IP

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Design and Implementation of Active Measurement Tool for One-way IP Performance Measurement

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IP
Global Positioning System(GPS)   Micro-second

.   ,

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IP   .

.

1.

[1].

.   .

IETF   IPPM(IP Performance Metrics)   (WG)   .
          (Metric)
    [2].   (one-way
delay),   (delay variation),   .
    (one-way packet loss),   (packet   . 2
loss pattern)   [3,4,5].   . 3
          .

                                                                    . 4

    [6,7,8].   .

                                              .   ## 2. Active Measurement Tool(AMT)
    AMT   IETF   IPPM
                                              WG
                                              (Infrastructure)   . AMT
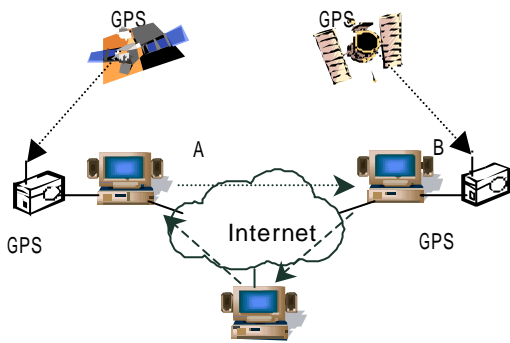   FreeBSD UNIX   PC
          .   MySQL
                                                    .
    ,   ## 2.1 GPS

          .   RTT

(Measurement System)

(Control System) 2

AMT

. 1 AMT

.

. 1 GPS
.

GPS

. GPS

.

2.3.1 (Control System)

Motorola Oncore Remote Antenna, Oncore GPS
Receiver(UI) GPS

[9].

.

Network Time Protocol

.

ntpd [10].

1) (Control Server)

AMT
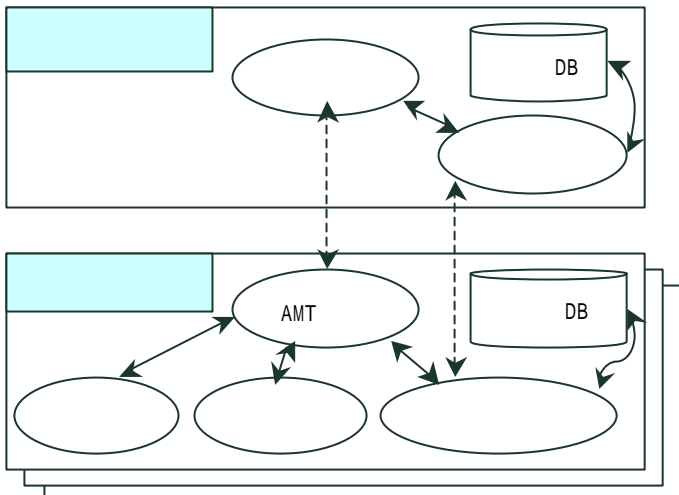
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2) (Storage Server)

(Local DB)

.

(Delivery Agent)

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그림 1.

2.3.2 (Measurement System)

.

2.2

IP

1) AMT (AMT Daemon)
AMT

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AMT , AMT
(AMT Sender) (AMT Receiver)

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2) (AMT Sender)
AMT

, .

[11, 12].

(Pseudo-random number generator)
(Poisson Process)

.

2.3 AMT

3) (AMT Receiver)

AMT .

,

.

< , IP ,   ,
IP   ,   >
4)   (Delivery Agent)
AMT

,

.

3.
3.1

KORNET AMT

. 1(MS1) IP 147.46.14.69

.

2(MS2) IP 203.232.127.20 KORNET

그림 2. AMT

.

3. 2

2000 11 28   0   2000 11 28
12   .
Lambda   2   Poisson   .
3   MS1   MS2   (Delay1)
.   4   MS2   MS1
(Delay2)   X
5   . Y
1   (us)   .
; (a) Minimum delay, (b) 95th percentile, (c)
Maximum delay.   5
. Percentile

(3, 4) 95th percentile
.   MS1
MS2   Path   Delay1   MS2
MS1   Path   Delay2
.
, MS1   MS2   Path   MS2   MS1   Path
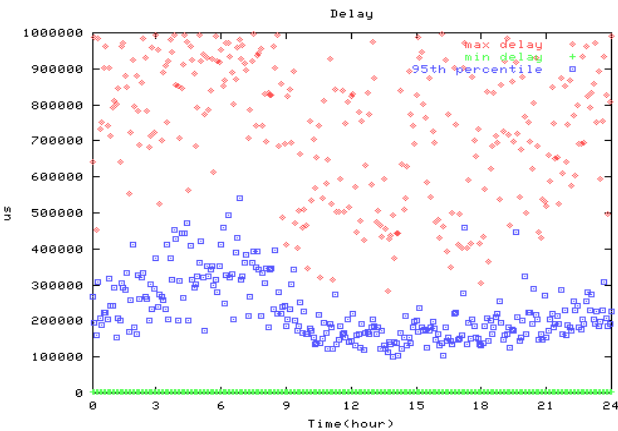Load   .   MS1
MS2   Path   .   ,
Routing   .
Ping   RTT   .

.

3. MS1   MS2   One-way Delay

4. MS2   MS1   One-way Delay

4.

(Metric)   .

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.

AMT(Active Measurement Tool)
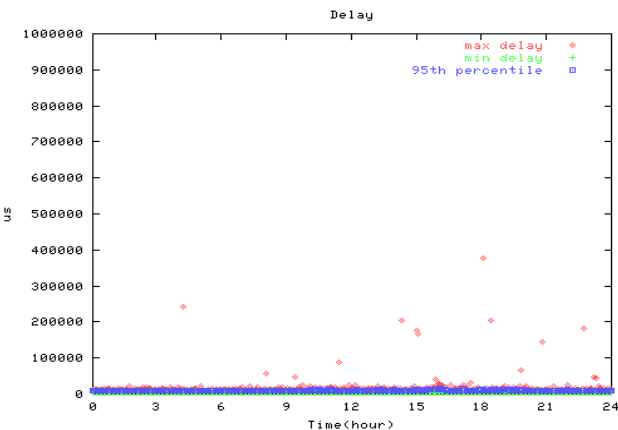.   KORNET
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AMT

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AMT

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