Software-Defined/Traditional Networks & Managed Services Vendor Benchmark 2017

Germany

An Analysis by
Experton Group AG
an ISG business
Munich, Germany
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1. EXECUTIVE SUMMARY ................................................................. 6
2. INTRODUCTION ........................................................................ 8
  2.1. Methodology and Definition .................................................. 8
  2.2. Definition “Software-Defined/Traditional Networks & Managed Services” ..... 8
  2.3. Experton Market Insight ....................................................... 10
  2.4. Project Schedule ................................................................. 11
3. SOFTWARE-DEFINED/TRADITIONAL NETWORKS & MANAGED SERVICES VENDOR BENCHMARK 2017 ................................................................. 12
  3.1. Rating by Categories ............................................................. 12
  3.2. Software-Defined Networking Products (LAN) ...................... 15
    3.2.1. Introduction ..................................................................... 15
    3.2.2. Evaluation of Providers of Software-Defined Networking Products (LAN) ... 17
    3.2.3. Overview of Providers of “Software-Defined Networking Products (LAN)” with Trend Forecast ................................................................. 28
  3.3. Software-Defined Networking Services (LAN) ...................... 29
    3.3.1. Introduction ..................................................................... 29
    3.3.2. Evaluation of Providers of Software-Defined Networking Services (LAN) ... 30
    3.3.3. Overview of Providers of “Software-Defined Networking Services (LAN)” with Trend Forecast ................................................................. 35
  3.4. Software-Defined WAN Products ....................................... 36
    3.4.1. Introduction ..................................................................... 36
    3.4.2. Evaluation of Providers of Software-Defined WAN Products ........ 38
3.4.3. Overview of Providers of “Software-Defined WAN Products” with Trend Forecast ................................................................. 43

3.5. Managed SD WAN Services ........................................................................................................................................ 44
3.5.1. Introduction ......................................................................................................................................................... 44
3.5.2. Evaluation of Providers of Managed SD WAN Services ...................................................................................... 46
3.5.3. Overview of Providers of Managed SD WAN Services with Trend Forecast .................................................. 49

3.6. Managed WAN Services .............................................................................................................................................. 50
3.6.1. Introduction ......................................................................................................................................................... 50
3.6.2. Evaluation of Providers of Managed WAN Services ........................................................................................... 52
3.6.3. Overview of Providers of Managed WAN Services with Trend Forecast ....................................................... 64

3.7. Managed LAN Services ............................................................................................................................................... 65
3.7.1. Introduction ......................................................................................................................................................... 65
3.7.2. Evaluation of Providers of Managed LAN Services ........................................................................................... 66
3.7.3. Overview of Providers of Managed LAN Services with Trend Forecast ....................................................... 76

4. AUTHORS AND CONTACT ........................................................................................................................................... 77
<table>
<thead>
<tr>
<th>Figure</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Figure 1</td>
<td>Market categories of the “Software-Defined/Traditional Networks &amp; Managed Services Vendor Benchmark 2017”</td>
<td>9</td>
</tr>
<tr>
<td>Figure 2</td>
<td>Experton Market Insight - sample</td>
<td>10</td>
</tr>
<tr>
<td>Figure 3</td>
<td>Project schedule:</td>
<td>11</td>
</tr>
<tr>
<td>Figure 4</td>
<td>Vendor landscape</td>
<td>14</td>
</tr>
<tr>
<td>Figure 5</td>
<td>Quadrant for software-defined networking products (LAN)</td>
<td>17</td>
</tr>
<tr>
<td>Figure 6</td>
<td>Software-Defined Networking Products (LAN) – overview of providers with performance dashboard</td>
<td>28</td>
</tr>
<tr>
<td>Figure 7</td>
<td>Quadrant for “software-defined networking services (LAN)”</td>
<td>30</td>
</tr>
<tr>
<td>Figure 8</td>
<td>Software-Defined Networking Services (LAN) – overview of providers with performance dashboard</td>
<td>35</td>
</tr>
<tr>
<td>Figure 9</td>
<td>Quadrant for „software-defined WAN products&quot;</td>
<td>38</td>
</tr>
<tr>
<td>Figure 10</td>
<td>Software-Defined WAN Products – overview of providers with performance dashboard</td>
<td>43</td>
</tr>
<tr>
<td>Figure 11</td>
<td>Quadrant for “managed SD WAN services”</td>
<td>46</td>
</tr>
<tr>
<td>Figure 12</td>
<td>Managed SD WAN Services – overview of providers with performance dashboard</td>
<td>49</td>
</tr>
<tr>
<td>Figure 13</td>
<td>Quadrant for “managed WAN services”</td>
<td>52</td>
</tr>
<tr>
<td>Figure 14</td>
<td>Managed WAN Services – overview of providers with performance dashboard</td>
<td>64</td>
</tr>
<tr>
<td>Figure 15</td>
<td>Quadrant for “managed LAN services”</td>
<td>66</td>
</tr>
<tr>
<td>Figure 16</td>
<td>Managed LAN Services – overview of providers with performance dashboard</td>
<td>76</td>
</tr>
</tbody>
</table>
1. EXECUTIVE SUMMARY

This benchmark examines two different kinds of network offerings. The first part analyzes the young SD market (SDN for LAN and SD WAN for WAN environments). The second part examines the traditional market for managed service offerings for LANs and WANs. For users, both markets are extremely important. This benchmark accounts for changing market requirements and provides a consistent market overview for both segments and concrete decision-making support to help user organizations to evaluate and assess providers’ offerings and performance.

Software-Defined Networking Products (LAN)

We conducted our first analysis of the SDN product segment in 2016. As we have observed, providers have added functionality to their portfolios and have reached a high degree of maturity. While Cisco was already successful in 2016 with their ACI product, other providers such as Juniper, Avaya and Brocade have also caught up. Alcatel Lucent’s OmniSwitch product family is a convincing SDN offering, which will be completed with a controller. Due to the provider’s promising development, Experton Group has positioned Alcatel Lucent as the Rising Star of this segment.

Software-Defined Networking Services (LAN)

System integrators are challenged to convince end customers of SDN benefits, develop respective concepts and implement them accordingly. Already in 2016, the system houses Computacenter and Dimension Data had reached a good position; they have enhanced their SDN offerings and are meanwhile enjoying a high degree of user acceptance. IBM was able to further strengthen their market presence. Comline AG has been evaluated for the first time. The company has realized that SDN is a viable and promising future alternative for end users.

Software-Defined WAN Products

SD WAN is going to revolutionize WAN connectivity. Cisco’s IWAN product, which was already successful in 2016, is used by many ISPs, carriers and enterprise customers. In 2016, Ocedo was acquired by Riverbed; meanwhile, Riverbed has integrated the Ocedo solution into their own portfolio, and the product is now marketed under the SteelConnect 2.0 brand. The German company Viprinet with headquarters in Bingen, one of last year’s product challengers, has made it into the leader quadrant, based on respective portfolio enhancements and sales results. FatPipe, a player that attracted attention in 2016, cooperates with Avaya. The SD WAN product by Silver Peak Systems is very successful in the US and is currently gaining a foothold in the German market. Due to the very comprehensive offering, Experton Group has positioned Silver Peak Systems as the Rising Star of this segment.
Managed SD WAN Services

Service providers and carriers respond hesitantly to the new situation and are just beginning to launch adequate SD WAN products. 2016 was characterized by innovations and first steps. In 2017, Experton Group perceives a real market with first defined SD WAN products, but hardly any customers in Germany. Due to the weak market development and stricter criteria with a focus on real customer and business developments, rather than innovative offerings, Verizon, BT, Interoute and NTT Communications have achieved weaker competitive strength ratings, compared to last year’s benchmark. Vodafone and NTT Communications have undertaken measures to strengthen their SD WAN portfolios and were able to improve their portfolio strength ratings accordingly.

Managed WAN Services

The WAN services segment in Germany is very mature, and not much has changed during the course of the year. Deutsche Telekom was able to achieve a slightly better position, based on their very strict quality management and the very strong dominance in the midmarket segment. ecotel has increased revenues in the upper midmarket segment significantly and was therefore able to achieve a leader position. Riedel Networks, Colt, Interoute and Verizon were able to slightly improve their competitive strength ratings through increased business development activities.

Managed LAN Services

The LAN services segment, too, is very mature. For providers, LAN services are less profitable than WAN services, since they provide less scalability and services must often be delivered to decentralized locations. However, competition is strong. Providers include network carriers, IT service providers and hardware manufacturers. Carriers have a strategic LAN services perspective, since they provide an opportunity to offer end-to-end SLAs across the whole network. IT service providers are also very active in this market. LAN services are directly connected to devices, acting as enabler for IoT services.
2. INTRODUCTION

2.1. Methodology and Definition

The project “Software-Defined/Traditional Networks & Managed Services Vendor Benchmark 2017” analyzes the relevant service providers in the German market, based on a multi-phased research and analysis process, and positions these vendors based on Experton Group’s “Market Insight” methodology. The project was divided into the following steps:

1. Definition of the “Software-Defined/Traditional Networks & Managed Services Vendor Benchmark 2017” target market
2. Survey of service providers and vendors across all trend topics, based on a questionnaire
3. Expert interviews with providers and users
4. Analysis and evaluation of services, service documentation and references

2.2. Definition “Software-Defined/Traditional Networks & Managed Services”

This benchmark examines two different kinds of network offerings. The first part analyzes the young SD market (SDN for LAN and SD WAN for the WAN environments). The second part examines the traditional market for managed service offerings for LANs and WANs. For users, both markets are extremely important. This benchmark accounts for changing market requirements and provides a consistent market overview for both segments and concrete decision-making support to help user organizations to evaluate and assess providers’ offerings and performance.

- Software-defined (SD) refers to SDN for LAN and SD WAN for WAN connections. In the age of virtualization and cloud computing, traditional LAN and WAN installations are not up-to-date anymore, since they are inflexible and bind a lot of personnel resources. The new technologies account for today’s requirements of reducing cost, while simplifying and accelerating service provisioning.

