Preventing Bill Shock Through Automated Economic Connections

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Abstract

Of late, bill shock has raised the alert flag in Europe and United States demanding better management and transparency in billing processes. Regulatory bodies in these regions have taken active role in combatting bill shock and efforts are underway.

This paper focuses on the European region, which was the first region hit by bill shock. It gives an overview of Europe's broadband landscape and possible solutions that should be put in place to curb bill shock.

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European Broadband Landscape & Consumer Behaviour

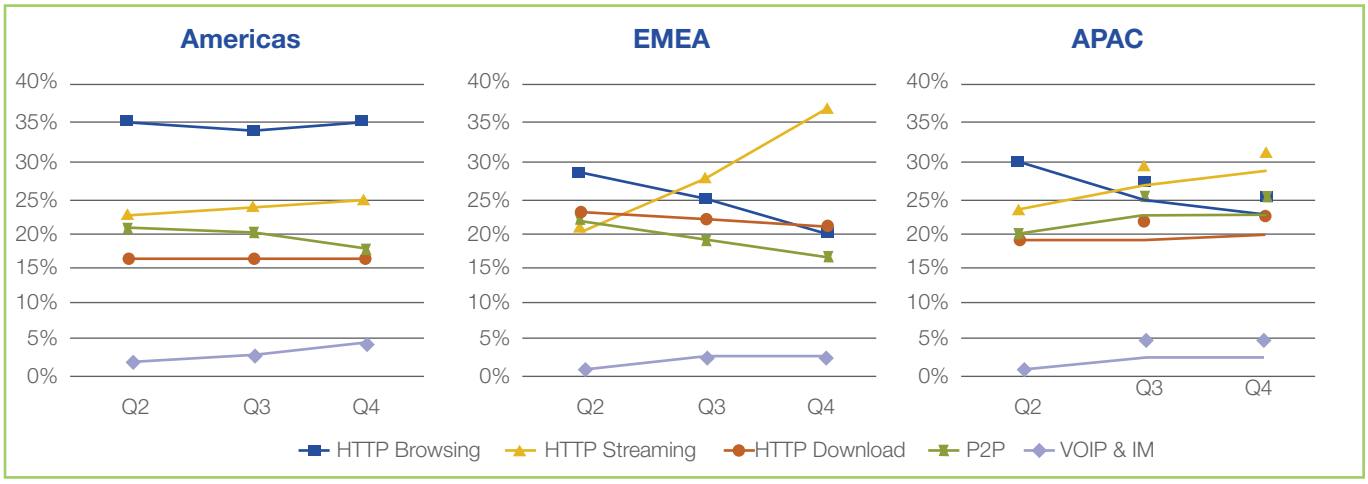
High Broadband Demand

Over the recent years, the demand for broadband services in Europe has been increasing significantly, particularly in Western Europe. Though broadband demand in other European jurisdictions is also growing, the take up level remains less compared to Western Europe, which currently experiences a market penetration rate of 60.5%, the second highest after North America.

Region	Broadband Subscribers (million)	Market Penetration (per 100 inhabitants)
East Asia & Pacific	381.4	17.8
Eastern Europe & Central Asia	49.2	12.4
European Union (EU-27)	294.1	60.5
Latin America @ Caribbean	52.4	9.4
Middle East & North Africa	27.8	7.6
North America	210.9	62.5
South Asia	9.1	0.6
Sub-Saharan Africa	15.6	1.9
World	1040.6	15.6

Figure 1: Regional broadband subscribers and market penetration rates

The high demand for broadband in the European region is driven by entertainment through services such as Video-on-Demand and IPTV . This is further proven true in a research by Allot Communications, the EMEA region, which shows Europe (EMEA) has experienced a dramatic increase in HTTP streaming (video applications) from Q2 – Q4 2009.



Source: Allot Communications

Figure 2: Mobile data usage trends broken down by top applications, Q2-Q4/09

[1] *Global Insights on Broadband, Fact Book 2009*

In particular, mobile broadband is on high demand with Europe having the highest 3G penetration in the world at 44.3% , a rate that indicates mobile broadband is preferred over DSL in Europe.

