CacheLogic
Advanced Solutions for P2P Networks

Creating the Commercial P2P Ecosystem

Presentation by

George Daum
VP US Sales, CacheLogic Inc.
gdaum@cachelogic.com

CacheLogic
Advanced Solutions for P2P Networks

What Does P2P Offer Today

- **Content Owners**
  - ✓ New Route to Market
  - ✓ Opens up long tail and niche offerings
  - ✓ Low Cost Distribution
  - ✓ Inherently Scalable
  - ✗ Download speed limited by
    - Number of peers
    - Upstream bandwidth capacity
  - ✗ **Questionable User Experience?**

- **ISPs (Internet Service Providers)**
  - ✗ Escalation of costs
    - Transit bandwidth
    - Network infrastructure
  - ✗ Saturation of upstream links
  - ✗ **Network Congestion**

What's in it for the ISPs?

CacheLogic
Advanced Solutions for P2P Networks

The Problem

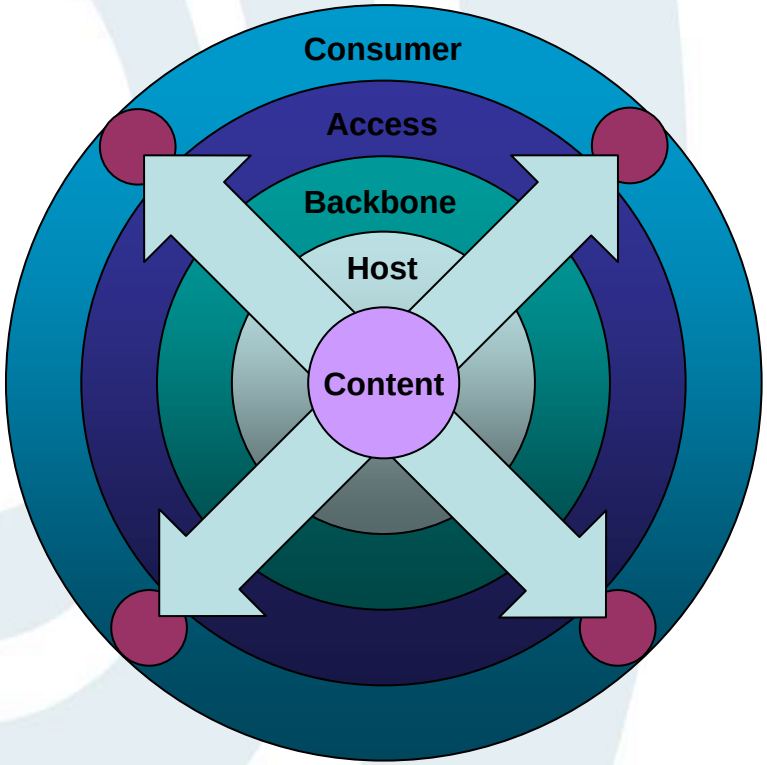
- **The ISP owns the Customers**
  - P2P uses their network in the worst possible way
  - ISPs see commercial P2P offerings as a threat
    - Undermines Cable TV
    - Undermines IPTV
- They've already coined the phrase

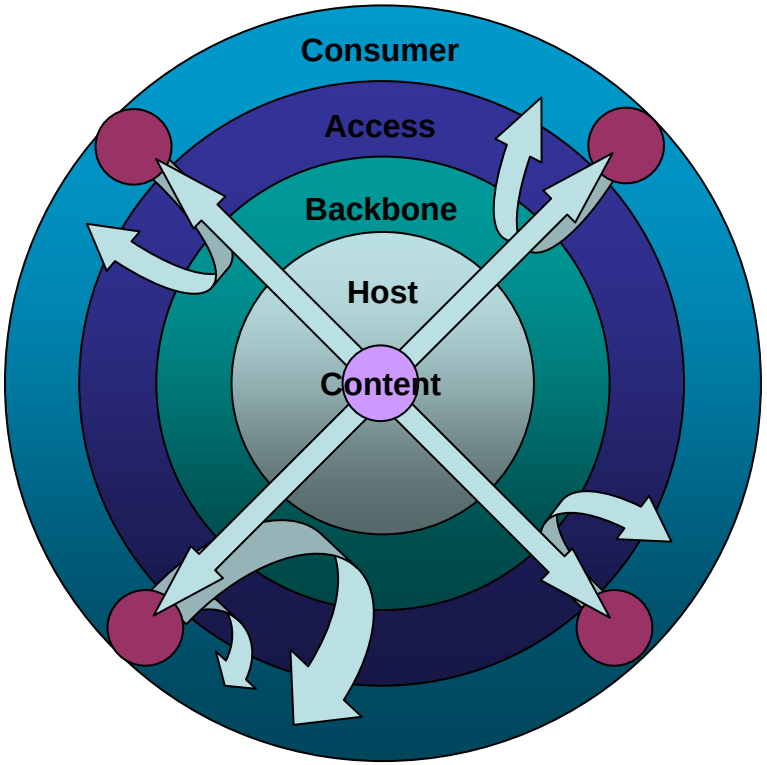
"Over the top services"

