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# A Fast and Robust Scheme for Measuring Internet Bottleneck Bandwidth

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Scheme[1] Yoo Han-seoung      Fast Convergence  
Fast Convergence Scheme

1. 가  
 (available bandwidth) 가 2  
 , 가 Fast Convergence Potential  
 Scheme [1] Fast Convergence Scheme Bandwidth Filter[2][5]  
 가, , 3 , 4  
 Fast Convergence Scheme 5

가 2.  
 2.1 Potential Bandwidth Filter(PBF)

Fast Convergence Scheme      Potential Bandwidth Filter  
 가

[3] 1

Potential Bandwidth Measured Bandwidth  
가 .

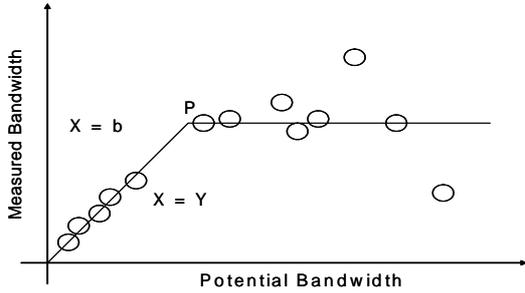


그림 1 Potential Bandwidth Filter 방식

1

[2]

MB = P	Actual Bandwidth
MB > P	Time Compression
MB < P	Time Extension

표 1 PBF |서 패킷을 필터링 하는 조건

Time Compression

Time Extension

[5]

### 2.2 Fast Convergence Scheme(FCS)

1 가

가

FCS

가

3. ( )

가

가

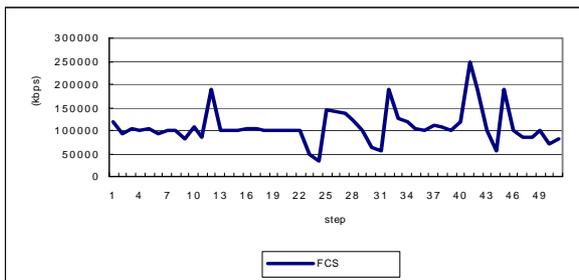


그림 2 FCS | 안정화된 대역폭 측정 결과

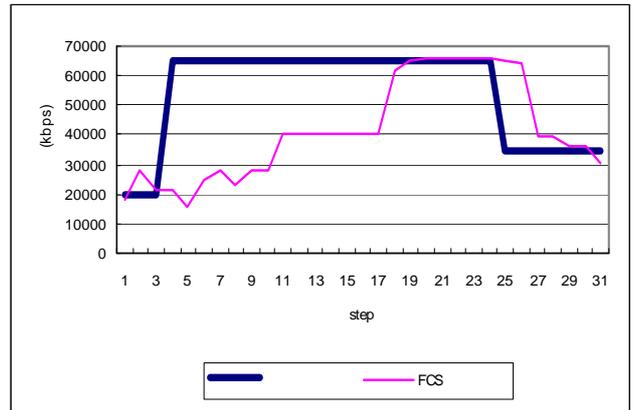


그림 3 FCS | 변화하는 대역폭 측정

3

가

가

가

3.1

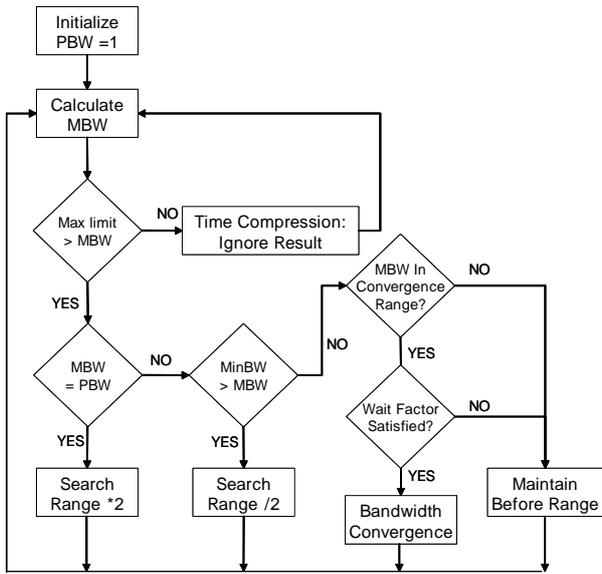
4

가

가

가

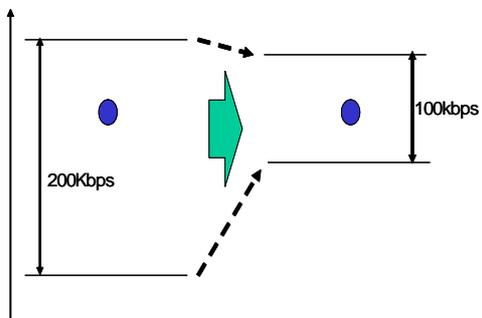
가



4 Bandwidth Search Procedure

5

1/2



5

3.2

4.

