
‘Absolute freedom with
the BlackBerry:
work whenever and
wherever you want’

BLACKBERRY – EMAIL AND CALENDAR ACCESS ANYWHERE, ANYTIME

Palm, Psion and Pocket PC are all devices used as Personal Digital Assistant (PDA). In the past these were often bought on own initiative for a relatively high price. Chris van Werkhoven looks at the technology behind the BlackBerry and how it differs from other technologies.

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Photography: Vodafone

New technology brings versatility to new products in the market; Pocket PC with Bluetooth, Palm in combination with a mobile telephone or even a BlackBerry? Everything is in place for companies to invest in this, but how do you as a company make the right choice?

The BlackBerry is certainly not positioned as a 'Mobile Desktop', but as an extension of the mailbox with which web-enabled applications can also be viewed. The balance lays in the PIM items and making downtime productive. This includes waiting for an appointment, at airports or during a meeting for an urgent e-mail. Users experience the BlackBerry as an e-mail appliance without frills that differentiates itself as being easy to use. A no-nonsense device, in fact.

Push, Pull and Semi-Pull

The BlackBerry is based on an Always-on, Always-connected principle.
The device never needs synchronizing as it makes use of a special patented technology that ensures that changes automatically appear on the handheld (Push). E-mails can be written on a BlackBerry whilst it is out of range of the GPRS network that will automatically be sent as soon as the device picks up the network signal again. Interactive functions, such as address book, browsing and viewing attachments are not available off-line. With limited memory in a BlackBerry means that attachments and the address book of Exchange and Notes are called up interactively.

Wireless networks

The BlackBerry Enterprise Server (BES) handles the communication between the Exchange/Notes servers and the BlackBerry handheld's. The BlackBerry PDA needs this gateway to synchronize, view attachments and look up the address book. The BES actually functions as proxy to enable browsing of the Internet. The filters that stipulate which messages must be sent to the handheld are set up on the desktop. The BES software is only available for Windows NT/200x platform, and is scalable to approximately 500 handheld's per BES.

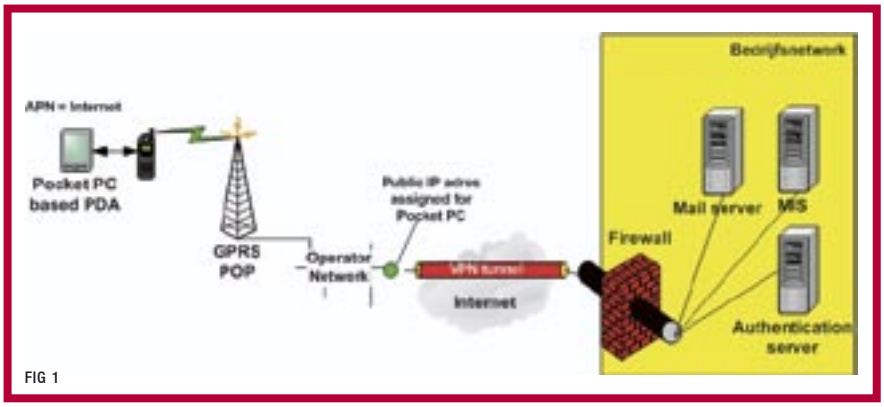

FIG 1

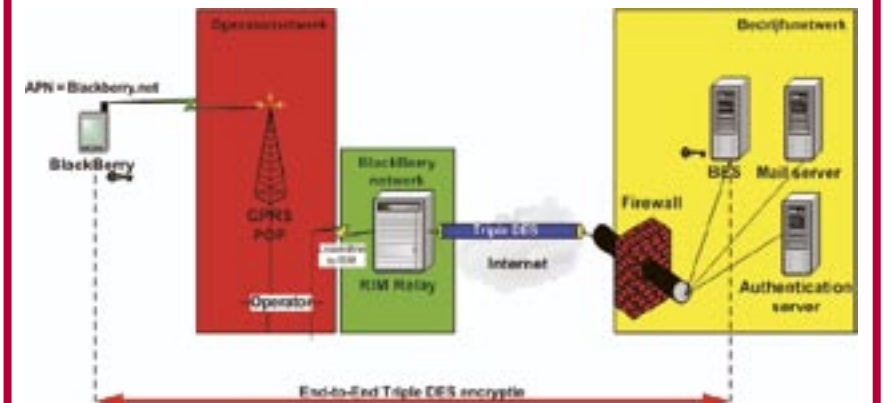

FIG 2

An Access Point Name (APN) is configured into the SIM-card of the operator. The APN determines to which network the data traffic will be routed when a GPRS connection is made. If the APN points to the Internet, the device will simply be an Internet node. The operator will then route all the data from the device; in fact delivery to the gates of hell! Every responsible company will build a VPN tunnel between the device and the company network, but it still remains as a simple node in the Internet. The handheld is connected to the Internet and meanwhile it skips through the company security and passes data to the corporate heart.