CacheLogic
Advanced Solutions for P2P Networks

Traditional Content Delivery vs. P2P

- Networks built to meet requirements of download delivery - core to edge
- But P2P traffic flows like this!





CacheLogic
Advanced Solutions for P2P Networks

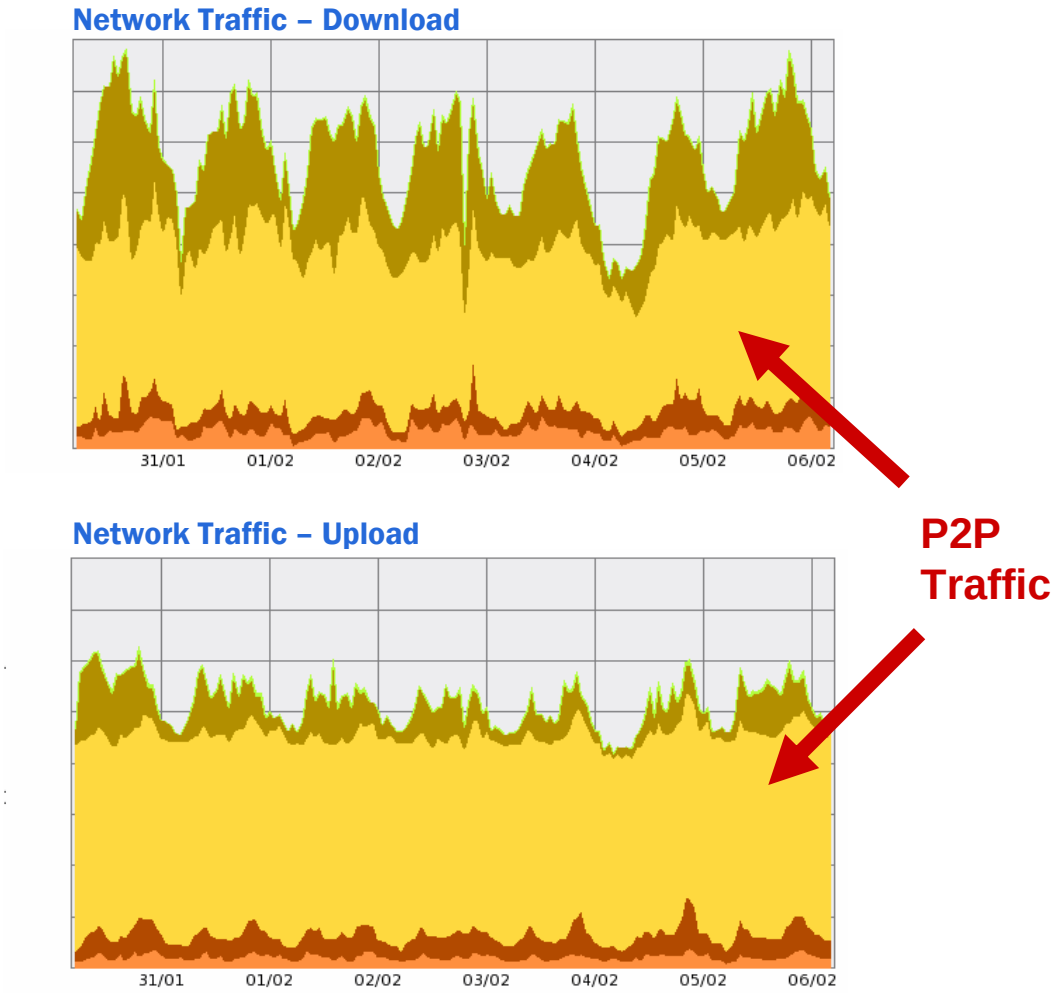
Impact of P2P on Service Providers

50-65% of downstream traffic

- In excess of 90% of P2P traffic crosses transit/peering links
- P2P applications aggressively consume all available bandwidth

