

THE EMERGENCE OF INTERNET-BASED VIRTUAL PRIVATE NETWORKS IN INTERNATIONAL SAFEGUARDS

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The costs associated with secure data transmission can be an obstacle to International Safeguards. Typical communication methods are priced by distance and may include telephone lines, frame relay, and ISDN. It is therefore costly to communicate globally. The growth of the Internet has provided an extensive backbone for global communications; however, the Internet does not provide intrinsic security measures. Combining the Internet with Virtual Private Network technology, which encrypts and authenticates data, creates a secure and potentially cost-effective data transmission path, as well as achieving other benefits such as reliability and scalability. Access to the Internet can be achieved by connecting to a local Internet Service Provider, which can be preferable to installing a static link between two distant points. The cost-effectiveness of the Internet-based Virtual Private Network is dependent on such factors as data amount, current operational costs, and the specifics of the Internet connection, such as user proximity to an Internet Service Provider or existing access to the Internet.

This paper will introduce Virtual Private Network technology, the benefits of Internet communication, and the emergence of Internet-based Virtual Private Networks throughout the International Safeguards community. Specific projects to be discussed include:

- The completed demonstration of secure remote monitoring data transfer via the Internet between STUK in Helsinki, Finland, and the IAEA in Vienna, Austria
- The demonstration of secure remote access to IAEA resources by traveling inspectors with Virtual Private Network software loaded on laptops
- The proposed Action Sheets between ABACC/DOE and ARN/DOE; which will provide a link between Rio de Janeiro and Buenos Aires
- The proposed use at the HIFAR research reactor, located in Australia, to provide remote monitoring data to the IAEA
- The use of Virtual Private Networks by JRC, Ispra, Italy