

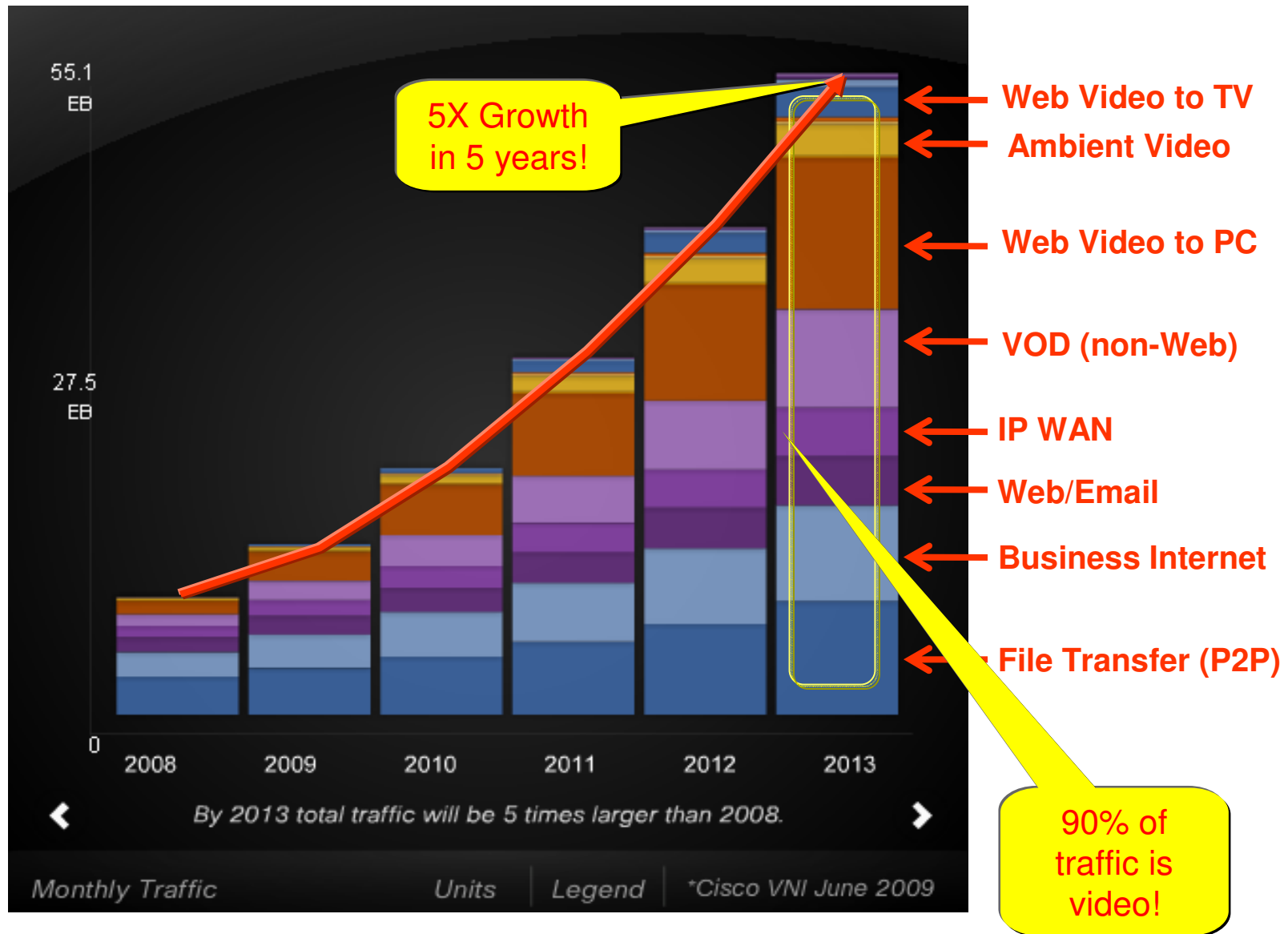
# **NG-CDN -- Huawei Media Delivery Solution**

[www.huawei.com](http://www.huawei.com)

