

The logo consists of a dark blue circle with a gold swoosh above it, resembling a stylized 'S' or a server rack.

serverloft

Dedicated Servers for Demanding Solutions

I Product Description serverloft Cloud

Germany, Version 1.1-EN, as of December 8, 2010

I serverloft is a brand of PlusServer AG.

Address:
BSB Service GmbH
Daimlerstrasse 9-11
50354 Huerth
Germany

Contact:
Phone: +(49) 22 33 – 612-145
Fax: +(49) 22 33 – 612-5150
www.serverloft.eu

Management:
Jochen Berger
Thomas Strohe

This is a translation of a German document. Errors and omissions excepted.

Trade Register:
HRB 42945, County Court Köln

Sales Tax-ID:
DE 216 740 823

1. Introduction

The product "serverloft Cloud" comprises a public cloud, which can be scaled up or down as needed. In general, the term cloud computing describes flexible applications, web services and IT infrastructure "as a service". This means the services are provided via the internet and billed according to use. If the demand for computing capacity rises, cloud computing allows the customers to add further resources in real-time. This cost efficient approach offers companies the capability to flexibly meet increased demands in peak times. Moreover, there is no need for longwinded usage forecasting, expensive capital investment or acquisition of mostly unused hardware.

Cloud computing is suitable for companies of any sizes. At present it is commonly used by start-ups and developers, but large companies are more and more relying on cloud-based solutions as well.

2. Technical Principles of the Cloud

2.1. Virtualization / Virtual Machines

Every server in the cloud exists as a virtual machine, thus they are separated from hardware. For this virtualization, the software solution Parallels Virtuozzo Containers is used, which already stood the test of time in hundreds of thousands of virtual machines due to its outstanding security, stability and scalability. This solution allows starting new virtual machines in just a few seconds, which leads to a former unknown flexibility in managing IP resources.

With the virtualization technique it is possible to scale and move virtual machines without having to do any reboot, so that necessary resources can be added anytime within seconds. It is always possible to start new virtual machines, and to stop or even clone them. That way, complex infrastructure setups can be carried out in a few minutes.

2.2. Virtual Appliances

serverloft offers a number of preconfigured appliances based on commercial and open source software, which the customer can book in the selected size at the push of a button. This offers the opportunity to use wide-spread software solutions within seconds in the desired size without any installation or configuration effort. The customer is solely responsible for the maintenance and updates of these virtual appliances.

The following appliances are currently offered; the list is enhanced continuously:

2.2.1. Typo3

Typo3 is one of the most popular free content management systems, which enables web authors to create web pages in a very easy, fast and comfortable way without any special previous knowledge. It offers nearly unlimited possibilities for creating websites and can make things a lot easier for the website owner. The creation, editing and removal of pages and content like texts, pictures and news is very efficient and simple. Typo3 is based on the scripting language PHP and uses MySQL as a database.

2.2.2. WordPress

WordPress is a system for managing website content (texts and pictures). It is especially useful for creating and maintaining a weblog as it allows assigning every entry to one or several categories, which can be created at will, and the respective navigation items are added automatically. Singular uncategorized pages are also possible.

2.2.3. Gallery2

Gallery is one of the most popular free photo management tools. Picture galleries can be created and managed without any effort. Photos can be adjusted in size, rotated and mirrored; preview pictures are created automatically. Albums help to group the photos and can be sorted in an arbitrary hierarchy.

2.2.4. phpBB

phpBB is a popular internet forum package written in the PHP scripting language. The name "phpBB" is an abbreviation of PHP Bulletin Board. Available under the GNU General Public License, phpBB is free software. The

software supports using templates, which allows adapting the forum's look to an existing design. phpBB claims to offer more translations than all other internet-based forums.

2.2.5. MediaWiki

MediaWiki is a free web-based wiki software application. It is written in the PHP programming language and uses a database. The first version of the software was deployed to serve the needs of the free content Wikipedia encyclopedia in 2002. Today, it has also been deployed by many companies as a content management system for internal knowledge management. The software is designed to be able to efficiently handle projects with several terabytes of content and hundreds of thousands of hits per second.

2.2.6. MySQL Database Server

MySQL is a relational database management system that runs as a server providing multi-user access to a number of databases. It is available as open source software and as a commercial enterprise version for several operating systems. Many dynamic web presences are based on it. The open source version of the software has been used for this appliance.

