafone product lifecycles benefit from the existence of a ‘virtuous circle’ of continuous improvement, providing a mechanism for market learning feedback into service development.

Kevin Paige says: “We faced the problems of achieving huge cultural and behavioural changes to realise the IP Factory, and it is of great credit to the Cisco and Vodafone people involved that we accomplished what we did. The honest and frank communication required was taxing but totally in tune with the transformation that we were trying to achieve.”

Vodafone UK's new service production procedures – as well as sales process, order management, service development and operational readiness provisions – are based upon the best practice eTOM (e-Telecommunications Operations Map) developed by the TeleManagement Forum, of which both Cisco and Vodafone are leading members. eTOM is a framework for all business functions undertaken by a service provider organisation. It offers activities decomposition across multiple levels, providing an end-to-end overview and increasingly detailed information at each drill-down level.

Hal Gurley again: “The eTOM approach ensures that the processes and procedures adopted by Vodafone UK will not only accord to industry standards but will also be exportable to any Vodafone operating company around the world.”

BUSINESS VALUE

The CPN platform was fully implemented and tested by November 2004 – across 34 Vodafone locations throughout the UK – and in the succeeding six months Vodafone UK migrated chosen core services onto that network. This included transport of its entire 3G data and voice minutes traffic, as well as desktop support and billing applications. In fact, in order to assure the continued success of Vodafone's 3G launch in the UK, that traffic was loaded onto the CPN some six months ahead of the originally planned schedule.

“This project has been of vital importance to both organisations and the technical delivery and service migration, and the planning around that, have been superb,” comments Kevin Paige.

Vodafone UK's experience with the IP Factory model is already realising the expected commercial benefits, with streamlined eTOM-based service production processes and a real reduction in complexity, complemented by simplified management over a single IP backbone.

“WE ARE REDUCING VODAFONE UK'S RELATED OPERATING EXPENDITURE BY AROUND 20 PER CENT – WHICH WILL SAVE THE OPERATING COMPANY TENS OF MILLIONS OF DOLLARS EVERY YEAR – AND AT THE SAME TIME WE ARE ACHIEVING GREATER CORPORATE AGILITY.”

Kevin Paige, Director, Core Network and Transport Systems, Vodafone UK

Kevin Paige underlines the advantages: “We are definitely seeing quicker time to market. My estimate is that we are now twice as fast and – because we can design once and re-use the same components for other services – that is set to further accelerate. In addition, the delivery of new services is much more efficient because we do not have to change and re-engineer the network each time – the tools and the processes are all there.”

That faster time to market is enhancing Vodafone's bottom line by pulling forward revenues from new services. At the same time, new business processes and a streamlined organisational structure have ensured that Vodafone UK is a much more agile company. It is able to adapt faster to changing market dynamics and improve customer retention by more rapidly reacting to and meeting their needs.

The simplified IP network topology is providing assured stability and availability. Furthermore, maintenance and fault finding have been improved and speeded up. Increased network availability is feeding through into greater customer satisfaction and reduced costs. In addition, adoption of a single vendor strategy has eliminated the need for Vodafone UK support staff to sustain multiple skill sets, resulting in further savings.

Kevin continues: “From a cost avoidance perspective we are reducing Vodafone UK’s related operating expenditure by around 20 per cent – which will save the operating company tens of millions of dollars every year – and at the same time we are achieving greater corporate agility.”

Invaluable Learning with Global Relevance

The project was not without its problems: hardly surprising for such a leading edge engagement. Hal Gurley explains: “There is no question that we had to change, and to get our people to think more outside the box. We made considerable use of Cisco professional services, for example, in helping Vodafone with the implementation of its business transformation. This was a broad Cisco effort, and the services that Cisco offers to drive real business value at service providers worldwide have been made immeasurably more robust as a direct result.”

Kevin Paige concurs: “Sometimes it was difficult to get people to think in different ways. To an extent that was around service delivery, such as getting Cisco to adopt a mission-critical direct support model, because this was not just about routers and switches but also about the services running over them. To be honest, it was quite painful in the early stages, but both companies have learned very valuable lessons from the experience.”

“VODAFONE UK HAS DELIVERED A MODEL THAT NOW HAS HUGE POTENTIAL TO BE APPLIED GROUP-WIDE TO PROVIDE THE INFRASTRUCTURE AND PROCESSES NECESSARY TO SUPPORT TRULY GLOBAL PRODUCT AND SERVICE OFFERINGS. THAT WILL, IN TURN, ENABLE US TO LEVERAGE SCALE AND DRIVE DOWN UNIT COSTS TO LEVELS NEVER-BEFORE-SEEN IN A MOBILE SERVICE PROVIDER.”

Kevin Paige, Director, Core Network and Transport Systems, Vodafone UK

Now, with success in the UK confirmed, the Vodafone Group plans to roll out the CPN architecture to the other Vodafone operating companies around the world as part of the ‘One Vodafone’ programme. Together with the transformed eTOM business process set, Vodafone is creating a delivery toolbox that will contain the necessary standards for each operating company’s migration to the new operational model.

At the same time Vodafone is consolidating its mobile applications servers and service delivery capability, also as part of the One Vodafone initiative. This has already commenced in Europe, where the Group has created a global service delivery platform, building on the IP Factory operating model for management of the global IP network. The transformation will be complete when each of the national networks aligns to the CPN model and interconnects with the global service platform.

Kevin Paige concludes: “Vodafone UK has delivered a model that now has huge potential to be applied Group-wide to provide the infrastructure and processes necessary to support truly global product and service offerings. That will, in turn, enable us to leverage scale and drive down unit costs to levels never-before-seen in a mobile service provider. This programme is a world-class case study on aligning and leveraging people, processes and technology to achieve true business impact.”

TECHNOLOGY BLUEPRINT

The Vodafone UK Converged Packet Network (CPN) uses a core platform consisting of 68 Cisco 12000 Series multiservice routers installed at Vodafone’s 34 network nodes in the UK. Intermediate and edge devices – some providing gateway functionality to legacy TDM (Time Division Multiplexing) core switching networks – include Cisco 7200 VXR, 3700 and 2600 routers, and Cisco Catalyst 6500 switches.

Primary network nodes are arranged into a ‘north ring’ and a ‘south ring’ both consisting of fully meshed optical transmission environments. In a totally resilient design, subsidiary sites have at least two separately provided optical fibre connections to primary network nodes. The backbone currently runs at 2.5Gbps, but this will be upgraded to 10 Gigabit Ethernet as more traffic is loaded onto the CPN. The Cisco 12000 Series routers can run data speeds of up to 40Gbps per line card if necessary.

Vodafone UK is believed to be unique among mobile service providers in having 3G services transported on an IP backbone using ATM (Asynchronous Transfer Mode) over MPLS (Multi-Protocol Label Switching) technology.

With this new generation CPN network, Cisco and Vodafone have embarked upon a multi-year technological journey. In the next phase, the CPN feature set will be upgraded over a period of 18 months (Vodafone’s 2G network traffic is being migrated – as VoIP – to the CPN in the early part of that period). Close co-operation with other network equipment suppliers was necessary in the first phase of the enterprise, to create the necessary gateways with TDM networks. Those development projects will continue as the CPN develops further.

MORE INFORMATION

For further information on Internet business solutions, visit <http://www.cisco.com/go/ibsg>



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