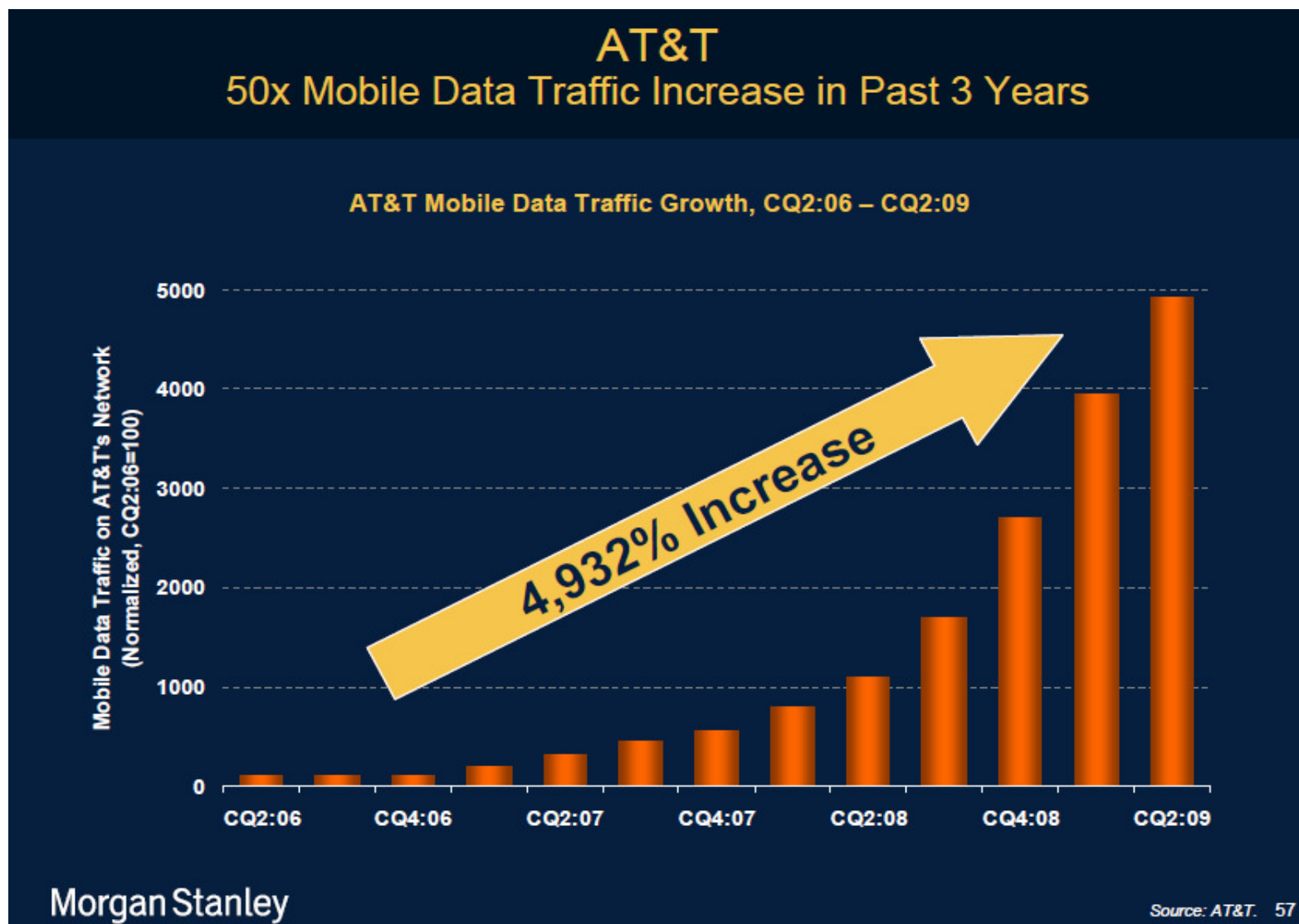
# Agenda

- **Facts and Challenges in Media Delivery**
- **NG-CDN Design Principles**
- **Q&A**

