
COMP90007 Internet Technologies

Week 11 Workshop

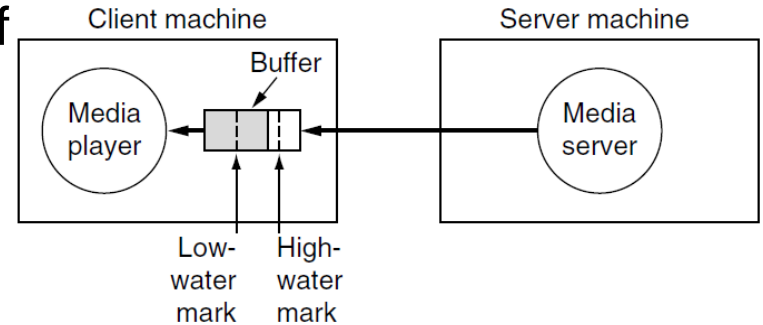
Semester 2, 2018

Opening Question

What is Bandwidth Delay Product ?

Question 1

An video streaming server takes 50 ms to communicate with a client media player. If the media player has a 1 MB buffer, what can you say about the position of the low and high-water mark? Assume the media being streamed has a bitrate of 1 Mbps across a sufficiently fast link.



Question 2

What is the bitrate required to transmit 1280×720 pixel colour frames with 8 bits/pixel at 30 frames/sec? How can such a video be streamed across the internet?



Question 3

A compact disk holds about 650 MB of data. Is compression used in the production of audio CDs?

Assume that there is 60 minutes of audio to be stored and that it is sampled at 44.1 kHz using 16 bits each for the left and right stereo channels.

Question 4

Design an attack on the DES cipher by using the knowledge that the plaintext to be sent contains only upper case ASCII letters and the space character.

Question 5

Suppose that a message has been encrypted using DES in ciphertext **block chaining mode**. One bit of the ciphertext in block C_i has been corrupted during transmission. How much of the plaintext will be corrupted as a result?

Question 6

Now consider ciphertext **block chaining** again. Instead of a single 0 bit being transformed into a 1 bit, an extra 0 bit is inserted into the ciphertext stream after block C_i . How much plaintext will be garbled as a result?

Question 7

Consider the use of **counter mode**, as shown in Fig. 8-15, but with $IV = 0$. Does the use of 0 threaten the security of the cipher in general?

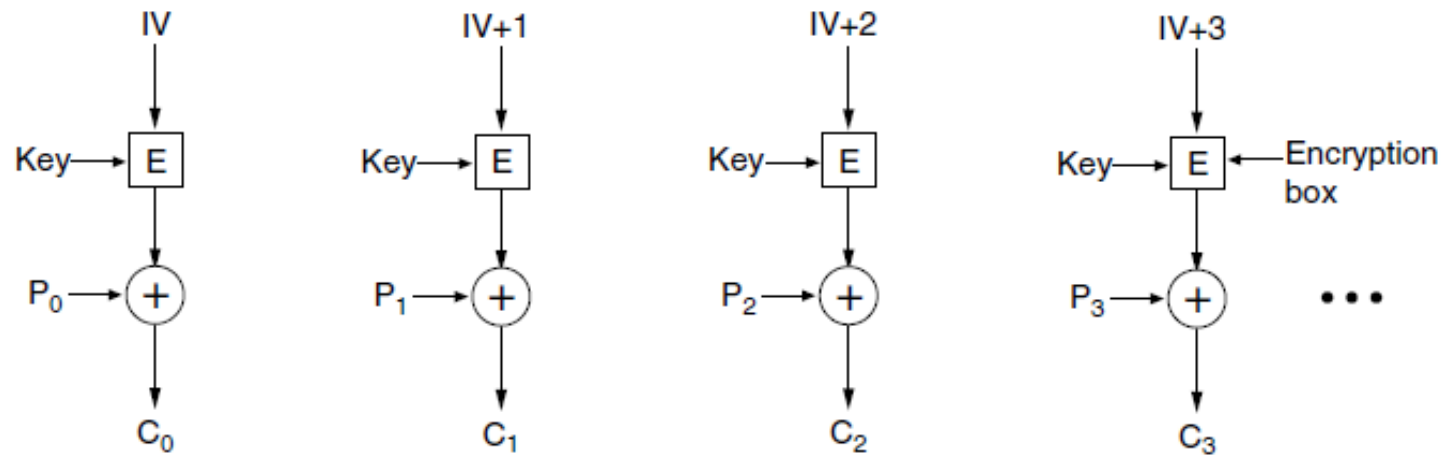


Figure 8-15. Encryption using counter mode.

Question 8

What are some of the differences between HTTP 1.0 and HTTP 1.1?