Region	3G/Total Wireless	DSL/Total Mainliners
East Asia & Pacific	18.3%	15.1%
Eastern Europe & Central Asia	10.1%	4.8%
European Union (EU-27)	44.3%	29.1%
Latin America @ Caribbean	20.2%	4.0%
Middle East & North Africa	8.9%	6.2%
North America	21.0%	37.9%
South Asia	12.3%	0.2%
Sub-Saharan Africa	7.9%	4.6%
World	21.5%	12.8%

Figure 3: Regional 3G penetration vs. DSL

Network Congestion Not Critical

Generally, where there is high demand for mobile broadband, network congestion is often an issue. However, interestingly, this is not the case in Europe. Though there is a huge demand for mobile broadband, Europeans do not face network congestion and this could be due to the following reasons:

- **Advanced networks** – IEurope comprising of HSPA and HSPA+ whereby 41% of HSPA networks are in Europe and 44% of HSPA subscribers reside in Europe. These networks are able to handle the existing demand for data. Figure 4 shows the deployment of HSPA and HSPA+ networks in Europe.

Source: Global mobile Suppliers Association (GSA)

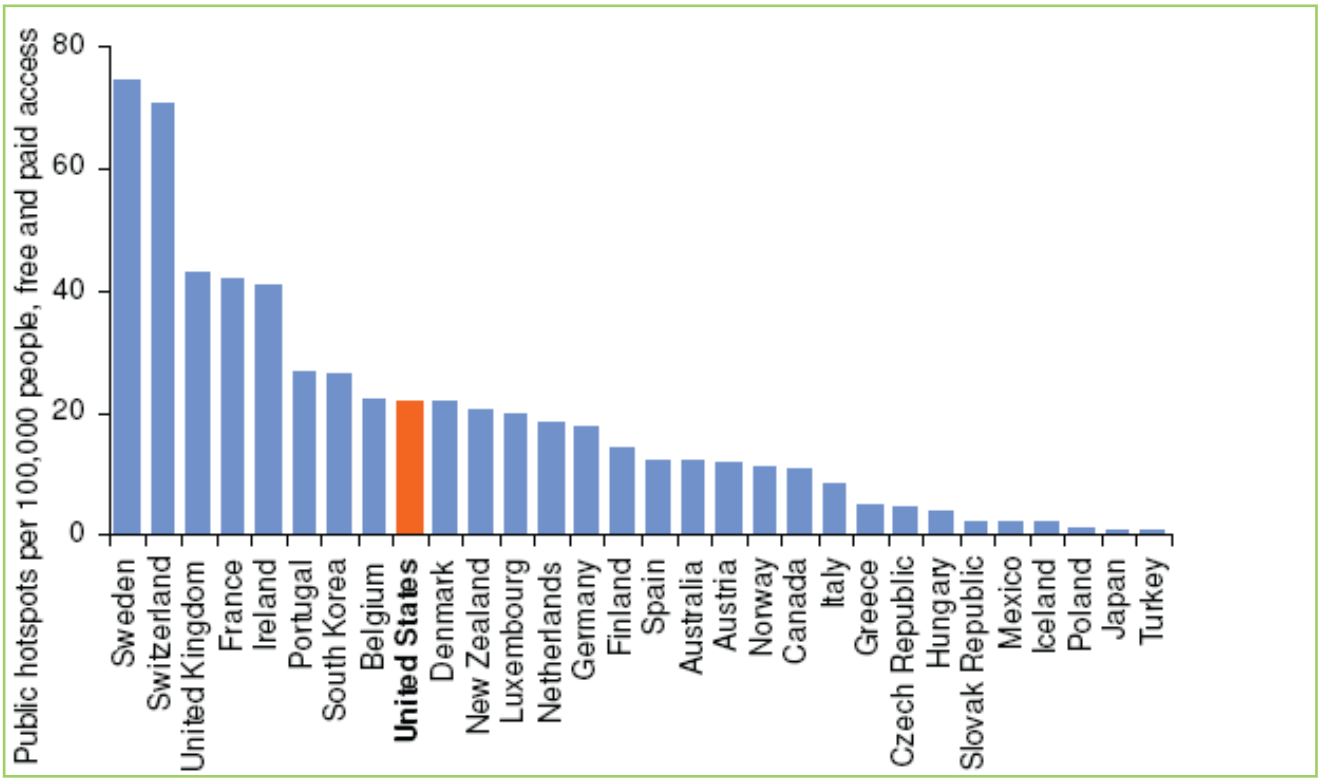
Figure 4: Europe's HSPA and HSPA+ Networks

