



100 TERABYTES A DAY

How CBC Delivers Content to Canadians

NANOG 55.

June 4, 2012



IT information technology



WHO IS CBC

Canada's public broadcaster offering services in English, French, and eight other aboriginal languages.

- Radio (FM, AM, Shortwave, and Satellite)
- Television (digital cable and OTA)
- Online (cbc.ca and radio-canada.ca)





100TB A DAY! REALLY?

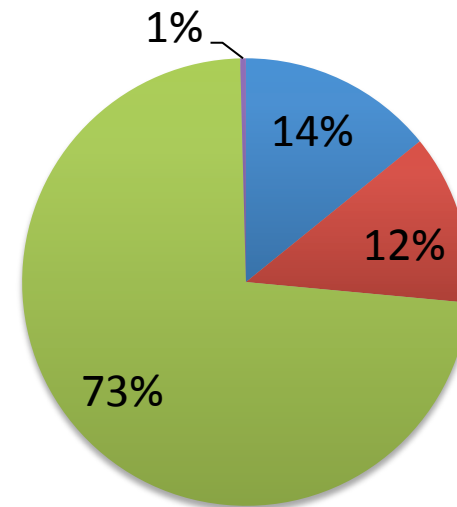
The breakdown for April 2012

- Live Radio Streaming: 312 TB
- HTTP/Website Delivery: 271 TB
- Live Video Streaming: 1,610 TB
- Mobile Video Streaming: 9 TB

73 TB a Day

Percentage of Traffic

- Live Radio
- HTTP/Website
- Live Video
- Mobile Video





DELIVERING THE CONTENT

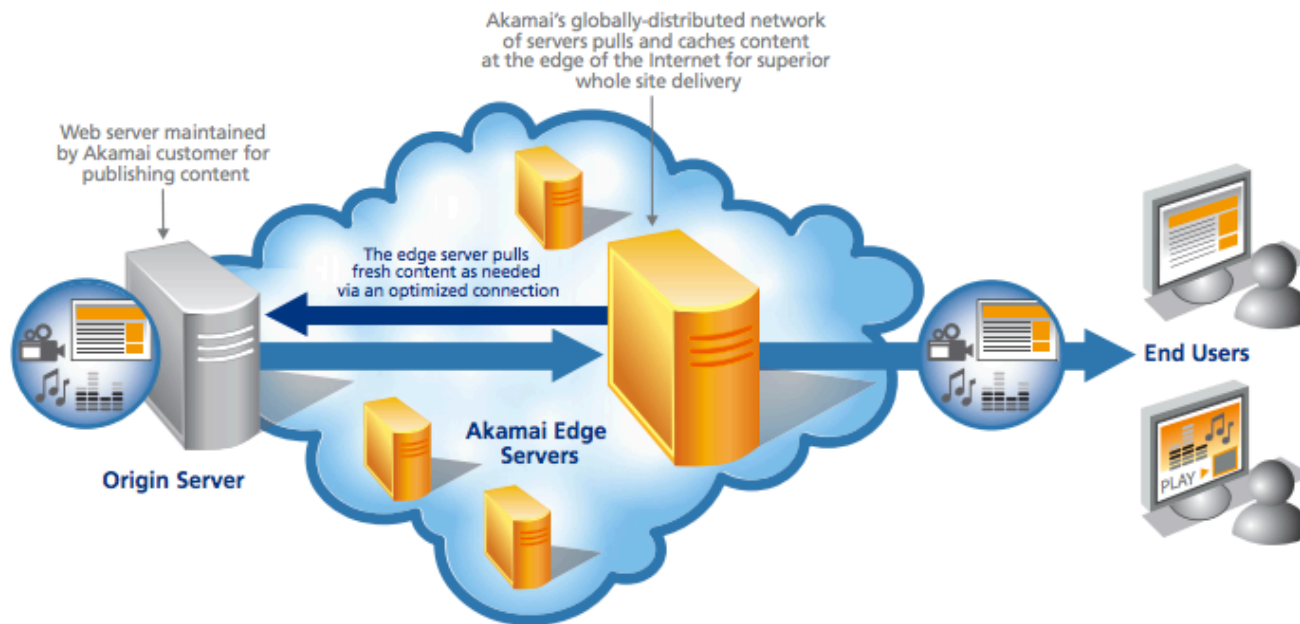
Content delivery networks make it possible!