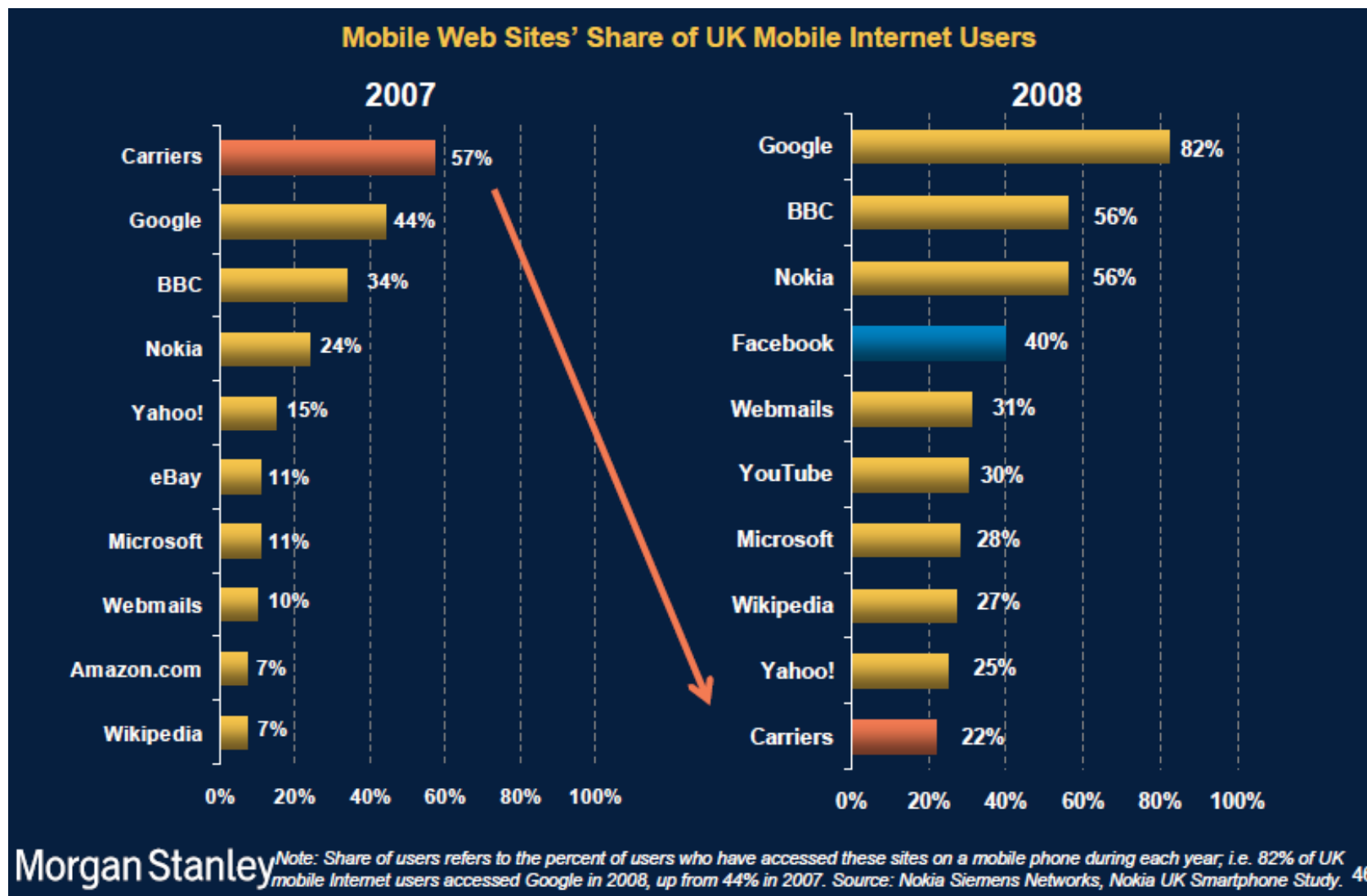
## IP Traffic Growth 2008 – 2013



## AT&T Mobile Data Traffic Grow Due to iPhone and Data Cards

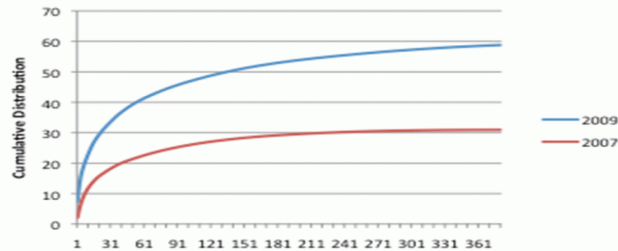


## The Rapid Decline of Wall of Garden Services



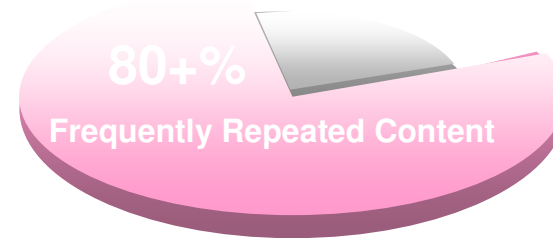
# Carrier Challenges in Media Delivery

Consolidation of Content

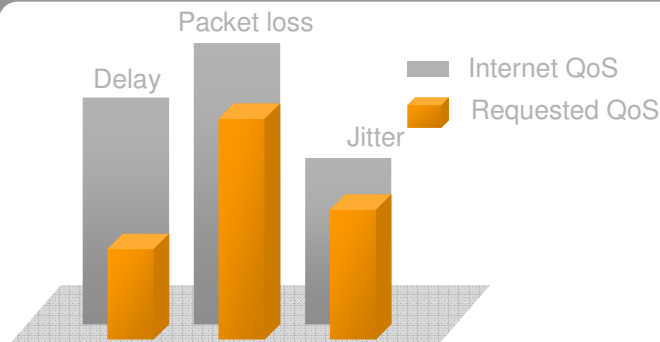


**Rapid Consolidation of Content Sources (120 ASN => 50% Content)**

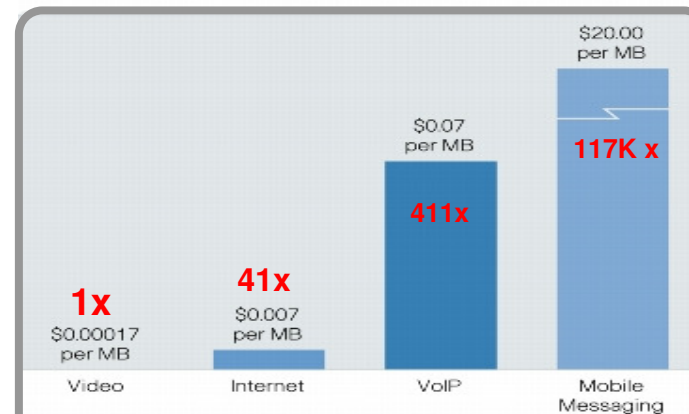
Content Proportion



**Duplicated Transmission Consumes Huge Bandwidth**

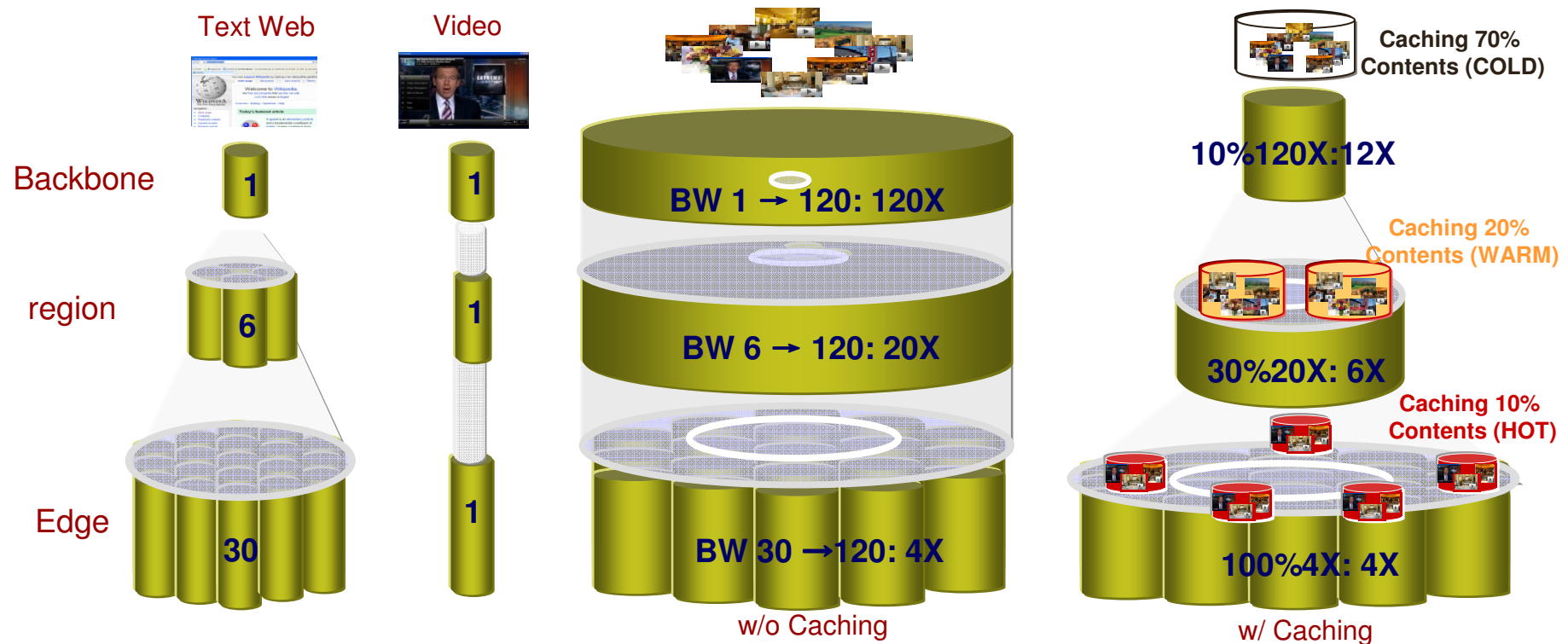


**Internet Does Not Meet the Requirement of On-line Video**



**Relative Revenues per MB**

# Paradigm Shift in Network Architecture



In 2003:

Backbone technology: 10G  
Access bandwidth: 1M

In 2008:

Backbone technology: 40G  
Access bandwidth: 8M

In 2013:

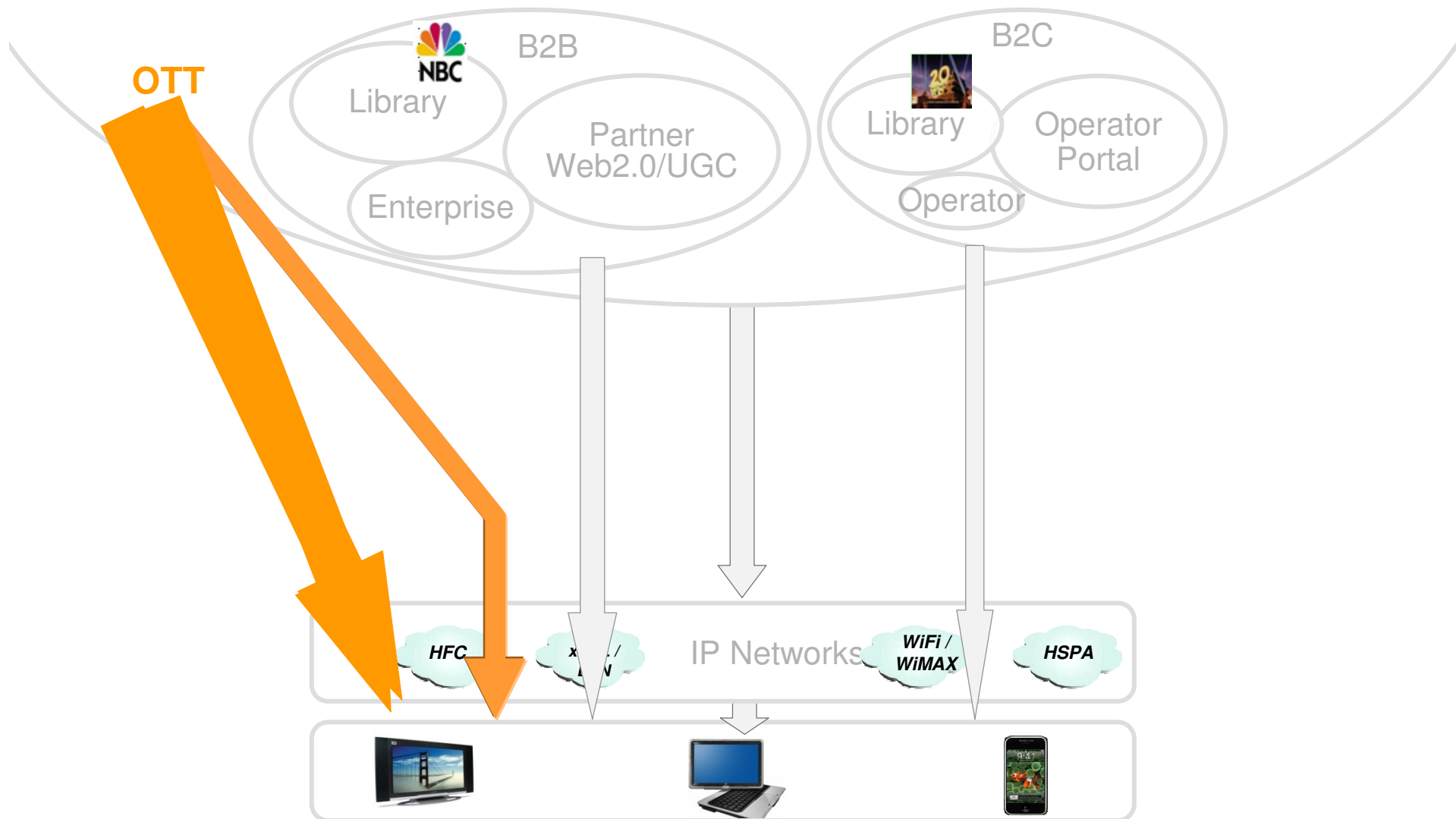
Backbone technology: 100G  
Access bandwidth: 100M

- Video “Duty Cycle” is different, pressure on backbone.
- The development of backbone is far less than access network.

# OTT vs. B2B/B2C

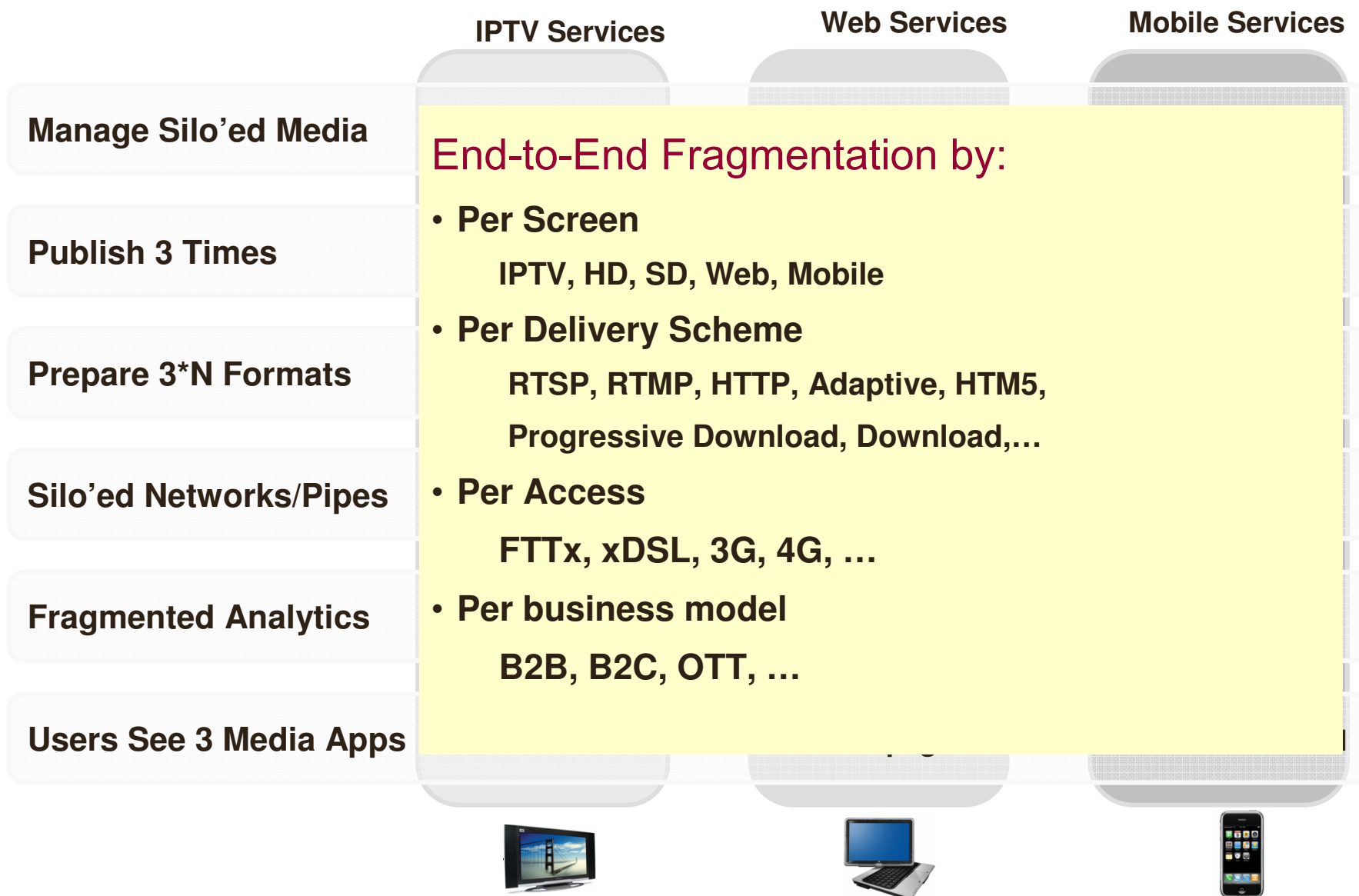


OTT (Over the Top)





