

# SMART VPN CLIENT

DNROSE for large corporations and governments

## THE BROWN'S UNIVERSAL VPN SOLUTION

When you're working away from your office-based LANs, it's important to have the right device to stay in touch with your Centre. For some, Pocket PCs or Windows Mobile devices are the answer. They're small, lightweight and easy to use. For others, a laptop PC running Windows 2000 or XP is more suitable.

To meet the threat of others attacking your wired or wireless communications, your machine or your central corporate assets, Brown's have developed a software based smart VPN client attuned for use with mobile networks though equally suited to more traditional fixed types. It will safeguard against any remote attack to any Windows 2000, XP and Pocket PC 2003 device, provide secure and pervasive access to all network traffic between the remote machines and the centre, and protect all internal resources.

Brown's smart VPN solution incorporates the Brown's Enterprise Access System (EASY) Box server and DNROSE, the smart VPN client. It runs on any of the aforementioned systems and can either replace or complement your existing solution. The Brown's EASY Box, a VPN concentrator, located at the centre, manages all the incoming VPN connections.

In particular, Brown's have designed their mobile attuned smart VPN solution to secure all IP data, not just email and web traffic.

## KEY BENEFITS

### Integrated VPN

DNROSE, Brown's smart VPN client, uses a completely integrated TLS 1.1 VPN feature to establish secure tunnels over the connections that it manages.

### Complete secure access

DNROSE provides completely secure access to corporate servers that are located behind the protection of a Brown's Enterprise Access System server, no matter where in the world the enduser is located or what bearer service is being used.

### Security, performance and cost efficiency

DNROSE secures all its VPN connections with no appreciable loss of performance. DNROSE will also always use the best available bearer service. It seamlessly switches to the better service always striking the right balance between cost and performance. DNROSE also has features to reduce the amount of data that travel across the network. They include converting e-mail attachments and inline elements items back into their binary form. This procedure reduces the size to about 64%; it also allows DNROSE to employ its other compression techniques thus reducing the overall size of the e-mail even further.

### Easy to install, easy to use and simple to operate

Brown's smart VPN solution is easy to install (so you won't have to worry over escalating back office overheads). It's easy to use in different environments because wherever you are, the computer and our software decide which network to use - be it mobile, wireless or even hotspots. Moreover, it is simple to operate, just click on the Windows icon, enter either a password or a PIN and press Connect.

### Battery life and ease of use

DNROSE, Brown's smart VPN client, will automatically remake its VPN connections after returning from suspend states and hibernation modes and maintain its virtualized VPN session while dropping the real underlying bearer services. This helps to save on both call charges and battery life.

### Ruggedized reliability and tailored access

DNROSE is intended to provide continuous network access all the way from Mayfair to Monte Carlo yet also be completely tailored to meet the needs of a company, department or individual.

- ✓ *Helps to make the adoption and use of remote and flexible working a rewarding experience.*
- ✓ *Removes the barriers of switching, selecting and connecting.*
- ✓ *Helps to remove a common cause of frustration by automatically logging on to the user's preferred network services.*
- ✓ *Helps to extend battery life.*
- ✓ *Offers an integrated VPN.*
- ✓ *Provides total security and performance.*
- ✓ *Enables effective working throughout the business.*

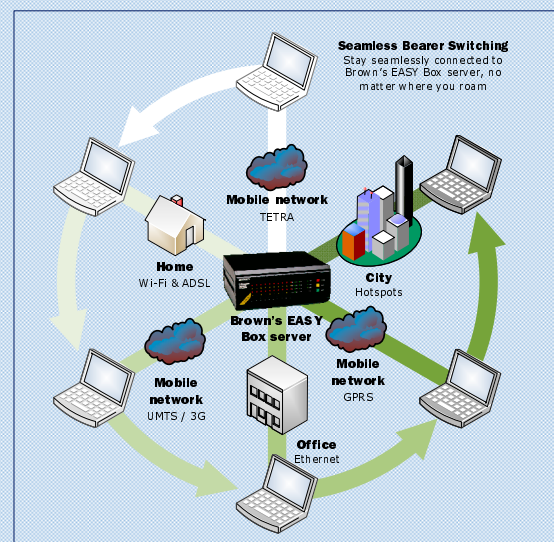
DNROSE's 7 reasons

The term VPN usually relates to an agreement, made between two computer systems whereby all data exchanged between them is both encrypted and authenticated. This effectively establishes a secured pathway, or tunnel, between the two through which private information can travel. VPNs usually offer greater access to one another's computer systems and so the authentication of the remote user is often required.

VPNs

Brown's smart VPN client (DNROSE) will either replace or complement your existing VPN solution. The Brown's Enterprise Access System, at the centre, manages all incoming VPN connections, supports up to 1024 simultaneous connections and

Brown's smart VPN solution



provides 30 MBps of throughput to the internal network. The solution is service provider and network feature independent, and works across all main networks or service providers.

## The platform

### Operating System support

DNROSE works with Microsoft Windows 2000, Windows XP and Pocket PC 2003.

### Client installation

DNROSE has a quiet mode of operation.

### Client-Less mode

DNROSE does not currently operate in a client-less fashion.

### Client OS implementation

For MS Windows 2000 and XP, the DNROSE driver is an NDIS "intermediate" TAPI-capable WAN miniport driver; for MS Windows CE DNROSE is a virtual COM port driver. DNNDSCFG, DNROSE's client configuration application and DNWStat, DNROSE's client statistics application interact with DNROSE at the application level.

