The Next Wave in

Multimedia Technologies

콘텐츠 비즈니스 테크놀로지 2007

Under the Hood – Daum UCC

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CDNetworks

1. The Path of Daum

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3. Things can Never be forsaken for your own UCC Service

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The Path of Daum

2001 2002 2003 2005 2007

- Approx. 1,000 Proprietary Unix Servers
- Poor R.O.I, Low Scalability

2001 **2002** 2003 2005 2007

- Decision made
- Migrate to Linux based x86 servers.
- Adopt Open Source Software

2001 2002 **2003** 2005 2007

- Radical Growth
- The Portion Linux based, cheap x86 servers kept Increasing.
- The Opening of Scaling out ERA

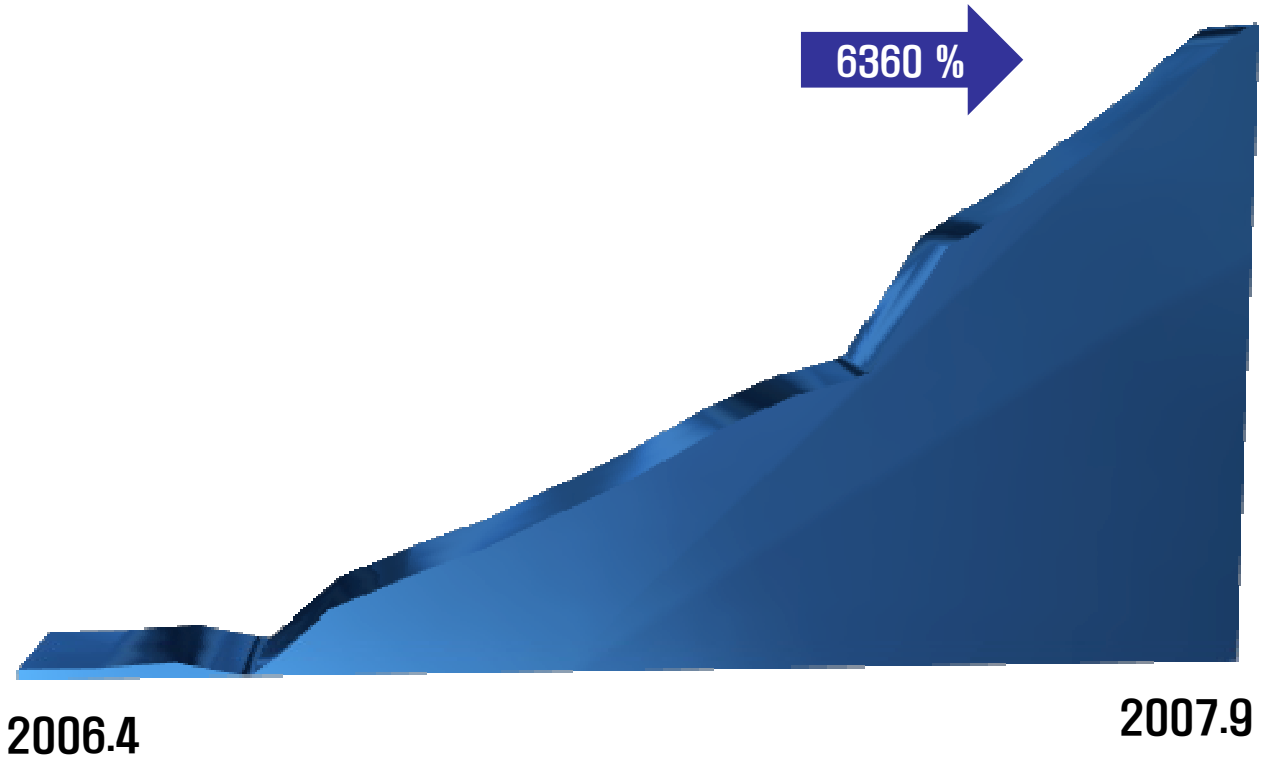
2001 2002 2003 **2005** 2007

- The quality of x86 servers and open source software were getting better day by day.
- Open Source and Linux Boom up
- Keep Scaling Out.

2001 2002 2003 2005 **2007**

- Approx. 10,000 Servers, 4 PB of Storages
- The Largest of IT Infrastructure in Korea.
- DAUM Pioneered UCC World.

