

OPTIMALISATION OF INTERNET NETS USAGE IN THE REGION OF KOŠICE, CHOICE OF OPTIMAL INTERNET ACCESS

OPTIMIZACIJA UPOTREBE INTERNETA U OBLASTI KOŠICE, IZBOR OPTIMALNOG PRISTUPA INTERNETU

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Abstract: The article treat of connecting single, villa and familiar home to internet and choice of optimal connecting in the region of Košice. The second part is oriented on choice of optimal internet access.

Key words: internet, digital lines - ISDN, Wireless Local Area Network - WLAN, analogue lines

Apstrakt: Ovaj rad obrađuje problem priključivanja individualnih kuća i domaćinstava na internet i izbor optimalnih priključaka u oblasti Košice. U drugom delu ovog rada razmatra se izbor optimalnog pristupa internetu.

Ključne reči: internet, digitalne linije - ISDN, bežična lokalna mreža - WLAN, analogne linije

1 INTRODUCTION

While proposing the optimal solution of the given problem, it was decided to double-check the costs resulting from the microwave access to Internet. It is necessary to arrange the access to WLAN net from the side of client for the successful Internet access.

2 THE PROPOSAL OF THE OPTIMAL INTERNET ACCESS FOR HOUSEHOLDS OUTSIDE OF BLOCK BUILD-UP AREA

To make it possible to access the client to WLAN net constructed by us, it is necessary to install in his dwelling the following equipment comprised of:

- PCI card,
- The conductor connecting PCI card with microwave antenna,
- The microwave antenna.

1 UVOD

Kada je predloženo optimalno rešenje za dati problem, odlučeno je da se više puta provere troškovi koji proizilaze iz mikrotalasnog pristupa internetu. U cilju obezbeđivanja uspešnog pristupa Internetu neophodno je sa korisničke strane osigurati pristup bežičnoj lokalnoj mreži (WLAN).

2 PREGLOG OPTIMIZACIJE PRISTUPA INTERNETU U INDIVIDUALNIM DOMAĆINSTVIMA LOCIRANIM IZVAN BLOKOVSKIH NASELJA

Da bi korisnik bio u mogućnosti da pristupi bežičnoj lokalnoj mreži, neophodno je da u svom domaćinstvu instalira sledeću opremu:

- PCI karticu,
- vod koji spaja PCI karticu sa mikrotalasnom antenom,
- mikrotalasnu antenu.

The interconnection of those components is depicted on the Figure 1. The price of this method of Internet access is oscillating around the sum of 9990,-Sk for one household (including the increased value tax). This price does not include the lightning safety catch. This type of proposed Internet access is depicted on the Figure 2.

Na slici 1 prikazan je način povezivanja pojedinačnih komponenti. Cena za uspostavljanje ovakvog pristupa internetu iznosi oko 9990 Sk za svako pojedinačno domaćinstvo (uključujući PDV). Ova cena ne obuhvata gromobransku zaštitu. Ovaj način pristupa Internetu prikazan je na slici 2.

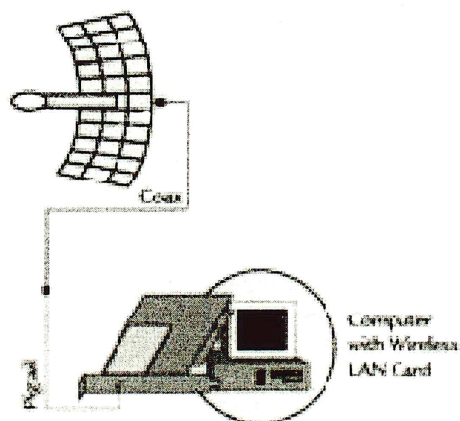


Figure 1 The setting up scheme of particular components
slika 1 Instalaciona šema pojedinačnih komponenti

The prices of particular components were taken from the price book of firm AGEM Ltd. that is engaged mainly in selling the wireless equipments. The equipments that comprise the constructed net are produced by the firm SparkLan and the microwave antennae are produced by the firm CSAT.

