

## **K1 Internet Service**

Fast, qualified and individual Management of your hosting.

**The company:** K1 Internet Service is the affiliated company of the Hanno Kirchhoff EDV-Beratung GmbH, which provides IT-consulting and service since 1989 with its 20 employees. The K1 with its 5 employees is primarily specializing in individual hosting for our customers. The hardware and technology is supplied by the HKEDV, the administration of mail and webservers as well as domain services and support of software developers and designers are provided by K1.

**Our service:** fast and individual service is our strength! That's why the staff of the K1 and HKEDV are reachable 24 hours a day, 7 days a week.

**Our hosting technology:** The core of the hosting relies on virtual servers which are provided by our VMware environment. No shared servers with multiple customers on a single virtual machine - every server runs a dedicated operating system. This also allows us to create identical copies of the complete live environment for testing or update purposes. Our VMware Servers run the newest and fastest Intel Xeon E5-2670 processors that can handle up to 32 CPU threads and 768GB of RAM. As storage solution we use a fully redundant fibre channel SAN by Datacore connected via FC switches. This provides us with the best performance and scalability and highest availability by the use of this redundant setup.

To provide best security and to take off the load of our customer's servers we use high available Cisco firewalls in our office at Birkenstraße as well as in our data center.

For E-Mail services our customers can choose our reliable SmarterMail servers with an excellent webinterface and a complete set of today's features. Or you choose to use the approved Microsoft Exchange Servers offered by K1.

Spam and anti virus protection is served by a cluster of Symantec Brightmail Gateway appliances to ensure high availability for both incoming and outgoing mail.

To guarantee best performance and high availability for our database servers we use clustered MySQL servers built with DRBD and pacemaker/corosync.

**Our Data Center:** Because ongoing success for hosting is not about server technology only, K1 works with the worlds biggest connection providers. To keep the distance to our servers short most of our servers located in the biggest data center in Düsseldorf, the Connecta Park at Düsseldorf-Reisholz. Thus, physical access to our complete hosting environment like servers and network hardware is possible within minutes day and night.

Biometrical secured access control and constant video surveillance guarantee highest security standards. A triple battery-backup/UPS as well as 2 diesel generators are in use to be safe from power outages.

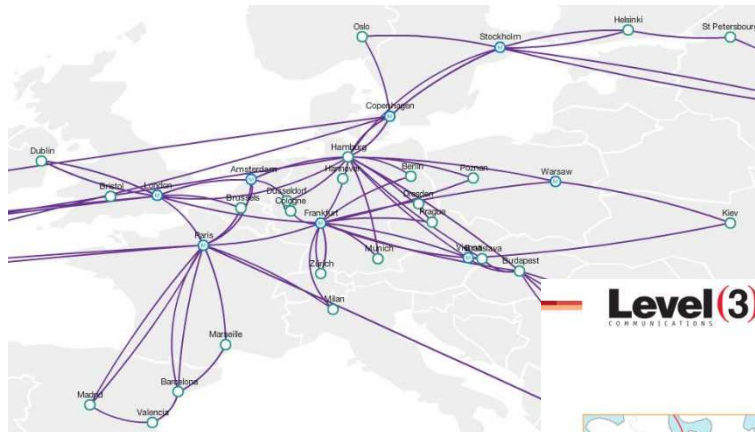
To keep the hardware inside the data center from damage in case of a fire, a modern gaseous extinguishing system has been installed.

The connection to the internet is provided by the backbones of Level3, Telia Sonera and NTT with 10Gbit each. Additionally the different German data base locations are connected via redundant links with a 2x20Gbit backbone.

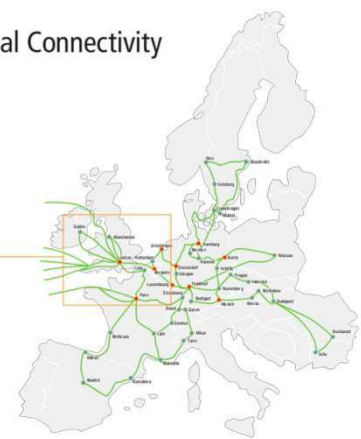
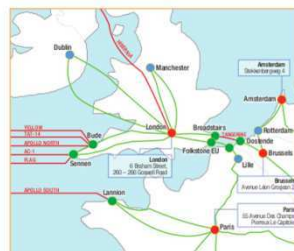
At the data center DUS4 we provide a ISO 27001 certified hosting environment. Power supply there is done with renewable energy from 100% hydro power(certified).