[2] *Global mobile Suppliers Association (GSA)*

- **High network availability.** Europe is sectioned into many countries within a small geographical area, more than 180 operators within. Thus, several operators' networks overlap each and the concentration of available network capacity per geographical area is high.

  Additionally, the concentration of WiFi coverage in Europe is substantially high with some countries having double or triple the number of hotspots in US (see Figure 5). Some of the larger operators like T-Mobile have over 20,000 WiFi hotspots throughout Europe and North America to be used as alternative dual access point to share capacity load.

  Meanwhile, independent WiFi providers and MVNOs are also providing services throughout Europe, predominantly in the CDB, thus alternative data access is widely available.



Source: Jwire data

Figure 5: Public Hotspots in Selected Countries Worldwide

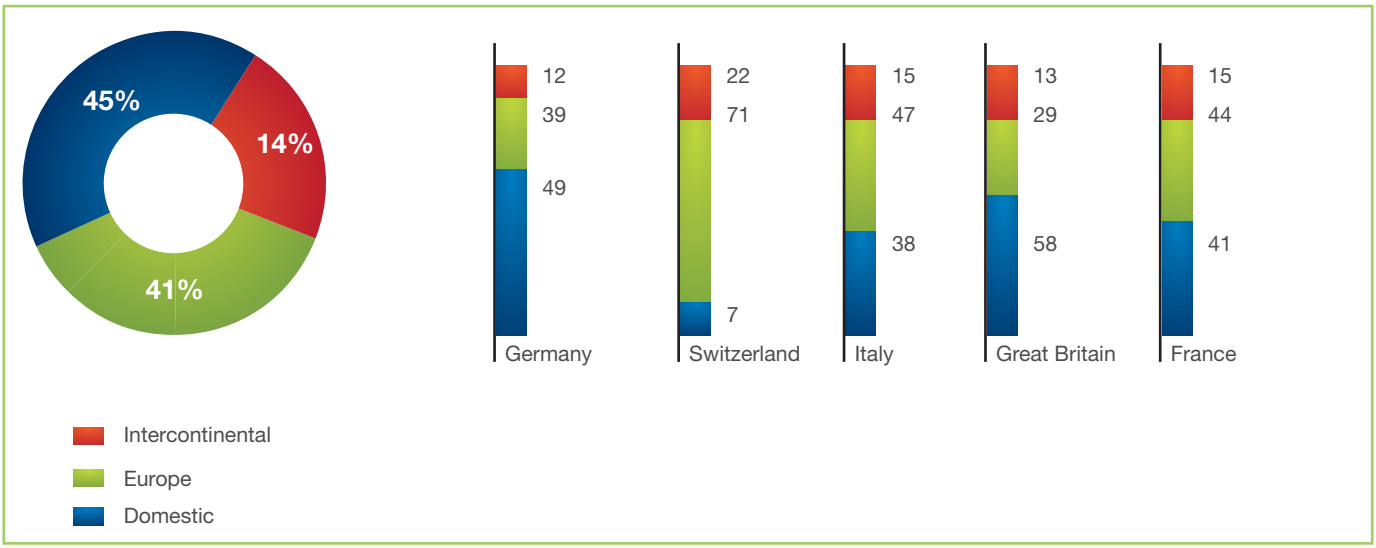
- **Tariff Structure.** Generally, European operators do not offer buffet plans, hence users are more careful in utilizing their data plans. But by large, many users are not technically sound to comprehend how much of data bits are used per application for example, email versus Youtube streaming versus voice over data. This might cause users to be bogged down with high charges when the limit is exceeded, worst still when roaming. This causes bill shock.

