A New Model for Manx Telecom

How Manx Telecom is Taking On NFV and Reinventing Voice Services with Metaswitch and VMWare

metaswitch

Executive Summary

Located in the Irish Sea, midway between Great Britain and Ireland, the Isle of Man is on a mission. With the exception of the annual Tourist Trophy (TT) races that draw over 40 thousand people over a 2-week period, a slow decline in the historically important tourist industry meant the Island had to reinvent itself. It needed a new model.

Benefiting from its status as a self-governing jurisdiction, the Isle of Man is increasingly being recognized as a global hub for high tech business, including green/clean research and web services. With its focus on delivering revolutionary services from leading-edge infrastructure, Manx Telecom has been at the heart of this evolution from the very beginning.

Breaking the Mold

Supporting a population of over 85,000 with nearly 150,000 fixed, mobile and broadband lines, Manx Telecom was an early adopter of the IP Multimedia Subsystem (IMS).
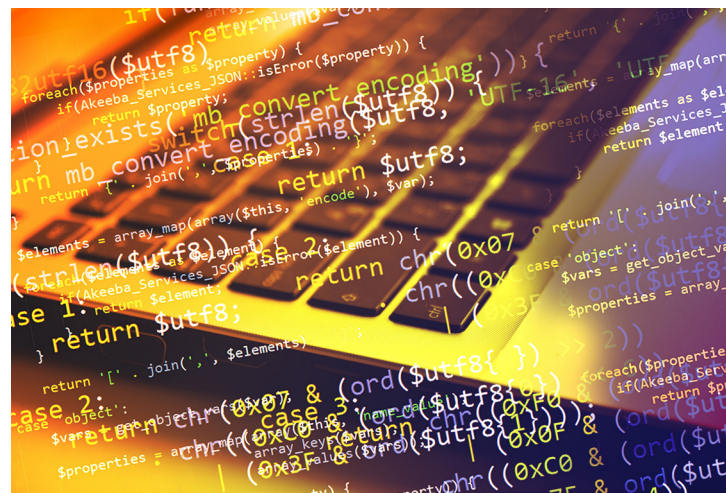
With a tiered architecture of highly modular components, clearly defined reference interfaces and an abstracted applications layer, IMS promised to revolutionize the delivery of multimedia telephony services. With the benefit of hindsight, it's now clear that while IMS represented such an advancement, the industry did not evolve in the way these functions were developed and delivered, with proprietary hardware, closed source software, incumbent vendors and expensive licensing models continuing to stifle adoption and growth.

"Our long history with VMware and close working relationship with Manx Telecom enabled us to provide extensive advice on how to plan, deploy and operate a virtualized environment tuned to the unique demands of delivering carrier services."

– Stuart Warwick, SVP Support, Metaswitch

With the advent of Network Functions Virtualization (NFV) and the introduction of Project Clearwater, an open source virtualized IMS Core, Manx Telecom recognized they had the opportunity to resolve those issues and the subsequent end-of-life of their existing IMS platform was their catalyst.

No strangers to operating large data centers, Manx Telecom opened its first in 2005 to provide world-class hosting services. In 2012, Manx Telecom pioneered again with the introduction of its virtualized Intelligent Cloud, running exclusively on VMware's virtualization platform, offering dynamic compute resources to increasingly demanding small, medium and large global enterprises. With that, Manx Telecom was also one of the first VMware vCloud Air Network partners as part of the VMware Service Provider Program.

While that wealth of virtualization expertise resided with the data center architects, the virtualization of network functions, at the heart of their critical voice applications infrastructure evolution, demanded that these engineers work closely with telephony engineers to share their expertise and tune the VMware infrastructure to support these uniquely demanding services. While other network operators are still talking about such symbiotic interdepartmental cooperation, Manx Telecom management acted, ensuring the right people — from Cloud IT specialists to telecom networking professionals — were working together, along with Metaswitch and VMware experts, to make their first, critical, NFV initiative a success.

That mentality endures to this day, as Manx Telecom continues to practice an agile approach to their ongoing network transformation and service offering initiatives.

Applying the New Model

Manx Telecom has deployed Metaswitch's virtualized fixed line IMS solution, fully integrated into the core of its existing telephony infrastructure, to deliver its entire suite of multimedia residential and business communications services.

Leveraging VMware platforms and 100% commodity X86 architecture server hardware, this approach represents the first time Manx Telecom has been able to provide these services using a pure software-based solution. To secure this infrastructure and provide the powerful interworking required to support their legacy infrastructure, Manx Telecom choose the Metaswitch Perimeta Session Border Controller (SBC) but opted to run the software on the same server hardware without a hypervisor.

"Clearwater follows IMS architectural principles and supports all the key standardized interfaces expected of an IMS Core network."

Replacing the core of their network presented a challenge, as the new vIMS infrastructure needed to interoperate with existing network elements historically sourced from a number of different vendors, replicating their entire portfolio of voice services while affording Manx Telecom the opportunity to rapidly deliver new multimedia communications offerings to their customer base.