### Telia Sonera Backbone in Europa



### European International Connectivity



### The Level 3 Network



**Our Software:** Our webservers run mostly Linux distributions with Long Term Support versions like Ubuntu and Debian using common software like Apache(v2.2, v2.4), PHP(v5.3, v5.5) and MySQL(v5.5) at their current version. Also we have various Windows servers 2008/2012 running. Individual versions of operating systems and software can be configured by our experienced professionals to match the requirements of our customers.

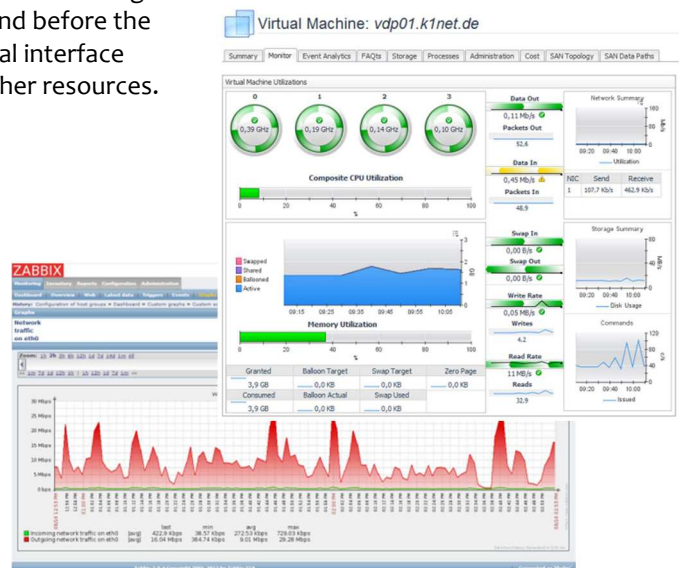
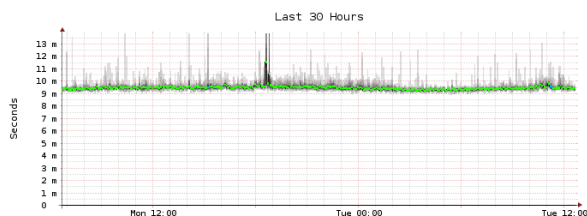
**Our Hardware:** K1 Internet Service uses servers built by HKEDV, each constructed to match the specific requirements of our projects: maximum reliability and individual performance tuning. Before a server is used in the productive environment it has to perform a performance and stress test for 2 weeks.

**Web Pages:** When developing websites we rely on Wordpress and Typo3, where we have years of experience with big companies as well as smaller customers. Thanks to our collaboration with leading developers from the Typo3 scene like the company WMDB, we can deliver fast and qualified support for all of our customers. But also other content management systems like Joomla and Drupal are being used frequently.

**High availability:** The complete infrastructure of K1 Internet service is built high available, from the network components like firewalls and switches to SAN storages (centralized hard disk storage) and of course servers.

**Data security:** Backups of the complete virtual machines are made daily and are kept at least for 14 days, monthly backups and longterm backups at different locations are available as well.

**Monitoring:** Information about health and current state of our systems is available at all times. Our monitoring system performs checks for availability of machines as well as process and system health monitoring. This allows us to recognize any errors and problems early and before the system goes down. This monitoring also provides a graphical interface showing the health of the machine, actual workload and other resources.



**References:** Here are some of our interesting projects that we would like to show as examples:

For the customer **Your Career Group AG** we service an area from 33 servers, providing the global job market. In addition to the physical servers, which come from the production of HKEDV, virtual machines for load balancing can be used. Special technical challenge in this project was the high load on the over 500GB large MySQL database.

Consolidation of many hundreds of domains under administrative and financial aspects was a challenging task. It was made possible by the long-standing expertise of K1 in the preparation and implementation of project plans.

