# KABEL DEUTSCHLAND PREPARES FOR ACCELERATED GROWTH IN IP SERVICES WITH A FLEXIBLE EDGE FOR THE CABLE HUB

Germany's largest cable operator chose the Alcatel-Lucent 7750 Service Router and its feature-rich Flexible Edge capability to prepare for dramatic growth in demand for its portfolio of IP services.

The Vodafone Company Kabel Deutschland (KD), Germany's largest cable operator, offers its customers high definition (HD), digital (SD) and analog TV, Pay TV and DVR offerings, Video on Demand, broadband Internet (up to 100 Mbit/s), Wi-Fi services and fixed-line Phone services via cable. Kabel Deutschland also distributes mobile services. Situated in Unterfoehring near Munich, the MDAX-listed company operates cable networks in 13 German federal states and supplies its services to approximately 8.4 million connected households. As per end of fiscal year 2012/13, Kabel Deutschland had approximately 3,700 employees. In the fiscal year 2012/13 (12 months ended March 31, 2013), the Company reported revenues of €1,830 million and an Adjusted EBITDA of €862 million.

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*"Kabel Deutschland continuously demonstrates exceptional growth thanks to our high-performance cable network and right products to meet rapidly growing broadband demand among our clients ... Alcatel-Lucent´s industry leading products, engineering expertise and support make them the right partner for Kabel Deutschland."*

**Dr. Thomas Kühne, Head of IP Engineering & Transport, Kabel Deutschland**

KD has a clear vision for continued growth and the determination to stay ahead of customer demand by rolling out new services quickly and cost-effectively, without disruption to current services. Alcatel-Lucent's Flexible Edge solution provides the routing capacity and the flexibility KD needs to deliver a growing portfolio of IP services.

## THE CHALLENGES

Keeping up with demand for new services and increasing subscriber numbers is a great problem to have. With fixed access speeds of at least 100 Mbps, KD's service offerings stand out over competitive offers of 20-50 Mbps and customer demand seems set to continue to increase. Success, though, brings its own challenges: specifically in capacity, scalability, flexibility, and the need to maintain service levels for existing customers while making network changes and while rolling out new services.

An early indicator of stress that is hard to ignore or work around is IP address exhaustion. With the observed rapid increase in IP device usage, KD anticipated that IPv4 would soon reach its limits and begin to impact both service availability and customer experience.

The immediate challenge for KD was to migrate to IPv6 in order to access the extra address capacity needed. However, this had to be done while maintaining current service levels for end users with IPv4 devices. During and following the migration, the solution had to support both the legacy IPv4 and the new IPv6 devices with the same network infrastructure.

With the foresight that has been the cornerstone of the company's success, KD did not want a "bolt on" solution that may increase complexity and cause future problems. They wanted a solution that

would address the issue of flexibility to accommodate long-term growth and next generation service delivery, without compromise to KD's reputation for high performance and high value service.

## THE SOLUTION

KD worked with Alcatel-Lucent to devise a solution for the immediate problem of IP address allocation, and to pave the way for an architecture to support the longer term growth strategy.

The solution chosen by KD uses the Alcatel-Lucent 7750 Service Router (SR) to provide dual-stack IPv4 and IPv6 to end customers. The dual-stack deployment is based on IPv6-only transport in the access domain to ensure future-proof, native IPv6 connectivity. Backward IPv4 connectivity is provided by using IPv4inIPv6 tunneling, with the customer residential gateway representing the B4 (Basic Bridging BroadBand element). At the edge of the cable network the 7750 SR performs the function of an Address Family Transition Router (AFTR) to encapsulate/de-encapsulate IPv4 traffic in/from IPv6 and provides CG-NAT using the IPv6 source prefix as the subscriber key.

By leveraging the 7750 SR Flexible Edge capabilities such as the support for both IPv4 and IPv6, KD will be able to separate the IP service routing from the access technology and simplify the cable hub. Not only does this enable the delivery of common personalized and differentiated services consistently across multiple access technologies, it enables migration from the existing network architecture to a future mode of operation, as demonstrated in this case from IPv4 to IPv6.

A key component of the KD solution, the Alcatel-Lucent 5620 Service Aware Manager (SAM) increases service

deployment agility through automation, proactively monitors and manages across the multiple layers in the flexible edge, and integrates with KD's existing BSS/OSS through open APIs.

To date, KD has deployed high-redundant clusters based on the Alcatel-Lucent solution in the biggest cities of Germany, each one supporting 16 Million NAT flows. They were integrated step-by-step in sub networks with DOCSIS 3.0 IPv6 rollouts.

## WHY ALCATEL-LUCENT

KD chose Alcatel-Lucent for the market-leading range of value added services and features built into the 7750 SR platform, the cornerstone of a flexible cable edge architecture that will allow KD to easily introduce new services and service differentiation such as cable Wi-Fi. It was clear to KD that the 7750 SR was a smart investment to meet near and long term IP service needs with an all-in-one platform.
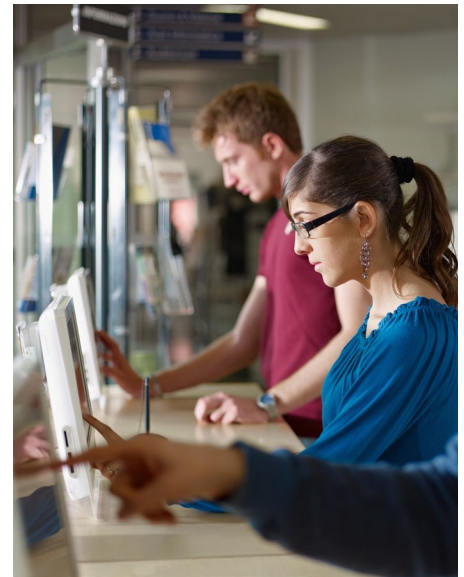
Teamwork was another important factor in KD's selection of Alcatel-Lucent. The two companies worked together to study the future market needs related to lack of IPv4 addresses and to analyse the options available for both the near and longer term. KD appreciated both the shared expertise and the hands-on approach that allowed them to see the performance of the Flexible Edge solution in action. To execute the project, Alcatel-Lucent and KD established a high level of mutual