Cene pojedinačnih komponenti preuzete su iz cenovnika firme AGEM Ltd., koja se pretežno bavi plasmanom bežične opreme. Opremu koja je sastavni deo mreže proizvodi firma SparkLan, a mikrotalasnu antenu proizvela je firma CSAT.

The connecting fee for the access to WLAN net outside of the block build-up area can be decreased to 4000,-Sk (the lowest possible price for the Internet access), if there is a LAN net build between houses on the base of neighbors mutual agreement. But all conditions for the construction of LAN net that were already mentioned must be kept (Figure 2).

Naknada za priključak na WLAN van blokovskih naselja može se smanjiti na 4000 Sk (najniža moguća tarifa za pristup internetu), ukoliko se između individualnih kuća ugradi LAN mreža, a na bazi njihovog zajedničkog dogovora. Ukoliko se ovaj dogovor postigne, svi uslovi za instaliranje LAN mreže moraju se u potpunosti poštovati (slika 2).

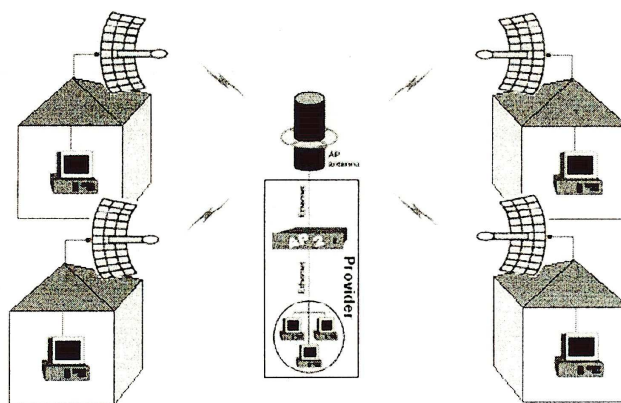


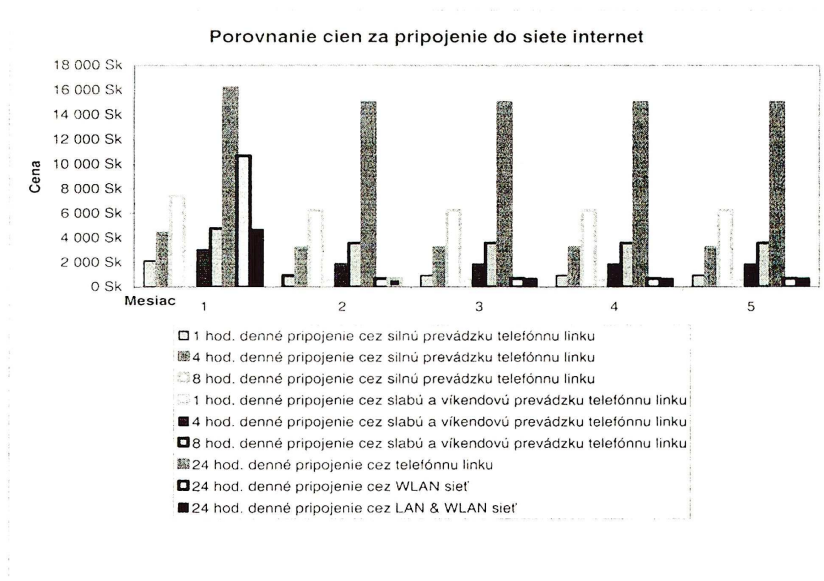
Figure 2 WLAN net outside of block build-up area
slika 2 WLAN mreža van blokovskih naselja

It was discovered that the costs of the realization of the Internet access through WLAN net are higher than the costs of the Internet access through analog or digital telephone lines.

If we consider that the monthly fee for the Internet access through telephone line (including the telecommunication fees) is 15000,-Sk and the founding fee of a DialUp line or ISDN line is 1198, -Sk, then the client will pay 16200, -Sk for the first month and 15000,-Sk for the daily 24-hours Internet access in every next month. The individual Internet access through microwave antenna costs around 107000,-Sk in foundation fee (including the 699 Sk flat rate for the first month). Every next month the client will pay only the monthly flat rate of 699,-Sk. The beneficiality of those investments is even higher for one household accessed to internet by LAN net connected to WLAN net (Figure 3) in the flow of one month, because of the lower level of founding fee. This comparison is graphically depicted in the graph 1. The graph includes the time limits of Internet access through telephone line from the Table 1.