- Managed service offerings reduce end users' workloads, since they address routine tasks within LAN and WAN networks. Many customers require around-the-clock monitoring of their network activities, which can hardly be ensured with internal resources. Network outages are not acceptable. Providers are specialized in ensuring overall network monitoring and administration.
Overview of market categories:

<table>
<thead>
<tr>
<th>Service Providers</th>
<th>Solution Providers</th>
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<tr>
<td>Software-Defined Networking Services (LAN)</td>
<td>Software-Defined Networking Products (LAN)</td>
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<td>Software-Defined WAN Products</td>
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<td>Managed WAN Services</td>
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</tbody>
</table>

Source: Experton Group 2016

Figure 1 Market categories of the “Software-Defined/Traditional Networks & Managed Services Vendor Benchmark 2017”
2.3. Experton Market Insight

The “Experton Group Market Insight” quadrant results from the evaluation matrix and contains four segments where the providers are positioned accordingly:

**Leaders**

The "leaders" among the vendors have a highly attractive product and service offering and a very strong market and competitive position; they fulfill all requirements for successful market cultivation. They can be regarded as opinion leaders, providing strategic impulses to the market. They also ensure innovative strength and stability.
**Product challengers**

The “product challengers” offer a product and service portfolio that provides an above-average coverage of corporate requirements, but are not able to provide the same resources and strengths as the leaders regarding the individual market cultivation categories. Often, this is due to the respective vendor’s size or his weak footprint within the respective target segment.

**Market challengers**

"Market challengers" are also very competitive, but there is still significant portfolio potential and they clearly lag behind the "leaders". Often, the market challengers are established vendors that are somewhat slow to address new trends, due to their size and company structure, and have therefore still some potential to optimize their portfolio and increase their attractiveness.

**Followers**

“Followers” are still lacking mature products and services or sufficient depth and breadth of their offering, while also showing weaknesses and improvement potentials in their market cultivation efforts. These vendors are often generalists or niche players.

**Rising Star**

Rising Stars are mostly product challengers with high future potential. When receiving the “Rising Star” award, such companies have a promising portfolio, including the required roadmap and an adequate focus on key market trends and customer requirements. The company also has an excellent management and understanding of the local market. This award is only given to vendors or service providers that have made extreme progress towards their goals within the last 12 months and are on a good way to reach the leader quadrant within the next 12-24 months, due to their above-average impact and innovative strength.

### 2.4. Project Schedule

The project started in October 2016 with the research phase, which lasted until December 2016, followed by the analysis, evaluation and report generation phases. Selected results will be presented to the media in March 2017.
### 3. Software-Defined/Traditional Networks & Managed Services Vendor Benchmark 2017

#### 3.1. Rating by Categories

<table>
<thead>
<tr>
<th>Players</th>
<th>Categories</th>
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### Vendor Landscape

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Figure 4 Vendor landscape
3.2. Software-Defined Networking Products (LAN)

3.2.1. Introduction

Following the server and storage virtualization wake, user organizations are now facing network (LAN) virtualization. For more than 15 years, traditional network infrastructures have undergone only few changes. Modifications or new installations of IT devices in the data center require time-consuming changes of each network component, which may take days, weeks or even months. This rigid architecture is not able to meet today’s flexibility, automation and security requirements. Challenges such as cloud computing (private, public and hybrid), Industrie 4.0, big data and infrastructure as a service require a flexible network environment that can adapt to changes quickly.

Software-defined networking (SDN) can help solve these problems. The SDN architecture separates the control from the data plane (in the past, the firmware and hardware in each switch). The switches are configured, administrated and controlled centrally by a separate software-based SDN controller. It is possible to program the data transport path and to configure the quality of service (QoS), assign bandwidths automatically and set up and cancel switch rules. These are only some of the features that make work easier for administrators. Based on the centralized network infrastructure management and the open architecture provided by many SDN product vendors, it is also possible to use SDN-enabled third-party switches, which reduces costs and vendor lock-in risks. Some providers also offer white box switches which are already used successfully by hyperscale data center providers such as Google, AWS and other players. White box switches are low-cost components that can be integrated into the SDN environment and can help reduce cost even further, which is especially interesting for large data centers.

Applications and new network services can be provisioned within few hours. Based on a management platform, the controller provides a complete overview of applications, network components and data throughput rates; problems are detected and resolved quickly. Based on an SDN network architecture, network infrastructure complexity is reduced by about 70%, compared to traditional network infrastructures. Most switches are supplied with all interfaces. While the number of SDN implementations in Germany is still relatively limited, significant SDN implementations were initiated in 2016. In 2017, demand will increase noticeably.

The following section provides an evaluation of product vendors.

Key evaluation criteria and requirements for providers of software-defined networking products can be summarized as follows:
• Strategy and vision
• Innovative strength
• Market presence in Germany
• Trials
• Workshop offerings
• Training offerings for end users
• Own central management platform
• Functionality
• Interface to other controllers
• Support of virtual environments

• Roadmap
• SDN platform is open for other partners
• Integration of network devices and administration via the controller
• Disclosure of APIs and programmability
• Integration of security features
• Advancements
• Case studies from Germany
• Reference projects in Germany

Evaluations of products within this category had a focus on functionality and market presence criteria. Has the SDN product been launched already and has it been installed successfully in user organizations? How flexible is the SDN solution? Is the offering complete, consisting of controller, software and switches? Are SDN-enabled switches supported by third-party providers? Is it possible to assign bandwidth and prioritize applications automatically? Options to only transition parts of an existing LAN to SDN are also important. Certainly, it is not possible to migrate the whole LAN environment all at once. Criteria such as strategy and vision, roadmap, product maturity and innovation are of high relevance within this segment.
3.2.2. Evaluation of Providers of Software-Defined Networking Products (LAN)

Experton Group has identified 14 companies as relevant providers of software-defined networking products (LAN) in the German market, including the following 9 leaders:

- Arista Networks
- Avaya
- Brocade
- Cisco
- Dell
- Extreme Networks
- HPE
- Juniper
- VMware

Alcatel-Lucent Enterprise (ALE) is the Rising Star of this segment.

![Quadrant for Software-Defined Networking Products (LAN)](image-url)
Category: Software-Defined Networking Products (LAN)

Alcatel-Lucent Enterprise (Rising Star)

Strengths/Opportunities:

- ALE’s OmniSwitch product family includes a broad portfolio of SDN-enabled switches for data center and campus operations. The switches feature high flexibility, open API interfaces for SDN programmability and OpenStack configurations.

- The ALE OmniSwitches can also be used for hybrid operations. This means that some ports have been assigned to SDN operations, while other ports are used to run the traditional network. Both universes can be serviced out of one switch case.

- The VM Snooping product is another highlight. It allows the administrator to identify and track individual header information between 2 virtual servers within one or several VS LAN tunnels in real-time to optimize data flows, if needed. Normally, visibility within one tunnel is not possible.

- ALE’s OmniVista 2500 management console can be used for centralized network monitoring and administration purposes. The administrator uses the management console to configure all network settings to be automated.

The system correlates changes on virtual machines with the SDN environment without adding complexity.

Weaknesses/Challenges:

- While ALE does not provide their own controller, the roadmap includes a proprietary product, based on Open Daylight, as OmniVista plug-in, which will complete the portfolio and should be made available short-term.

- Marketing information is only available in English. German SDN material would be especially useful for midmarket and smaller businesses.

- No information on customer satisfaction and customer references is available; such information would be helpful to gain a picture of the provider’s market presence.

Trend assessment:

NEUTRAL

Advisor Statement

“ALE provides flexible high-performance SDN switches for data center and campus operations. A controller will be added to complete the portfolio.”
Category: Software-Defined Networking Products (LAN)

Arista Networks

Strengths/Opportunities:

- Arista Networks provides an SDN solution, based on the Extensible Operation System (EOS) system software. Users benefit from the EOS platform’s programmability and the resulting flexibility. EOS provides comprehensive functionality and high-performance solutions for network provisioning and application workflow management.

- Arista Networks provides an open SDN landscape. CloudVision can be used to easily integrate third-party switches.

- Arista Networks provides a product portfolio consisting of several variants; EOS is installed on all switches. The switches are popular among cloud service providers with high availability and throughput requirements. The Arista Networks products have a good price/performance relationship.

- While Arista Networks does not provide their own SDN controller, the provider cooperates with various technology partners such as VMware, HP Enterprise and Dell.

Weaknesses/Challenges:

- As compared to established players, awareness in Germany is still limited. Targeted SDN marketing would help increase users’ awareness of the provider’s products.

- Adding their own SDN controller to the portfolio would increase the attractiveness of the offering. For many end users, it is important that the controller is from the same provider as the rest of the equipment.

- An ongoing legal dispute with Cisco concerning patent infringements should also be included in purchase decisions.

Trend assessment:

POSITIVE

Advisor Statement

“Arista provides a flexible, attractive product portfolio. More SDN marketing information could help increase the offering’s attractiveness among end users.”
**Category: Software-Defined Networking Products (LAN)**

**Avaya**

**Strengths/Opportunities:**

- Avaya provides a comprehensive SDN portfolio. The mature end-to-end fabric connects the data center with the campus and remote offices. Many companies from the enterprise and the midmarket segments are satisfied Avaya customers. More than 1000 SDN environments have already been installed worldwide.

- Avaya’s solution is highly automated and related configuration and management efforts are minimized accordingly. Ethernet-enabled devices such as medical appliances or IoT systems can be integrated directly into the SDN.

- The open SDN Fx architecture can be used to easily integrate third-party products if respective interfaces are supplied accordingly. The Avaya Fabric Orchestrator (AFO) controller, which is based on Open Daylight, is used to configure and administrate the SDN.

- The Fabric Orchestrator, which integrates Open Daylight and OpenStack, helps to ensure comprehensive, multi-platform interoperability. It is possible to integrate cloud administration systems and custom applications, based on various APIs that ensure easy and consistent SDN and fabric programmability.

**Weaknesses/Challenges:**

- While the AFO Controller also supports third-party network switches, Avaya does not provide support for these third-party products.

- Third-party network devices can be administrated, based on interfaces, but system integration is not possible.

- Although the SDN Fx architecture supports the hypervisor NSC environment, Avaya has no VMware certification.

**Trend assessment:**

**POSITIVE**

**Advisor Statement**

“Avaya provides a mature SDN solution for users that appreciate a high degree of automation.”
**Category: Software-Defined Networking Products (LAN)**

**Brocade**

**Strengths/Opportunities:**

- Brocade has a long history as a provider of SAN solutions in the data center. Due to the new FCoE technology (fiber channel over Ethernet) the relevance of SAN switches has, however, decreased considerably. Meanwhile, Brocade can position themselves as one of the leading providers of SDN architectures and a strong supporter of an open SDN ecosystem.