confidence by aligning teams to work together to solve technical issues and meet KD's objectives.
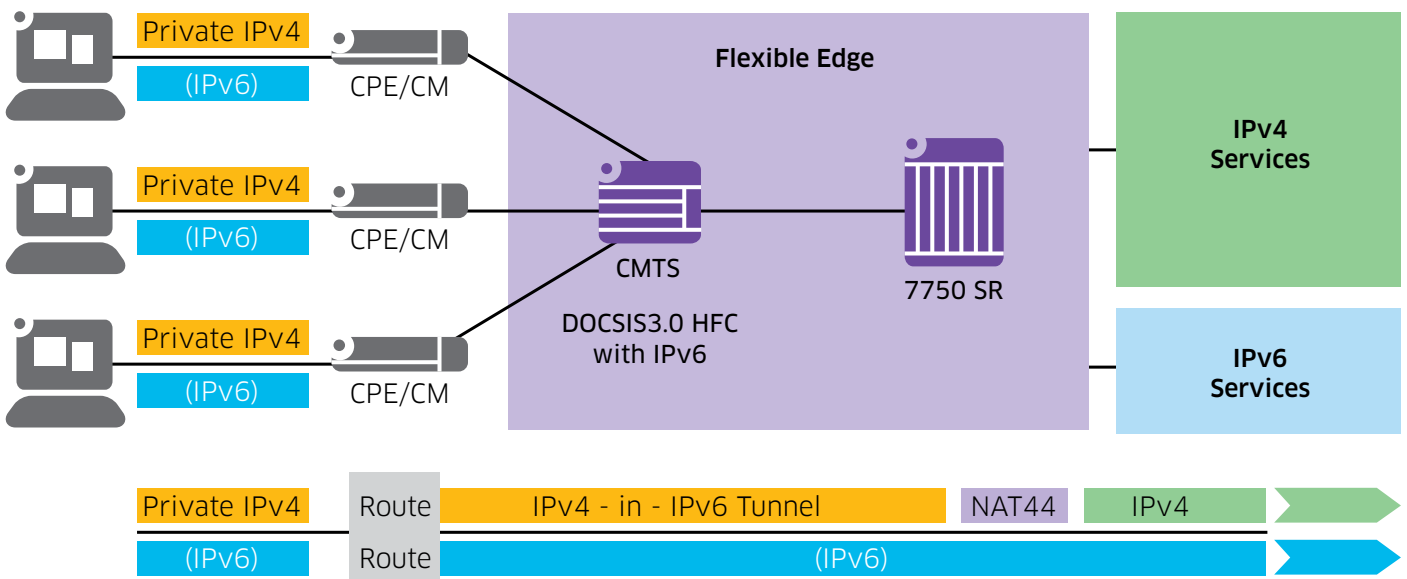
## THE BENEFITS

The simplified cable Flexible Edge architecture delivers tangible benefits for KD and the company's customers:

- **Network capacity.** The Dual-Stack architecture increases network address capacity by introducing IPv6 addressing.

- **Service flexibility.** KD is able to offer both IPv4 and IPv6 services.

- **Service continuity.** New services can be rolled out with no disruption to current end users. Users with existing IPv4 devices experience seamless delivery of their contracted service. New users benefit from IPv6 native devices.

- **Cost savings.** KD saves on OPEX by using a single IPv6 access network, instead of running concurrent IPv6 and IPv4 access networks. In addition, the Flexible Edge configuration reduces standalone network elements with associated space and cabling, while reducing power consumption, topology churn and network latency.

- **Ease of service diversification.** The 7750 SR lays the foundation for a diversified services portfolio that maybe strategically or tactically deployed as and when required utilizing the additional 7750 SR capabilities such as cable Wi-Fi WLAN Gateway,

Application Assurance, LNS, IPSec Security Gateway, and Threat Mitigation System (TMS). Moving forward the 7750 SR can be leveraged as an IP services consolidation platform for delivery of residential, commercial and mobile services across multi-access network technologies such as current and future DOCSIS, CCAP, point-to-point fiber, PON, cable Wi-Fi and the migration to MVNO with EPC.

- **Competitive advantage.** KD can leverage the Flexible Edge architecture to quickly to address dynamic customer demand, both in services and capacity.

## SUMMARY

KD chose Alcatel-Lucent's highly flexible, simplified cable hub architecture to address scaling, cost and functionality challenges at the edge of the cable network. The solution resolved the immediate challenge of insufficient IPv4 addresses with a Dual Stack approach that accommodates both IPv4 and IPv6. And because Alcatel-Lucent's Flexible Edge architecture separates the IP service routing from the access technology, it can also simplify network design and operation; leverage the benefits of the Converged Cable Access Platform (CCAP); and be extensible to other access technologies to support KD's strategic evolution of residential, commercial and mobile services.

Accommodation of continued subscriber growth and rapid new services introduction is key for KD. The company's investments in infrastructure and services have so far been rewarded by growing subscriber rates – for example, the company's superfast 100 Mbit/s products have a take-rate approaching 50%, if available – and that's a tradition KD is set to continue.

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