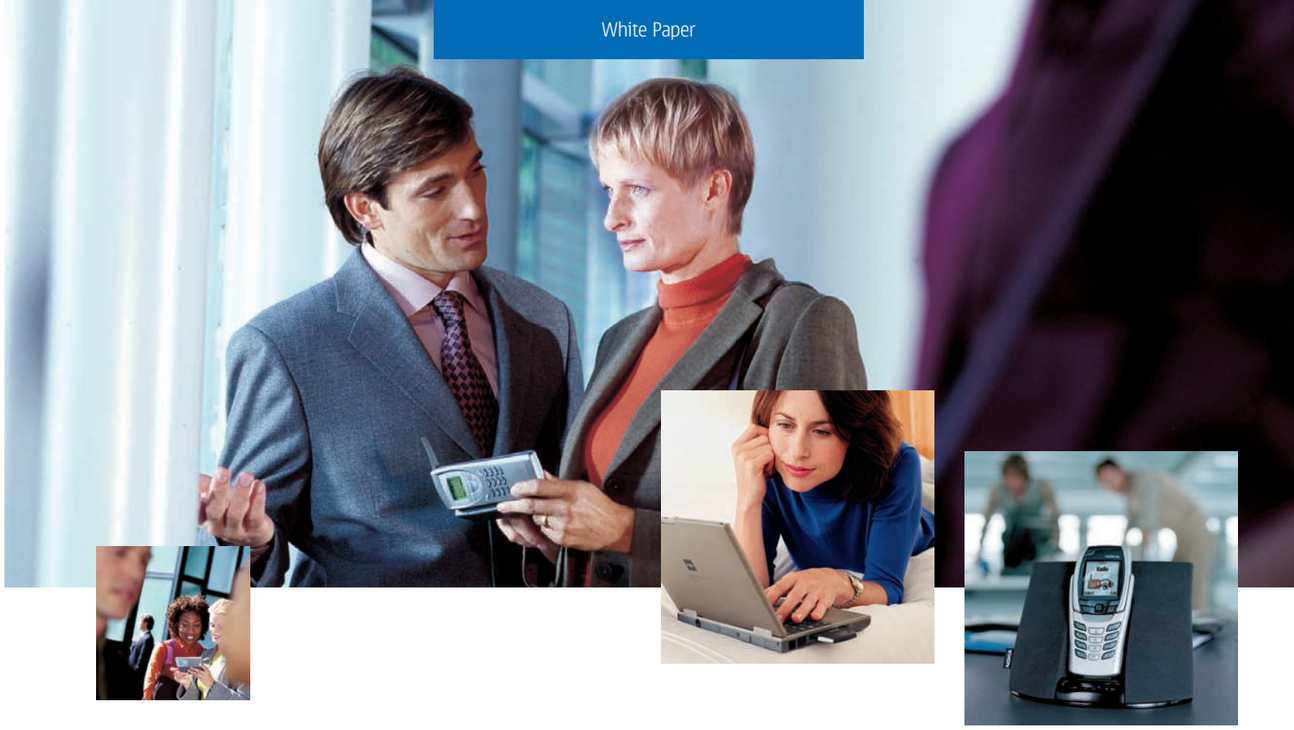
White Paper



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# Mobile access to e-mail: a critical business application

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# It is estimated that about 30% of today's workforce is mobile, spending at least one day a week out of the office on average. Despite these mobile workers being increasingly away from their desks, they are still expected to remain productive.
# To achieve this, mobile workers need mobile communications and mobile access to business critical information – simply, securely and reliably.

At the end of 2001, in Western Europe alone, there were 53 million mobile phone accounts for business users. This represents a penetration of 32%[1]. These business people use their mobile phones mainly for voice calls and SMS messaging and they are heavy users. Business users account for only 20% of all mobile phone users, yet they generate more than half of service revenues.[2]

Employers want to maximise their mobile workers' productivity and time efficiency, while minimising the costs of being mobile. They also want to achieve and maintain a high level of customer satisfaction. Mobile workers often need to communicate with customers and their own office and they need to stay organised. Mobile hand sets with access to e-mail help significantly in meeting all of these needs.