- Brocade provides a complete system, consisting of the Brocade SDN Controller, based on the Open Daylight protocol, the switches of the VDX series for data centers and ICX series for the campus. The Flow Optimizer software can be used to conduct data analyses.

- The switches are easy to configure and to administrate. The integrated fabric technology provides automated functionality for virtual and cloud environments.

- Brocade provides support of VMware’s vCenter and NSC hypervisor products and of OpenStack integration.

- Brocade has a broad installed based in all industries as well as public sector institutions and among service providers.

**Weaknesses/Challenges:**

- The primary target group are enterprise customers; there are not many Brocade installations in midmarket data centers.

- The switches lack port interfaces for 25GbE and 50GbE speeds, and more and more end customers expect such interfaces.

- Support is only provided for VMware’s NSX hypervisor and for OpenStack.

**Trend assessment:**

NEUTRAL

**Advisor Statement**

“Brocade provides a comprehensive, innovative SDN environment for all industries and is an interesting option for customers that want a solution with a high degree of automation.”
Category: Software-Defined Networking Products (LAN)

Cisco

Strengths/Opportunities:

- Cisco has a large base of global customers who use many of Cisco’s IT infrastructure and network products. Often, Cisco is the first choice for customers who want to enhance and expand their existing data center IT product equipment. Administrators are familiar with the systems, which reduces training efforts for the new products.

- Cisco’s Application Centric Infrastructure (ACI) is a strong SDN offering that leaves nothing to be desired. The solution consists of an Application Policy Infrastructure Controller (APIC), the Nexus switches 9000 or 3000 and a hypervisor-based Application Virtual Switch (AVS). Cisco has already realized several thousands of installations worldwide and demand for Cisco products in Germany is high.

- Based on the AVS, the products can be used to integrate virtual and physical products. ACI supports all common hypervisor products such as NSC by VMware, Xen by Citrix, KVM hypervisors, Microsoft Hyper-V and Linux containers.

- In Germany, Cisco provides broad coverage with their network of channel partners with skilled and certified staff that ensure a high quality of services, from project support to implementation and going live.

- According to customers who have already installed the SDN environment, Cisco has been a good choice.

Weaknesses/Challenges:

- Cisco’s ACI solution is practically a closed, proprietary environment, causing a vendor lock-in. Customers who want an open solution will have their difficulties with the Cisco solution.

Trend assessment:

POSITIVE

Advisor Statement

“Cisco provides a strong SDN solution that leaves nothing to be desired. Customers that have already installed Cisco ACI are highly satisfied.”
**Category: Software-Defined Networking Products (LAN)**

**Dell**

**Strengths/Opportunities:**

- Dell pursues a very open SDN strategy. The offering comprises the proprietary OS10 software for the switch systems and software solutions by partners BigSwitch, Cumulus, VMware, Pluribus, NEC, Midokura and IP Infusion, which is a very successful approach. Dell also provides support for their product partners’ products, which benefits the customer.

- The Dell Open Daylight (ODL) Controller simplifies SDN configuration and administration and provides OpenStack support. The controller can be integrated in OpenStack Neutron.

- Virtual hypervisor environments such as VMware, NSX, MS Hyper-V, Midokura Midonet and Red Hat Cloud Reference Architecture are also supported. Dell also sells the Midokura Midonet products.

- The high degree of openness also allows customers to use third-party hardware solutions. Customers that prefer this option can integrate all kinds of disaggregated switches. Dell also supports the low-cost white box or brite box switches.

- In addition to networking products, Dell provides a broad portfolio of IT infrastructure systems such as servers, hyperconverged environments, storage products and PCs. Dell is therefore a good choice for customers who want to minimize the number of IT suppliers.

**Weaknesses/Challenges:**

- Dell's traditional sales in Germany is based on a direct sales model, combined with channel sales through partners. Customers often have difficulties to find out whom to contact.

- In the wake of the merger with EMC and VMware customers are still uncertain about Dell's future position and related benefits for customers.

**Trend assessment:**

*POSITIVE*

*Advisor Statement*

“Dell pursues a very open SDN strategy, with a high degree of flexibility for customers.”
**Category: Software-Defined Networking Products (LAN)**

**Extreme Networks**

**Strengths/Opportunities:**

- Extreme Networks has more than 15 years of network experience in data center environments. After the Enterasys acquisition, the company has consolidated both portfolios and now provides a broad offering of SDN technologies. The proprietary SDN controller is based on Open Daylight and comprises network management, application management and the wireless LAN controller.

- Extreme Networks provides open and standardized protocols for the easy SDN migration of existing networks. Customers can choose among programmable interfaces (APIs) to integrate third-party solutions and applications. Broad support is provided for VMware NSX environments.

- Extreme Networks is renowned for their high-quality service. The solutions are sold via channel partners.

- Start-ups are supported and invited to participate in developing and advancing the products.

**Weaknesses/Challenges:**

- Extreme Networks is not among the large SDN providers, and therefore it is important to ensure sufficient coverage through suitable sales and support partners.

- SDN marketing information is only available in English. Extreme Networks addresses customers of all company sizes, and for many of these customers, German information would be very helpful.

**Trend assessment:**

NEUTRAL

**Advisor Statement**

“Extreme Networks provides a mature SDN portfolio which can easily be integrated with existing network environments. The Daylight Controller provides all important management functionality.”
**Category: Software-Defined Networking Products (LAN)**

**HPE**

**Strengths/Opportunities:**

- Despite the partial sales of H3C to the Chinese WSJ Tsinghua Unigroup, HP Enterprise (HPE) remains one of the largest network system providers worldwide. HPE provides a broad SDN portfolio for the campus (HP VAN SD Controller) and the data center (DCN) as well as a large variety of SDN-enabled switches.

- HPE provides an SDN software developer kit that can be used to develop user-specific apps for any SDN-enabled device on the controller. Interested users are granted access to a developer community with events held by and for developers and the opportunity to examine use cases.

- HPE cooperates with many partners and provides an open SDN architecture to be able to integrate third-party products. Currently supported SDN technology providers include Cumulus Networks and Pica 8. We expect that more partnerships will be added.

- The HPE controllers are based on the Open Daylight protocol, and HPE is one among few network providers that accept white box switches and also provide service for these products.

**Weaknesses/Challenges:**

- There is a lack of SDN references and case studies in the German market, which would help increase the degree of awareness.

- HPE addresses large midmarket and enterprise customers; smaller businesses are not targeted, although these companies are also interested in SDN solutions.

- HPE only provides support for VMware hypervisor environments.

**Trend assessment:**

NEUTRAL

**Advisor Statement**

“HPE has many years of global experience with network systems and provides an innovative SDN solution for data center and campus operations.”
Category: Software-Defined Networking Products (LAN)

Juniper

Strengths/Opportunities:

- Juniper Networks supports an open, interoperable infrastructure; the SDN solution consists of the open-source SDN controller, the Contrail SDN software and a hypervisor-based virtual router.
- Based on this open infrastructure, it is possible to integrate third-party hardware. Customers who prefer this option can integrate all kinds of disaggregated switches, including low-cost white box switches.
- Juniper Networks provides a broad SDN portfolio for the data center. The solution can easily be integrated into existing networks and is easy to administer. The open, programmable RESTful API can be used to modify and customize the environment.
- Juniper Networks enjoys a good reputation as a solid network provider among large enterprises and service providers.
- Based on the virtual router and tunneling protocols, Juniper Networks provides connectivity to virtual servers and supports VMware NSX, Citrix Xen and KVM hypervisor environments. OpenStack environments can also be integrated, based on an open-source model.

Weaknesses/Challenges:

- There is a lack of customer references and case studies from the German market that would demonstrate the attractiveness of the provider’s offering.
- Juniper Networks has a focus on service providers and large enterprises, but neglects the midmarket segment.

Trend assessment:

POSITIVE

Advisor Statement

“Juniper Networks provides a very open SDN solution and accepts disaggregated hardware by multiple third-party providers. Large enterprises and service providers are quite willing to leverage this option.”
Category: Software-Defined Networking Products (LAN)

VMware

Strengths/Opportunities:

- Customers’ satisfaction with VMware’s hypervisor server NSX products is high. Many companies have virtualized their server environments in the data center with NSX. The product has been enhanced with network virtualization capabilities. For VMware customers, this is an option to run their network environment with NSX.

- VMware NSX maps the whole network environment as software. NSX provides comprehensive logical network elements and services, including logical switching, routing, firewalls, load balancing, VPN, QoS and monitoring. Virtual networks are code-based and are administrated, independent of the underlying hardware.

- VMware NSX can move virtual machines and all their related networks and security policies between data centers within minutes. Interruptions of running applications are avoided, which enables customers to implement active-active data centers and immediate disaster recovery options.

Weaknesses/Challenges:

- In case users want to migrate from VMware ESX to another third-party hypervisor product, the whole network landscape must be redesigned, purchased and implemented accordingly.

- Multi-hypervisor architecture options are limited, since VMware does not provide support for all hypervisor environments.

- In most data centers, server and network environments are administrated by separate teams. Organizations that choose VMware might face conflicts concerning administrative responsibilities.

Trend assessment:

POSITIVE

Advisor Statement

“Customers who are already using the VMware solution for in-depth server virtualization should include VMware in their SDN enhancement considerations.”
### 3.2.3. Overview of Providers of “Software-Defined Networking Products (LAN)” with Trend Forecast

![Software Defined Networking Products (LAN) – overview of providers with performance dashboard](image)

<table>
<thead>
<tr>
<th>Player / Categories</th>
<th>Strategy &amp; Vision</th>
<th>Features / Portfolio depth</th>
<th>Architecture &amp; Service Design</th>
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Legend: “+” above average; “0” average; “-” below average (compared to the competition); trend assessment: Arrow up = positive; arrow left_right = neutral; arrow down = negative (assessment of future development)
3.3. Software-Defined Networking Services (LAN)

3.3.1. Introduction

It is not enough to simply recognize that the SDN architecture is an environment that helps the company move forward, simplifies and speeds up network installations and modifications and relieves administrators from time-consuming tasks. Rather, it is important to develop an overall concept and implement it step by step. In many cases, it is not possible to perform this task internally, since the IT staff does not have the time and also lacks the required know-how. Product vendors are often not able to provide comprehensive advice and integrated support to their customers, from concept development and consulting to training offerings, implementation and post-implementation support. This is where system integrators can step in and act as suitable partners. They offer workshops to demonstrate customers SDN-related benefits and inform them on which products generate the highest added value for them. Already in times when SDN discussions were purely academic, some service providers recognized the promising future potential of SDN and invested into this new architecture at an early point in time, made contact with respective vendors, built up their own test environments, evaluated the products and included them into their portfolio. As of to date, IT service providers have installed more than 100 SDN environments in Germany and are convinced that this small number of installations will grow significantly during the next few years. Some providers expect the number of installations to double or even triple in 2017. The number of service providers in Germany that have respective experience is still rather limited, also because some providers are still taking a wait-and-see attitude before they jump onto the SDN bandwagon.