Ustanovljeno je da su troškovi uvođenja priključka na internet preko WLAN mreže veći od priključka preko analognih ili digitalnih telefonskih linija.

Ukoliko se uzme u obzir da mesečna tarifa za pristup internetu putem telefonske linije (uključujući naknadu za telekomunikacione usluge) iznosi 15000 Sk, a priključna tarifa za DialUp liniju ili ISDN liniju iznosi 1198 Sk, znači da će korisnik plaćati 16200 Sk za prvi mesec i 15000 Sk za dnevni 24-časovni pristup internetu svakog sledećeg meseca. Individualni pristup internetu preko mikrotalasne antene košta oko 107000 Sk za priključnu tarifu (uključujući 699 Sk fiksne tarife za prvi mesec). Svakog sledećeg meseca korisnik će plaćati samo fiksnu mesečnu ratu od 699 Sk. Ova investicija biće još isplativija za pojedinačno domaćinstvo ukoliko se LAN mreža priljuči na WLAN mrežu (slika 3) u toku jednog meseca, s obzirom na nižu priključnu tarifu. Pomenuto poređenje grafički je prikazano na dijagramu 1. Ovaj dijagram prikazuje i vreme ograničenog pristupa internetu preko telefonske linije koje je dato u tabeli 1.



*Graph 1 The comparison of fees for the Internet access
dijagram 1 Uporodna analiza troškova pristupa internetu*

The Graph 1 makes it clear that the most beneficial solution of the internet access for the households outside the block build-up area is 24-hours daily access through the WLAN net.

The graph shows that only the Internet access through the telephone line limited to 1 hour daily in the slow operating flow has comparable operating costs with WLAN net. But this solution

Dijagram 1 jasno pokazuje da ukoliko stanujete u individualnom domaćinstvu koje je van blokovskog naselja, najisplativije rešenje za pristup internetu predstavlja 24-časovna konekcijaa preko WLAN mreže.

Dijagram prikazuje da se samo operativni troškovi pristupa internetu preko telefonske linije ograničeno, na samo 1 sat korišćenja dnevno, i to u sporijem

is not beneficial because of the time limit of the Internet access.

In the Table 1, in the first column, there is depicted the price for the founding of Internet access and the operating costs per one month. The other columns state the monthly operating costs only.

After the realization that the Internet access through the WLAN net is the most beneficial solution for the connecting of households outside the block built-up area to Internet, we have decided to double-check the costs resulting from the founding of provider firm that would provide the Internet access through WLAN net for the households outside the block build-up area.

Table 1 The comparison of fees for the Internet access
tabela 1 Upporedna analiza tarifa za pristup internetu

		Mesiac				
		1	2	3	4	5
Pripojenie	1 hod. denné pripojenie cez silnú prevádzku telefónnu linku	2 150 Sk	952 Sk	952 Sk	952 Sk	952 Sk
	4 hod. denné pripojenie cez silnú prevádzku telefónnu linku	4 427 Sk	3 229 Sk	3 229 Sk	3 229 Sk	3 229 Sk
	8 hod. denné pripojenie cez silnú prevádzku telefónnu linku	7 463 Sk	6 265 Sk	6 265 Sk	6 265 Sk	6 265 Sk
	1 hod. denné pripojenie cez slabú a víkendovú prevádzku telefónnu linku	1 768,80 Sk	570 Sk	570 Sk	570 Sk	570 Sk
	4 hod. denné pripojenie cez slabú a víkendovú prevádzku telefónnu linku	3 064,80 Sk	1 866 Sk	1 866 Sk	1 866 Sk	1 866 Sk
	8 hod. denné pripojenie cez slabú a víkendovú prevádzku telefónnu linku	4 792,80 Sk	3 594 Sk	3 594 Sk	3 594 Sk	3 594 Sk
	24 hod. denné pripojenie cez telefónnu linku	16 200 Sk	15 000 Sk	15 000 Sk	15 000 Sk	15 000 Sk
	24 hod. denné pripojenie cez WLAN sieť	10 699 Sk	699 Sk	699 Sk	699 Sk	699 Sk
	24 hod. denné pripojenie cez LAN & WLAN sieť	4 699 Sk	699 Sk	699 Sk	699 Sk	699 Sk