UCC service is Growing Fast



Problems on Mass Network Traffic Environment And Their Solutions

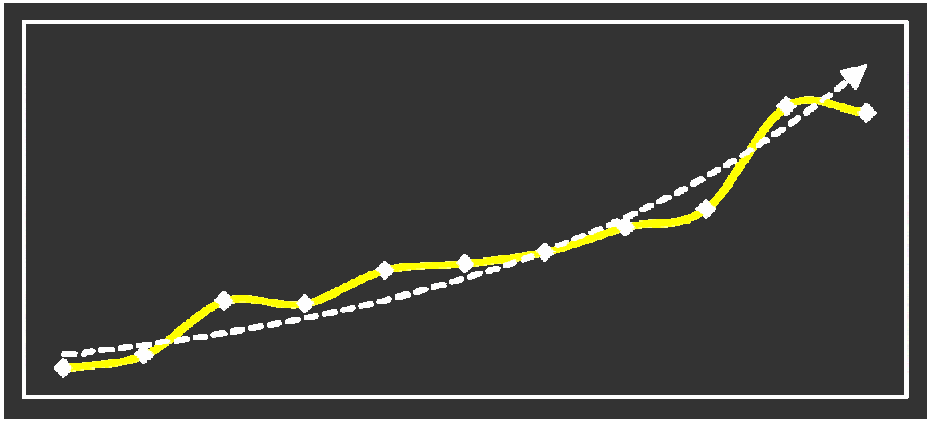
Optimizing Cost

- What was in our hand

  The Largest Portion is Network Traffic

  Network Traffic → Cost

  Cut down Cost by Optimizing Contents Delivery Procedure



Optimizing Cost

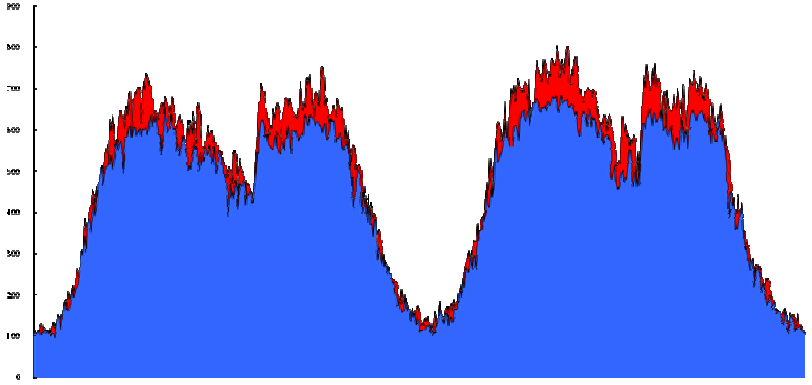
- Grasp the characteristic of UCC Service

"Let users have their contents as fast as Possible!"

→ Not always Good.

Not all users are play video files till the end

If we could restrict download bandwidth to minimum...?



Optimizing Cost

- **What we did**

  What we need was a little more than 1Mbps per session.

  Set max download bandwidth

  Infinite → **5 Mbps**

  Try to use just as much as we need.

Optimizing Cost

- **The Result**

  Immediate Response: Network Traffic Reduced 15%

  We also can cut the cost about 10% a month

	Before	After	Decrement Ratio
Day 1	24 Gbps	19 Gbps	- 15.4 %
Day 2	22 Gbps	19 Gbps	- 26.1 %
Day 3	19 Gbps	16 Gbps	- 16.9 %

Optimizing Cost

- **What was in our hand**

  Single request → Dozens of images

  As burden on image servers

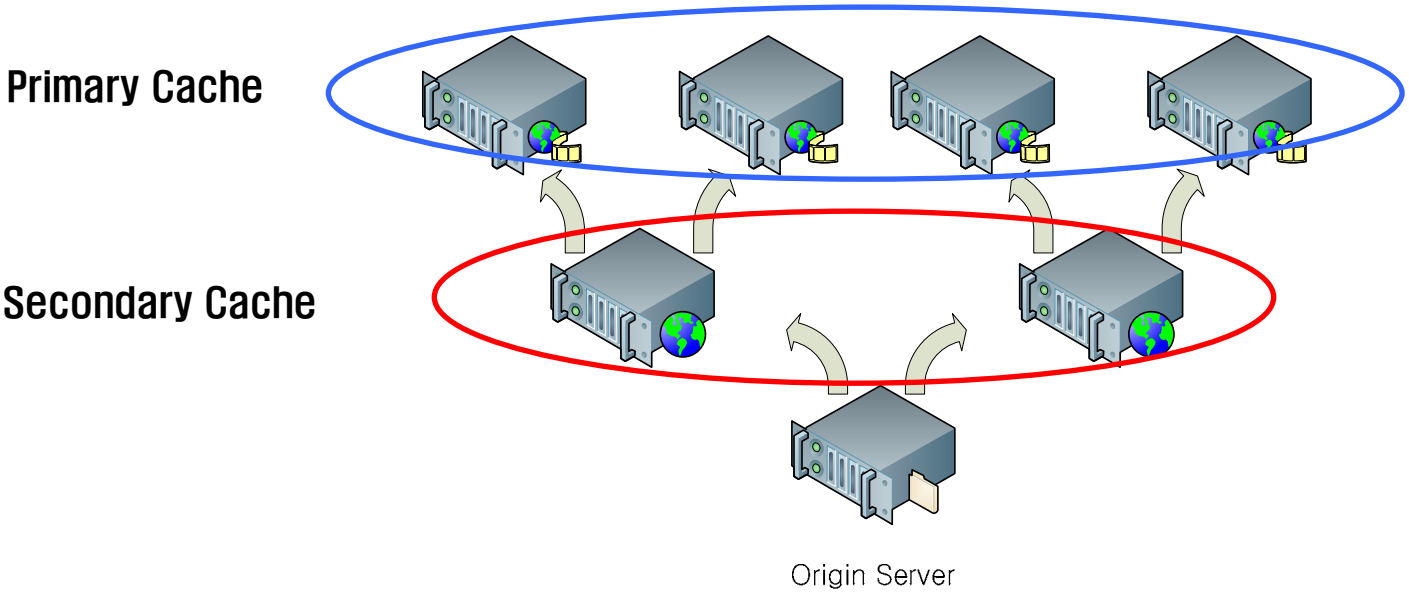
  gets bigger, QoS gets poorer.