In order to accelerate the network transformation process, Manx Telecom applied agile workflow philosophies from the very beginning, with the initial design phase running in parallel with early integration testing. Based on VMware virtualization infrastructure, a 2-site geo-redundant architecture was chosen to support the deployment of Metaswitch virtualized network functions (VNFs), employing data center locations around the capital city of Douglas.

Forming the foundation of Manx Telecom's emerging rich communications service architecture was the Metaswitch Clearwater Core vIMS offering, a hardened and supported version of Project Clearwater. With the initial codebase contributed to the open source community by Metaswitch in 2013 Project Clearwater was not only at the forefront of the virtualization revolution, but it also fundamentally redefined how communications network infrastructure should be acquired and deployed. Clearwater follows IMS architectural principles and supports all the key standardized interfaces expected of an IMS Core network. Unlike traditional implementations of IMS, however, Clearwater was designed from the ground up for the cloud, making it the ideal candidate for progressive network operators like Manx Telecom when redefining their business and operational models.

Providing security and interworking at critical IMS interfaces, the Perimeta SBC delivers both edge Proxy Call Session Control and Interconnection Border Control Functions (P-CSCF and IBCF), together with providing security and interworking functionality. A Metaswitch Access Gateway Control Function (AGCF) was also implemented to manage existing multi-service access nodes. A virtualized MetaSphere Telephony Application Server (TAS) was implemented to offer residential call services, supported by the Metaswitch Media Resource Server (MRS), to provide tones and announcements. Affording unprecedented realtime visibility into the operation of their new multimedia communications infrastructure, Manx Telecom also implemented the Metaswitch MetaView Service Assurance Server (SAS), which accelerated the initial implementation process and dramatically reduces ongoing mean-time-to-repair metrics.

Agile Innovation

"We are changing the way networks are built, using agile workflow methodologies while pulling in unique skills from across the company and working closely with vendors like Metaswitch and VMware to maintain our technological leadership."

—Kevin Paige, CTO, Manx Telecom

With Manx Telecom, VMware and Metaswitch actively working together throughout, the project life cycle, from initial conception to final turn-up, was just 10 months. Along the way were major obstacles inherent to both the nature of IMS integration and the early adoption of Network Functions Virtualization. Key issues surrounding resiliency and performance, critical when deploying carrier grade infrastructure, were quickly addressed, aided by Metaswitch's native VNF development philosophy which embraces web design methods focusing on software reliability over hardware plus careful attention to the need for geo-redundancy. Together, the team was able to continuously review network design and configuration to ensure the high availability characteristics demanded of a carrier grade network like this were met and exceeded.

Integrating with legacy IMS infrastructure in multivendor environments can also be problematic, especially when such 3rd party endpoints and elements do not follow the appropriate 3GPP specifications. Early interoperability testing helped promptly highlight potential problems and the Perimeta SBC, with its powerful but lightweight SIP and SDP message manipulation framework -- based on a Lau rules and policy engine -- was able to bridge the gaps, ensuring interworking between all application servers, control functions, gateways and user endpoints.

On conclusion of platform acceptance testing, the migration of Manx Telecom's residential subscriber base was completed in just 4 weeks. While operating in parallel, for a short time, the legacy IMS platform was completely turned down and the final migration of all remaining services occurred a short while later.

Serving an Island of innovators, Manx Telecom must continually reinvent itself, its infrastructure and its service offerings. With its agile business approach and revolutionary, service-oriented, virtualized IMS platform, Manx Telecom represents the new model for network operators.

About Manx Telecom

Manx Telecom is the leading communication solutions provider on the Isle of Man, offering a wide range of fixed line, broadband, mobile, and data centre services to businesses, consumers and the public sector on the Isle of Man as well as a growing portfolio of innovative hosting and "Smart SIM" solutions to off-Island customers.

Manx Telecom has a record of innovation, being the first European operator to launch a 3G mobile service and the first in the world to launch a 3.5G mobile service. 4G service launched in the summer of 2014, and it is now available to contract and pre-pay customers with 99% population coverage. The Company's high speed VDSL broadband service (Ultima) is available to 91 per cent of homes on the Island. A VDSL Plus service launched in February 2015.

The Company has three data centres (two of which are Tier 3 designed) plus international connectivity and its operations are business-critical to the economic strategy of the Isle of Man. Manx Telecom is listed on the Alternative Investment Market of the London Stock Exchange with the ticker MANX.

About VMware

VMware is a global leader in cloud infrastructure and business mobility. Built on VMware's industry-leading virtualization technology, our solutions deliver a brave new model of IT that is fluid, instant and more secure. Customers can innovate faster by rapidly developing, automatically delivering and more safely consuming any application. With 2015 revenues of $6.6 billion, VMware has more than 500,000 customers and 75,000 partners. The company is headquartered in Silicon Valley with offices throughout the world and can be found online at www.vmware.com.

About Metaswitch

Metaswitch is powering the transition of communication networks into a cloud-based, software-centric, all-IP future. As the world's leading network software provider, we design, develop, deliver and support commercial and open source software solutions for network operators. Our high performance software runs on commercial, off-the-shelf hardware, as appliances or in the cloud. For more information, please visit: www.metaswitch.com.