CDN IN A NUTSHELL

How Akamai works:





NOT SO TYPICAL TRAFFIC PATTERNS

cbc.ca experiences "newsey" traffic.

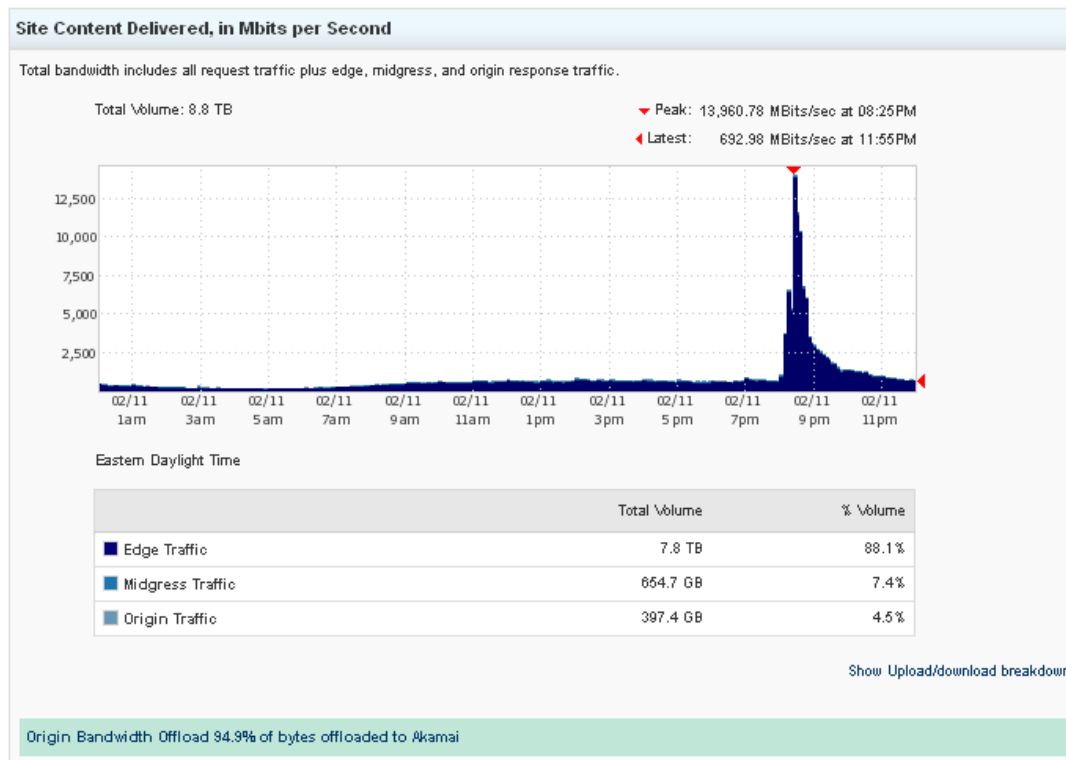
- Bursts in traffic > 20 times normal
- Unpredictable
- Usually short-lived
- Can be longer lasting (during events such as Elections or Olympics)





AN EXAMPLE (HTTP)

Whitney Houston Death (Feb 11, 2012)





AN EXAMPLE (HTTP)

Dick Clark Death (Apr 18, 2012)