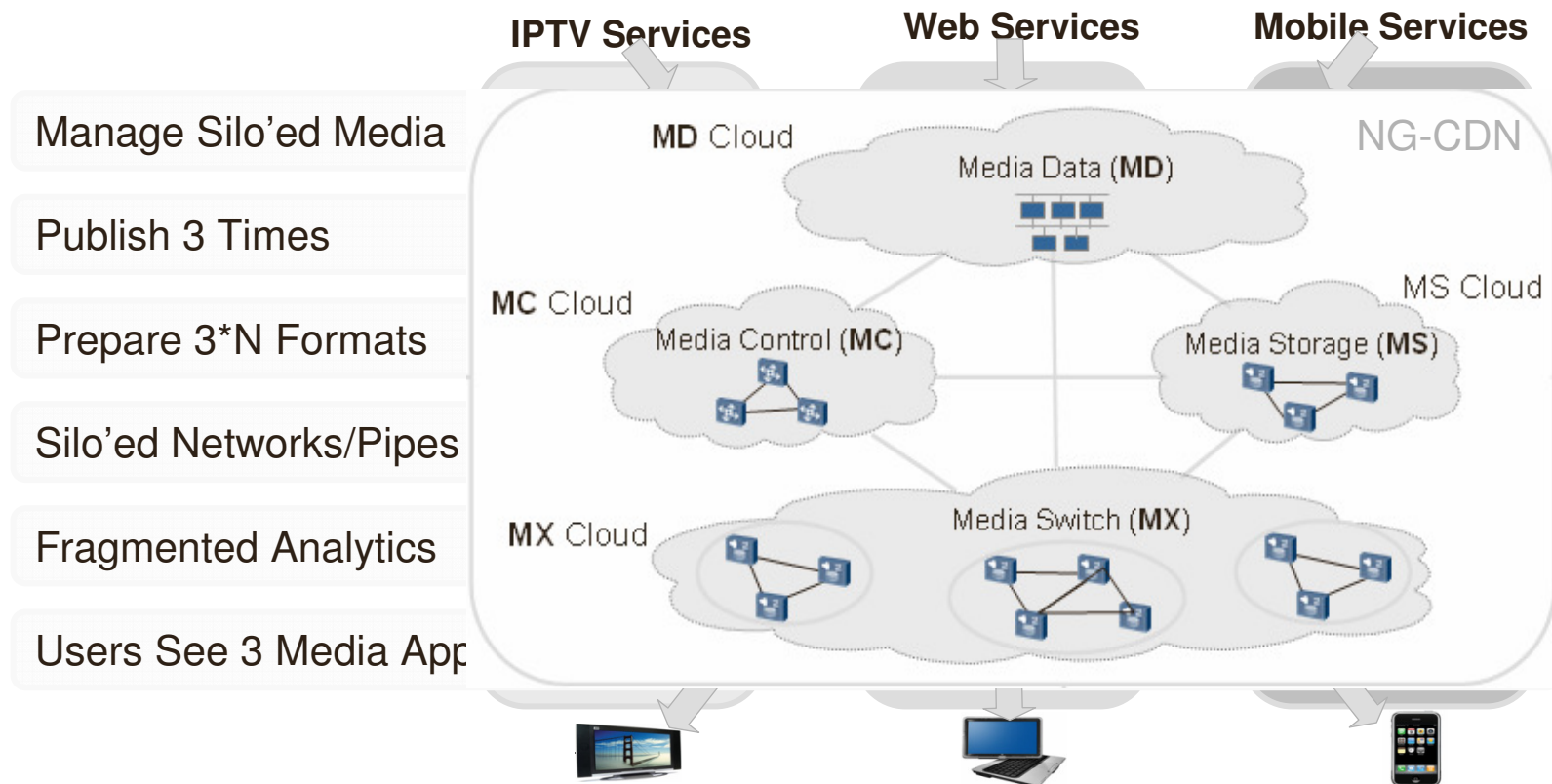
# Today's CDN: Highly Fragmented & Repetitive Investment