- **Technological Forerunner**. From the telecoms perspective, it is important to note that Europe is in the forefront of technological evolution. This is proven by its rapid adoption of HSPA+, fixed mobile convergence, mobile to mobile convergence and femtocell deployments – technology employments that improve bandwidth utilization for optimum networks.

Travel Habits

Aside from being heavy broadband users, Europeans are prone to travel within the regions to countries such as Germany, Switzerland, Italy and France. In a research conducted by AirPlus, 45% business travels (outbound travels) by Europeans occurred within the region.

Percentage of business flights according to destination areas(in %)



Source: AirPlus Business Travel Index 2009

Figure 6: Europeans' Business Travel Destinations in 2009

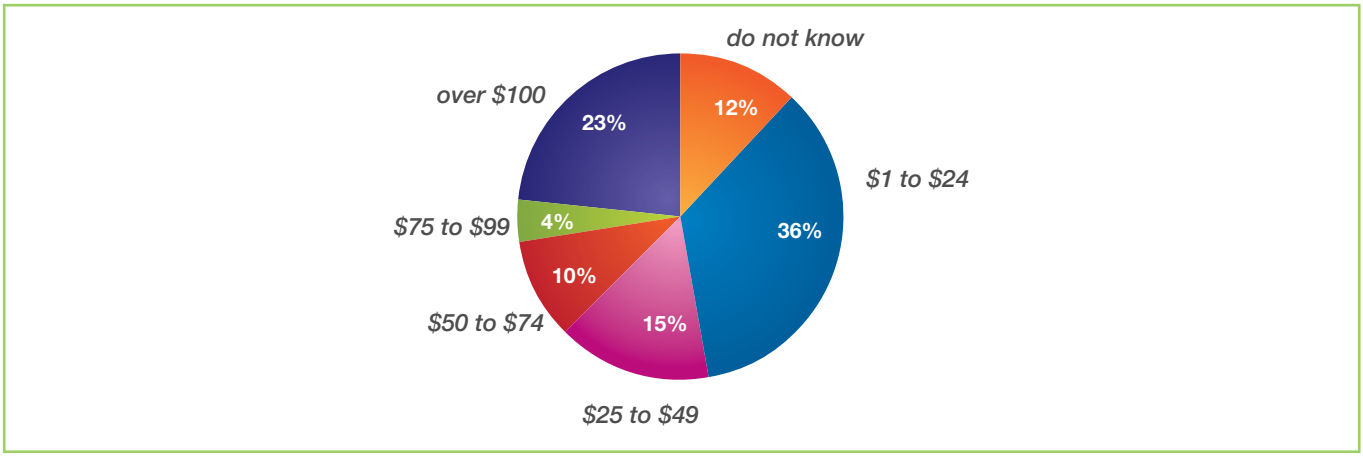
Managing Data Roaming to Prevent Bill Shock

In general, Europeans' high broadband usage, coupled with high regional travel paves the potential for bill shock to occur. As users are more inclined towards mobile data and travel at the same time, often users are unaware of their data consumption and how their data roaming activities are relate to their monthly plans or current data/voice plans. Often, these charges are exorbitant, resulting in bill shock.

What's With Bill Shock?

Bill shock transpires when users receive mobile phone bills way in excess of the standard amount (with no changes to current plans) with no prior warning. This phenomenon typically occurs as a result of roaming services and has become a growing concern in the US and European regions, particularly in the increase of mobile data consumption.

To understand the impact of bill shock to users in general, let's look at a study conducted by the Federal Communications Commission (FCC) reflecting American users (similar study is not available for European users at the moment). FCC's study revealed that one in six mobile phone users or 17% in the US suffer from bill shock. From the respondents surveyed, 23% (second highest sector) reported that their bill shock involved an increase of over USD 100.



Source: Federal Communications Commission, April – May 2010

Figure 7: Size of mobile phone bill increase

Additionally, 84% of respondents said that their mobile service operator did not alert them as they were on the verge of exceeding their normal plans and 85% reported they did not receive any form of notification after the sudden surge in bill amount.

Causes of Bill Shock

Data Roaming

One of the biggest causes of bill shock, particularly in Europe is caused by users travelling between countries and using mobile data applications. Data is charged 10% - 700% more when roaming, hence, if users are not watchful of their cellular data usage, bill shock occurs.