Performance Boost on Image Caching

- **What we did**

  Enforce Cache Servers more Optimally,

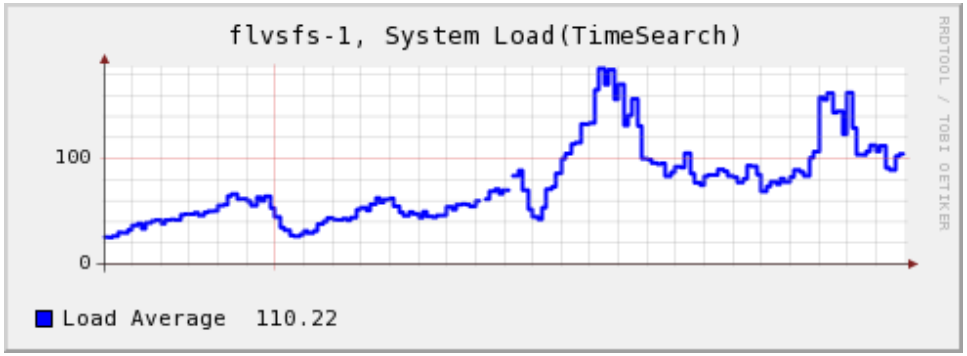
  That is Hierarchical architecture that scales well

