



Total Secure Communications Management

The **SNAP** solution is a robust, scalable, and cost-effective encryption solution based on enhanced military technology for securing voice and data networks. The solution is a software-based architecture- **SNAP** (Secure Network Access Platform) system with end-to-end and point-to-multipoint security. Additionally it is the only secure voice solution that provides encryption for multiple communications devices including telephone, cellular, fax, PDA and SATCOM (upgrade). Security is achieved when communication is established with one of the end-point device(s) (Snaptrunk, Snapfone and Snapcell, SnapSoft PDA). This leading-edge technology can allow multipoint communications at any time, with any user, in any geographical location through COTS- commercial-off-the-shelf components using the customer's current available infrastructure. No additional infrastructure is needed to support this system. New keys are generated for each call with high information assurance standards approved by the U.S. National Institute of Standards and Technology (NIST) with certified protocols approved by the Federal Information Processing Standards (FIPS) for 140-2 level two compliance.

The SNAP enterprise solution provides uniquely flexible security features, such as authentication, access control, dialing restrictions, VPN encryption, call destination encryption and point-to-any-point secure communication and multi-technology interfaces. Policy enforcement is possible to easily configure, distribute, monitor, and sustain network policies enterprise-wide, as well as decide which resources users and groups can access and control their roaming privileges.

Network Appliance Description

The **Snaptrunk** is rack-mounted, 2U, encryption gateway located between the telecommunications supplier through either PSTN or IP connection and the PBX. The Snaptrunk is connected via digital interfaces, such as E1/T1 ISDN PRI or T1-CAS.



The **Snaptrunk** secures all incoming and outgoing private and public telecommunications. It also functions as an advanced centralized gateway which interacts with other encryption products (Snaptrunk, SnapGate, Snapfone, Snapcell and SnapSoft). The Snaptrunk can also allow interoperability for secure communications outside of the managed network providing users to the ability to roam securely on any public network.

A **Snaptrunk** can support up to 6 E1/T1 interfaces, allowing up to 90/72 concurrent calls and comes two 10/100 Fast Ethernet ports. The **Snaptrunk** includes central management software capable managing different groups, and controlling all enterprise functions such as configurations, alarming, user statistics, user profiling, auditing, call detail reports-CDR, remote upgrading and more. An optional web management tool is also available for remote administrative management.

Call Flow Process

When a user makes a secure call, the end-points (**Snapfone, Snapcell or SnapSoft PDA**) will first establish an encrypted and authenticated session using a combination of Public Key Encryption (PKI) with 1024 bit keys and randomized AES-256 bit keys with the **Snaptrunk**. This prevents the user's destination numbers as well as the conversation from being intercepted or compromised. This operation is automatic and transparent to the user. The user only dials the destination number. The end-points are programmed to auto-dial the Snaptrunk in the same manner a modem would "log-on" to a server to get an internet connection.

After the initial session, with the end-point secured, the **Snaptrunk** then connects the outgoing call to the destination number and notifies the subscriber via a tone as to the level of security achieved on the connection. Similarly, incoming calls are also secured whenever the calling party initiates a call using a special virtual number, which is stored in the database of the **Snaptrunk**. These operations, which are seamless to the end-user, continuously secure the access network and beyond.

End-Point Solutions

NEW- SnapSoft PDA Software

Snapsoft provides a comprehensive solution for data at rest and data in motion. Snapsoft ensures that all information residing on a device (data at rest) can be encrypted based on user-defined criteria. In addition, Snapsoft offers secure data connectivity (upgrade) for all popular forms of messaging, cellular voice and connectivity (VPN, email, SMS, MMS, file transfer, chat,). Snapsoft is available on major Smartphone operating systems such as Windows Mobile, Symbian and Palm. Linux scheduled for release in 2006.



Snapcell-300

Snapcell is a patented micro-adapter for secure cellular communications over any of the four GSM frequencies- 850/900/1800/1900. Snapcell is compatible with popular Sony-Ericsson mobile phones. It is a plug-n-play solution that is inserted into the mobile phone.

