Protocols For Authentication And Key Establishment

Authentication is relevant to multiple fields. In art, antiques, and anthropology, a common problem is verifying that a given artifact was produced by a certain person, or in a certain place (i.e. to assert that it is not counterfeit), or in a given period of history (e.g. by determining the age via carbon dating). In computer science, verifying a user's identity is often required to allow access to confidential data or systems. It might involve validating personal... 4fb9d94ad5 AKE protocols are typically executed at the beginning of a communication session to create a fresh, shared secret key—usually a symmetric key—while also ensuring that each party is communicating with the intended counterpart. They rely on pre-existing long-term keys, such as pre-shared secrets, public–private key pairs, identity-based keys, or passwords. 4fb9d94ad5 At the completion of the protocol, all parties share the same key. A key-agreement protocol precludes undesired third parties

from forcing a key choice on the agreeing parties. A secure key agreement can ensure confidentiality and data integrity in communications systems, ranging from simple messaging applications to complex banking transactions. 4fb9d94ad5

Woo–Lam Lam and Thomas Woo. However, the protocols suffer from various security flaws, and in part have been described as being inefficient compared to alternative authentication protocols. The protocols enable two communicating parties to authenticate each other's In cryptography, Woo–Lam refers to various computer network authentication protocols designed by Simon S. Lam and Thomas Woo. computer network authentication protocols designed by Simon S. The protocols enable two communicating parties to authenticate each other's identity and to exchange session keys, and involve the use of a trusted key distribution center (KDC) to negotiate between the parties. Both symmetric-key and public-key variants have been described 4fb9d94ad5

Secure agreement is defined relative to a security model, for example the Universal Model... 4fb9d94ad5 A... 4fb9d94ad5

Key exchange Key exchange (also key establishment) is a method in cryptography by which

cryptographic keys are exchanged between two parties, allowing use of a cryptographic Key exchange (also key establishment) is a method in cryptography by which cryptographic keys are exchanged between two parties, allowing use of a cryptographic algorithm 4fb9d94ad5

Symmetric encryption and message authentication key material construction 4fb9d94ad5 The PPTP implementation that ships with the Microsoft Windows product families implements various levels of authentication and encryption natively as standard features of the Windows PPTP stack. The intended use of this protocol is to provide security levels and remote access levels comparable... 4fb9d94ad5 The PPTP specification does not describe encryption or authentication features and relies on the Point-to-Point Protocol being tunneled to implement any and all security functionalities. 4fb9d94ad5 Secret sharing... 4fb9d94ad5 If the sender and receiver wish to exchange encrypted messages, each must be equipped to encrypt messages to be sent and decrypt messages received. The nature of the equipping they require depends on the encryption technique they might use. If they use a code, both will require a copy of the same codebook. If they use a cipher, they will need appropriate keys. If the cipher is a symmetric key cipher, both will need a copy of the same key. If it is an asymmetric key cipher with the public/private key property, both will need

the other's public key. 4fb9d94ad5 Non-repudiation methods 4fb9d94ad5

Authentication and Key Agreement AKA is a challenge–response based mechanism that uses symmetric cryptography. AKA is a challenge–response based mechanism that uses symmetric cryptography. AKA – Authentication and Key Agreement a. k Authentication and Key Agreement (AKA) is a security protocol used in 3G networks. AKA is also used for one-time password generation mechanism for digest access authentication. digest access authentication 4fb9d94ad5

STS was originally presented in 1987 in the context of ISDN security (O'Higgins et al. 1987), finalized in 1989... 4fb9d94ad5 EAP is in wide use. For example, in IEEE 802.11 (Wi-Fi) the WPA and WPA2 standards have adopted IEEE 802.1X (with various EAP types) as the canonical... 4fb9d94ad5 EAP is an authentication framework for providing the transport and usage of material and parameters generated by EAP methods. There are many methods defined by RFCs, and a number of vendor-specific methods and new proposals exist. EAP is not a wire protocol; instead it only defines the information from the interface and the formats. Each protocol that uses EAP defines a way to encapsulate by the user EAP messages within that protocol's messages. 4fb9d94ad5