Figure 8 shows roaming rates of operators within Europe. Data roaming charges are more than 100% than base rates.

Home Country : UK		Roam To: Italy		
Operator	Cost / MB (in €)	Operator	Cost / MB (in €)	Additional Paid For Roaming (in €)
Oranger	0.02	3, Vodafone	3.63	3.61 (180%)

Home Country: Ireland		Roam To: France		
Operator	Cost / MB (in €)	Operator	Cost / MB (in €)	Additional Paid For Roaming (in €)
02	0.01	Orange SFR	4.98	4.979 (4.979%)

Home Country: Ireland		Roam To: France		
Operator	Cost / MB (in €)	Operator	Cost / MB (in €)	Additional Paid For Roaming (in €)
Vodafone	0.038	02,T-Mobile	3.95	3.912 (103%)

Source: European Commission, websites of respective operators

Figure 8: Base and Roaming Charges in Europe

Unaware of Limit

When the St. Germains family in Massachusetts received their phone bill, they were in for a rude shock. On that particular month, the bill (normally about $100) was more than $ 12,000! Upon investigation with their service provider, Verizon Wireless explained that when the family had renewed their two-year contract, the free data download promotion had elapsed. Not realizing the service is not longer available, Bryan St. Germain, a college student downloaded 816MB of data in games.

Similar to the plight of St. Germains, many users are unaware of their data package limits and cost/KB of data utilized. This situation is made worst as operators are migrating from unlimited data plans to tiered pricing. Users who experience this migration are not conscious of the impact and do not monitor their use, instead, often utilize data as freely as they would on an unlimited plan. It's no wonder then that bill shock happens.

Mobile Phone for Tethering

Following on from the case mentioned above, Bryan St. Germain had logged onto the Internet via his mobile phone, tethering it to his home computer, under the impression the family had free data downloads (from a previous promotion).

Users, often travellers find it expensive to use the hotel's broadband connection or are at locations with no Internet services. These users resort to tethering their mobile phones to their laptops for Internet access. Data applications and web surfing on a PC consumes more data compared to mobile phones – for example, a full website viewable through the PC displays much more data in the form of text and graphics in comparison against the same website on mobile version.

Rise of Application Stores

Most of the time, mobile data is consumed through smartphones such as the iPhone and Android-based phones which host application stores as well. Today's users especially the younger generation make generous use of these stores to download and access various applications which hook users to download massive data amounts, ultimately leading to bill shock.

Impact to Operators

No doubt bill shock has definitely challenged the financial capacity of many individuals and families, resulting in consumer uproar and triggered regulatory intervention both in US and Europe. The common reason for bill shock is the lack of awareness. Users simply do not know how much the data consumption is going to cost them, worst still when roaming outside their home network.

The key solution to this problem involves transparent communication between the consumer and network operator. Without transparency in data usage, this phenomenon would impact operators negatively, this includes potential for customer churn, the threat of costly litigation and bad publicity. Additionally, users who refuse to pay their huge bills result in bad debts.

How To Combat Bill Shock?

There are three parties who have to take up the responsibility of combatting bill shock – regulatory bodies, operators and users.

Regulatory Bodies

Regulatory bodies have thus far taken the active role in curbing bill shock and efforts are underway. The first and highest affected group are the Europeans. As such, the European Union (EU) introduced several measures to provide protection from data roaming bill shock as of 1st March 2010.

- Rate reduction – All calls, text and emails received on mobile phone while roaming to be 60% cheaper.
- Cut off limit – Every account must be introduced with a data roaming limit. When 80% of the limit is reached, an alert is sent to the user. Once 100% of the limit is reached, the user is barred from roaming data services.

Similarly, the FCC is trying to address the issue of bill shock in the US and employing the system implemented by the EU – mobile network operators must send users a (free) text when nearing the data roaming limit for voice, data and text. FCC is also looking into further measures to ensure additional fees charges are more transparent, an effort to make the wireless industry more consumer-friendly.

