Headquarters Kabel Deutschland Unterföhring

Executive Summary

Customer Name
Kabel Deutschland GmbH

Industry
Cable / Multimedia

Business Opportunities
- Evolution from cable operator to comprehensive communications provider
- Introduction of "triple play" service options, including telephony
- Network transformation delivers flexibility and scalability for future growth

Network Solution
- Transformation of legacy television infrastructure to a Cisco IP Next-Generation Network (IP NGN). The universal Cisco IP NGN supports digital TV, telephony and Internet access via the cable connection
- Cisco IP NGN will also provide the infrastructure to support future mobility services
- Modular architecture and scalability of Cisco IP NGN voice solution delivered immediate revenue for KDG for a relatively small investment

Business Value
- Elevation of KDG's market position and increased market share
- Comprehensive investment protection, low operating costs
- Infrastructure ready to support mobile communications
- Rapid payback – immediate profits from voice service

Kabel Deutschland GmbH

Kabel Deutschland provides bundled digital communications services

Kabel Deutschland (KDG) is in the process of evolving from a cable network operator to a comprehensive provider of communication and TV services. This evolution is being realised through the transformation of its legacy television infrastructure into a Cisco IP Next-Generation Network (IP NGN). More than one million customers are now watching digital TV, while several hundreds of thousands are making telephone calls or surfing the Internet via their cable connection. The Cisco IP NGN is also providing the backhaul infrastructure to support future mobility services. With a scalable IP NGN architecture, KDG can provide millions of customers with every conceivable form of communication and multimedia entertainment. KDG has strengthened its long-term future in a booming mass market and improved return on investment for short-term growth. As the Cisco IP NGN can expand in line with subscriber growth, incremental investments to meet demand can deliver returns within a few months.

It has been almost 25 years since antenna-free TV was introduced in Germany. In July 1982, television and radio programs were received in German living rooms via cable for the first time. Within ten years, 34 percent of households had bid farewell to terrestrial TV reception. Today, more than half of all households are connected to a cable network, with the vast majority, in excess of nine million, as customers of Kabel Deutschland (KDG) – Germany's largest cable operator.

Upstream channel makes TV interactive
The KDG network has long since ceased to be a one-way street. "Today, a large portion of our infrastructure has upstream channel capacity and can therefore transfer signals in both directions," said Fred Mattig, Head of Advanced Technologies at Kabel Deutschland Breitband Services GmbH. Upstream channels not only provide the basis for interactive digital TV, but also for Internet access and telephone services via the cable network.

Cisco CRS-1

KDG started to deliver "triple play" services in 2005 and has since equipped the signal booster units with upstream channel capacity in several tens of thousands of its distribution boxes. This process was completed for approximately eight million households by the end of 2006. This year, another 2.4 million households will be added. By the end of the 2008/2009 business year, up to 90 percent of the more than 15 million households with KDG cable connections are expected to support "triple play" services.

The strategic decision of the KDG management to evolve into a digital experience provider coincides with a period of dramatic shifts in the market. "We are not alone," said Fred Mattig. "Triple play is also being promoted by major telecommunications providers and we see them increasingly advancing into the traditional television broadcasting domain, with IPTV and video on demand. Currently everything is in a state of change." The catalyst and driver of multimedia service convergence is Internet Protocol (IP) and experts agree that very soon telecommunications and cable networks will essentially offer the same services.

Background
With over nine million customers and around 2,700 employees, KDG is Germany's largest TV cable network operator. The 2006/07 Annual Report stated annual revenues of around 1.1 billion Euro.

Challenge
KDG is on its way towards becoming a comprehensive multimedia service provider. To support this direction the corporation requires a highly scalable infrastructure that can keep up with its rapidly growing number of customers.

Solution
KDG exclusively employs IP Next-Generation Network technology from Cisco. The solution's key components consist of the Cisco CRS-1 Carrier Routing System, Cisco BTS 10200 Series Softswitches and Cisco Media Gateways.