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## E-mail: a business-critical application

E-mail has become a necessary business tool. There are 176 million business e-mail accounts in Europe today[3], with the average employee receiving about 30 e-mails per day[4]. In many companies, e-mail is the preferred method of communication – even between people that sit relatively near to each other.

Mobile workers who are cut off from this business-critical application risk missing valuable business opportunities and information by being unable to check their inbox. Accessing e-mail when on the move has many benefits:

- idle time becomes productive time: read and respond to e-mail while waiting for a meeting, sitting on a train or waiting to board a flight
- quick to use: no need to wait for a laptop to boot and connect to the network. A mobile handset can be open most of the time and connected to the network so checking e-mail while on the move is quick and painless
- faster response time: e-mail alerts inform the user immediately an important e-mail arrives, allowing a rapid response
- freedom/quality of life: no more sitting by the computer waiting for that last e-mail before going home
- keeping informed: stay abreast of developments within the company through e-mail alerts.

*Figure 1: Corporate e-mail users worldwide*


Source: *Messaging Online, 2000; IDC; E-mail Usage Forecast and Analysis, 2000; eTForecast, 2000, Nokia*

## Nokia Business Terminals

Nokia Business Terminals is a progressive range of mobile terminals designed to meet the requirements of business users. These terminals include features such as:

- mobile e-mail support: several terminals include native e-mail clients for enhanced functionality
- Personal Information Management (PIM): calendar and contact information help to organise the user
- synchronisation: easy synchronisation with the PC's calendar
- speaker phone: hands-free voice communication
- easy provisioning of settings: hassle-free implementation of new services
- advanced user interface: enhanced user experience
- ability to add Java™ or Symbian applications: tailoring the handset to the employee's needs.

Different terminals in the range are designed to meet the many different needs and technical requirements of mobile workers. The range currently includes the Nokia 6800 messaging device, the Nokia 7650 imaging phone, the Nokia 9200 series Communicators, the Nokia D211 multimode radio card, and the newest Nokia 6000 series phone models like the Nokia 6610 and the Nokia 6100.

*Figure 2: Comparison of e-mail functionality using the different Nokia Business Terminals vs. using an SMS or WAP-based solution*

| | SMS | WAP | Nokia 6800 | Nokia 7650 | Nokia 9210 | Nokia D211 with laptop |
|---|---|---|---|---|---|---|
| View e-mail headers from inbox | • | • | • | • | • | • |
| Read individual e-mails | • | • | •• | •• | •• | •• |
| Forward and delete e-mails | • | • | •• | •• | •• | •• |
| Write and reply to e-mails | • | • | ••* | • | ••* | ••* |
| Attachments | | | | | | |
| view received attachments | – | • | – | • | •• | •• |
| create and send attachments | – | – | – | • | •• | •• |
| edit received attachments | – | – | – | – | • | •• |
| Send and receive MMS | – | – | • | • | – | – |

*Key*
– Not supported
• Functionality supported
•• Enhanced functionality

* *Has full messaging keyboard for easy text input*

## DIFFERENT METHODS OF IMPLEMENTING MOBILE E-MAIL

E-mail can be used on all Nokia Business Terminals and each company can decide what type of implementation suits them best. Employees can be offered generic SMS or WAP-based e-mail access or they can take full advantage of the e-mail clients available on their Nokia 6800 messaging device, Nokia 7650 phone or Nokia 9200 series Communicator. *(See figure 2 above)*

## SMS and WAP-based e-mail

All Nokia Business Terminals have SMS and WAP browser functionalities. Therefore, when a company is implementing mobile e-mail for their workforce, they can choose to offer an SMS or WAP-based service. Essentially, this means that all of their employees get the same e-mail functionality regardless of what handset they carry.