70-85% of upstream traffic

- Peer-to-Peer is symmetrical
  - Download = Upload
- Majority of ISP networks are asymmetrical
  - Download > Upload
  - ADSL/Cable: ratio up to 20:1



CacheLogic
Advanced Solutions for P2P Networks

ISP Solutions for P2P

- ISPs must intelligently manage P2P

Solution	Encourages P2P Usage	Reduces ISP Costs	Maintains User Experience
Do nothing!	✓	✗	✗
Usage Based Billing	✗	✓	?
Shaping P2P traffic rate limited or "throttled"	✗	✓	✗
Caching P2P content locally cached and served from an on-network source	✓	✓	✓

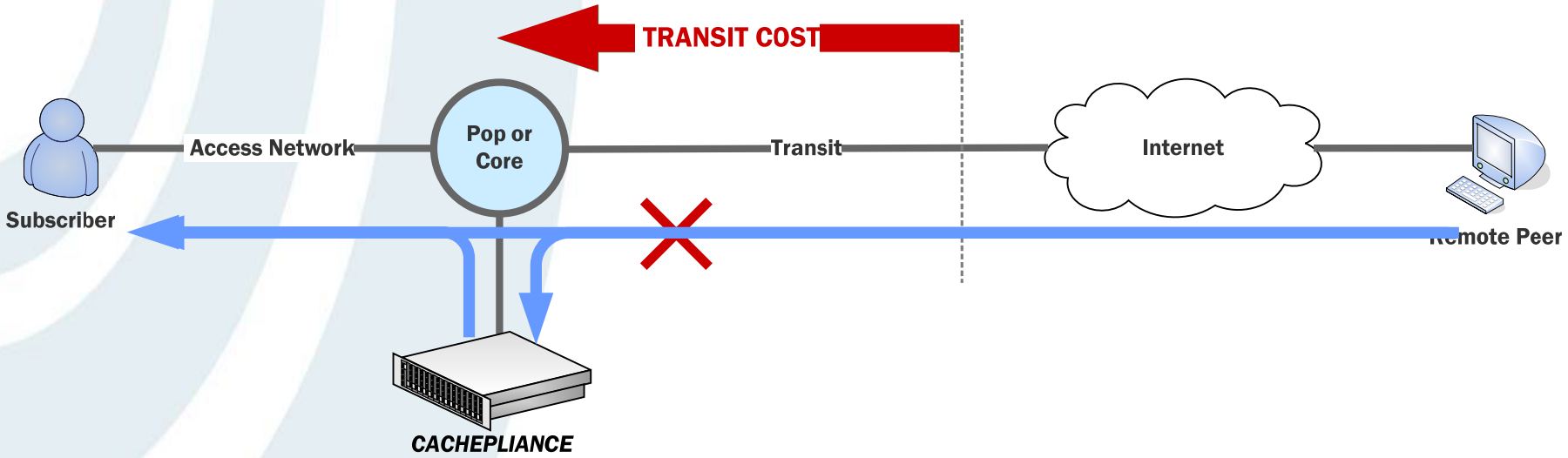
CacheLogic
Advanced Solutions for P2P Networks