Operators

Sadly, most operators carry a rather nonchalant attitude towards bill shock. The negative implications of this issue are outshined by the monetary gains achieved. Aside from implementing actions imposed by the regulatory bodies, operators can make remarkable improvements to their OSS/BSS systems for a more user friendly bill.

When wireless carriers had to support only voice calls and text messages, their existing operations support systems (OSS) and billing support systems (BSS) had been sufficient. Those systems automatically capture and catalogue account activity after it occurs but only spit out reports as needed for monthly statements or customer Web portals that don't promise real-time usage statistics.

As the industry becomes increasingly application and service-driven, legacy OSS/BSS systems are no longer capable to handle data usage and provide timely reporting to ensure a consumer friendly experience. By tightly integrating the OSS/BSS with policy controllers, network operators are equipped with the technology to provide smart and real-time billing systems. With this system, users are able to control usage based on their preference. For example, parents can create custom restrictions for their children on calls, texts, data usage and content purchases.

One such system is Bridgewater's myPolicy platform, a smartphone application that works with a policy controller in the carrier's core network to make decisions based on real-time billing information. Users can track and set dollar or megabyte limits from their handset, deciding when to alert or cut themselves off. These flexible limits can be set or amended at any time by the subscriber – in line with travel plans or personal financial limits, which can be applied dynamically and automatically.

Mobile Users

While operators can implement smart real-time billing systems and can be updated by users, this method requires the user to access a self-service portal to edit their preference. To a certain extend this can be troublesome to the user and potentially detrimental to the operator. As the policy controller is situated on the operator's core network, slight security lax or glitch can be hazardous. There are risks of users hacking the system to obtain or even change the settings/preferences of other users.

An alternative and safer method is through connection managers. Connection managers' primary role is to enable users to connect to a mobile network and it is installed on the user's mobile node itself. This gives connection managers the edge in controlling connection access and preference on the spot without requiring remote access.

Connection managers enable connection based on user profiles which are preset based on best available connection or best signal strength. Similarly, economic profiles can be set up for data roaming to enable users to choose the cheapest broadband connection while away from home country. Data roaming charges can be programmed into the connection manager. While abroad, before establishing a connection, the connection manager will automatically prompt users on available networks to connect to and suggest the most economical option. This way, users know exactly how much they are paying for every bit of data consumed.

A user travelling abroad can select the "Most economic" connection profile – this way, he will be automatically connected to the broadband network with the cheapest rate.