SMS-based e-mail services, such as those offered by many operators, ISPs and by the Nokia One Mobile Connectivity Service[5], are commands-driven, meaning that the user must type in commands that he then sends, via SMS, to the service. The service responds by sending the user the desired information in the form of a SMS or a series of SMS'. Most SMS-based services have basic e-mail functionality, but do not enable the reading or sending of attachments. *(See figure 3).*

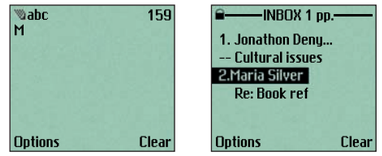



*Figure 3: SMS-based e-mail services are commands-driven. Here, the user types and sends the command 'm' to receive a list of new mails.*

WAP-based e-mail solutions, such as those offered by Nokia One Mobile Connectivity Service[6], are menu-driven. The user simply initiates a WAP session, either over GSM data or over GPRS, logs on to their corporate network, and makes selections from the menus to find the information required.

Most WAP solutions offer basic e-mail functions, including the viewing of attachments. Here, the attachment is not downloaded to the mobile device, but is converted to text by the WAP server and then browsed by the user – the attachment will look like a long text message, with all the formatting of the original document removed. *(See figure 4 on the next page)*

1, 2 Source: *Strategy Analytics, May 2002*
3 Source: *IDC, 2001*
4 Source: *Cahners In-Stat Group, 2001*
5, 6 For more information about Nokia One – mobile connectivity service, see *www.nokiaone.com> Solutions> Business> Products for Business*


*Figure 4: WAP-based services are menu-driven. Here, the user selects from several service options.*

Although SMS-based or WAP-based e-mail works with all terminals that support SMS and WAP, they do not give the user as many options or functions as a terminals native e-mail client.

The advantage of implementing an SMS-based or WAP-based e-mail solution is that these work with all terminals that support SMS and WAP. On the other hand, the user experience is not as rich, and the functionality is not as great as when accessing e-mail using a terminals native e-mail client.

### E-mail using the terminals native e-mail client

Most Nokia Business Terminals have built-in e-mail clients that provide greater functionality, and enable a richer e-mail experience than available with WAP or SMS-based e-mail solutions. Native e-mail clients allow:

- Reading and writing of e-mails when offline
- Better handling of long e-mail messages
- Direct connection to the corporate e-mail server using standard e-mail protocols. This means there is no need for an e-mail gateway when accessing e-mail using a Nokia 6800, Nokia 7650, or Nokia 9200 series hand sets.

### Nokia 6800 e-mail

With its full keyboard, the Nokia 6800 is designed to make messaging, including mobile e-mail, easier.


*Figure 5: The Nokia 6800 terminal has a full messaging keyboard to make messaging fast and easy.*

With its built-in e-mail client, this compact sized product allows e-mail to be used anywhere and at anytime. The key features giving efficient messaging include:

- A full messaging keyboard: for faster and easier sending of SMS, MMS and e-mail messages
- Folders for offline storage of e-mails: Inbox, Outbox, Sent Items, Deleted Items, Drafts and Archive
- Smooth interworking between e-mail and contact database: for easy addressing of e-mail
- A full MMS client: for sending and receiving multimedia messages.

### Nokia 7650 e-mail

The Nokia 7650 is a Series 60 handset with a built-in e-mail client. Its advanced user interface and high-resolution colour screen makes mobile e-mail efficient and easy-to-use. Key features for efficient messaging include:

- Support for e-mail attachments: view and send images, sound clips and notes
- Smooth interworking between e-mail and contacts: for easy addressing of e-mail.
- Built-in camera: take photos and send them as e-mail attachments or MMS messages.


*Figure 6: The Nokia 7650 imaging phoneterminal has built-in e-mail and MMS clients for rich messaging capability.*

### Nokia 9200 series Communicator

The Nokia 9200 series Communicator has a full messaging keyboard, a large colour screen and e-mail functions similar to those found on a PC. It also enables the creation, reading and editing of e-mail attachments including MS Word, MS Excel, MS PowerPoint, Lotus 1-2-3, WordPerfect, and Tagged Image File Formats.