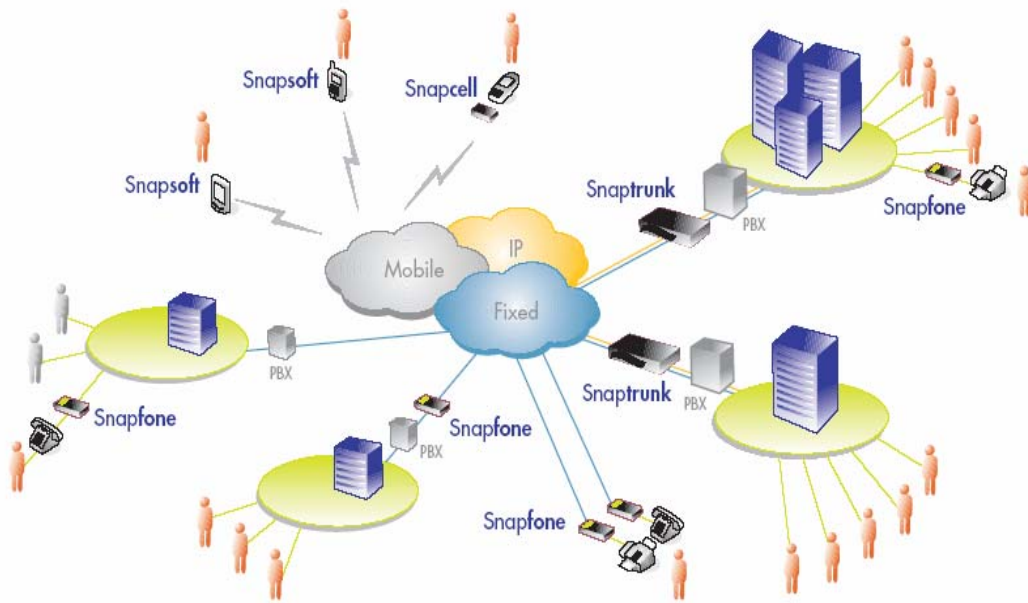


Snapfone-100

Snapfone is a compact and lightweight encryption termination unit capable of securing any analog voice or fax communication- at the office, home and while traveling.



Diagram of Enterprise with deployed SNAP solutions



Call Setup Description

Snaptrunk to Snapcell/SnapSoft PDA or Snapfone

In cases where the destination of the call is to a client outside of the managed network, anywhere in the Public Switched Telephone Network (PSTN), the Snaptrunk maintains the security by using end-points (Snapfone, Snapcell or SnapSoft PDA) which encrypts/decrypts the call..

The system compresses voice to 8 Kbit/sec (G-729A) for Snapfone and 6.4Kbit/sec (G723.1) for Snapcell/SnapSoft PDA while retaining a high voice quality (toll quality) and uses fax relay for fax transmissions. The total call setup time is about 6 to 7sec. While the round trip delay is less than 100msec for Snapfone and about 400msec for Snapcell or SnapSoft PDA. Voice clarity is toll-quality over both wireless and wired networks.

Snaptrunk to Snaptrunk (E1/T1 to E1/T1)

The system operates the E1/T1 interface as a 30/24 individual time slot of voice information. The output port leaving one destination is designated to input port of other Snaptrunk. This occurs as 64K encryption/decryption after ADPCM compression.

The total call connection time is about 1.5 sec. While the round trip delay is less than 40 msec. The transport link between Snaptrunks is secured. Note that Data call is currently not supported (future upgrade), only Voice-PSTN, Cellular or Fax. .

Snaptrunk to Snaptrunk (IP to IP)

The system creates an H323 IP session between two Snaptrunks. The output port leaving one destination is designated to input port of another Snaptrunk, and the IP packet is encrypted/decrypted after compression.

Specifications

Protocol: IP
Call Signaling: VoIP - H.323 version 4.1
Call Control: Q.931
Data Transport: H.245
RTP (IETF RFC 1889)



Security Protocol: H.235 version 2
Supported Audio Codecs: G.711 (PCMF); G.723.1; G.726 (ADPCM); G.728; G.729a
Confidentiality: 3DES (168-bit key)
AES (128,192 and 256-bit key)

Integrity: HMAC-SHA1-96
Authentication: Password based
Key Management: Authenticated Diffie-Hellman key exchange: 1024-bit public key, 192-bit private key

PRI
Euro-ISDN PRI or CAS
Q.931
Proprietary
Modem:
Voice - Proprietary Modem: Max. transmission Rate:14,400 bps; Synchronization Time:7 sec
GSM-V110 according to PRI ISDN:
Max. Transmission Rate:9,600 bps;
Synchronization Time:7 sec
Fax - Proprietary Modem:
Max. transmission Rate:14,400 bps
Synchronization Time:7 sec
With Fax Relay supporting GROUP 3 T30 Fax

Public Key
G.723.1 compliant; G.729A; G.726; Voice quality (MOS) 3.88 - 4; Bit Rate: 6.4Kbps,8Kbps,32Kbps
3DES (ECB Mode) - Key Length:168 bit
AES - Key Length:256 bit;
Key Exchange Time: Less than 1 Sec
Optional
Password based
Diffie-Hellman – Default Prime Number Length:1024 bit
Diffie-Hellman – Default Private Key Length:192 bit

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