

# Methodology of comparison of Swiss hosting companies

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## **Background**

The aim of this benchmark is to measure the performance of the quality of service that major Swiss hosting companies deliver, as this quality is experienced in the end user's environment or, in other words, as it is perceived by web visitors to these hosting centers.

To do so, hosting centers are not assessed on the basis of the technical criteria of the internal network, but rather for the capacity and speed of access to the web services hosted in these centers.

For each of the hosting companies under study, ten target "customers" (i.e. public web sites that are hosted in these centers) are assessed with very frequent connections via the internet, on systems that are installed as close as possible to the backbones of public operators.

Testing is done with ip-label's Datametrie Single tool, which connects to web sites as a web visitor would do using a browser, except that Datametrie does not load all of the objects that make up the graphical display of the web site. The aim of these tests, in fact, is to check how the host system behaves, and measure it, rather than evaluate the quality of the hosted web service application.

In this context are measured:

- the quality of the host's connection to the internet (its choice of operators for IP transmission)
- access at its hosting area and all the way through to the client machines
- the time it takes to access transferred data (not affected by the page size, which depends on web design in this context)
- availability of access to the web service (connection availability)

For this benchmark, testing is carried out from Geneva, via the DFiNet (AS12333) network, at a pace of one test every 5 minutes, 24/7.

Assessments are made on the basis of 30 days' worth of measurements, a total of 8640 unit tests for each web service tested. Taking into account the 10 web sites tested, hosts therefore are evaluated on the basis of over 86,000 unit tests.

## **Representativeness**

Computerworld.ch and its partner ip-label select a list of hosting companies that are representative of significant business sectors on the Swiss internet. For each hosting company, a list of 10 web sites is drawn up for very high-frequency testing.

On 1 September 2014 there were 6 hosting companies under study (Aspectra, HostPoint, Netrics, Nine, Snowflake, and Unic). This list is subject to change without warning, through the addition or removal of hosting companies.

Likewise, the list of targets for each host may change without warning, and without causing any change to the present methodology, which remains applicable. It is agreed that the number of web sites tested for a host can be reduced if a sufficient number of representative web sites cannot be found, or if application performance (for which the host cannot be held responsible) risks affecting the performance of the hosting company under study.

## **Metrics**

Indicators are calculated each week on the basis of the values measured for each of the web sites under study over the course of the past 30 days.

### **Access performance indicator (*PerformanceIndicator*)**

A score is calculated on the basis of 100 points to represent access performance.

In the context of these measurements, access performance means the time that elapses between the end of DNS resolution (in other words, communication from the servers of the internet operator via which the robot conducts its tests of the IP address of the server that hosts the target web service) and reception of the first source code data (generally HTML) of the homepage of the target web site.

This performance is therefore representative of how long it takes for the operators in the communication chain (directly or indirectly) and the internal network of the hosting center to allow the user to connect to the web service that he/she intends to visit. The operator(s) that are transited directly (internet operators through which the hosting center is connected to the backbones of the internet) must offer excellent connectivity and interconnection agreements with the other operators in the chain. Poor access performance may be indicative of insufficient connectivity or interconnection quality. The hosting center's internal network may also generate slowdowns that degrade service quality and penalize web site owners who are the customers of hosting centers.

The ***AccessTime*** metric represents the average time it takes to access the home page of all of the web sites under study for a given host, expressed in milliseconds, and represented in the form of an indicator with a value between 0 and 100.

To calculate the ***PerformanceIndicator*** metric, a minimum time and a maximum acceptable time to access the web site have been defined:

- ***MinTime***, 0 ms
- ***MaxTime***, 250 ms

If ***AccessTime*** is equal to ***MinTime***, the value of the ***PerformanceIndicator*** is 100 points.

If ***AccessTime*** is greater than or equal to ***MaxTime***, the value of the ***PerformanceIndicator*** is 0 points.

Within these limits, the ***PerformanceIndicator*** is calculated as follows:

$$\text{PerformanceIndicator} = 100 \times \left( 1 - \left( \frac{\text{AccessTime} - \text{MinTime}}{\text{MaxTime} - \text{MinTime}} \right) \right)$$

### **Availability indicator (*AvailabilityIndicator*)**

A score is calculated on the basis of 100 points to represent availability. Expressed as a percentage, availability represents - for each web site tested for a hosting firm - the ratio between the number of tests that are validated without encountering a major error (those preventing access to the site) and the total number of tests. The final value, ***AvailabilityRate***, is the average of the ratios calculated for all of the web sites under study for a given host.

Taking into account **TotalTests**, the total number of tests performed during the period, and **FailedTests**, the number of those that failed, the **AvailabilityRate** metric is calculated as follows:

$$AvailabilityRate = avg \left( \frac{(TotalTestsSite1 - FailedTestsSite1) \times 100}{TotalTestsSite1} \right. \\ \left. \frac{(TotalTestsSite2 - FailedTestsSite2) \times 100}{TotalTestsSite2} \right. \\ \left. \frac{(TotalTestsSiteN - FailedTestsSiteN) \times 100}{TotalTestsSiteN} \right)$$

To calculate the **AvailabilityIndicator** metric, a minimum acceptable availability rate and a maximum expected availability rate have been defined:

- **MinRate**, 95%
- **MaxRate**, 100%

If **AvailabilityRate**, the average availability recorded over the period, is less than or equal to **MinRate**, the value of the **AvailabilityIndicator** is 0 points.

If **AvailabilityRate** is equal to **MaxRate**, the value of the **AvailabilityIndicator** is 100 points.

Within these limits, the **AvailabilityIndicator** is calculated as follows:

$$AvailabilityIndicator = 100 \times \left( 1 - \left( \frac{MaxRate - AvailabilityRate}{MaxRate - MinRate} \right) \right)$$

### Overall performance indicator (**GlobalIndex**)

The hosting firm's ranking is defined by calculating an overall quality index, **GlobalIndex**, on the basis of 100 points.

The overall quality index aggregates the two metrics calculated beforehand, which are weighted using these coefficients:

- **AvailabilityCoef**: the relative weight assigned to the availability metric, set at 2.
- **PerformanceCoef**: the relative weight assigned to the performance metric, set at 1.

The overall quality index is calculated as follows:

$$GlobalIndex = \frac{(AvailabilityIndicator \times AvailabilityCoef) + (PerformanceIndicator \times PerformanceCoef)}{AvailabilityCoef + PerformanceCoef}$$

### Display of results

The results of these comparative tests are published on the Computerworld site in a set of tables:

- a synthesis showing the average performance and availability scores, as well as overall performance for each of the hosting companies in the benchmark, as well as the trend with respect to the previous rating.

In this table, the hosting companies under study are shown in descending order of overall quality, from the best index to the lowest. Where there is a tie, the hosting companies are listed in alphabetical order by name.

- a detailed table for each of the hosting companies in the benchmark, listing in alphabetical order by domain the web sites that were tested.

The individual performances of each site are not displayed. The scores assigned to the hosting firms are listed at the bottom of each table, along with an additional reference showing the average quality index measured for all of the hosting companies together.

Above each table is noted the reference period, whose dates are inclusive.