### Printing

DNROSE will support printing as long as the printer is addressable and traffic from the DNROSE device is permitted to reach the printer through the firewall functionality of the Brown's Enterprise Access System server.

### Ease of Use

The interface is extremely simple to use.

## Seamless bearer switching

### Plug-n-Play

DNROSE will maintain network connections across the insertion and removal of Plug-n-Play communications devices as listed within DNROSE's bearer service list. When a device is removed, DNROSE will select the next best bearer service interface to use and re-establish its universal VPN.

### Suspend states and Hibernatio modes

DNROSE will automatically re-establish its VPN connection after resuming from device Suspend states and Hibernation modes.

### Different bearer services

DNROSE will maintain network connections across different bearer services such as Wi-Fi, GPRS and Ethernet.

### Broken connections

DNROSE will seamlessly remake broken network connections.

### Server initiated expedited reconnections

The Brown's Enterprise Access System server (Brown's EASY Box server) can either initiate reconnections between itself and DNROSE when there is outbound data to send or signal DNROSE, by using another bearer service, that it is time to reconnect and receive the pending data.

## Fully configurable

### Enhance, extend and customise

DNROSE incorporates a powerful scripting language. The language can either allow DNROSE to be enhanced and customised, or it can allow applications and business tools to be built around DNROSE's core remote and mobile functionality.

### Manage multiple Boxes

The scripting language can be used to manage many Brown's EASY Box servers more effectively.

### Extend the power of DNROSE

The scripting language can also be used to improve or optimize DNROSE. For instance, if a new method of access or a new device is introduced, the SBS feature can be enhanced by using the scripting language to take advantage of the fact. In general, the scripting language can be used to tailor and customise DNROSE's operation to suit individual needs.

## Total security

### Prevention

DNROSE prevents communication of data to unauthorised servers. This is achieved by rigorous checking of the EASY Box server certificates and associated revocation lists. This action is done once per connection. DNROSE also prevents Man-in-the-middle attacks by strictly complying with defined security policies.

The Brown's EASY Box server prevents any unauthorized access to internal services, from DNROSE, by the use of a database of Allowed Routes comprising a combination of allowed IP address ranges and allowed port ranges.

DNROSE prevents passive eavesdropping through encryption.

DNROSE detects and stops any tampering of data by message authentication codes and encryption counters.

DNROSE stops any side-channel inbound attacks and side-channel outbound leaks occurring through the establishment of a single, secured, client to corporate, universal VPN connection. To prevent mis-configuration errors resulting in a lowered level of security being trusted, a server-based implementation of security policies is maintained.

### Protection

DNROSE offers both Public Key and Pre-shared keys protection.

The Public Key infrastructure feature utilises the TLS 1.1 standard. A dedicated RADIUS user authentication server that supports RSA and VASCO two-factor tokens and passwords manages the user authentication process. TLS cipher suites 0, 10 and 53 are supported. Its initial key-exchange process uses RSA 1024-bits (or greater) of key material for its encryption and 168-bit triple-DES in EDE mode with CBC or 256-bit AES for bulk encryption. It utilizes HMAC SHA-1, a 48-byte secret shared between client and server, for creating the MACs. TLS 1.1 is fully implemented.

The Pre-shared keys feature utilises the ISO 8732 Wholesale Banking Encryption standard. The same RADIUS user authentication server manages the user authentication process. The Pre-shared keys supports Gemplus MPCOS Smart Cards and Three-layer key software tokens. Bulk encryption is provided either by 168-bit triple-DES in EDE mode with CBC or 256-bit AES. Cipher Block Chaining implements the Meyer and Matyas chaining algorithm.

### Assurance

DNROSE and the Brown's EASY Box server are both currently proceeding through an independent and stringent UK government assessment and certification program.

### Auditing, accounting and administration

Brown's EASY Box server and its dedicated RADIUS user authentication server implement RADIUS authenticating, accounting and authorisation. It also can create and write to an ODBC database.

## Highly Efficient

### Cost saving

DNROSE's Short Hold Mode feature will maintain virtual universal VPN connections between itself and the Brown's EASY Box server while disconnecting the underlying physical connections, letting them exist in disconnected states and then reconnecting them when more user data is desired to be transferred. This feature can save the user up to nine-tenths of any time based connection cost like those incurred during Wi-Fi hotspot usage, ISDN or GSM calls.

### Extended battery life

DNROSE's Short Hold Mode feature will also help to extend the battery life of both the communications and terminal devices by not using them for most of the time thus reducing their power consumption.

### E-mail compression

DNROSE can reduce the size of any encoded data such as images, audio or PDF files found within or attached to e-mails by about 64% of their original size by transmitting the MIME encoded data as binary data. Then allowing DNROSE's other data compression functions to decrease the volume of data even further to about 33% of its original size. Finally decompressing and reconstructing the binary data back into MIME data at the other end. This is as against 0% if e-mail compression is not used.

### Compression before encryption

DNROSE will perform Repeated string and Repeated element compression on the user's traffic before it encrypts the traffic and not after. This is because any attempt to compress encrypted data would be, by design, useless.

### TCP packet optimization

DNROSE optimizes the transmission of higher-level TCP packets by eliminating the transmissions of duplicate TCP packets and mitigating any effect of WAN network latency thus preventing the creation of TCP packet storms. DNROSE can do this because it operates its own reliable link layer connection with the Brown's EASY Box server.

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