(Website [www.yourcareergroup.de](http://www.yourcareergroup.de) )

For one of the leading VOIP PBX provider **3CX** we host a variety of servers to operate the websites and forums based on WordPress and phpBB. Also the download mirrors for the 3CX software products are provided by the K1. (Website [www.3cx.com](http://www.3cx.com) )

The effective support of K1 also has convinced the 3cx partner company **2X** to host their Mobile Device Management solutions in the K1.

(Website [www.2cx.com](http://www.2cx.com) )

Even large companies rely on the effectiveness of a relatively small company such as K1 Internet service.

Highest technical level combined with quick contact options around the clock has led the **Bitburger Braugruppe** to shift their portal [www.dasgastroportal.de](http://www.dasgastroportal.de) on the ESX server of the K1 Internet Service.

The web shop of König Pilsener, Wernesgrüner, Köstritzer and Craftwerk run on the servers of K1.

(Websites [shop.koenig.de](http://shop.koenig.de), [shop.wernesgruener.de](http://shop.wernesgruener.de), [shop.koestritzer.de](http://shop.koestritzer.de), [www.craftwerk.de](http://www.craftwerk.de))

For an Internet Agency a complete hosting project with about 300 domains was settled for the Customer **Bayer**.

This included the design of the hardware and software environment for the Hosting (based virtualization with VMware) as well as the structure of the server system with software requirements of six agencies.

Besides the technical know-how in terms of encryption, consistency, reliability and confidentiality are the reasons for the operation of a fully encrypted cloud infrastructure based on Microsoft Exchange in our Düsseldorf data center for a well-known large company.

The great flexibility of K1 in the implementation of the highest safety requirements has also convinced the Bank 11. The K1 hosts both customer sites as well as the encrypted data exchange platform with K1 Team Drive.

(Websites [www.bank11.de](http://www.bank11.de), [www.bank11direkt.de](http://www.bank11direkt.de), [www.autowunsch.de](http://www.autowunsch.de))

**Certified Professionals:** K1 Internet Service and its parent company, the Hanno Kirchhoff EDV-Beratung, have been certified with every certification needed to provide secure operation of our hosting platform.



The HKEDV has two certified VMware VCPs and 15 other VMware certifications as well as a certified Datacore Engineer DCIE for construction and maintenance of our storage systems.



HKEDV is certified as





**Out hosting concept:** All parts of the K1 hosting platform are separated and high available through the use of virtualization. Firewalls, host servers, switches and of course the storage systems are located in a different rack each, including separate power supply and internet connection.



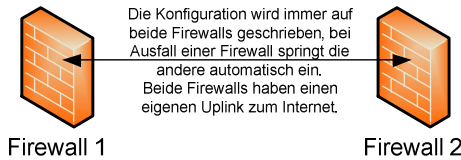


**Hostingübersicht**  
 Virtuelle Server bei der K1 Internet Service im Rechenzentrum von MESH (Premium Paket und Root-Server)



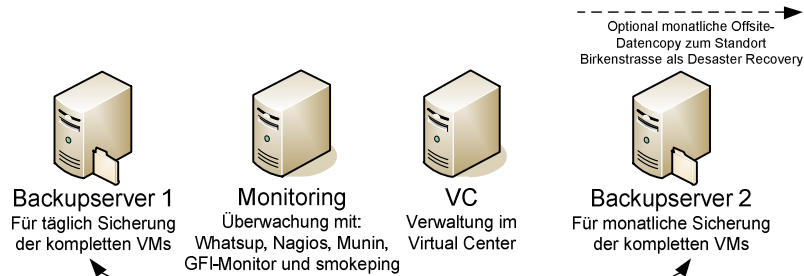
**Firewallebene**

Zur Absicherung am Gateway  
Cisco Firewall mit VPN Gateway zum Standort Birkenstrasse



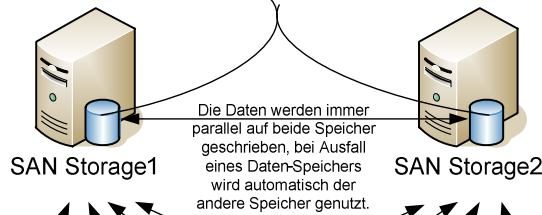
**Verwaltungsebene**

Für Datensicherung und Management der Virtuellen Umgebung + Firewall, sowie Überwachung des Betriebs