2.2.7. PostgreSQL

PostgreSQL is a free object-relational database management system (ORDBMS). Its development was started in the 1980s, since 1997 an open source community took over the further development. PostgreSQL is compliant to a large extent with the SQL standard ANSI-SQL 92, which means that all required functions are available and conduct as defined.

2.2.8. OpenVPN

OpenVPN is a free and open source software application that implements virtual private network (VPN) solutions for creating secure point-to-point or site-to-site connections in routed or bridged configurations and remote access facilities. It uses SSL/TLS security for encryption and is capable of traversing network address translators (NATs) and firewalls.

2.2.9. Tomcat 5.5

Apache Tomcat provides an environment for executing Java code on web servers. It is a servlet container written in Java, which – supported by the JSP compiler Jasper – can also translate JavaServer pages to servlets and execute them. A complete http server rounds the package up. Tomcat's http server is mostly used for development, while in production an Apache web server is often operated before the Tomcat.

2.3. Hardware

serverloft exclusively works with well-known manufacturers and distributors. The server hardware is laid out especially for server operation thus meeting the highest demands. The hardware platform is based on the latest server systems from Fujitsu. All servers are equipped with at least eight cores and plenty of memory. Due to the deployment of first-class server components, very high availability is granted. All systems have to pass an extensive hardware test over several days in order to check the stable co-functioning of all components.

2.4. CPU

The needed CPU capacities per virtual machine can be determined as desired (between 1,200 MHz and 20,000 MHz) and modified in real-time. The capacities are set in MHz with one MHz corresponding to the performance of one MHz of an Intel Pentium 4 with a CPU frequency of 2.6 GHz.

2.5. Storage

Three different types of Storage are offered: SATA, SAS or SSD. The Storage type is determined when creating a container and cannot be changed later on.

2.6. Network

Every virtual machine comes with an external IP address, but it can also be an internal container without external IP. If required, further IP addresses can be booked. Moreover, all virtual machines of one cloud are connected over an internal network. Every cloud has 128 internal IP addresses that can be assigned to the virtual machines as desired. Virtual

machines can possess external and internal IP addresses. All virtual machines are connected both internally and externally per GBit to switches from the manufacturer Juniper Networks. The accumulating data volume is billed per GB. Internal traffic is free of charge.

2.7. Loadbalancer

A loadbalancer can be used in the cloud to distribute the load between several virtual machines. The loadbalancer offers a multitude of settings to distribute the load and can be configured using an interface. Distribution is only possible to external IP addresses.

2.8. Content Delivery Network (CDN)

Data can be uploaded to a CDN in order to make it available worldwide with good performance, and afterwards accessed over the worldwide Content Delivery Network of Level 3. The data will be buffered in the respective nearest geographical POP when accessed, which allows for fast downloading.

2.9. VPN

The internal network of the cloud can be accessed over VPN. Customers have the option to manage accounts and to grant access rights using an interface. The central VPN is based on the solution OpenVPN.

2.10. Backup

Incremental or full backups of single virtual machines can be initiated anytime in the cloud panel. The backups are billed for according to used disk space and the number of backups.

3. Data Center

3.1. Security

The data center datadock is protected 24/7 by security services. Video surveillance of the internal and external facilities and entrance areas ensures that no unauthorized persons can enter the data center.

3.2. Specific Entry Controls

Fingerprint scanners on all inner doors allow only authorized individuals to enter sensitive areas of the data center.

3.3. Air Conditioning

An unrivaled cooling system has been installed at datadock. This system makes use of the area's extensive ground water sources, which are extracted by means of specially built wells. The well systems, pumps and cooling circuits are laid out redundantly. If one component fails, another one can take over. Thus, constant cooling is guaranteed. Only state-of-the-art, eco-friendly climate devices are used at datadock. In addition, cold aisle containment within the server rooms ensures perfect cooling circuits.

3.4. Power

The permanent power supply is secured by a sophisticated redundancy concept of multiple power suppliers with several uncrossed conductors. In the unlikely event of a power outage, multiple UPSs (uninterruptible power supplies) guarantee that all important components are supplied with power until the emergency power generators take over. For stability reasons, multiple emergency power generators are available.

- Capacity: 48 hours at full load
- Refuelable during operation
- Refueling within 3 hours

3.5. Fire Protection

Two-stage detection as well as three-stage fire protection systems ensure operation even in case of a fire. Early-

detection systems for smoke (VESDA) provide immediate protection against fire damage of critical systems in the data center including serverloft hardware.