Criteria such as strategy and vision, roadmap and innovation are of high relevance within this segment. Key evaluation criteria include the following:

- Strategy and vision
- Roadmap
- Number of SDN projects in 2015 and 2016
- Workshop offerings
- Availability of a physical SDN test lab
- Service offerings
- Staff trainings
- Training offerings for customers
- Post-implementation support
- Reference projects in Germany
- Case studies from Germany
- As-a-service offerings
- Integration of security products
3.3.2. Evaluation of Providers of Software-Defined Networking Services (LAN)

Experton Group has identified 8 companies as relevant providers of software-defined networking services (LAN) in the German market, including the following 4 leaders:

- Axians IT Solutions
- Computacenter
- Dimension Data
- IBM

![Figure 7 Quadrant for “software-defined networking services (LAN)”](image-url)
Category: Software-Defined Networking Services (LAN)

Axians IT Solutions

Strengths/Opportunities:

- Axians has comprehensive experience with SDN solution consulting and implementation. Highly qualified staff supports customers who are considering an SDN implementation. The offering includes workshops, audits, consulting, integration and system maintenance services.

- Axians runs their own test lab and uses the Cisco ACI technology, consisting of the ACI Controller and the Nexus 9000 switches. A VMware NSX environment is also installed, which is an ideal environment for customers to get to know various SDN architectures of both vendors.

- Besides using Cisco’s and VMware’s SDN products, Axians also acts as channel partner for other product vendors. All products are tested in the lab prior to engaging in respective marketing and sales activities.

- Axian's SDN solution is also available as managed service, which helps users reduce Capex and Opex costs and relieves their administrators from routine tasks.

Weaknesses/Challenges:

- Considering the expected growing interest of end users in SDN, a more targeted SDN marketing support would help increase Axians’ awareness among customers.

- There is a lack of published SDN customer references that could attract customers’ attention. Such information would be helpful to increase customers’ trust in Axians and their services.

Trend assessment:

POSITIVE

Advisor Statement

“Axians has already gained strong SDN competence. Highly qualified staff and the product offering help ensure successful SDN projects.”
Category: Software-Defined Networking Services (LAN)

Computacenter

Strengths/Opportunities:

- Based on more than 5 years of SDN experience, Computacenter provides a broad, attractive SDN product portfolio and has implemented many successful SDN projects within customers’ data center, campus and production environments.
- Comprehensive services are provided to support customers, from audits, concept development and project plans to product selection and implementation.
- Computacenter also offers workshops to demonstrate customers related SDN benefits and inform them on tested and proven products and differences between these products.
- Computacenter has more than 120 qualified network specialists who develop and enhance their skills on an ongoing basis.
- The company runs their own solution center with SDN solutions for data center and campus environments to demonstrate the functionality to interested enterprise customers and service providers. It is also possible to set up customized test environments.
- Customers can administrate the SDN solution themselves or choose the managed service option.
- For cloud environments, SDN functionality can also be integrated as a service into an OpenStack environment; Computacenter provides their own competence team and services for this purpose.

Weaknesses/Challenges:

- The target group is limited to larger midmarket businesses and enterprise customers; small businesses are not addressed.
- The SDN Internet presence is not optimal; non-customers have difficulties to find respective information.

Trend assessment:

POSITIVE

Advisor Statement

“Computacenter has above-average SDN experience and has implemented numerous successful customer installations.”
**Category: Software-Defined Networking Services (LAN)**

**Dimension Data**

**Strengths/Opportunities:**

- Dimension Data presented their SDN strategy as early as 2012. Meanwhile the provider has realized numerous SDN projects in Germany and has gained respective strong know-how. About 700 employees worldwide share their knowledge in an SDN community.

- Dimension Data offers a broad product portfolio by renowned vendors who enjoy a high degree of acceptance among customers worldwide. Products are tested in the provider's own labs before they are included into the portfolio.

- The focus is on generating benefits for the customer. Dimension Data provides a multitude of services that can be customized to address customer-specific needs, for instance the Software-Defined Networking Development Model (SDNDM). An SDNDM workshop is offered to analyze the requirements and prerequisites for transition to an SDN environment. As a result, customers receive practical recommendations for action and SDN usage. Additional offerings include concept development and complete project support, from product selection to installation.

- Customers can administrate the SDN solution themselves or choose the managed service option.

- Dimension Data runs their own lab, which is equipped with Cisco products and a VMware NSX environment to allow customers to conduct respective tests.

- For cloud environments, SDN functionality can also be integrated as a service into an OpenStack environment, based on the customer's specific requirements.

**Weaknesses/Challenges:**

- The target group is limited to larger midmarket businesses and enterprise customers; small businesses are not addressed.

- Marketing information is only available in English. Information in German language on products that are available in Germany would be very useful.

**Trend assessment:**

**POSITIVE**

**Advisor Statement**

“Dimension Data has strong SDN competence, which has been demonstrated, based on numerous customer installations.”
Category: Software-Defined Networking Services (LAN)

IBM

Strengths/Opportunities:

- IBM has several years of SDN experience and has recognized at an early point in time that following the server and storage virtualization wave in data centers, the traditional network architecture must also be transformed accordingly to support and drive business goals, growth and innovations in today’s economy.

- The company provides a broad offering of SDN solutions, consisting of various third-party products. Products are subject to intense testing before they are included into the portfolio.

- The IBM Network Consulting Services provide customers comprehensive SDN support, from an analysis to find out whether SDN is a useful approach, to concept development, project support, product selection and installation.

- In Germany, IBM has established a network innovation center in Kelsterbach near Frankfurt. This lab can be used by customers to test their customized SDN solution prior to installation in their own data center.

- Customers can administrate the solutions themselves or choose the managed service option.

Weaknesses/Challenges:

- Customers are concerned about personnel layoffs and wonder whether IBM is the right partner.

- IBM’s core competencies are more targeted at the large accounts, rather than the midmarket segment. A lot of content is only available in English.

Trend assessment:

POSITIVE

Advisor Statement

“IBM, as one of the large players, provides a comprehensive SDN portfolio and has already realized many successful projects.”
3.3.3. Overview of Providers of “Software-Defined Networking Services (LAN)” with Trend Forecast

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Figure 8 Software-Defined Networking Services (LAN) – overview of providers with performance dashboard
3.4. Software-Defined WAN Products

3.4.1. Introduction

The new software-defined WAN technology is revolutionizing the WAN market. During the last 10 years, most companies have used multi-protocol label switching (MPLS) technology to transport data packets from A to B – an expensive, but secure data transmission option for business-critical applications. Meanwhile, this type of WAN connectivity has become outdated. Today, end users require fast and flexible WAN connections to cloud providers and their own global offices. In case new lines or higher bandwidths are necessary, it takes weeks to provision these connections. In most cases, cloud-based data transfers for on-demand software or infrastructure services provisioning is done via Internet connections. However, hardly any cloud service provider (CSP) has included MPLS in his portfolio.

User organizations are looking for alternatives. SD WAN is such an alternative; this is a virtual WAN that allows users to bundle multiple WAN technologies and connections, e.g., MPLS; broadband Internet, LTE and Ethernet, and provision them as overall bandwidth. SD WAN determines the path for transmitting data packets and the medium to be used. If a connection has too much load, another path is taken automatically. The virtual connections consist of multiple paths that are used in parallel. If one path fails, transmission is continued by simply taking another path. Available products ensure 256-bit tunneled encryption. A controller is used to influence paths and connections, for instance, to transmit critical applications via MPLS only, and other applications only via Internet broadband connections or other technologies to ensure high-performance transmission of data, voice and video files. The controller or a management console is used to define rules that are applied automatically, for instance, to speed up the data transfer of critical applications. Connections are monitored and important information such as availability or packet loss rates are supplied to administrators, which is not possible in traditional WANs. Based on the multiple paths of the virtual WAN environment, data transfers are accelerated and bandwidths and costs can be reduced. As research in the US has shown, cost reductions can amount to 70% and more. End users also have the option to give up parts of their cost-intense, rigid MPLS connections. Users are not bound anymore to use one carrier, but can order an optimal connection individually via a colocation hub provider short-term. While SD WAN is still in its infancy in Germany and has not reached the broad mass of users yet, we expect this situation to change in 2017 and interest in SD WAN to increase considerably.
Criteria such as strategy and vision, roadmap, product maturity and innovation are of high relevance within this segment. Key evaluation criteria include the following:

- Strategy and vision
- Roadmap
- Number of sold SD WAN systems in 2015 and 2016
- Proprietary software
- Functionality
- Internet-based test options
- Trials
- Workshop offerings
- Virtual WAN paths that can be used in parallel
- Bundling of multiple transmission technologies
- AES256-based encryption of data, video, voice
- Secure connectivity options to cloud hyperscalers
- Connectivity options via a cloud hub provider
- Training offerings for end users
- Staff trainings
- Availability of a hybrid WAN 8MPSL/Internet) connection
- Option to transport critical applications via MPLS only
- Possibility to prioritize latency-sensitive applications
- Integration of security products
- Network analysis tools to monitor data transfers in real time
- Automated quality of service
- German case studies
- Reference projects in Germany
3.4.2. Evaluation of Providers of Software-Defined WAN Products

Experton Group has identified 9 companies as relevant providers of software-defined WAN products in the German market, including the following 3 leaders:

- Cisco
- Riverbed
- Viprinet

Silver Peak has been identified as Rising Star.