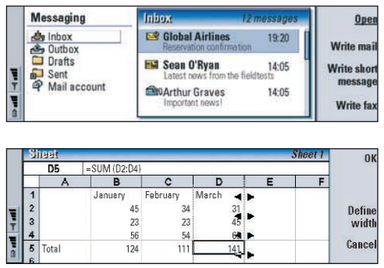



*Figure 7: The Nokia 9200 series Communicator offers many of the same e-mail functions as those on your PC.*

### Nokia D211 with laptop

Nokia data cards are designed for employees whose primary business tool is the portable computer. The Nokia D211 is a multimode radio card that connects laptops to the corporate network via the mobile network. The Nokia D211 supports GPRS, GSM data and HSCSD, and WLAN. Once connected, the user can access his corporate e-mail in the same way as with wireline.[7] As well as e-mail, the whole corporate network is also available.[8]

### MMS to e-mail[9]

E-mail is just one type of messaging available to the mobile user. Using terminals such as the Nokia 7650 and Nokia 6800, users can enhance their e-mail capabilities with MMS.

Users of MMS-enabled hand sets can choose to have some or all of their e-mails pushed to their hand sets as multimedia messages. Filters allow the user to decide which e-mails get forwarded, for example, according to sender, subject, or recipients.[10]

The user of an MMS handset can also choose to have an e-mail address assigned to his terminal, allowing friends and colleagues to send e-mail messages directly to the terminal.[11]

The examples *(see figure 8 opposite)* of combining mobile e-mail and multimedia messaging are optional additional services that can enhance mobile e-mail to better meet the specific needs of particular mobile workers. For more information, contact your mobile operator.

## OPTIONS FOR IMPLEMENTING MOBILE E-MAIL

There are a number of ways of implementing mobile e-mail and the solution a company chooses will depend on the size and type of company, the terminals they provide, their security policy and the security solutions already in place. In this section, we introduce two options:

- A hosted solution provided by the network operator and;
- an in-house solution based on a Virtual Private Network (VPN).

### Operator-hosted Solution – Private APN

Many operators offer Private Access Point Name (APN) solutions to companies who want to give their employees mobile access to corporate applications. These are a good choice for those who prefer to outsource rather than invest in their own mobile e-mail systems or who prefer hand sets that don't support the additional software required by mobile VPN solutions.





*Figure 8: Feature comparison for some Nokia Business Terminals*

| | Nokia 6800 | Nokia 7650 | Nokia 9210i | Nokia D211 with laptop |
|---|---|---|---|---|
| E-mail connectivity protocols | SMTP, POP3, IMAP4 | SMTP, POP3, IMAP4 | SMTP, POP3, IMAP4 | All protocols supported by the PC |
| Data protocols | • GSM data<br>• HSCSD<br>• GPRS | • GSM data<br>• HSCSD<br>• GPRS | • GSM data<br>• HSCSD<br>• Fax | • GSM data<br>• HSCSD<br>• GPRS<br>• WLAN<br>• Fax |
| Security solution options | • Operator provided security (eg. Private APN)<br>• PPP authentication | • Operator provided security (eg. Private APN)<br>• VPN client<br>• SSL/TLS encryption<br>• PPP authentication | • Dial-up<br>• VPN client<br>• SSL/TLS etc encryption<br>• PPP authentication<br>• File/disk encryption<br>• Antivirus | • Operator provided security (eg. Private APN)<br>• VPN client<br>• SSL/TLS etc encryption<br>• Antivirus |
| Types of networks | EGSM 900/1800 | EGSM 900/1800 | EGSM 900/1800 | EGSM 900/1800<br>IE 802.11b |
| Browser options | WAP 1.2.1 | WAP 1.2.1 | WAP 1.1, HTML | All PC software |
| Options for provisioning settings | • OTA provisioning<br>• Connection to PC via datacable or IR | • OTA provisioning<br>• Connection to PC via Infrared or Bluetooth | • OTA provisioning<br>• Connection to PC via datacable or IR | • OTA profiles<br>• Network installation<br>• Profile import as file |
| Other features | • Full keyboard<br>• MMS<br>• Speaker phone<br>• Java™<br>• SyncML v1.1.1 support | • Built-in camera<br>• Symbian OS<br>• MMS<br>• Speaker phone<br>• Java™<br>• SyncML v1.0.1 support | • Full keyboard<br>• Symbian OS<br>• Speaker phone<br>• Conference calling<br>• SyncML v1.0.1 support | • Mobile access to all PC applications |

In hosted Private APN solutions, the operator is a trusted partner. The company is assigned its own GPRS access point (aka. Private APN), and the company's GPRS traffic travels through this Private APN to the company's own LAN via the operators secure backbone network. In this way, employees have secure access to the e-mail servers already in place in the company network.