Evolution of the Infrastructure
"Introducing upstream channels is not enough however," explains Fred Mattig. "To offer genuine "triple play" we had to fundamentally update the core infrastructure of our networks." Bandwidth was no problem as we have abundant capacity from the outset. In line with the DOCSIS 3.0 standard, a cable network can in general provide a throughput of approximately 200 megabits per second in both directions – roughly four times faster than the highest speed DSL offerings available today. Instead, the crucial challenges during KDG's network transformation were obtaining the flexibility to provide customized service activation, enabling efficient billing of the content and services, and providing the scalability to support hundreds of thousands of voice connections. "All this can only be handled by a highly integrated architecture model that manages all aspects of the services with a uniform approach. We opted for the Cisco IP Next-Generation Network (IP NGN) architecture because no other provider even comes close to comprehensively supporting all aspects of the value chain for innovative "triple play" services – from the backbone network right through to the equipment in the customer's living room," said Fred Mattig.

The core IP backbone is a fully-redundant 10-Gigabit ring that currently encompasses ten metropolitan cities. A Cisco CRS-1 Carrier Routing System is installed at each access point in the high-speed core, such as at Frankfurt (Main) and Berlin. In addition, approximately 85 Cisco AS 5400 Series media gateways are deployed in the core IP network to handle the bridging of voice traffic onto other networks. The transfer of the data traffic to the Internet and to other carriers' networks is handled by Cisco 7600 Series routers with 10 gigabit per second connections. At the points-of-presence (PoPs), Cisco uBR7246VXR and Cisco uBR10012 Series Universal Broadband Routers provide the data transport to and from the subscribers. Fred Mattig explained how scalability optimizes the capital costs. "With Cisco's Cable Modem Termination Systems (CMTS), we can start with a small configuration, initially with just one line card in the router for example, and expand by adding more line cards as needed. Only when the growth in customer numbers exceeds the maximum capacity of the uBR7246VXR at any one of our more than 100 cable POPs across Germany, will we need to scale to a larger Cisco CMTS system at the location."

Cisco AS 5400 Series Gateway

"In the black" from the start

KDG's voice services over cable basically functions similarly to voice over IP (VoIP). The voice service control technology is provided by six Cisco BTS 10200 softswitches located at two KDG data processing centers. Each softswitch can handle hundreds of thousands of telephone connections. In addition, the Cisco PGW 2200 Media Gateway Controller, in conjunction with the Cisco IP Transfer Point (ITP) and Cisco AS 5400 gateway, performs the signaling and call transfer onto Deutsche Telekom's PSTN and other carriers' networks. In explaining the return on investment of Cisco's voice solution,

Fred Mattig said: "The modular architecture and extreme scalability of Cisco's IP NGN voice solution delivered immediate revenue for KDG for a relatively small investment. Our voice service was 'in the black' right from the start."

A thousand and one service options

KDG is not limiting its services to telephone connections. As mentioned earlier, the upstream channel-enabled TV cable offers additional capacity to accommodate broadband Internet access. More than 250,000 customers currently benefit from this option and more join them every day. "The most important ability in today's highly competitive environment is to be flexible enough to bundle and immediately activate service packages tailored to customers' needs," said Fred Mattig.

The Cisco BACC (Broadband Access Center for Cable) provisioning system that jointly serves voice and data services, gives KDG exactly this type of flexibility.

For overall service quality, the protection of customers from hackers and virus attacks is as important as the absolute reliability of web and e-mail access. KDG has equipped its central data centers with service modules for firewalls, Secure Socket Layer (SSL) and load balancing. This is another area in which the scalable structure of the Cisco IP NGN provides an advantage. "With the service modules for load balancing and SSL we can scale our services to support the web access of hundreds of thousands of simultaneous sessions. The capital investment for this is amortized within a few months," said Mattig.

Mattig added: "No matter what our product managers conceive in terms of multimedia content offers – with our purely IP-based Cisco IP NGN we can cost-effectively and securely provide our customers with any type of data, voice and video services. Not only that, the infrastructure is ideally suited to support our future mobile phone services."