Figure 9 Quadrant for „software-defined WAN products“
Category: Software-Defined WAN Products

Cisco

Strengths/Opportunities:

- Cisco is very successful with their Intelligent WAN (IWAN) technology and can demonstrate numerous local and global installations among end user organizations, service providers and carriers.
- IWAN is a comprehensive solution to connect company headquarters with branch offices via hybrid WAN easily and cost-efficiently and ensure secure connections to the cloud providers. The Application Policy Infrastructure Controller Enterprise Module (APIC-EM) is Cisco’s proprietary orchestration engine.
- The Performance Routing (PfR) is a key component of the IOS operating system. The PfR technology selects the best path and the most efficient WAN connection for each application.
- IWAN provides a variety of automated functionality, for instance, performance routing, path selection, QoS, automated WAN optimization and compliance with defined security policies and SLAs.
- The integrated Identity Service Engine (ISE) monitors the exchange of user identities to ensure that no unauthorized access is possible and to detect anomalies in real time.
- Cisco offers a comprehensive training and certification program for channel partners and end customers.

Weaknesses/Challenges:

- Despite numerous customer references in Germany no current German SD WAN references are available.
- Cisco is a large provider, but localized information for a broader base of prospects on their interesting and broad portfolio is limited.
- Cisco should enhance their SD WAN offering by adding colocation hub providers as technology partners.

Trend assessment:

POSITIVE

Advisor Statement

“Cisco is a champion whose IWAN solution provides a comprehensive portfolio, which will help user companies and service providers to solve many WAN problems successfully.”
Category: Software-Defined WAN Products

Riverbed

Strengths/Opportunities:

- In 2016, Riverbed acquired the German SD WAN provider Ocedo. Ocedo was very successful with their ControllerConnect product and had realized first installations in Europe and the Asian-Pacific region. Following the acquisition, Riverbed has advanced their own SteelConnect 1.0 product, which has been launched in September 2016 as SteelConnect 2.0.

- SteelConnect 2.0 is an easy-to-use SD WAN solution for orchestrating hybrid WANs for branch offices and cloud connections (AWS is available, Microsoft Azure shall be available in early 2017).

- The SteelConnect Policy can be used to prioritize applications, performance, security requirements and SLAs, including central administration for local and global branch offices and cloud environments, which relieves administrative work enormously.

- In Germany, Riverbed has a broad channel network, a prerequisite to ensure the successful roll-out of the product.

Weaknesses/Challenges:

- There is a lack of transparency regarding the Ocedo integration and the SteelConnect 2.0 development, and Riverbed should initiate comprehensive marketing measures to communicate these developments accordingly.

- Staff of channel partners (sales, consulting, technicians) must be trained accordingly to generate successful SDN projects.

Trend assessment:

POSITIVE

Advisor Statement

“Riverbed’s acquisition of Ocedo has helped the company to make a technology leap into the right SD WAN direction; now, the provider must also convince customers of their offering.”
**Category: Software-Defined WAN Products**

**Silver Peak (Rising Star)**

**Strengths/Opportunities:**

- Silver Peak is a privately-owned company from California with about 10 years of WAN experience. In 2015, the company launched the Unity Edge Connect product.

- Unity Edge Connect is available as physical and as virtual appliance that supports all hypervisor environments. The solution is very flexible and is very suitable for providing cost-efficient connections between national and global branch offices. The Unity Edge Connect appliance allows for a site-by-site or a combined hybrid WAN approach.

- Silver Peak provides comprehensive SaaS support and maintains partnerships with important cloud colocation hub providers such as Equinix or hyperscalers such as AWS or Microsoft Azure. Based on these close partnerships it is possible to set up new interconnections very quickly.

- The Unity Edge Connect product has already been installed in many customer organizations in the US. The product is easy to use, which has convinced customers, resulting in high customer satisfaction rates.

**Weaknesses/Challenges:**

- While Silver Peak has an office in Munich, the company is relatively unknown in Germany and the products lack awareness.

- Silver Peak must work to gain a stronger foothold in Germany. Setting up a broad channel partner network with qualified consulting and technical staff is key for the provider’s future market success.

- Also, sustainable information and offerings must be made available to convince end users of the benefits of the product. Marketing messages should be made available in German to also address the midmarket segment.

**Trend assessment:**

**POSITIVE**

**Advisor Statement**

“Silver Peak will become successful with the Unity Edge Connect SD WAN product in Germany, as soon as the required infrastructure has been set up accordingly.”

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**Category: Software-Defined WAN Products**

**Viprinet**

**Strengths/Opportunities:**

- Viprinet is a German company, headquartered in Bingen, and has been engaged in SD WAN activities for many years. The provider targets companies and public-sector organizations in Europe, North America and Africa.

- The portfolio includes the respective hardware for site-to-site connections and hybrid WAN as well as required software and network management tools. The technology offering is also interesting for customers where devices must be used in environments where no traditional connections are available.

- Connectivity media can be bundled as desired to increase bandwidths temporarily. Data packets are transmitted, based on tunneled and encrypted connections, via a multi-channel VPN router.

- Customers can either administrate the SD WAN offering themselves or can choose the managed service option.

- The network management tool analyzes data streams and the utilization of connections in real time; the integrated Viprinet 3G Monitor monitors the 3G/4G mobile connections.

**Weaknesses/Challenges:**

- Considering the expected SD WAN growth in Germany, Viprinet should work to considerably increase their general degree of awareness and ensure positive customer feedback.

**Trend assessment:**

**POSITIVE**

**Advisor Statement**

“Viprinet provides an interesting SD WAN solution, including all technological connectivity options which can be bundled with each other.”
3.4.3. Overview of Providers of “Software-Defined WAN Products” with Trend Forecast

<table>
<thead>
<tr>
<th>Player / Categories</th>
<th>Strategy &amp; Vision</th>
<th>Features / Portfolio depth</th>
<th>Architecture &amp; Service Design</th>
<th>Client Experience</th>
<th>Sales &amp; Marketing</th>
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Legend: “+” above average; “0” average; “-” below average (compared to the competition); trend assessment: Arrow up = positive; arrow left/right = neutral; arrow down = negative (assessment of future development)

Figure 10: Software-Defined WAN Products – overview of providers with performance dashboard
3.5. Managed SD WAN Services

3.5.1. Introduction

SD technology is becoming increasingly relevant, also for WAN environments. Companies are getting ready for the transformation to replace existing MPSL networks. SDN technology can better address today’s requirements than MPLS. Leasing MPLS connections can take months, and more and more customers do not accept such long waiting times anymore. Considering the increasing workplace mobilization and the related increase in the number of endpoints connected via the Internet, MPLS is too rigid and too expensive. Also, the digital transformation and the expected adoption of Internet of Things use cases will further drive SDN as flexible network architecture. However, while MPLS as overall concept will lose its importance for the WAN, it will continue to play a vital role for critical data transmissions. Business decision-makers are increasingly demanding both higher flexibility and lower data transmission costs. Bundling various connectivity technologies and WAN virtualization can help optimize bandwidth needs and increase flexibility and availability rates.

Service providers and carriers have responded hesitantly to the new situation and are just beginning to launch adequate SD WAN products. 2016 was characterized by innovations and first steps. In 2017, Experton Group perceives a real market with first defined SD WAN products, but hardly any customers in Germany. When carrier agreements expire, at the latest, user organizations should get involved with the SDN topic and include respective SD WAN providers into their requests for proposal. While the 2016 benchmark had a focus on active investments and innovative technology, criteria have become more stringent in 2017. The highest relevance within this segment is attached to a standardized portfolio and an active customer approach.

Key evaluation criteria include the following:

- Strategy and vision
- Integration of security products
- Market presence
- Functionality
- Reduced bandwidths, which can be increased, if necessary
- QoS
- Option to transport critical applications via MPLS only
- Option to prioritize latency-sensitive applications
- Availability of secure connections to cloud providers
- Virtual WAN paths that can be used in parallel
- AES256-encrypted transmission of data, video and voice files
- Roadmap
- Service offerings
- Methodological approaches and support (plan/build/run)
- Availability of connections from multiple carriers
- Bundling of multiple transmission technologies
- Advancements

- Managed service offering
- Use cases and current references in Germany
3.5.2. Evaluation of Providers of Managed SD WAN Services

Experton Group has identified 6 companies as relevant providers of managed SD WAN services in the German market; only Verizon was able to reach a position in the leader quadrant.

BT is the Rising Star of this category.

![Quadrant for "managed SD WAN services"](image)
Category: Managed SD WAN Services

BT (Rising Star)

Strengths/Opportunities:

- BT is enhancing their SD WAN portfolio with best-of-bred technologies such as Cisco IWAN and Nuage by Nokia.

- The British provider is among the first carriers that market their own proprietary SD WAN as solution with global availability.

- BT is defending their reputation as a technological innovation leader, based on the first implementation of eight service classes for MPLS and the first implementation of application-aware networks.

Weaknesses/Challenges:

- The market for carriers with strong MPLS commitment is still very young. As of to date, BT cannot provide a fully standardized portfolio and has not customers for this service yet in Germany.

- Vendors are driving SD WAN development more actively and launch network solutions that can be operated by the customers themselves, which is threatening the managed service business. BT could strengthen the position of their SD WAN portfolio in the German market.

Trend assessment:

POSITIVE

Advisor Statement

“BT has implemented a global SD WAN portfolio, demonstrating their reputation and role as a technology innovator.”
**Category: Managed SD WAN Services**

**Verizon**

**Strengths/Opportunities:**

- Verizon is actively enhancing their SD WAN portfolio, based on the products of leading technology vendors.

- The American provider is among the first carriers that market their own proprietary SD WAN as solution with global availability.

- Verizon is leading when it comes to SD WAN portfolio standardization and is proactively marketing their offering through white papers, reports and their own “Digital Advisory” unit.

**Weaknesses/Challenges:**

- The market for carriers with strong MPLS commitment is still very young. While Verizon has already defined their portfolio, no reference customers for this service exist in Germany yet.

- Vendors are driving SD WAN development more actively and launch network solutions which can be operated by the customers themselves, which is threatening the managed service business.

- Verizon could communicate the availability of their SD WAN portfolio in the German market more strongly and translate the global marketing material into German.