Alternatively, the company can choose a fully-hosted solution, where both the mobile access and the e-mail servers themselves are hosted by the operator.

The benefits of an operator-hosted solution include:

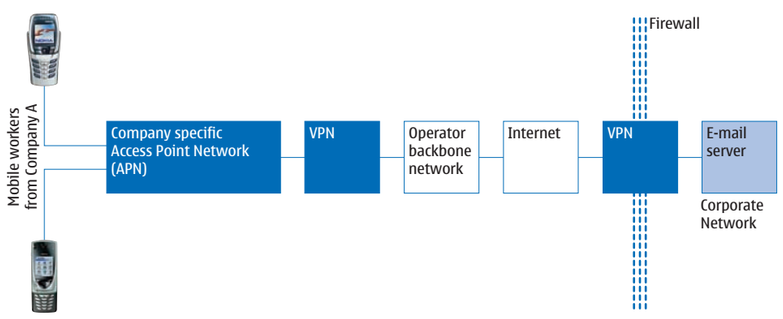
- No need for hardware investments – the service is outsourced
- No need to invest in new terminals – any GPRS terminal with a standard e-mail client will do
- No additional client or application (eg. mobile VPN client) is needed in the mobile terminal
- Easy to use – the security solution is transparent to the phone user
- Easily scalable – buy only what you need
- Secure, company-controlled connection to the corporate intranet – for mobile access to e-mail and other business applications.

### In-house Solution – Virtual Private Network (VPN)

Multinational corporations with in-house e-mail servers, and those who already have VPN remote access solutions in place, may be interested in expanding their VPN into the mobile arena. Nokia Symbian terminals (Nokia 9210i and Nokia 7650) can be equipped with mobile VPN clients, allowing them to become part of a VPN solution. The benefits of a mobile VPN solution include:

- Ability to extend existing VPN solution for mobile access
- Solution is independent of operator – it works wherever you have connectivity (eg. when roaming or travelling abroad)
- Secure, company-controlled connection to the corporate intranet – for mobile access to e-mail and other business applications *(See figure 10 overleaf)*

*Figure 9: Operators offer Private APN solutions to enable companies to offer mobile access to their e-mail servers*

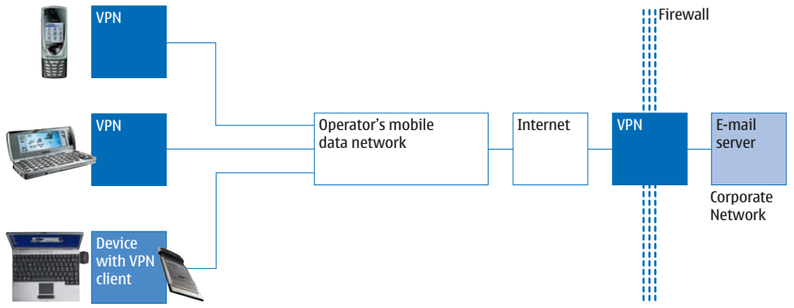



### Configuring a mobile handset with mobile e-mail settings

To implement a mobile e-mail system, the handset must be configured with both GPRS and e-mail settings. The Nokia 7650 phone, Nokia 9200 series Communicators, and the newest classic models like the Nokia 6610 phone and Nokia 6100 phone all support over-the-air provisioning, allowing settings to be sent to the phone as a message. All the user has to do is accept the settings to start using the service.

7 Note that the network may be slower than when connected to the LAN via wireline. Therefore, downloading attachments may happen more slowly.
8 What parts of the corporate network are available to the remote user depends on what the company's IT department defines.
9 For more information about MMS to e-mail, see *www.nokia.com>Solutions>Mobile Software>Messaging*
10,11 *www.nokia.com>Solutions>Mobile Software>Messaging and Presence*

*Figure 10: Mobile Virtual Private Network (VPN) architecture*




## SCENARIOS

### Scenario 1
### Outsourced Solution – Private APN

Anna is a Senior Architect at a large architectural firm employing 30 architects. She does the majority of her drawing work on her desktop computer, which is equipped with specialised architecture software. Her days are shared between the office and visits to building sites.