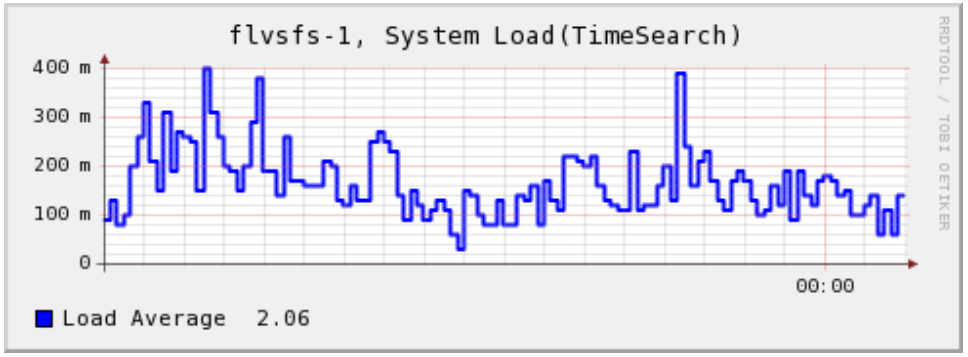


Performance Boost on Image Caching

- **The Result**

Origin Server Workload dropped





Performance Boost on Image Caching

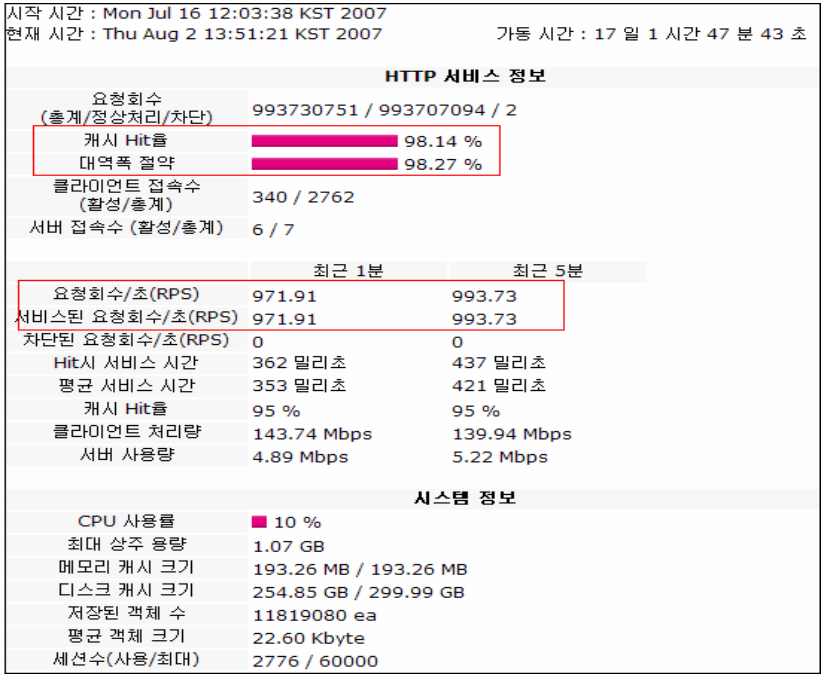
- **The Result**

  Response Time improved dramatically

  Worst: more than 5 seconds

  ↓

  Current : Less than 500ms



시작 시간 : Mon Jul 16 12:03:38 KST 2007
현재 시간 : Thu Aug 2 13:51:21 KST 2007 가동 시간 : 17 일 1 시간 47 분 43 초

HTTP 서비스 정보

요청회수 (총계/정상처리/차단)	993730751 / 993707094 / 2
캐시 Hit률	98.14 %
대역폭 절약	98.27 %
클라이언트 접속수 (활성/총계)	340 / 2762
서버 접속수 (활성/총계)	6 / 7

	최근 1분	최근 5분
요청회수/초(RPS)	971.91	993.73
서비스된 요청회수/초(RPS)	971.91	993.73
차단된 요청회수/초(RPS)	0	0
Hit시 서비스 시간	362 밀리초	437 밀리초
평균 서비스 시간	353 밀리초	421 밀리초
캐시 Hit률	95 %	95 %
클라이언트 처리량	143.74 Mbps	139.94 Mbps
서버 사용량	4.89 Mbps	5.22 Mbps

시스템 정보

CPU 사용률	10 %
최대 상주 용량	1.07 GB
메모리 캐시 크기	193.26 MB / 193.26 MB
디스크 캐시 크기	254.85 GB / 299.99 GB
저장된 객체 수	11819080 ea
평균 객체 크기	22.60 Kbyte
세션수(사용/최대)	2776 / 60000

Things can never be forsaken for your own UCC Video Service

Architecture represents essence of service

- NO WONDER

  Whether you do it or let others do it

  No matter what,

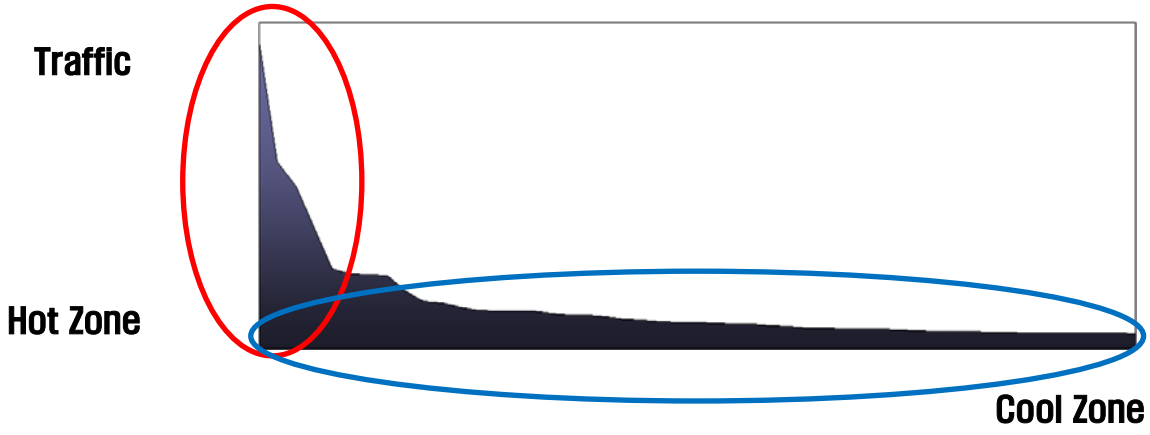
  You Have to prepare appropriate Protection

Architecture represents essence of service

- The Long Tail

  Contents must be transferred through Hot Zone and Cool Zone freely.

  Decent Architecture is required.



"The Challenge
For Reliable and Efficient Service"

Makes Daum UCC More Valuable.

THANK YOU

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