A BlackBerry SIM-card APN is configured to point to the BlackBerry network. The data traffic from the BlackBerry will then be sent by the operator and delivered by its own connection direct to the RIM.
Relay servers here use a store-and-forward mechanism to communicate with all the BlackBerry servers.

If the BlackBerry is used for browsing, then data goes vie triple-DES to the BES and from there takes all the steps that apply to internal nodes. Here one can think of not only proxies and firewall setups and restrictions, but also http virus scanning. One of the most important aspects allied to the use of PDA's is the protection of company data, not only in the exchange of but also in the storage of data in the handheld. The BlackBerry offers a substantial level of protection 'out-of-the-box'.

All data exchanged with the company network is triple DES encoded.
What is unique to the BlackBerry is that in case it is lost or stolen the stored data can be wiped, remotely. If the device is out of range of the GPRS network, or switched off, then the wipe action will be carried out as soon as the device is switched on in range.
This keeps company information out of the hands of unauthorized persons.

The role of the operator

For what is implied by the working methods of the BlackBerry, not every operator can offer BlackBerry services. Every BlackBerry operator has to have a connection with the BlackBerry network from RIM and configure a different APN on its SIM-card.

Furthermore, a SIM-card is associated with an operator network and has the scope of a specific country. In Europe there are a number of operators that are represented in multiple countries. However, the SIM-card issued by one operator in the Netherlands will differ from the SIM-card issued by the same operator in Germany. A specially programmed SIM-card is used in a BlackBerry whereby the operator has made the necessary modifications to its network.

Each operator has made its own agreements with other operators about GPRS roaming so that the coverage in other countries can vary per supplier. For example, O2 in the United Kingdom has different contracts than O2 in the Netherlands. The GPRS 'footprint' is thus dependent on the agreements for GPRS roaming.