CacheLogic's P2P Caching Solution

CacheLogic
Advanced Solutions for P2P Networks

Caching Benefits - Downstream Savings

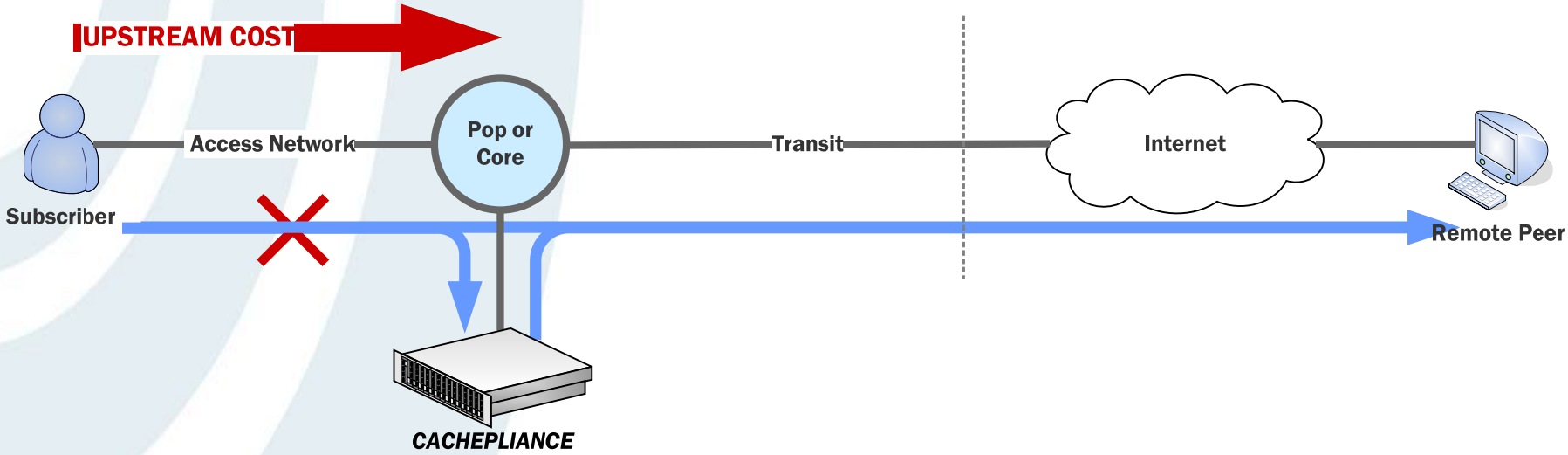
- Download requests from inside the network intercepted by Cachepliance
- Every cache "hit" reduces transit bandwidth requirements
- Result
  - Lower transit bandwidth requirements per customer result in reduced costs per customer
  - Customer experience not affected
  - Reduced traffic on core network



CacheLogic
Advanced Solutions for P2P Networks

Caching Benefits - Upstream Savings

- Download requests from outside the network intercepted by Cachepliance
- Every cache "hit" reduces traffic levels on congested access network
- Result:
  - Reduced traffic on access network allows more customers to be connected to existing infrastructure, therefore delaying capital-intensive upgrade programmes



CacheLogic
Advanced Solutions for P2P Networks

What Does P2P Offer Today

- **Content Owners**
  - ✓ New Route to Market
  - ✓ Opens up long tail and niche offerings
  - ✓ Low Cost Distribution
  - ✓ Inherently Scalable
  - × Download speed limited
    - Number of peers
    - Upstream bandwidth Capacity
  - × **Questionable User Experience?**

- **ISPs (Internet Service Providers)**

  Caching manages the costs and impact of P2P

  - ✓ Caching manages the costs
    - Transit bandwidth
    - Network infrastructure
  - ✓ Caching frees up upstream links
  - ✓ **Caching Massively Reduces Network Congestion**

But where is the commercial incentive for ISPs?

CacheLogic
Advanced Solutions for P2P Networks

NTL, CacheLogic, BitTorrent Technology Trial

CacheLogic
Advanced Solutions for P2P Networks

Cache-Enabled P2P

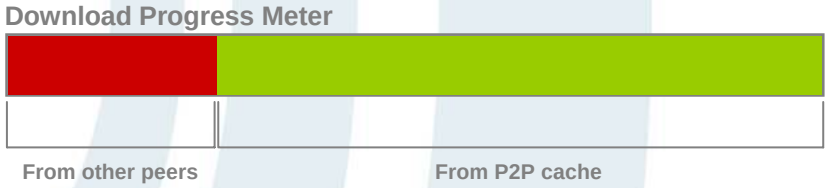
- **Technology Trial**
  - **Evaluation of ultra high-speed, video download service on ntl cable network**

- **Technology Developments**
  - **BitTorrent/CacheLogic**
    - P2P client to locate Cache Discovery Server
  - **CacheLogic**
    - Cache Discovery Protocol
    - Cache Discovery Server