**Trend assessment:**

POSITIVE

**Advisor Statement**

“Verizon is a global carrier and a leading-edge SD WAN player who is driving the development of their SD WAN portfolio, which is an interesting option, especially for customers with international requirements.”
3.5.3. Overview of Providers of Managed SD WAN Services with Trend Forecast

<table>
<thead>
<tr>
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Legend: "+" above average; "0" average; "-" below average (compared to the competition); trend assessment: Arrow up = positive; arrow left_right = neutral; arrow down = negative (assessment of future development)

Figure 12 Managed SD WAN Services – overview of providers with performance dashboard
3.6. Managed WAN Services

3.6.1. Introduction

Managed WAN are services by respective service providers and offer the scope of services and functionality of various network solutions, often including core solutions such as the MPLS protocol for IP-VPN services and multiple access technology. WAN services allow end customers to access resources for NOCs, disaster recovery, active fault clearance and customer portals. Two trends are driving changes of this kind of services and respective competitive changes in this market.

The first trend is the technological transition from MPLS networks to SDN. In Europe, including Germany, MPLS networks are mostly obtained and purchased as a service with respective service levels from the carrier. Still, MPLS is the most widely used WAN technology in companies with distributed locations; it has developed continuously, and today, it is, for instance, possible to prioritize types of applications, depending on respective jitter, packet loss and deceleration requirements. State-of-the-art MPLS networks also allow customers to speed up individual applications. While MPLS VPNs provide certain advantages as an option to connect locations, they are an expensive medium when it comes to connect mobile devices and address requirements related to the increasing decentralization of workplaces outside fixed locations. In the wake of increasing mobility, many employees do not work on the campus, but from their home offices or on the move. Often, this requires a more flexible infrastructure than can be provided by MPLS networks, and so, the SD technology becomes increasingly relevant, also for WAN environments. Considering the high current popularity of MPLS networks, Experton Group does not expect them to be replaced, but rather complemented by SD WAN technologies during the next few years.

The second trend is the increasing relevance of ICT services. Historically, SLAs for WAN services have been targeted at IT departments. Still, service providers are competing by trying to achieve the best values for criteria such as packet loss, jitter, network availability and mean time to repair. However, customers’ budgets are increasingly approved by the lines of business, which increases users’ expectations regarding business-relevant SLAs and the use of parameters such as performance per applications. Today, customers expect differentiated, tailored service offerings for business-critical areas of their day-to-day business on the one hand, while less critical faults and incidents should, for instance, be resolved outside business hours.
Experton Group has analyzed providers of managed WAN services in the German market, based on the following criteria:

- Strategy and vision for network-based professional services
- Network coverage for WAN connections in Germany
- Quality of the WAN service portfolio and WAN innovations
- Quality of services and SLAs
- Quality of monitoring
- Capability to meet international requirements of German customers
- Capability to win business customers in the highly competitive WAN market in Germany
3.6.2. Evaluation of Providers of Managed WAN Services

Experton Group has identified 18 companies as relevant providers of managed WAN services in the German market, including the following 11 leaders:

- BT
- Claranet
- Colt
- Deutsche Telekom
- ecotel
- Interoute
- QSC
- Riedel Networks
- Verizon
- Versatel
- Vodafone

Figure 13 Quadrant for “managed WAN services”
**Category: Managed WAN Services**

**BT**

**Strengths/Opportunities:**

- British Telecom (BT) has a global, highly performant network with very good connectivity in Europe and the Middle East.

- BT is an established market leader for professional service management, including NNI interconnection via third-party networks. The BT network provides high-quality managed WAN service across up to eight service classes.

- BT is among the first providers that are actively driving the technology transformation towards SD services. The carrier has already demonstrated their strong innovative portfolio through the first comprehensive application-aware networks implementation.

- More than 10 years ago, BT won a spectacular request for proposal of the Bavarian government and has proven that it is possible to operate a network with complete coverage of small municipalities in Germany.

**Weaknesses/Challenges:**

- BT should regain a stronger position in the German market; the British provider's visibility in the German market has weakened, compared to the situation a few years ago.

- BT could work to increase the awareness of their position in the German market. In the midmarket segment, the company is facing increasing competition by smaller, very focused and agile providers.

**Trend assessment:**

POSITIVE

**Advisor Statement**

“**BT is an established and innovative provider for large enterprises with professional service management capabilities.**”
Category: Managed WAN Services

Claranet

Strengths/Opportunities:

- Claranet has 20 years of experience and is among the established carriers for German midmarket businesses. The offering is completed with agile project management and professional services.

- Claranet provides a complete VPN portfolio, including Internet options via IP Sec and bandwidth optimization via WAN controller.

- Claranet's network provides relatively broad coverage in Germany. The key reference is the trader network for Skoda in Germany.

- To increase their reach, Claranet provides connectivity to more than 250 partners, including good Germany outbound options.

Weaknesses/Challenges:

- Claranet does not have the network density required to provide VPN services through their own network to public-sector municipalities or retailers with thousands of locations and offices.

- Claranet’s current momentum is lower than that of many competitors. The carrier should work to increase their market awareness and maintain their position.

- The SLA with 99.9% availability advertised on the provider’s web site is not as compelling as the standard SLA of many competitors.

- Claranet must strengthen their position with respect to the SD WAN transformation, where the provider keeps a low profile.

Trend assessment:

NEUTRAL

Advisor Statement

“Claranet is among the established VPN service providers for larger midmarket businesses and offers a complete portfolio and professional service management options.”
**Category: Managed WAN Services**

**Colt**

**Strengths/Opportunities:**

- Colt is a very established provider of managed WAN services on layer 3 (IP) and layer 2 (physical network) in municipal areas and is renowned for their good service and prices.

- The provider can rely on a comprehensive, pan-European network with good coverage in German cities.

- The high-quality fiber optics backbone makes it possible to couple MPLS technology with very high bandwidths.

- In larger cities, Colt can provision very high bandwidths via their own Ethernet connections; this includes the large cities as well as cities such as Hanover and Stuttgart.

**Weaknesses/Challenges:**

- In Germany, Colt does not provide complete coverage, but has a strong focus on municipal areas.

- Colt’s footprint is not strong enough for industries that need deeper capillarity, such as the retail sector.

**Trend assessment:**

NEUTRAL

**Advisor Statement**

“Colt is an established provider for customers that require high-availability connections and high bandwidths in municipal areas in Germany and in Europe.”
**Category: Managed WAN Services**

**Deutsche Telekom**

**Strengths/Opportunities:**

- Deutsche Telekom has the densest, state-of-the-art IP network with complete coverage in Germany by far.

- Deutsche Telekom's network provides global connectivity and NNI-based connections to carriers that provide coverage of most of the world.

- Deutsche Telekom’s portfolio is very comprehensive and includes LAN and WAN services with a very high quality of service from one single provider.

- Deutsche Telekom operates state-of-the-art NOCs in Germany to monitor network quality and security, which also benefits midmarket businesses.

- The provider’s wealth of experience regarding service management for all kinds of customers – from global corporations to smaller midmarket business across all industries – is unique in Germany.

- Based on the broad portfolio and professional IT project management, Deutsche Telekom is able to meet even very complex, non-standardized customer requirements.

- The provider has a very strong sales network in Germany.

**Weaknesses/Challenges:**

- Deutsche Telekom is rather hesitant, compared to the competition, when it comes to network-related innovation topics.

- Although Deutsche Telekom is able to defend their position in their home market, the provider is experiencing pressures by small and agile as well as the more active global competitors.

**Trend assessment:**

NEUTRAL

**Advisor Statement**

“Deutsche Telekom is the uncontested market leader in their German home market and the benchmark for quality, security, national coverage with international connectivity and complex network management requirements.”
Category: Managed WAN Services

ecotel

Strengths/Opportunities:

- ecotel is experiencing growth rates in the network segment, also through the VNO (Virtual Network Operator) virtual management model that provides IP VPN services through third-party networks, but with ecotel service management responsibility.

- Interconnections and existing contracts with carriers allow the provider to offer a good service coverage in Germany.

- While ecotel has a strong focus on the German midmarket segment, the provider was able to win new large accounts last year.

- International requirements for Germany outbound, for instance, in Austria and Italy, can also be addressed.

Weaknesses/Challenges:

- Among large enterprises, ecotel’s approach still lacks awareness, which could be increased accordingly.

- Network management, based on the VNO model, is very strongly dependent on the quality of services provided in advance by the providers of physical networks.

- While ecotel has increased revenues, and is investing in innovations, the financial stability could be improved further. The company still lacks the financial resources available to larger competitors.

- The VNO approach limits the offering of more complex services, for instance, services that must meet high security requirements. Based on this virtual approach, ecotel can only sell what other providers have already built up.

Trend assessment:

POSITIVE

Advisor Statement

“ecotel pursues the ‘virtual network operator’ approach, which was launched more than 10 years ago by Vanco, in Germany; for some customers, this is an interesting option.”
Category: Managed WAN Services

Interoute

Strengths/Opportunities:

- Interoute is one of the established and leading international carriers for large enterprises in the German market and provides a global network and connectivity to key locations of the German industry.

- Interoute, as one of the largest carriers, has the resources required to make early investments in new technologies.

- Interoute has a very strong focus on the two core business segments wholesale and WAN networks.

- Interoute provides a flexible IP VPN offering for up to 500 locations with flexible broadband connections in Germany.

- As one of few carriers with a large MPLS customer base, Interoute is addressing the technology transformation towards SDN very early, with a primary focus on data center transformation.

Weaknesses/Challenges:

- Interoute provides hardly any differentiation for the midmarket segment. While smaller, growing carriers such as Riedel Networks and ecotel are no immediate threat for Interoute in the top enterprise segment, these very focused providers could threaten the business in the upper midmarket segment.

- The limited capillarity of up to 500 locations is sufficient for many customers, but excludes retailer as customers for Interoute as main carrier.

- Interoute should strengthen their position in the German market. Despite the high standard and frequent inclusion in customers' sourcing initiatives, the company has only few references in Germany.

Trend assessment:

POSITIVE

Advisor Statement

“Interoute combines IP VPN service experience and a network that is optimized for international customers with SD technology innovations for customers with up to 500 locations.”
Category: Managed WAN Services

QSC

Strengths/Opportunities:

- With more than 30,000 customers, QSC is among the established market leaders for network solutions for the German midmarket segment.

- The company is renowned for their professional network service management and has a very large number of references. All data centers are TÜV-certified and have BSI security certifications.

