



Network encryption in the field

Fox SkyTale

The Fox SkyTale is a ruggedised hardware VPN solution, developed for the military mobile domain. The Fox SkyTale combines an optimised network protocol with very low overhead and support for multicast, with high network performance of up to 100 Mbps. At the network level it is transparent for IP traffic (IPv4 and IPv6), so that existing network equipment in vehicles can be used virtually without reconfiguration. Partly as a result of this transparency, the Fox SkyTale is extremely easy to use. The Fox SkyTale uses state-of-the-art strong cryptography and is designed to be suitable for use at NATO and national Confidential levels.

The issue

To avoid dependence on radios, which provide bandwidth too limited for modern applications, many military organisations are moving towards communication solutions based on Mobile Ad hoc Networking (MANET). In a MANET, each participating vehicle potentially occupies a key position in the network, and all vehicles cooperate to ensure maximum availability of the network: for each transmission, the best route is chosen from the available communications resources (SatCom, WiFi, Wired networks, radios). Limited resources are combined into a constantly changing, but always available, network. Vehicles in a MANET typically contain a chain of devices to support the ad-hoc network functions, such as routing and up-links. A key function in this chain is security of the communications.

Requirements and properties

The Fox SkyTale r is specifically designed to provide the cryptographic security required in the dynamic and flexible environment of a MANET. As part of the MANET chain, the Fox SkyTale ensures the security of communications, regardless of the channel over which information is sent or received. The most important requirements and properties of the Fox SkyTale in the MANET chain are:

- Simple and user-friendly for the end-user and operational maintenance; the Fox SkyTale can be operated via the network (onboard computers).
- Suitable for use at NATO and national Confidential levels.
- Transparent for IP and usable in a Mobile Ad hoc Network (MANET) to offer the flexibility to dynamically support various communications media.
- Extremely low overhead in cryptographic protocols, to allow use of very low bandwidth channels; an overhead of 8 bytes per packet is possible.
- Support for multicast, to enable group communication.
- Future-proof, with strong cryptography, IPv6 support, and planned support for higher classification levels and protocols like HAIPE and/or SCIP.

Management and integration

The Fox SkyTale is provided with a management system for administration and configuration. This system is designed for flexibility and can be used both in off-line scenarios (settings and key material are transferred to the device on physical carriers, e.g. secure USB sticks), and in on-line scenarios. The Fox SkyTale supports re-keying over the network (over-the-air-rekeying, or OTAR) and it can be deactivated remotely (zeroisation). In addition to the management system, Fox-IT offers a standard integration and programming interface to control the Fox SkyTale, for example from an onboard computer on a vehicle's internal network. A fine-grained permission model allows precise control over authorisations, for example controlling who is permitted to enable communications over the device. Strong encryption of all management messages allows administration over untrusted communication channels.



Characteristics of the Fox SkyTale:

- Easy to configure and operate
- Suitable for use at NATO and national CONFIDENTIAL levels
- High throughput of up to 100MBit/s
- Minimal, configurable packet overhead
- Transparent for IP communications
- Multicast support
- IPv6 ready
- State-of-the-art encryption technology
- Off-line and on-line management using a standard management system
- Flexible integration with existing systems
- Future-proof roadmap

Fox-IT

Fox-IT specializes in cyber defense, IT Security, lawful interception and digital forensics solutions, providing completely secure, easy-to-use and automated products for data transport, interpretation and archiving to dozens of government defense and intelligence agencies, systems integrators and commercial organizations worldwide. Fox-IT solutions maintain the security of government systems up to "state secret level" sensitivity, critical infrastructure and process control networks and other highly confidential data. The company also provides services including IT security audits, digital forensic investigations, training programs and managed security services. Established in 1999, Fox-IT is based in the Netherlands and works with trusted partners in more than 20 countries.

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