

Monitoring and safeguarding of web services in wireless networks

Based on the document "Monitoring und Sicherstellung von Internetdiensten
in Wireless-Netzwerken" from Kensity Systemtechnik, Frank Kensity

1. Background	2
2. Network planning	2
3. Quality assurance	3
4. Recommendations	4



1. Background

Broadband internet access is a highly necessary location factor for more than 90% of all enterprises. Internet is needed to gather information, to enlarge the virtual economic area, for cities and communities as a factor of social life and many more. The decision of the responsible persons where to build a business park for example is not at last affected by the accessibility of broadband internet.

The business park A27 near Osterholz seemed to match very good in almost all requirements. But the infrastructure of communication had a lot of lacks. Because of too long distances between the park and the switching centre there even occurred faults with ISDN.

In the most cases business parks are built off site of cities. That is why there often are problems with the infrastructure of communication. To solve this, alternative solutions have to be found. A point-to-point radio system is the most auspicious one because you get rid of laying a cable.

2. Network planning

Planning a LAN (Local Area Network) is not really difficult as long as the network keeps within a local area like a building. To plan a wireless LAN is much catchier. Planning a WLAN applies to attend some facts:

- The bandwidth takes effect by
 - distance,
 - frequency,
 - weather,
 - sensitivity of the used components
 - and many more
- A frequency change often necessitates a hardware exchange (antenna)
- A rise of bandwidth often can only be afforded by bundling channels
- And many more

Planning the capacity of a WLAN is one of the most complicated parts when a Network is planned because amplification often results in buying new hardware. Building up a new WLAN should include the possibility to use contemporary services. The planning has to be conducted depending on the services, and their needed bandwidth, that will be used via the network.

3. Quality assurance

Every network has a limited bandwidth which has to be fragmented in a way that every member of the network gets the needed bandwidth assigned. This is called shaping. Optimal shaping means to analyse the pattern of use, to detect the expedient bandwidth for each user and to assign the optimal bandwidth to each user.

The analyse of the pattern of use has to follow some rules. Different services have to be prioritised by several conditions. Some of the most important criterions for the prioritization are listed below:

- Must the service get its data in real time, as e.g. VoIP, streaming or IP TV?
- Which bandwidth is necessary to guarantee a suitable working with the service / application?
- Is it possible to “buffer” the needed data with a proxy?

Another way to ensure that there is enough capacity for all users is to minimize the traffic by using a proxy server. The proxy server is an interface between the internal and the external network. It is possible to confine individual services or websites.

The reliability also is a topic that has to be surveyed. In wired networks it is rarely necessary to build up redundant network structures. The reason for this is that a breakdown mostly affects a better part of the structure.

In respect of wireless networks there have to be paid much more attention to a redundant structure. They are much more in danger to because for example a used frequency can be interferenced.

4. Recommendations

Keeping attention on these guidelines increases the chance to build up a well working network. But there are many more specifications that have to be complied. There are two rules of thumb:

- The more comprehensive a network becomes the more has to be planned, and
- the more comprehensive a network becomes the more expert knowledge is necessary to monitor and safeguard it in an adequately way.

So it is strongly recommended to gather network knowledge during the planning, build-up and the operational phase.

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