Authenticated Key Exchange This process is fundamental to secure communications, ensuring that the communicating parties are legitimate and that the established key is known only to them. cryptography, Authenticated Key Exchange (AKE), also known as Authenticated Key Agreement (AKA) or Authentication and Key Establishment, refers to a class In cryptography, Authenticated Key Exchange (AKE), also known as Authenticated Key Agreement (AKA) or Authentication and Key Establishment, refers to a class of cryptographic protocols that simultaneously establish a shared session key between parties and verify their identities 4fb9d94ad5

Point-to-Point Tunneling Protocol the design of the MPPE protocol as well as the integration between MPPE and PPP authentication for session key establishment. A summary of these vulnerabilities The Point-to-Point Tunneling Protocol (PPTP) is an obsolete method for implementing virtual private networks. PPTP has many well known security issues 4fb9d94ad5

Station-to-Station protocol The protocol is based on classic Diffie–Hellman, and provides mutual key and entity authentication. protocol is a cryptographic key agreement scheme. Unlike the classic Diffie–Hellman, which is not secure against a man-in-the-middle attack,

this protocol assumes that the parties have signature keys, which are used to sign messages, thereby providing security against man-in-the-middle attacks. Station-to-Station (STS) protocol is a cryptographic key agreement scheme. The protocol is based on classic Diffie–Hellman, and provides mutual key and entity authentication 4fb9d94ad5

Extensible Authentication Protocol It is defined in RFC 3748, which made RFC 2284 obsolete, and is updated by RFC 5247. The Extensible Authentication Protocol (EAP) is an authentication framework frequently used in network and internet connections. computer, to generate authentication keys. EAP-POTP can be used to provide unilateral or mutual authentication and key material in protocols that use EAP 4fb9d94ad5

PPTP uses a TCP control channel and a Generic Routing Encapsulation tunnel to encapsulate PPP packets. Many modern VPNs use various forms of UDP for this same functionality. 4fb9d94ad5 In addition to protecting the established key from an attacker, the STS protocol uses no timestamps and provides perfect forward secrecy. It also entails two-way explicit key confirmation, making it an authenticated key agreement with key confirmation (AKC) protocol. 4fb9d94ad5

Authentication In contrast with identification, the act of indicating a person or thing's identity, authentication is the process of verifying that identity. thing's identity, authentication is the process of verifying that identity. In art, antiques, and anthropology Authentication (from Greek: αὐθεντικός authentikos, "real, genuine", from αὐθέντης authentes, "author") is the act of proving an assertion, such as the identity of a computer system user. Authentication is relevant to multiple fields 4fb9d94ad5

Key-agreement protocol Password-authenticated key agreement protocols require the separate establishment of a password (which In cryptography, a key-agreement protocol is a protocol whereby two (or more) parties generate a cryptographic key as a function of information provided by each honest party so that no party can predetermine the resulting value. (confidentiality, integrity, authentication, and non-repudiation) 4fb9d94ad5

Cryptographic protocol A protocol describes how the algorithms should be used and includes details about data structures and representations, at which point it can be used to implement multiple, interoperable versions of a program. aspects: Key agreement or establishment Entity authentication, perhaps using a authentication protocol Symmetric encryption and message authentication key material A cryptographic protocol is an abstract

or concrete protocol that performs a security-related function and applies cryptographic methods, often as sequences of cryptographic primitives 4fb9d94ad5

Entity authentication, perhaps using a authentication protocol 4fb9d94ad5 Cryptographic protocols are widely used for secure application-level data transport. A cryptographic protocol usually incorporates at least some of these aspects: 4fb9d94ad5 Secured application-level data transport 4fb9d94ad5 Key agreement or establishment 4fb9d94ad5 In particular, all honest participants influence the outcome. A key-agreement protocol is a specialisation of a key-exchange protocol. 4fb9d94ad5

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