4. IP Network

The global serverloft IP Network is defined as Autonomous System (AS) Numbers 34088 and 8972. These AS include all national and international connections to serverloft. The IP Network is based on an optical carrier network that has a capacity of several hundred Gbits per second. The connection to important IXs (Internet Exchange Points) in Europe, Asia and America allows serverloft, together with other partners, to operate public peerings with all important IP carriers, ISPs and content suppliers, as well as many other private peering points.

5. Billing

5.1. General

All services within the cloud are billed according to usage. The highest value that is configured within every hour is identified and billed with the respective amount of FlexiPoints. Customers may own several clouds; however, a separate credit account is used for every cloud. It is possible to move pay-per-use FlexiPoints between different clouds.

5.2. FlexiPoints

All cloud services are billed in a credit unit called FlexiPoints. This grants a very precise calculation of all services. First of all, the customer has to acquire FlexiPoints for his virtual account, from which the used credits are then withdrawn every hour.

5.3. Payment

The payment methods PayPal and credit card (Mastercard and Visa) are accepted for the product serverloft Cloud.

5.4. Pricing Models

There are two different pricing models for the product serverloft Cloud. Customers can either use a pay-per-use model, or book a monthly package thus profiting from discounts. It is also possible to combine the two models, so that pay-per-use FlexiPoints can be booked in addition to monthly packages if required.

5.4.1. Pay-per-use

An arbitrary amount of FlexiPoints is selected and added to the account. These credits can then be used in the cloud as desired. The customer can either define a lower limit for automatic adding of credits, or top up again manually before all credits are used. If no FlexiPoints are left, the virtual machines will be stopped. All pay-per-use FlexiPoints expire after 180 days if a customer did not use any FlexiPoints during this period. They can be moved to another cloud account if desired.

5.4.2. Monthly Packages

The monthly packages vary in their monthly fee and the number of contained FlexiPoints. The more FlexiPoints are included, the more discount on the package will be given and the lower is the price of each FlexiPoint. If not used, the credits from monthly packages will expire automatically at the end of each monthly interval, but they are always used first by the system. Every cloud needs its own package.

5.5. Maximum Usage

In order to avoid that the systems are overloaded the possible amount of credits per hour is limited. The limit is 7500 credits per hour. If a customer should reach this limit, no further resources can be assigned to him. If more resources are needed, the serverloft sales team can remove the limit for single customers after consulting.

5.6. Usage Stats

To comprehend the usage of all his FlexiPoints, the customer can trace all withdrawals and usage parameters in the CloudPanel. Accounting is displayed here very clearly and easy to understand.

5.7. Minimum Volume

Any entities and products in the cloud are defined with a minimum volume. This value states the smallest possible unit and cannot be gone below. Furthermore, basic fees exist for several products, which have to be added to the FlexiPoints that are billed according to usage. Basic fees are also billed in FlexiPoints per hour.

6. Technical Specifications

6.1. Scaling

It is guaranteed in the cloud that customers can always start new entities, or enhance or scale down existing ones. Due to different algorithms, an optimal utilization of the host systems and minimum scaling time are possible.

6.2. Distribution

For the distribution of single virtual machines on the host systems, it is taken into account, if possible, that all entities of one customer are placed on different host systems. That way, in case of a host system failure the damage can be reduced for the customer.

6.3. High Availability

All host systems are monitored, so that all virtual machines can be started on a hot-standby device if a system should fail, by which means the failure is reduced.

7. Configuration

7.1. CloudPanel

All virtual machines of the cloud can be managed conveniently with the CloudPanel. For example, customers can create new machines by drag&drop or access all important processes via context menu. In order to structure the cloud and achieve a better overview, the virtual machines can be sorted into blocks and groups.

8. Service Level

A service level agreement is offered for serverloft Cloud. Operational availability guarantees, maximum restore efficiency and service creation times are specified there. The service level agreement is available as a separate document.

9. Service Management and Support

9.1. System Monitoring

serverloft's Support and Service Center is available 24 hours a day on 365 days a year. If the Support and Service Center detects a failure of the platform and its services, troubleshooting measures will be commenced immediately. Single virtual machines are not monitored and are subject to the customers' field of responsibility.

9.2. Hotline

Support staff is available seven days a week from 7 am to midnight CET via phone hotline. Customers can use this hotline to report failures of the platform which are not subject to his field of responsibility.

9.3. Scheduled Maintenance

serverloft announces scheduled maintenance, which may impact a customer's service, at least three business days in advance. Scheduled maintenance is normally performed between midnight and 6 a.m. CET.