- QSC provides a very comprehensive network and communications portfolio, including a combination of IP VPN and IP Centrex (cloud-based telephony) from one provider.

- QSC’s VPN portfolio is flexible, project-based and includes a number of access services for locations and mobile staff.

Weaknesses/Challenges:

- QSC does not address the high global requirements of international corporations.

- Competitive pressures from smaller, focused providers in the midmarket segment are increasing.

- While QSC is a very active and innovative player in segments such as IoT, the provider is rather hesitant to address innovations that relate to their core business, for instance, the SD WAN technology transformation.

Trend assessment:

NEUTRAL

Advisor Statement

“QSC is an established player in the German midmarket segment. The broad portfolio and the integrated, flexible solutions are especially interesting for companies that want to include IoT services into their network solutions.”
Category: Managed WAN Services

Riedel Networks

Strengths/Opportunities:

- Riedel Networks benefits from their increasing reputation among midmarket businesses, based on key references, in particular RTL and F1. The provider’s churn rate during the last five years has been very low.

- Customers include globally leading providers of very specific products as well as renowned vendors of household goods.

- The German provider is a very agile company with a clear focus on their core business, i.e., networks for midmarket businesses with international presences.

- Since 2011, service management has been optimized to address customer requirements, unimpeded by legacy hardware or processes.

- The provider with headquarters in Butzbach has a good distribution network in Germany. Resellers include IT service providers such as Bechtle or Freudenberg IT.

Weaknesses/Challenges:

- Riedel Networks is no viable option for DAX corporations; the provider’s focus is not on this segment.

- Riedel Networks still lacks awareness, as compared to leading competitors. Any serious aggressive campaign initiated by a large provider to target the midmarket threatens the core business.

- To reduce dependencies, Riedel Networks is challenged to build up other strong show cases, in addition to F1/RTL. The provider’s plans to achieve growth rates for Germany outbound and international outbound is certainly of advantage.

Trend assessment:

POSITIVE

Advisor Statement

“Riedel Networks is an interesting option for larger midmarket businesses with international requirements, especially for companies that have a focus on global coverage, rather than capillarity.”
**Category: Managed WAN Services**

**Verizon**

**Strengths/Opportunities:**

- With 28 DAX customers, Verizon is among the established and leading international carriers for large accounts in the German market and provides a global network with connectivity to key locations for the German industry and comprehensive capillarity in the US.

- Verizon, as one of the largest carriers, is a financially very stable company and has the resources required to make early investments in new technologies.

- Verizon provides a long-standing and established professional service management that addresses the requirements of the large accounts segment.

- As one of only few carriers with a large MPLS customer base, Verizon has addressed the technology transition to SDN very early, which demonstrates the provider’s willingness to actively work to launch innovations that benefit the customers, rather than their own revenues.

**Weaknesses/Challenges:**

- Verizon’s differentiation in the large midmarket segment is too weak. We cannot perceive a clear focus on this segment. While smaller, growing carriers are no immediate threat for Verizon in the top enterprise segment, these very focused providers could threaten the business in the upper midmarket segment.

- Verizon should strengthen their position in the German market. Despite the high standard, momentum in the new-customer business is not very strong.

**Trend assessment:**

**POSITIVE**

**Advisor Statement**

“Verizon is an established player with professional service management for large accounts with international requirements.”
**Category: Managed WAN Services**

**Versatel**

**Strengths/Opportunities:**

- Versatel provides comprehensive coverage in Germany, also based on their 1&1 acquisition in 2014, and provides capillarity for 250 cities in Germany.

- The provider has many midmarket references and a very good distributor network in this segment.

- Based on their proprietary fiber optics backbone across Germany, Versatel provides a flexible VPN portfolio with many access options.

- The telecommunications portfolio includes IP telephony solutions and VPN services from one single provider.

**Weaknesses/Challenges:**

- Versatel does not address the complex needs and global coverage requirements of international large accounts.

- In the midmarket segment, Versatel is experiencing pressures from smaller, very agile competitors and from innovative companies that combine carrier with IoT services.

- The provider should improve their project management capabilities to be able to keep up with competitors such as QSC.

- Versatel could better market their service management and infrastructure quality in Germany, based on compliance with respective security guidelines.

**Trend assessment:**

NEUTRAL

 Advisor Statement

“Versatel is a strong option for German companies with national requirements that attach value to a high-availability backbone and coverage in municipal areas.”
Category: Managed WAN Services

Vodafone

Strengths/Opportunities:

- Based on the Arcor and Kabel Deutschland acquisitions, Vodafone provides a fixed-line network with a physical size and coverage that can compete with the Deutsche Telekom network.
- Based on the Cable & Wireless service management tools and their sales and portfolio management investments, Vodafone enjoys high competitive strength ratings in the German market.
- Vodafone’s German customers benefit from a global MPLS network. The Vodafone network provides connectivity to nearly all countries worldwide. In specific countries, such as India and Great Britain, capillarity is comparable to capillarity in Germany.
- Vodafone is increasingly communicating plans to integrate FMC and UCC, based on a centralized network. Deactivation of the ISDN telephony by Deutsche Telekom in 2018 generates a strong momentum for IP Centrex services. Vodafone’s message and portfolio provide a strong position to leverage this situation for acquiring new WAN customers.

Weaknesses/Challenges:

- The lack of footprint in the US is perceived as a weak focus on the North-American region. For Experton Group, there is no need to expand the network, but Vodafone should formulate and communicate a strategic message on USA inbound for international customers.
- Increasingly, Vodafone’s WAN services rely on scaling effects, based on the global network. The provider should work to actively transition their own architecture to SD networks to reduce operational cost. A high focus on standardization bears the risk that niche players with a high focus on individual customers are gaining traction.

Trend assessment:

NEUTRAL

Advisor Statement

“Vodafone is among the strongest competitors of Deutsche Telekom for companies that require international coverage.”
### 3.6.3. Overview of Providers of Managed WAN Services with Trend Forecast

#### Managed WAN Services

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Legend: "+" above average; "0" average; "-" below average (compared to the competition); trend assessment: Arrow up = positive; arrow left_right = neutral; arrow down = negative (assessment of future development)

Figure 14 Managed WAN Services – overview of providers with performance dashboard
3.7. Managed LAN Services

3.7.1. Introduction

A managed LAN service includes all aspects relating to the construction, the integration and the operations of LAN networks, provided by an external service provider who guarantees a defined quality, security and continuity of service. Such service is particularly interesting for very large corporations or companies with many employees in specific fixed locations. A managed LAN may also be tendered and purchased as additional service, in combination with the managed WAN service. For providers, LAN services are less profitable than WAN services, since they provide less scalability and services must often be delivered to very decentralized locations. Providers include network carriers, IT service providers and hardware manufacturers. Carriers have a strategic LAN services perspective, since they provide an opportunity to offer end-to-end SLAs across the whole network, which makes LAN services the natural extension of the much more profitable WAN services. IT service providers are also very active in this segment. LAN services are directly connected to devices, acting as enabler for IoT services.

Similar to WAN services, traditional LAN service levels are based on technical parameters. There are first interesting approaches for BOO (business-oriented outcome), i.e., SLAs where specific parameters are agreed which are of direct business relevance for the customer. An example are connected devices that generate a higher output. Due to their higher visibility for end customers, higher innovation rates can be expected, compared to the WAN segment.

LAN services are a key component of the digital transformation. The kind and number of devices to be connected is changing, as are expectations concerning state-of-the-art IT services and SLAs. Experton Group has analyzed and evaluated the LAN service providers, based on the following criteria:

- Number of customers
- Number of locations
- Strategy and vision for network-based professional services
- Service coverage in Germany
- Quality of portfolio and innovation
- Quality of services and SLAs
- Quality of monitoring
- Security Management
- The capability and willingness to win new customers in the highly competitive LAN market
- Is there a NOC available that can be accessed by the end customer?
- Number of NOCs in Germany
- Case studies from Germany
- Reference projects in Germany
3.7.2. Evaluation of Providers of Managed LAN Services

Experton Group has identified 14 companies as relevant providers of managed LAN services in the German market, which was analyzed for the first time; the following 9 providers have reached the leader quadrant:

- BT
- CANCOM/PIRONET
- Computacenter
- Damovo
- Deutsche Telekom
- Dimension Data
- Fujitsu
- IBM
- Unisys

![Figure 15 Quadrant for "managed LAN services"](source: Experton Group 2017)
**Category: Managed LAN Services**

**BT**

**Strengths/Opportunities:**

- BT provides a standardized, globally available LAN service, combined with WAN services and end-to-end SLAs, complemented by flexible service options such as guest access.
- The LAN service ensures connectivity, even in difficult geographies such as Nigeria.
- For German customers, the LAN service is operated out of a state-of-the-art NOC, located centrally in Germany and including quality and security monitoring. BT also has their own strong fault clearance team in Germany.
- BT has renowned German references for the managed LAN service.

**Weaknesses/Challenges:**

- The market is getting more and more competitive, especially in municipal areas and for customers with up to 500 locations in Germany.
- BT relies on partners, also in Germany, to be able to provide comprehensive local fault clearance services.
- There is significant potential to better position and market the LAN service in Germany.

**Trend assessment:**

NEUTRAL

**Advisor Statement**

“BT provides a standardized, globally available LAN service, combined with WAN services and end-to-end SLAs, complemented by flexible service options such as guest access.”
Category: Managed LAN Services

CANCOM/PIRONET

Strengths/Opportunities:

- CANCOM/PIRONET provides a high-quality managed LAN service, which is operated and monitored from within Germany.

- CANCOM/PIRONET’s managed LAN service features a highly transparent, flexible pricing model, with on-demand provisioning and billing of ports.

- CANCOM/PIRONET’s LAN service can be combined with the provider’s broad portfolio of cloud services, IP telephony and unified communications.

Weaknesses/Challenges:

- CANCOM/PIRONET is competing with international carriers that perceive the LAN service as a natural extension of WAN services.

- The flexible pricing model could further reduce the relatively low margins in the LAN service segment.

- CANCOM/PIRONET has significant potential to better market their position in the LAN service segment.