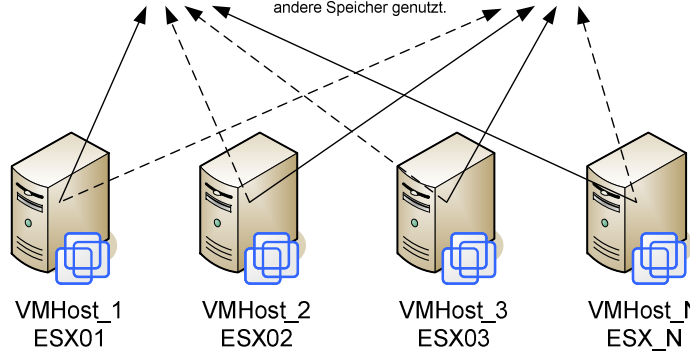
**Speichernetzwerk**

Redundante Datenspeicherung in zwei separat abgesicherten Serverschränken  
Unified Storage SAS/SATA WD/Seagate  
Speichervirtualisierung Datacore SANSymphony  
SAN Switches Hewlett Packard  
LAN Switches Allied Telesys



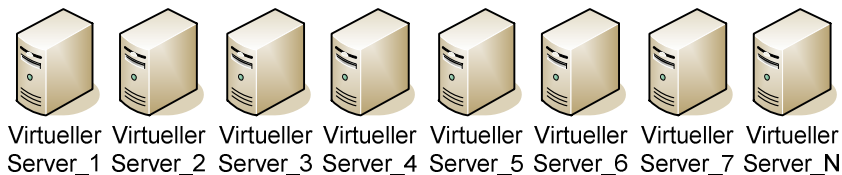
**Rechenleistung**

ESX Server im Cluster  
AMD Multiprozessor Systeme mit 8/16 Cores und 64/128GB RAM



**Virtuelle Server**

Konfiguration individuell nach Kundenwunsch  
CPU-Leistung, Ram und Festplattenspeicher kann nach Bedarf einfach skaliert werden, Netzwerke sind über VLANs getrennt



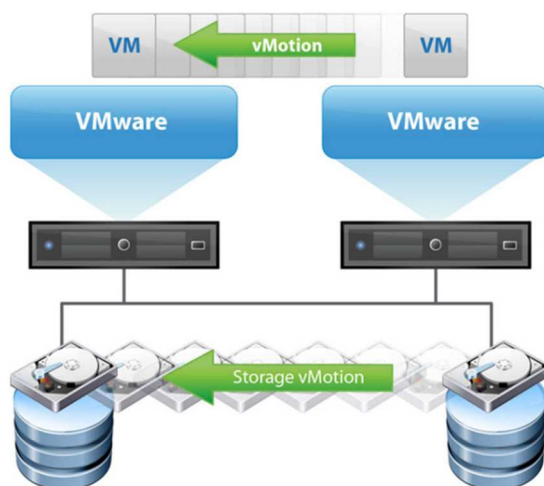
**Benefits of the virtual environment of VMware:**

- ▶ Simple management and monitoring with clean graphical visualization.

- ▶ Flexible management of virtual hardware components like CPUs, RAM and hard disks
- ▶ High availability with VMware: if a physical host goes down every affected virtual machine gets migrated to another available VMware host server automatically.
- ▶ Changes of the physical hardware possible without downtimes with VMware vMotion, which makes it possible to move a virtual machine to a different host and different storage system without the need to shutdown the virtual machine.

**One of the key benefits of VMware:**

- ▶ Even maintenance of the underlying storage system is possible without downtimes. Because of VMware's Storage vMotion it is possible to move whole virtual disks to different physical storage.



**Benefits of Datacore storage systems:**

- ▶ Fully high available storage system consisting of two independent units: not only raid sets and redundant parts in a single enclosure but physically separated devices in different racks.
- ▶ Every hard disk access is performed on both systems each, resulting in every change being made simultaneously on both devices.
- ▶ The fibre channel connection of our servers provide only a minimal latency compared to common iSCSI connections.
- ▶ Memory virtualization enables autotiering, meaning that parts of the data that get accessed or changed more frequently are saved on SSD storage automatically which decreases the access time strongly.