Because the architects spend a considerable amount of time outside the office, they need mobile access to e-mail. In addition, they take and share a lot of photographs, so multimedia messaging is useful to them. The firm already has its own e-mail servers, but has outsourced mobile connectivity (a private APN solution), and ordered an MMS service from its local operator.

Because Anna sends a lot of e-mail and SMS messages when she's on the road, and because she often needs to take photos, she has chosen the Nokia 6800, with Nokia Camera Headset enhancement, as her mobile tool.

**Enhanced communication capabilities**
It's Monday morning, and Anna is visiting the site of a planned new building for which Anna's firm is competing. Anna uses her Nokia 6800 with Nokia Camera Headset to take snapshots of the area for her own reference and which she can share with her colleagues as they begin working on this project.

**Faster response to customer needs**
Before leaving the site, Anna connects to her inbox to check her e-mail. There is a new e-mail from a client who is wondering about the project's timetable. Anna flips open her Nokia 6800 and uses the full messaging keyboard to reply.

### Scenario 2
### In-house mobile e-mail solution – Mobile VPN

Christine is the Sales Development Manager for LMC, a multi-national company. She is based in Paris but does a lot of international travelling to meet customers and prospects.

LMC has recently implemented a mobile solutions programme to make its mobile workers more efficient when on the road. One aspect of this programme has been to provide mobile access to e-mail, which has been done in several ways – some workers have data cards for their laptops and others have hand sets that offer mobile e-mail. LMC has implemented a VPN solution, including the installation of mobile VPN clients to their employees' mobile devices.

**Increased responsiveness**
It's Tuesday, and Christine has just landed in Madrid to meet a prospective customer. As she waits for a taxi, she uses her Nokia 9210 Communicator to check her e-mail. There is an urgent message from her partner with an attachment: the latest version of the offer to the prospect. Christine opens the attachment and skims over the text while calling her partner to discuss the changes in more detail. She continues the conference call as the driver speeds to her hotel.

**Speed up business processes**
That evening, after the meeting, Christine is back in her hotel room. The meeting went extremely well and the prospect is ready to move forward quickly. Christine boots up her laptop and starts tailoring the contract template to suit the discussions with this customer. When she's finished, she uses her Communicator as a modem to dial into the corporate network and send the contract draft to the legal department to review. She hopes to receive some feedback by the time she's back at home so that she can get back to the prospect before the week is out.

**A picture is worth a thousand words**
While online, she reads an e-mail from one of her top sales people, Jack. Jack has a Nokia 7650 phone, and has sent a photo he's taken of an incredible array of LMC products displayed at a top retail store in his region. This is a great achievement, and the picture says more than a thousand words.



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# More Information

For more information about implementing mobile e-mail at your company, contact your local Nokia dealer or www.nokia.com

**Glossary**

| | |
|---|---|
| APN | Access Point Name |
| EGSM | Enhanced or EDGE GSM |
| GSM | Global Standard for Mobile phones |
| GPRS | General Packet Radio Service |
| HSCSD | High Speed Circuit-Switched Data |
| HTML | HyperText Markup Language |
| IMAP 4 | Internet Mail Access Protocol, version 4 |
| ISP | Internet Service Provider |
| JAVA™ | An object-oriented programming language developed by Sun Microsystems |
| LAN | Local Area Network |
| MMS | Multimedia Messaging Service |
| OTA | Over-the-air |
| POP 3 | Post Office Protocol |
| PPP | Point-to-Point Protocol |
| SMS | Short Message Service |
| SMTP | Simple Mail Transfer Protocol |
| SSL | Secure Socket Layer |
| Symbian | Operating system for small devices |
| SyncML | Open industry standard for universal synchronisation of remote data and personal information across multiple networks, platforms, and devices |
| TLS | Transport Layer Security Protocol |
| VPN | Virtual Private Network |
| WAP | Wireless Application Protocol |
| WLAN | Wireless LAN |


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