# Agenda

- Facts and Challenges in Media Delivery
- NG-CDN Design Principles
- Q&A

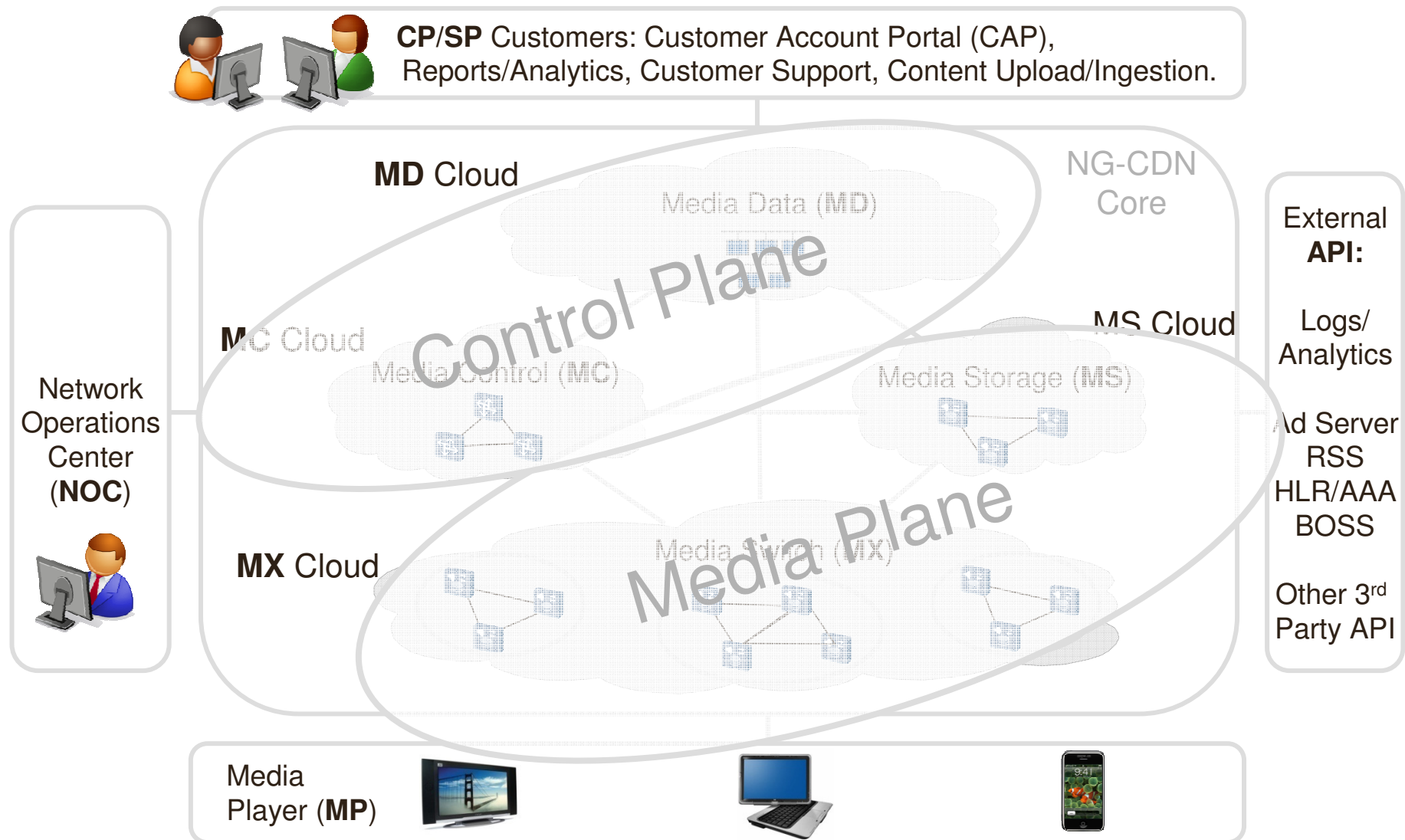
# Unified Service Deliveries



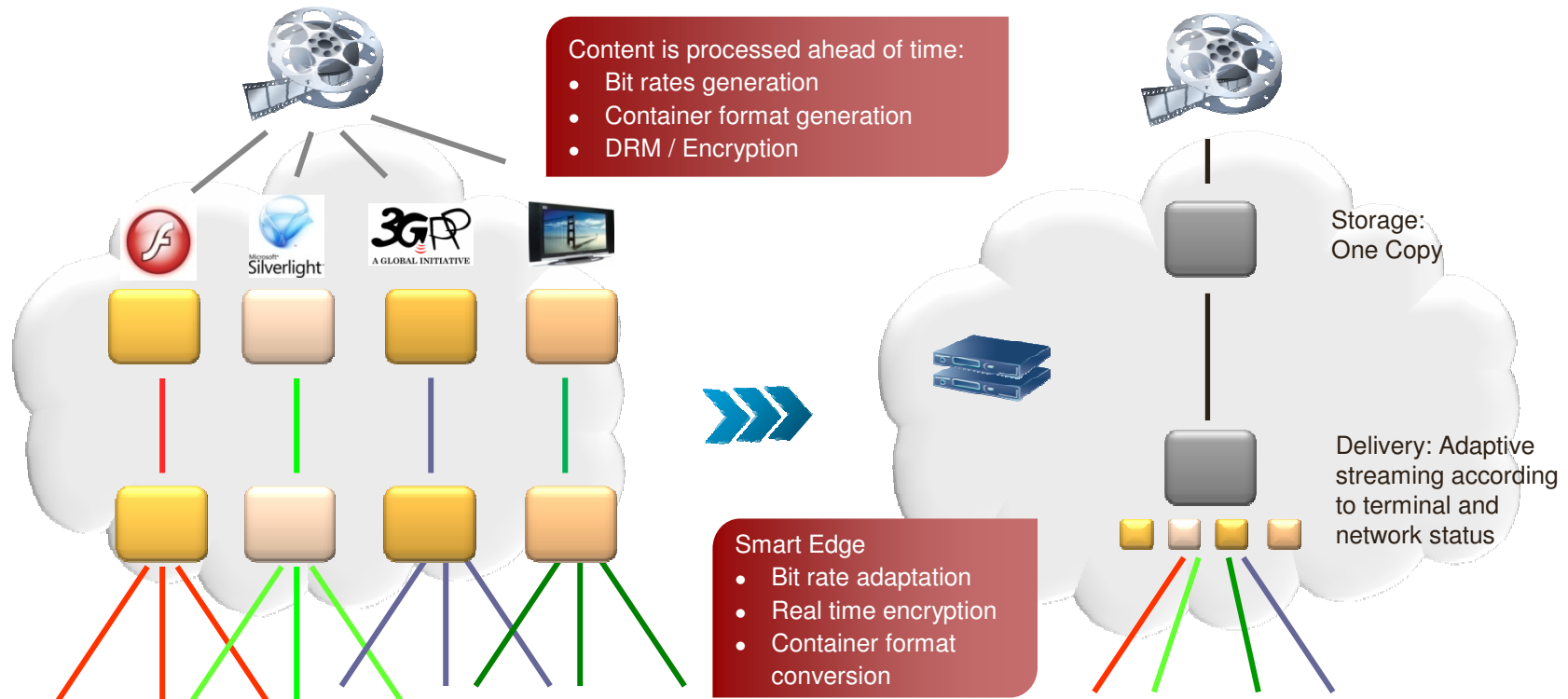
Perpendicular network structure, duplication of investment, content and service can't be centrally managed, high CAPEX and OPEX. How to satisfy content provider and end user's need for any-to-any delivery?

Establish a unified media network platform for IPTV, Mobile TV and Web Video scenario. One platform for several different services, save a large costs of content storage and delivery. Completely open system and API interface.