režimu protoka informacija mogu pcediti sa troškovima WLAN konekcije. Međutim, treba imati u vidu da ovo rešenje nije isplativo zbog ograničenog vremena pristupa internetu.

U tabeli 1 prva kolona prikazuje priključnu tarifu pristupa internetu uključujući i mesečne operativne troškove. Ostale kolone prikazuju samo mesečne operativne troškove.

Pošto je ustanovljeno da je za pristup internetu najisplativije rešenje za individualna domaćinstva koja su izvan blokovskih naselja konekcija preko WLAN mreže, rešeno je da se ponovo provere troškovi provajderske firme za obezbeđivanje pristupa internetu.

- **Blue colour** depicts the Internet access with the lowest level of operating costs, but this solution is not really beneficial because of the time limit of Internet access,
- **Red colour** depicts the Internet access with the highest level of operating costs,
- **Yellow colour** depicts the Internet access with the lowest level of operating costs, but the founding fee is high here because of the separate Internet access,
- **Plava boja** označava pristup internetu uz najniže operativne troškove, koji se, međutim, ne smatra isplativim zbog ograničenog vremena pristupa.
- **Crvena boja** označava pristup internetu uz najviše operativne troškove.
- **Žuta boja** označava pristup internetu uz najniže operativne troškove, ali visoke priključne tarife zbog pojedinačnog pristupa internetu.

- **Green colour** depicts the most beneficial solution of Internet access

- **Zelena boja** označava najisplativije rešenje za pristup internetu.

1.1 Calculations – Summary of Costs for One User

On the base of double-check of all costs and overheads, these are the resulting monthly flat rates, if the firm is fulfilling the following conditions:

- 256 Kbit/sec line with statistically allocated width of zone: 699 Sk per month
- 256 Kbit/sec line with the guarantee of zone width: 786 Sk per month
- 256 Kbit/sec line with the guarantee of zone width, the guaranteed 99,5% time and 99,9% capacity accessibility of service: 824 Sk per month.

2 CONCLUSION

From the point of user costs the best solution of Internet accessing of clients is possible through WLAN net. This solution offers especially: the flexibility of access, the fact that the period of time spent on Internet is not limited with the effort to spare the costs and the increased attractiveness for the client because of the availability of prices. WLAN net could enable the Internet access even to common households in the future.

1.1 Proračun – rekapitulacija troškova po individualnom korisniku

Na osnovu dvostruke provere svih troškova, uključujući i režijske, mogu se ustanoviti fiksne mesečne rate, ukoliko firma koja se obavezala da obezbedi priključak ispuni sledeće uslove:

- 256 Kbit/sec linija sa statistički određenom amplitudom zone: 699 Sk mesečno,
- 256 Kbit/sec linija sa garantovanom amplitudom zone: 786 Sk mesečno,
- 256 Kbit/sec linija sa garantovanom amplitudom, garantovanih 99,5% vremena i 99,9% pristupnog kapaciteta: 824 Sk mesečno.

2 ZAKLJUČAK

Sa tačke gledišta korisnika najpovoljnije rešenje za pristup internetu je priključak preko WLAN mreže. Ovo rešenje nudi posebnu fleksibilnost pristupa, jer vreme potrošeno na internetu nije ograničeno željom da se smanje troškovi obezbeđujući korisniku veću slobodu i mogućnost delovanja zbog povoljnijih cena. WLAN mreža treba da obezbedi nesmetan i pouzdan pristup internetu pojedinačnim domaćinstvima u bliskoj budućnosti.

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