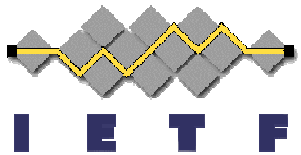
TCP-AO Crypto Goo

draft-lebovitz-ietf-tcpm-tcp-ao-crypto-02

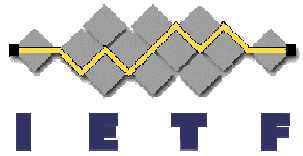


IETF75

Monday, July 27, 2009

Gregory M. Lebovitz
Juniper
gregory.ietf@gmail.com

Intellectual Property

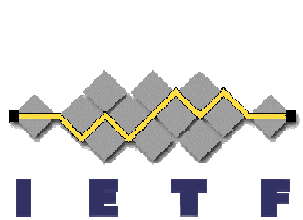


- No IPR on this document about which I’m aware.

Current Requirements

Requirement	Authentication Algorithm
MUST	HMAC-SHA-1-96 [RFC2404]
MUST	AES-128-CMAC-96 [RFC4493]
Requirement	Key Derivation Function (KDF)
MUST	KDF_HMAC_SHA1
MUST	KDF_AES_128_CMAC

Key Derivation Function



Derived_Key =

KDF(Master_Key, Input, Output_Length)

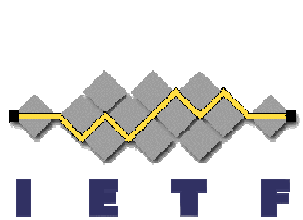
- Master_Key - PSK in manual key mode
- Input See next slide

KDF's "Input"

(i || Label || Context || Output_Length)

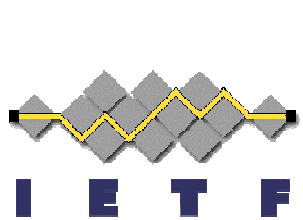
- i: A counter,
- Label: ASCII string "TCP-AO" (FIPS140 conformance)
-
- DROPPED – "0x00" – it's a field maker; not needed here since Label is fixed length. So dropped it.
- Context : Data_Block
- Output_Length: in bits, of the key that the KDF will produce.

KDF_HMAC_SHA1



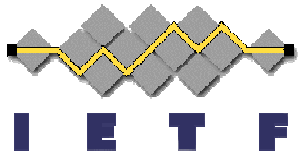
- PRF: HMAC-SHA1 [RFC2404]
- Input:
  - i: "0“
  - Label: "TCP-AO“
  - Context: Data_Block
  - Output_Length 160
- Result: Traffic_Key

KDF_AES_128_CMAC



- PRF: AES-CMAC-PRF-128 [RFC4615]
- Input:
  - i: "0“ [ASCII “0” (0x30) or a NUL (0x00)?]
  - Label: "TCP-AO“
  - Context: Data_Block
  - Output_Length 128
- And … (see next slide)

Make sure you get a 128bit key to use in AES-128

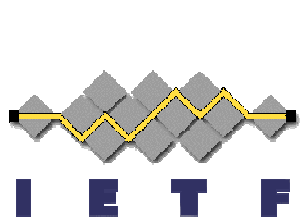


- Given: MK (variable len shared secret string)
  Output: K (128 bit output of the KDF, the Key, then used as key in Step 2)

- Step 1: K:=AES-CMAC(0^128, MK, MKlen);
- Step 2: TK := AES-CMAC(K, Input, len);

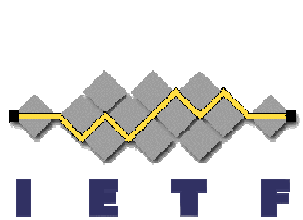
  - Step 1 is done only once at very beginning of connection, then used for all TK's gen'd for that connection.

What's new in -02 (from -00)



- 3.1 Clarified Output length stuff
- Cleaned up text explaining KDF_AES_128_CMAC
- On Key Extractor for AES-128-CMAC, changed from 0^128 as key to a fixed constant string
- Removed the "labels section". Replaced with "tips for UI's" 3.1.3
- In the input block, dropped "0x00" and explained why it's not needed, per NIST 800…
- Cleaned up wording to match auth-opt-05, i.e. TSAD -> MKT, Conn_Block -> Data_Block, conn_key -> traffic_key, etc.
- added the text on how to deal with future KDF to end of s3.1 (EKR)
- Editorial stuff

Changes For -03



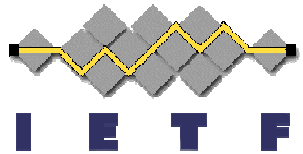
- Change to -00 as a wg document
- Ensure w/ Joe Touch that text from crypto-03 sect xx aligns with auth-opt-05 sec 7.

Wrap Up

GOALS

- Get 4 reviews — Aug 5
- WG Rev-00 — Aug 7
- Go to WG LC — Aug 10

Advertisement:
Authenticated Rtg Protos Roadmap @ Rtg Open Area



draft-lebovitz-kmart-roadmap-01

(http://tools.ietf.org/html/draft-lebovitz-kmart-roadmap-01)

- Goal: Improve security of routing protocol transports by beefing up authentication/integrity
- How:
  - Step 1 - Improve existing manual key mechanisms for “modern” practice
  - Step 2 – Add automatic key management protocol to make operations easier
- Where: kmart@ietf.org
- See procedings from Rtg Area Open Mtg today

Feedback?