# NG-CDN High Level Diagram



# Unified Management



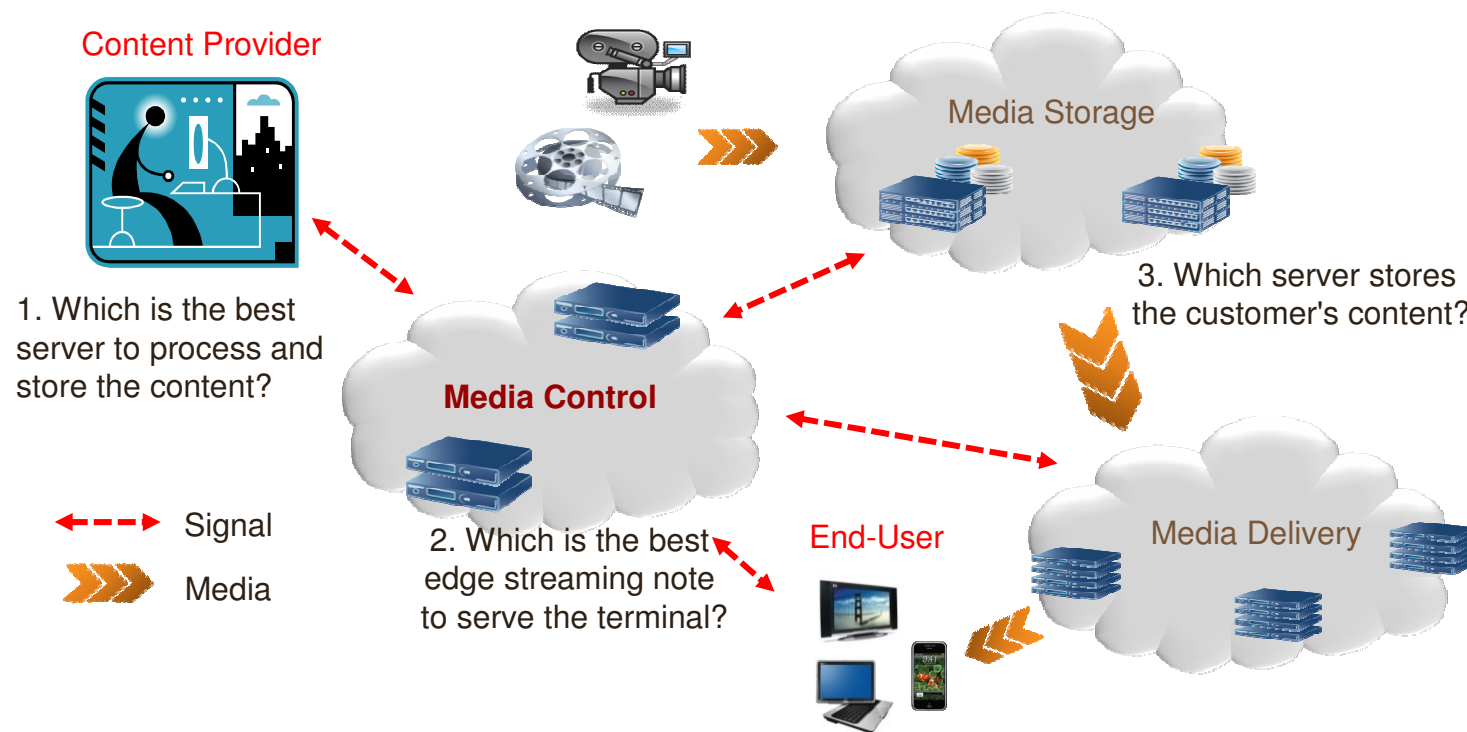
## Problem

- File container, bit-rate are generated ahead of time. Cache and storage per content per container per bit-rate.
- Strong coupling of media processing and service requirement

## Solution

- Normalized one copy for different file container. In the future, codec type and bit-rate.
- Dynamic adaptation at the edge according to terminal and network status, flexibility and good experience.

# Smart Routing Ensure Network Balance and User Experience



## Problem

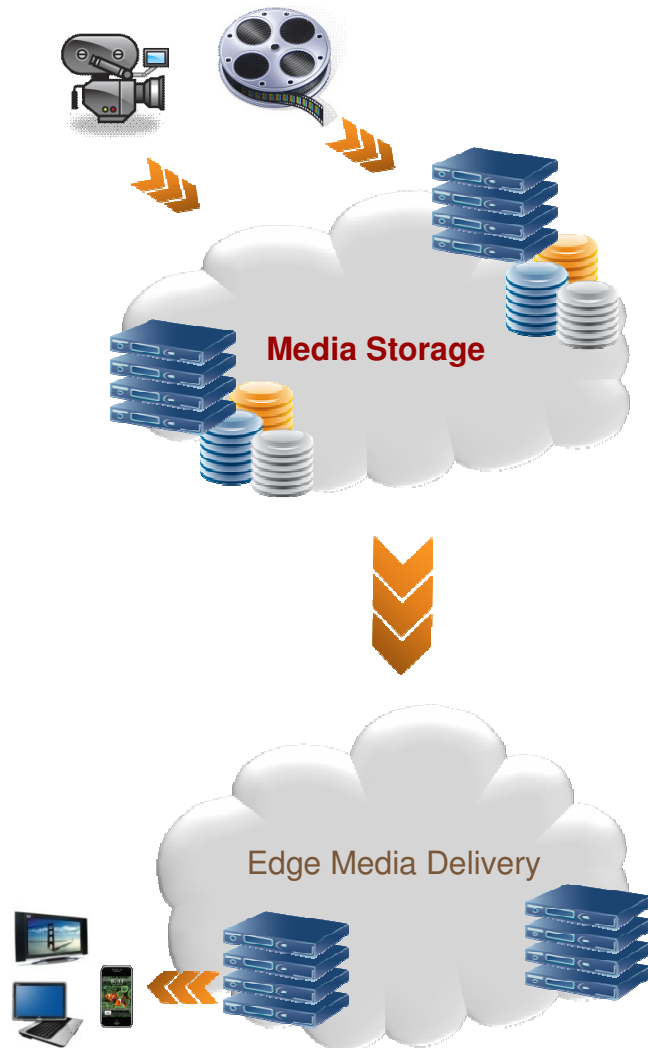
- Lack of smart control mechanism, hard to monitor the load of whole network, can't dynamically allocate resource based on network load.
- Resource waste due to unbalanced utilization

## Solution

- Smart routing algorithm and centralized network monitoring mechanism to ensure the global load balancing.
- Dynamically adjust routing according to network status, NE load and terminal requirement, ensure reliability and user experience.