Figure 9: Use Connection Managers to Connect Based on Preferred Profile

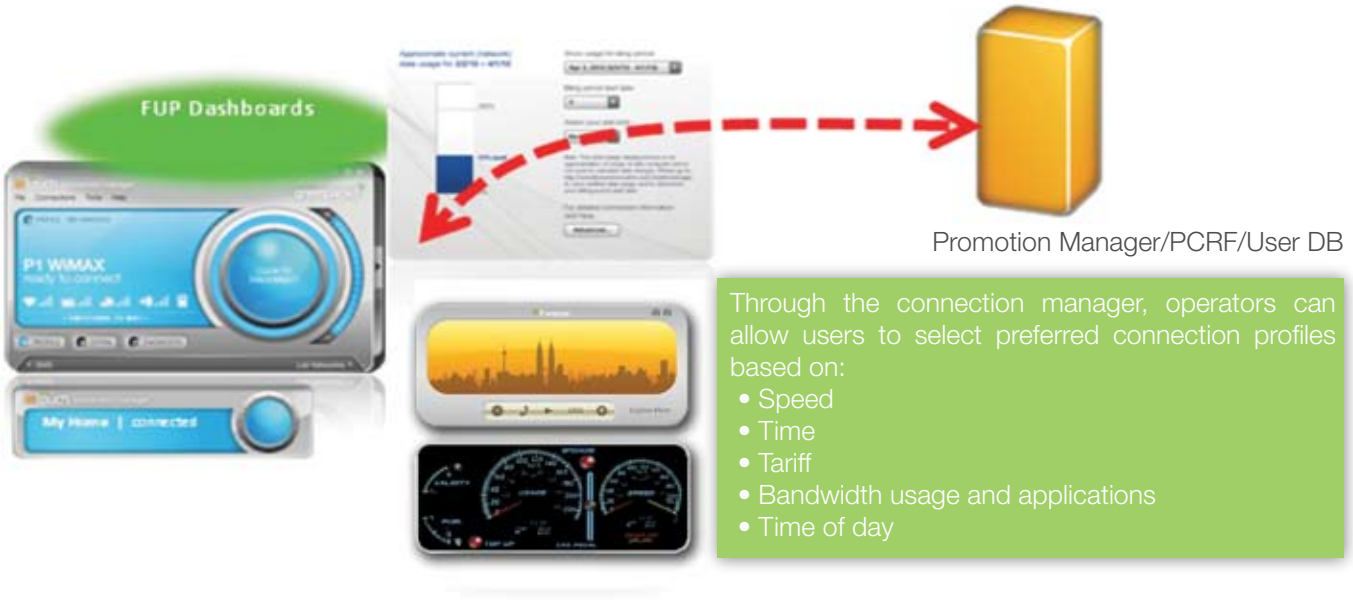


Figure 10: Connection Profiles Options for Connection Manager

Meanwhile, operators in the European region with roaming partnerships can offer better bargains to users who roam within the partnered networks.

Further to this, connection managers can be used as the advertising platform to publish data roaming rates. Instead of swarming a user's mobile phone with text messages, operators can advertise their broadband rates, discounts and promotions through the connection manager.

Why Connection Managers ?

Subscribers greatly benefit through connection managers as it shows real-time information on the spot, without having to log into remote systems. In other words, it empowers them with the necessary information to make decisions immediately without later regrets.

On the other hand, operators have the capability to ensure users are happy with the service received resulting in increased loyalty based on the confidence that there is greater transparency in usage and billling process. It is important that operators take efforts so thath users do not experience bill shock. Users who have been shocked once may most likely purchase a prepaid data plan when they travel. While this increases hastle for the user, operators lose the opportunity to increase ARPU. Next, by extending transparency, users are in control of their usage and charges. As such, if budget permits, these users will not hesitate to pay for additional speed or capacity, giving operators more upsell prospects.

Find Out How You Can Prevent Bill Shock Through Economic Connections!

Greenpacket challenges you to empower users with an automated mechanism to monitor their data roaming usage economically. At Greenpacket, we understand the demands placed on Operators like you. That is why we have developed groundbreaking technologies and innovative solutions to enrich your end-user experience and help you grow your business and new revenue streams.

With Greenpacket, limitless freedom begins now!

Free Consultation

If you would like a free consultation on how you can start saving network cost through data offloading, feel free to contact us at marketing.gp@greenpacket.com kindly quote the reference code, WP10BS when you contact us).

References

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About Green Packet

Greenpacket is the international arm of the Green Packet Berhad group of companies which is listed on the Main Board of the Malaysian Bourse. Founded in San Francisco's Silicon Valley in 2000 and now headquartered in Kuala Lumpur, Malaysia, Greenpacket has a presence in 9 countries and is continuously expanding to be near its customers and in readiness for new markets.

We are a leading developer of Next Generation Mobile Broadband and Networking Solutions for Telecommunications Operators across the globe. Our mission is to provide seamless and unified platforms for the delivery of user-centric multimedia communications services regardless of the nature and availability of backbone infrastructures.

At Greenpacket, we pride ourselves on being constantly at the forefront of technology. Our leading carrier-grade solutions and award-winning consumer devices help Telecommunications Operators open new avenues, meet new demands, and enrich the lifestyles of their subscribers, while forging new relationships. We see a future of limitless freedom in wireless communications and continuously commit to meeting the needs of our customers with leading edge solutions.

With product development centers in USA, Shanghai, and Taiwan, we are on the cutting edge of new developments in 4G (particularly WiMAX and LTE), as well as in software advancement. Our leadership position in the Telco industry is further enhanced by our strategic alliances with leading industry players.

Additionally, our award-winning WiMAX modems have successfully completed interoperability tests with major WiMAX players and are being used by the world's largest WiMAX Operators. We are also the leading carrier solutions provider in APAC catering to both 4G and 3G networks and aim to be No. 1 globally by the end of 2010.

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