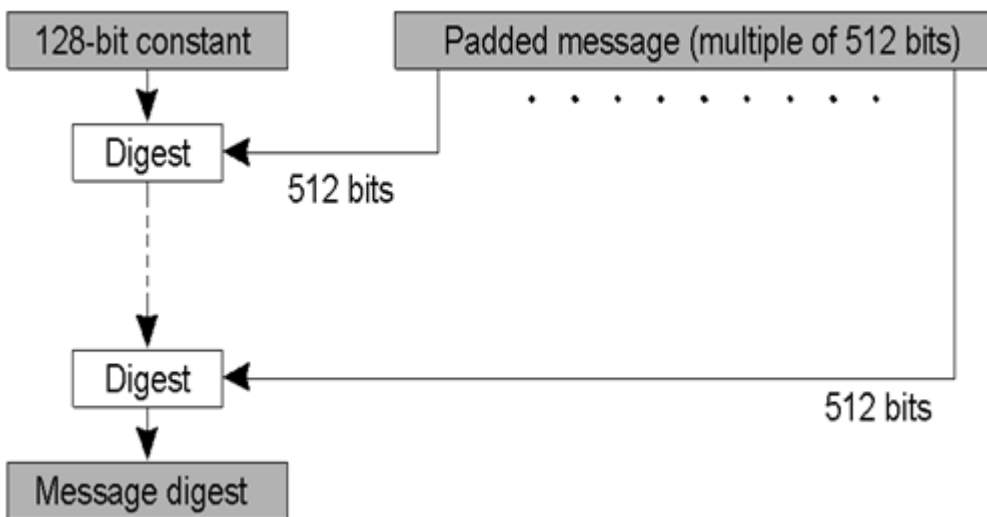


MD5 algorithm was developed by Professor Ronald L. Rivest in 1991. According to RFC 1321, “MD5 message-digest algorithm takes as input a message of arbitrary length and produces as output a 128-bit “fingerprint” or “message digest” of the input.

The MD5 algorithm is intended for digital signature applications, where a large file must be “compressed” in a secure manner before being encrypted with a private (secret) key under a public-key cryptosystem such as RSA.”



MD5 algorithm structure

General steps:

1. Input message must be < 264 bits
2. Not really a problem.
3. Message is processed in 512-bit blocks sequentially
4. Message digest is 160 bits

MD5 Algorithms steps:

Step1: Padding

Step2: Appending length as 64 bit unsigned

Step3: Initialize MD buffer 5 32-bit words

Store in big endian format, most significant bit in low address

A|B|C|D|E

A = 67452301

B = efcdab89

C = 98badcfe

D = 10325476

E = c3d2e1f0

Step 4: the 80-step processing of 512-bit blocks - 4 rounds, 20 steps each.

Each step t ($0 \leq t \leq 79$):

Input:

W_t . - a 32-bit word from the message

Kt - a constant.

ABCDE: current MD.

Output:

ABCDE: new MD.

Only 4 per-round distinctive additive constants

$0 \leq t \leq 19$ Kt = 5A827999

$20 \leq t \leq 39$ Kt = 6ED9EBA1

$40 \leq t \leq 59$ Kt = 8F1BBCDC

$60 \leq t \leq 79$ Kt = CA62C1D6

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