# High Reliability, High Availability and Scalable Storage



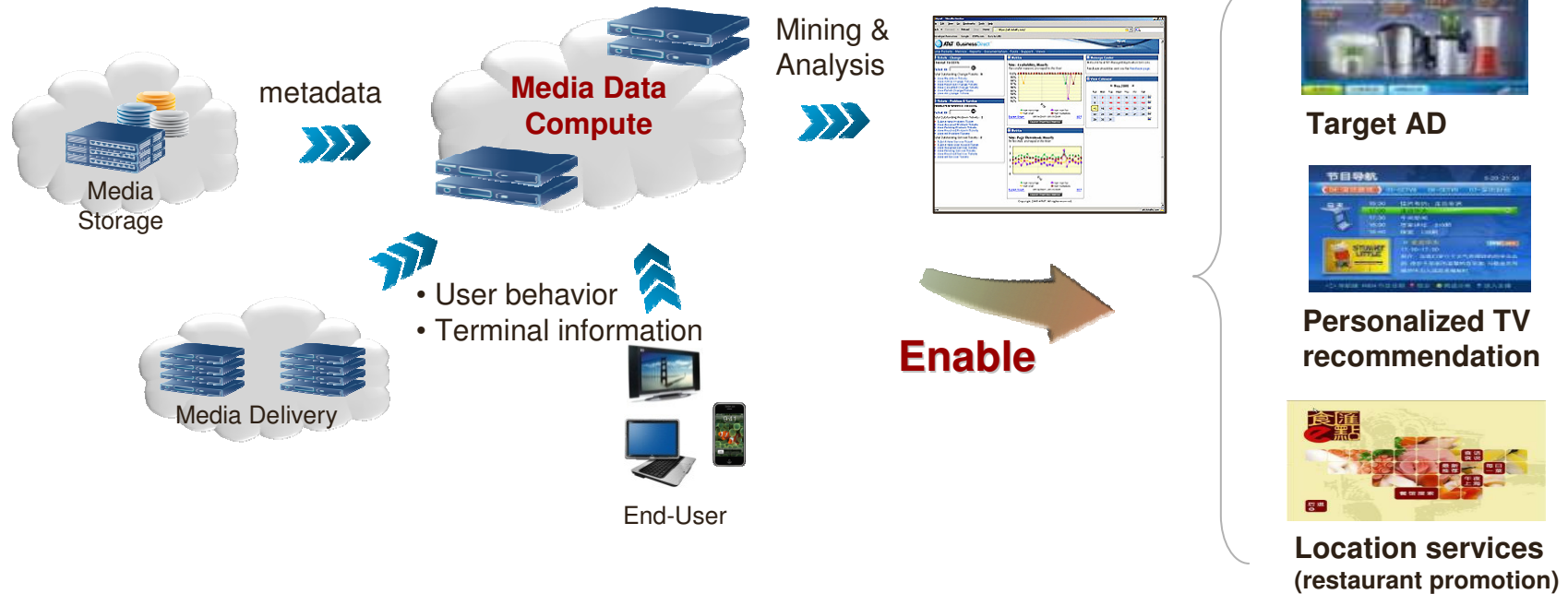
## Problem

- Massive isolated storage servers, can't share the storage resource in location, high CAPEX.
- No automatic backup mechanism between different location, high OPEX.
- Only media storage, no pre-processing and pre-delivery function.

## Solution

- Hundreds of terabytes of capacity, shared local storage in each location
- High available master-copy storage
- Automatic content replication & failover
- Per customer content mirroring in multi location
- Ingest of file content and live streams, pre-deliver the hot content to the edge
- Intelligent placement of customer content across different geographic locations

# Data Mining and Analysis



## Problem

- Lack of unified data collection and processing platform, need to integrate multiple third-party components.
- Lack of data mining and analysis, massive data can not be used to value-added business

## Solution

- Cloud and Web 2.0-based architecture, open and modular design
- Real time massive data capture and mining, provide large number of valued statistic
- Service enabling, move up value chain



# Example of Content Personalization, Recommendation

### Amazon.com recommendation engine: Leveraging data

**New formats: Kindle**

**What Amazon recommends**

**What other customers are buying**

**What other customers are thinking**

**What other customers are saying**

### Google ads: Improvements in relevance

Sponsored Links

[750 Hotels in Paris](#)  
Good availability and great rates.  
Book online now, pay at the hotel!  
[www.booking.com/Paris](#)

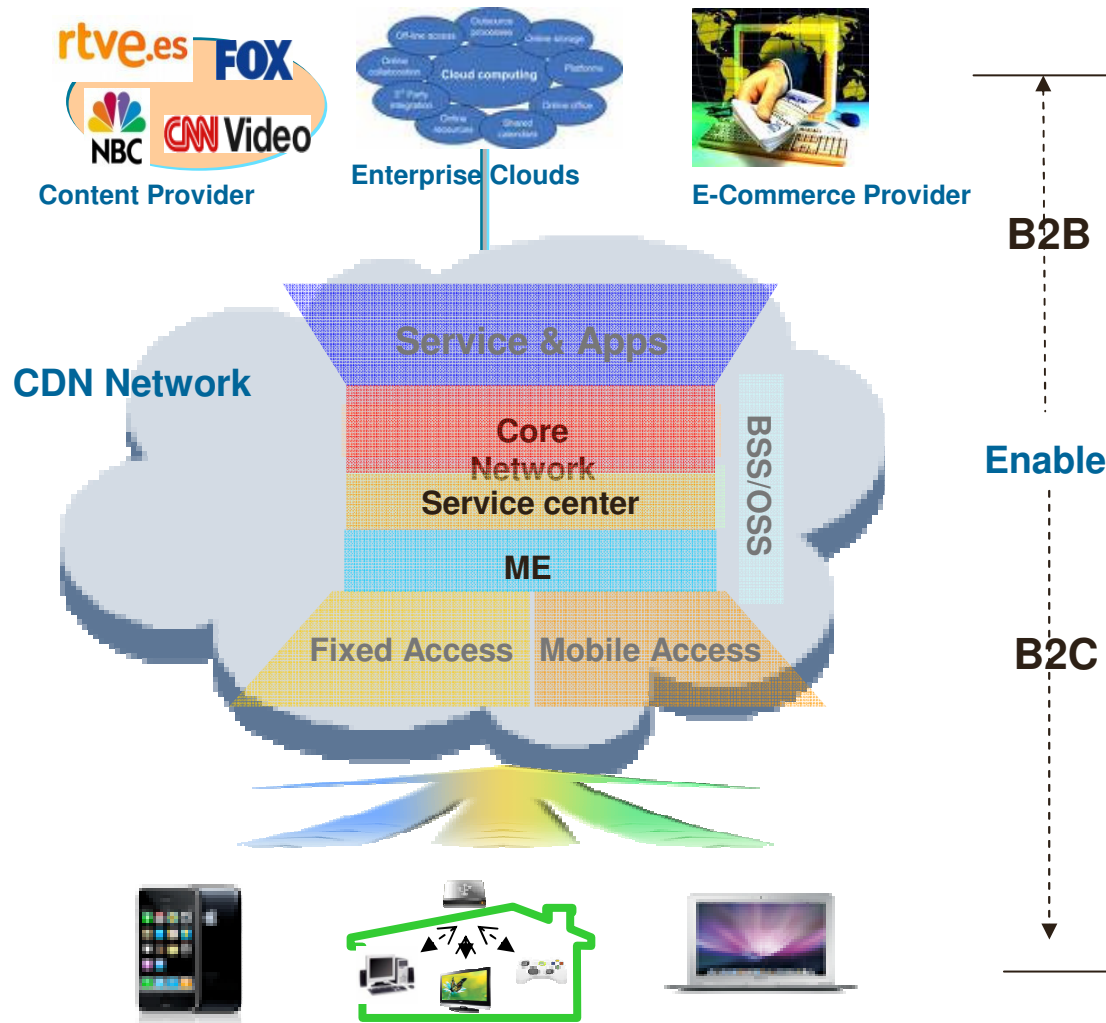
[Upgrade From Coach Class](#)  
People who sit up front don't have the money. They have the brains.  
[FirstClassFlyer.com](#)

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Learn All About **Paris**. Check Out Videos & User-Posted Pictures.  
[AAAdvantageMilestones.com](#)

[Vuelos Paris](#)  
Aprovecha nuestra oferta hasta el 30 de abril 08 ¡Plazas limitadas!  
[www.eDreams.es](#)

Source: Amazon.com, Google

# Support Various Business Models



## Revenue from Business Service

- Media Delivery Service
- E-Commerce Acceleration Service
- Targeted Ads
- Business Intelligence

## Revenue from Consumer side

- Ubiquitous 3-screen experience
- Superb user experience
- Personalized services

## Key Technologies in Huawei Media Network



Thank you

[www.huawei.com](http://www.huawei.com)