Trend assessment:

POSITIVE

Advisor Statement

“CANCOM/PIRONET’s managed LAN service features a highly transparent, flexible pricing model, with on-demand provisioning and billing of ports.”
Category: Managed LAN Services

Computacenter

Strengths/Opportunities:

- Computacenter provides comprehensive, end-to-end LAN services, from sourcing and planning to implementation and network management.
- Among German large accounts, Computacenter is renowned for their high-quality services, especially their planning, transformation and integration services.
- The LAN service is operated from within a state-of-the-art global LAN in Great Britain and includes proactive fault clearance management.
- Based on the provider’s very broad portfolio, the LAN service can be combined with additional services such as IP telephony, desktop management and application performance management.

Weaknesses/Challenges:

- There is significant potential to better standardize, position and market the LAN portfolio.
- The market is getting more and more competitive, especially in municipal areas and for customers with up to 500 locations in Germany.
- Computacenter’s integration services and hardware upgrades could affect margins significantly, especially in case of short contract periods.

Trend assessment:

NEUTRAL

Advisor Statement

“Computacenter is an interesting option for German customers with high innovation and transformation expectations who request integration with a state-of-the-art LAN infrastructure.”
**Category: Managed LAN Services**

**Damovo**

**Strengths/Opportunities:**

- Damovo has 50 years of telephony service management experience, which can also be leveraged for LAN management. Both deal with a mixture of hardware and software that must be maintained remote and on-site.

- Damovo provides a comprehensive service portfolio, from planning, migration, network design, software and hardware installation to SLA-based network and application operations.

- Damovo, with origins in the hardware reseller business, has become an established service provider. Meanwhile, more than half of the provider’s revenues are generated with services, and the customer base is increasing, also in Germany.

- With more than 160,000 managed ports worldwide, Damovo is by no means a small managed LAN service provider.

- Damovo’s offering for customers features specific SLAs with business-oriented outcome. For instance, the provider has integrated LAN infrastructure monitoring events with trouble ticket and has set up automated escalation levels, based on situational business-critical factors.

**Weaknesses/Challenges:**

- Damovo is competing with global carriers with high innovative strength and strong financial resources that perceive LAN services as a natural extension of the WAN.

- The former Ericsson reseller could work to market the benefits of their offering, especially their innovative customer-oriented SLAs in Germany, more strongly.

- There is much potential to improve the business and position in Germany.

**Trend assessment:**

**POSITIVE**

**Advisor Statement**

“Damovo is an interesting medium-sized player with pan-European service coverage and highly innovative offerings such as business-oriented outcome for SLAs in managed LAN environments.”
**Category: Managed LAN Services**

**Deutsche Telekom**

**Strengths/Opportunities:**

- Deutsche Telekom provides a LAN service with global availability, combined with WAN services, based on consistent SLAs.

- The LAN service includes proactive fault clearance management. The provider’s high availability and own local resources for on-site fault clearance services are unique in Germany.

- Deutsche Telekom uses state-of-the-art technologies and NOCs for monitoring the quality and security of their LAN services.

- Based on the provider’s very broad portfolio, the LAN service can be combined with additional services such as IP telephony and application performance management.

- The service provides complete coverage of network infrastructure changes within a location, including hardware, for instance, in case of technology transformation initiatives.

- References in the retail sector demonstrate the comprehensive coverage and availability of the LAN service, which helps to connect locations quickly.

**Weaknesses/Challenges:**

- Internationally, Deutsche Telekom cannot deliver the same high quality of fault clearance services themselves and depends on their partners’ quality.

- The market is getting more and more competitive, especially in metropolitan areas and for customers with up to 500 locations in Germany.

- Taking the customer’s hardware into the books of Deutsche Telekom could further reduce margins.

**Trend assessment:**

NEUTRAL

**Advisor Statement**

“Deutsche Telekom provides a high-quality, secure LAN service for their business customers. The company’s offering includes comprehensive, local fault clearance services and is therefore especially interesting for customers with a dense network of branches, such as retailers.”
Category: Managed LAN Services

Dimension Data

Strengths/Opportunities:

- Dimension Data provides quality management and LAN service monitoring capabilities for their German customers in Germany.
- The LAN management comprises a broad portfolio, including comprehensive security solutions with Cisco components.
- Dimension Data is an established LAN service provider for German large accounts and has a lot of experience with LAN and communications services integration.

Weaknesses/Challenges:

- Dimension Data is competing with global carriers with high innovative strength and strong financial resources that perceive LAN services as a natural extension of the WAN.
- The LAN service is not a standardized bundle and is not sold actively in the German market.

Trend assessment:

POSITIVE

Advisor Statement

“Dimension Data is an established player with a lot of experience when it comes to LAN management and integration with IP communications providers.”
**Category: Managed LAN Services**

**Fujitsu**

**Strengths/Opportunities:**

- Fujitsu makes high investments in network service innovations and has invested in SD technology for LAN management purposes at an early point in time.

- The Japanese provider has a highly standardized managed LAN portfolio, which can be combined with desktop management and communications services.

- Fujitsu is a very established provider of highly standardized managed desktop services in Germany and has project management expertise as well as the know-how to provide remote maintenance of IT workplaces, which can be leveraged for the LAN management accordingly.

- The provider combines their investments in IoT management skills with the LAN service management layer to also monitor connected machines in the LAN.

**Weaknesses/Challenges:**

- Fujitsu is competing with global carriers with high innovative strength and strong financial resources that perceive LAN services as a natural extension of the WAN.

- In the last quarter 2016 Fujitsu generated negative publicity through staff reductions. Although these layoffs do hardly affect the IT service business, they have raised concerns and worries concerning the provider’s future focus and stability.

- There is much potential to better position the LAN management capabilities in Germany.

**Trend assessment:**

POSITIVE

**Advisor Statement**

“Fujitsu combines managed LAN services with SD technology and desktop services, which makes this player a very interesting option for customers with LAN transformation and innovation requirements.”
**Category: Managed LAN Services**

**IBM**

**Strengths/Opportunities:**

- IBM provides a broad managed LAN service portfolio that can be combined with communications services and contact center solutions.

- IBM is one of the established managed service providers for large accounts and can leverage their comprehensive project management and security competences for LAN transformation initiatives.

- IBM ensures managed LAN service monitoring and security from within a NOC in Germany.

- A German-speaking service help desk and support team is available.

**Weaknesses/Challenges:**

- IBM is competing with global carriers that perceive LAN services as a natural extension of the WAN.

- The LAN service portfolio is not standardized and is not sold actively in the German market.

- There is much potential to better position the LAN management capabilities in the market.

**Trend assessment:**

NEUTRAL

**Advisor Statement**

“IBM provides a broad LAN portfolio for large accounts and is an interesting option for customers with high LAN infrastructure transformation requirements.”
**Category: Managed LAN Services**

**Unisys**

**Strengths/Opportunities:**

- Unisys provides a broad managed LAN service portfolio that can be combined with workspace solutions.
- Unisys is an established managed services player for large accounts and has a lot of field service experience.
- Unisys has strong local field service resources for fault clearance.
- Service help desk and support can be integrated to ultimately offer third-level support from one single provider.

**Weaknesses/Challenges:**

- Unisys is competing with global carriers that perceive LAN services as a natural extension of the WAN.
- The LAN service portfolio is not standardized and is not sold actively in the German market.
- There is much potential to better position the LAN management capabilities in the market.

**Trend assessment:**

NEUTRAL

**Advisor Statement**

"Unisys has included a highly-integrated service desk and strong local field services in their LAN service for the German market."
3.7.3. Overview of Providers of Managed LAN Services with Trend Forecast

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Figure 16 Managed LAN Services – overview of providers with performance dashboard
4. AUTHORS AND CONTACT

Wolfgang Heinhaus is a Partner Advisor at Experton Group.

Mr. Heinhaus has more than 25 years of IT experience, both in user organizations and as a consultant. Prior to joining Experton Group in early 2011, Wolfgang Heinhaus worked for Ferrero as head of the IT infrastructure department. He has built up and developed the department and has adjusted it to the continuously changing requirements. His focus is on data center harmonization and standardization and on network strategies. Project-related areas of coverage include the following:

- Planning and implementation of new data centers in Germany and abroad
- Network infrastructure planning and design
- Planning and design of server and storage landscapes (server consolidation, server and storage virtualization)
- IT infrastructure tendering
- Business alignment
- Sourcing topics
- Interim CIO

Mr. Heinhaus worked as project manager with responsibility for planning and building up a new data center of 2,500 sqm in Germany and four data centers (primary and backup) in Russia and India, with a strong focus on resilience and tier-3 and tier-4 high availability (redundant installation of the required facilities such as power and cooling system, fire extinction, security). Another strong focus was on green IT, i.e., the reduction of power and cooling costs and CO₂ emissions.
Dr. Henning Dransfeld is a Manager Advisor at Experton Group.

Dr. Dransfeld advises both ICT users and ICT vendors; his main areas of coverage include the mobile enterprise with a focus on issues such as client strategy, mobile productivity, security and employee motivation. Dr. Dransfeld is a recognized expert for ICT trend analyses, vendor strategy evaluation and competitive positioning and has more than 18 years of industry experience. Dr. Dransfeld also advises ICT users on their core marketing and sales messages.

Prior to joining Experton Group, Dr. Dransfeld worked as head of Forrester Research’s Mobile Enterprise unit in Europe. In this position, he published various analyses on current mobility topics, including “Demystifying BYOD in Europe”.

Before, he worked for T-Systems. Within eight years, he held a variety of positions as marketing, sales strategy and business strategy project manager. Most recently, he was responsible for T-Systems' solution marketing for mobile enterprise and workplace services.

Before, Dr. Dransfeld worked six years as an analyst for Ovum in London, where he was head of the IP Communications Services advisory service. He was responsible for numerous studies and forecasts, including IP communications services, and acted as Research Director for the ICT Network Strategy division.

Dr. Henning Dransfeld is an experienced speaker on international conferences, such as the European VPN User Association (EVUA) and the European IPQC Mobility Exchange.

Dr. Dransfeld has studied at Henley Business School, the University of Wales, Swansea and the Université 1, Institut de Gestion, Rennes. He is married and has four children.
EXPERTON GROUP

Experton Group is the leading fully integrated research, advisory and consulting company. Experton Group supports large enterprises as well as midmarket businesses with their IT strategic planning and implementation through innovative, neutral and independent consulting and advisory services to help them maximize the business value of their ICT investments.

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Experton Group was founded in 2005 by very experienced market research and consulting experts; in March 2016, Experton Group became a subsidiary of Information Services Group.

More information on our research can be found under:

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