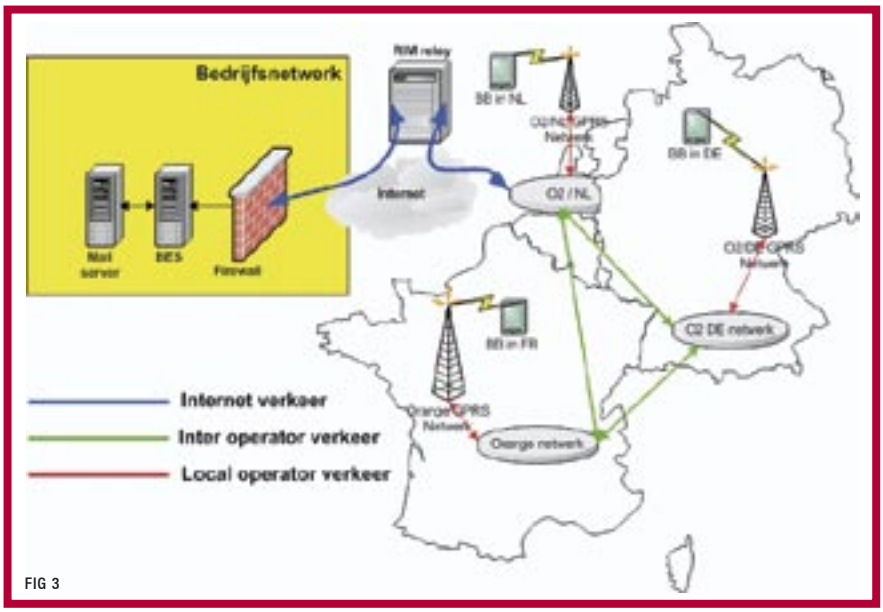

FIG 3

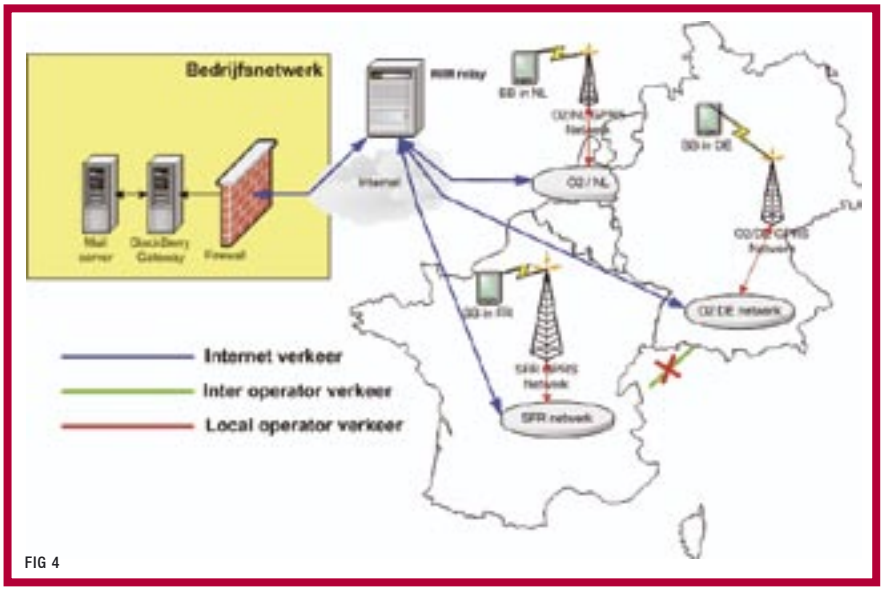

FIG 4

Single or multiple operators

It is not an easy matter to fathom how GPRS and BlackBerry connect.
The dotted arrows in figure 2 indicate the routing of data traffic between own company network and a BlackBerry that finds itself in another country and is therefore 'roaming'. Here are colleagues who are on a trip and looking for the home server. The dashed arrows show how the data traffic flows when a PDA that is in another country downloads data from the company server via a mobile network and the Internet. Here we have colleagues from a foreign branch of the company logging into the company's head office network.

If someone takes a BlackBerry to France, then the GPRS data is first sent via the inter-operator connection to the operator. Then the data stream is led off to the BlackBerry network of RIM.
This inter-operator network is expensive, a megabyte of data can cost between € 10-14 depending on the country where the agreement has been made. By comparison a megabyte within both the operator and country boundaries cost just € 1,50. It would be relatively expensive to give a user a Netherlands SIM-card if they are going to spend the majority of their working time in France. The use of a card from one country has advantages such as a contract with the operator and one monthly invoice.
The list of countries where the BlackBerry can be used is the same for every user.

If BlackBerry's are used on a lager scale in a company it can be advantageous to negotiate with several operators in different countries. It is really necessary to analyze the travel patterns of the BlackBerry user beforehand. As a rule of thumb, if a user spends more than 60% of their time in a country, then it is advantageous to use that country's SIM-card if the operator has the necessary BlackBerry connections and the special SIM-cards. These connections would only come in to play for a user who incidentally finds themselves outside their homeland borders. In this example, each BlackBerry has a SIM-card from the country where it is situated.

The networks between the operators are not used and the costs of GPRS roaming are contained. The difficulty with this sort of implementation is that each network associated with a SIM-card has different GPRS roaming agreements to the other networks. It could be that a French operator has agreements with a Portuguese operator but the Dutch operator does not. It will then be challenging for an IT department to explain to a Dutch-based user why the BlackBerry of his French colleague works during a trip to Lisbon, but his own does not. Even with multi-country operators, the use of GPRS in another country other than the homeland is

regarded as GPRS roaming.
GPRS roaming is roughly ten times as expensive for the same amount of data traffic within the homeland borders.
As soon as someone crosses the border carrying a GSM/GPRS device the operators of that land have antennas ready and waiting, listening for the first chance to send this 'roaming' user a bill for expensive 'ticks'.

Protected configuration

If a user persists in abusing the battery and continues to drain it, the BlackBerry will save the configuration before the battery has reached a critically low level and then shuts down into storage mode. The BlackBerry can now safely be ignored in the desk drawer for months, and when the battery is again charged up the device will simply restart under the saved configuration and begin bringing in those waiting e-mails without any further intervention by the user.

TCO

The management of a PDA brings cost with it. The demands of functionality, usage and security levels have a considerable impact on the TCO. The TCO of a BlackBerry is roughly € 800 per year, whilst the TCO for a Pocket PC with the same level of protection and functionality is in the region of € 1800 per year, although as previously mentioned it does have a wider range of capabilities.

Conclusion

A standard BlackBerry is a good deal cheaper when compared to a Pocket PC-based device, easier to use but the functionality and possibility to increase this are more limited. Applications can be developed for this platform, but when real mobile company applications need to be carried, the Pocket PC is more suited. The BlackBerry is an optimal solution for people who always want to have their e-mail and calendar with them without having to think about how the data got there, or having to do anything to make that happen.