4.1

-600MHz

UDP  
Packet Pair

FCS PDF

4.2

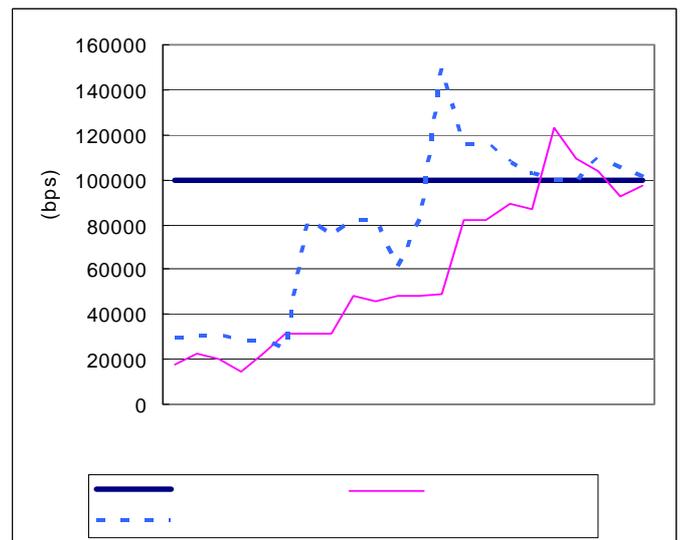


그림 6 대역폭 측정 시간의 비교

6

가 가

100kbps

500

가  
가 가

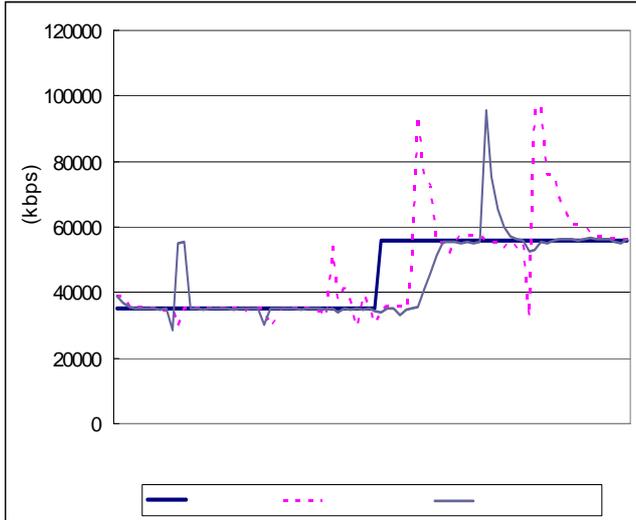


그림 7 변화하는 대역폭에서의 성능 비교

7

가

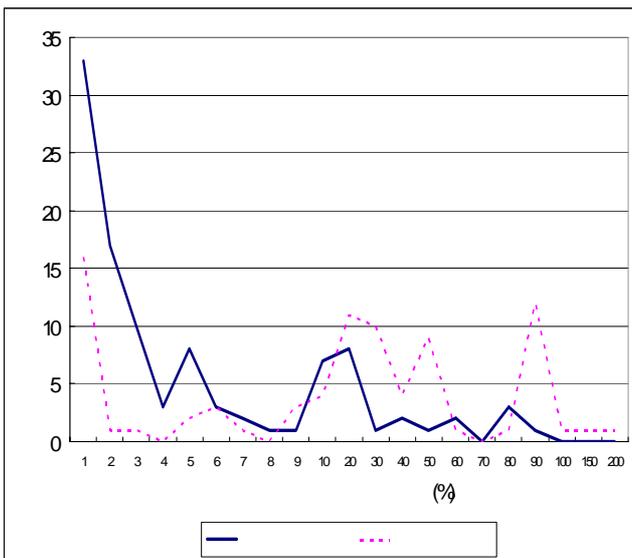


그림 8 알고리즘의 추정오류에 의한 영향 비교

8

가

5.

가

Fast Convergence Scheme

Fast Convergence

Scheme

23~31%

가

가

[1] Han-Seung Yoo, Ju-Wook Jang, An improved packet pair method for filtering estimation noise and fast convergence in measuring bottleneck bandwidth, Parallel and Distributed Systems, 2001. ICPADS 2001

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