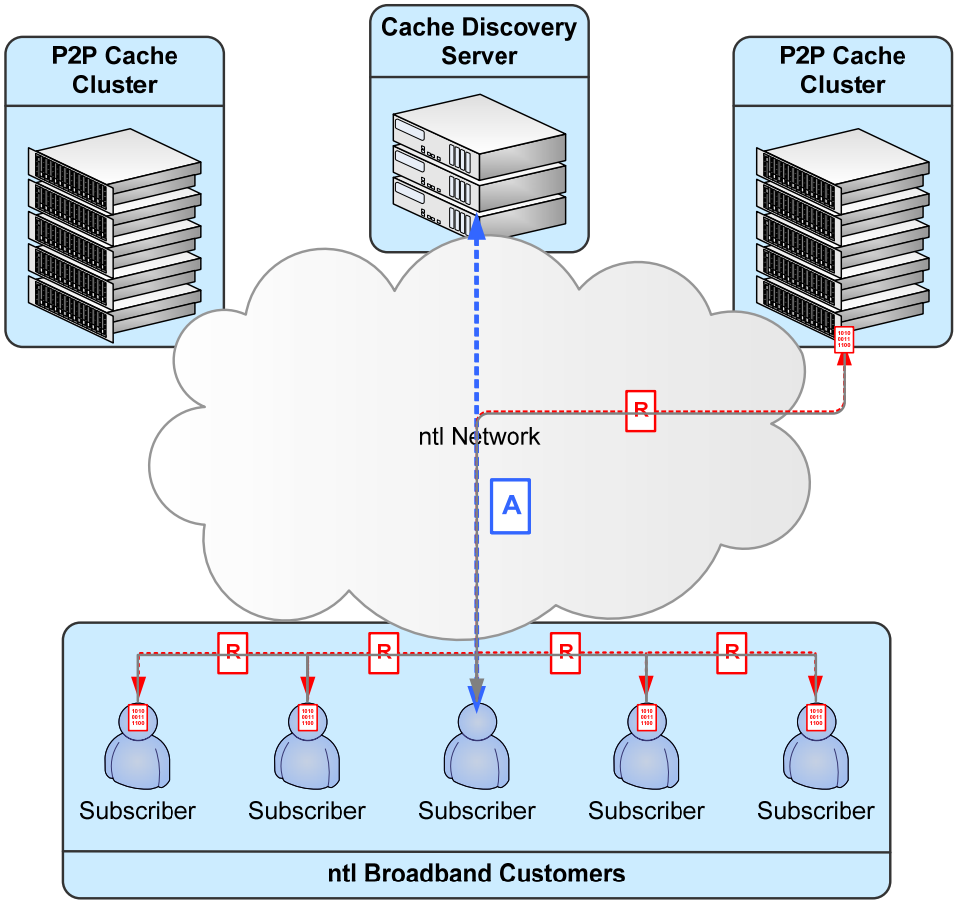
CacheLogic
Advanced Solutions for P2P Networks

How It Works

1. Subscriber client contacts the Cache Discovery server to ascertain location of desired content
2. Client sends out get request to peers and nearest available P2P Cache cluster
3. Client begins multi-source download



- **P2P cache provides majority of the content**
  - Network not reliant on upload capacity of other peers/clients
  - Dramatically reduces delivery times
- **Amount of content served from the P2P cache configurable**
  - High value/ demand = high speed P2P cache delivery
  - Low value/demand = low speed P2P cache delivery



CacheLogic
Advanced Solutions for P2P Networks

What Does P2P Offer Today

- **Content Owners**
  - ✓ New Route to Market
  - ✓ Opens up long tail and niche offerings
  - ✓ Low Cost Distribution
  - ✓ Inherently Scalable

Caching enables accelerated content delivery

  - ✓ Download **not** speed limited
    - Number of peers
    - Upstream bandwidth Capacity
  - ✓ **Quality of Service Control**

- **ISPs (Internet Service Providers)**
  - ✓ Caching manages the costs
    - Transit bandwidth
    - Network infrastructure
  - ✓ Caching frees up upstream links
  - ✓ **Caching Massively Reduces Network Congestion**

Caching enables accelerated content delivery

  - ✓ Up sell subscribers to high bandwidth services
  - ✓ Service Differentiators – exclusive deals with content owners

CacheLogic
Advanced Solutions for P2P Networks

Thank you

Presentation by

George Daum
VP US Sales, CacheLogic Inc.
gdaum@cachelogic.com

CacheLogic
Advanced Solutions for P2P Networks

Copyright and Confidentiality

Copyright Statement

Registered office: 326 Cambridge Science Park, Milton Road, Cambridge, CB4 0WG, United Kingdom

Confidentiality Statement