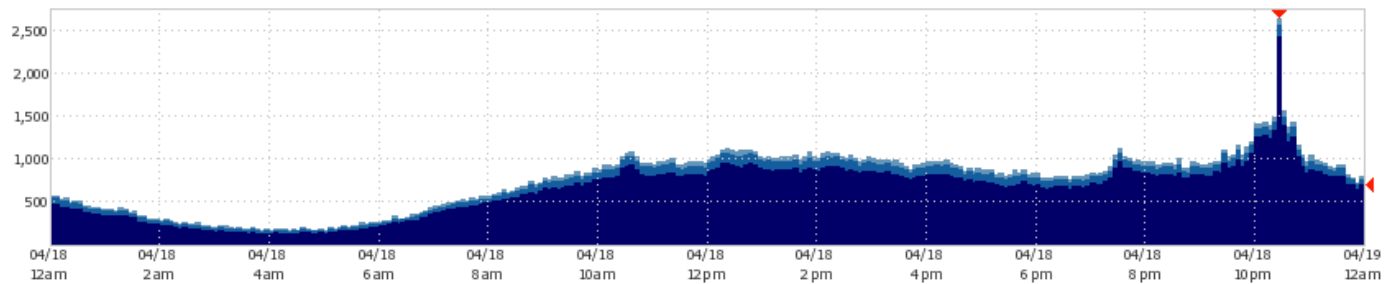
Site Content Delivered, in Mbits per Second

Total bandwidth includes all request traffic plus edge, midgress, and origin response traffic.

Total Volume: 8 TB

▼ Peak: 2,627.57 MBits/sec at 10:25PM

◀ Latest: 799.16 MBits/sec at 11:55PM



Eastern Daylight Time

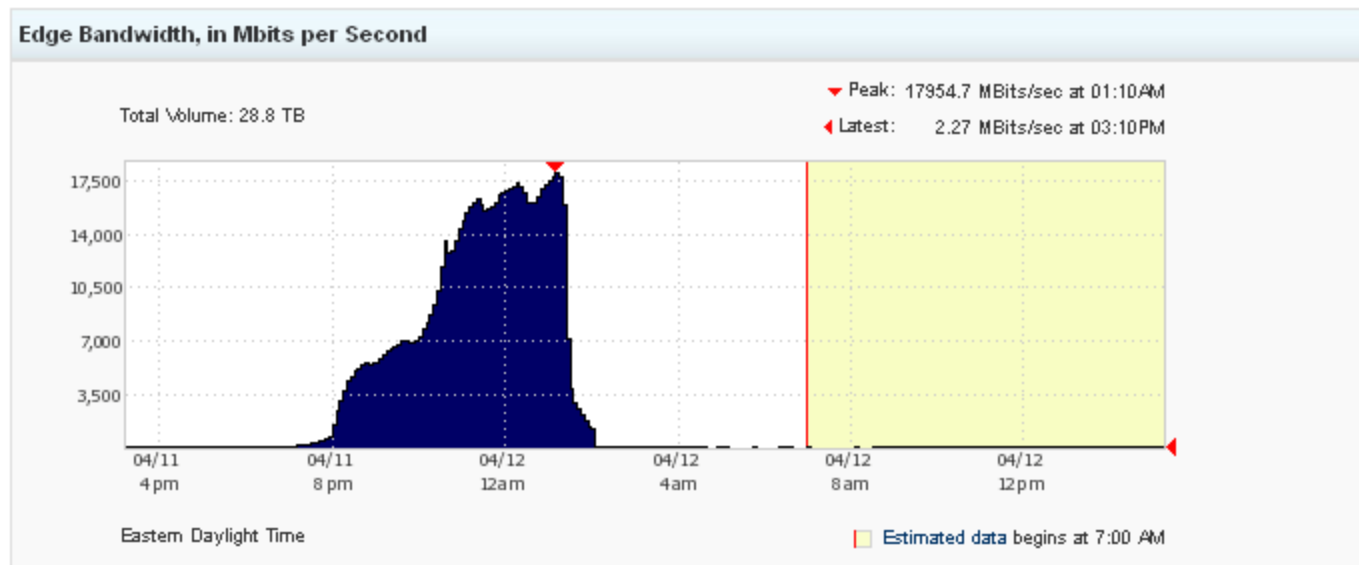
	TOTAL VOLUME	% VOLUME
■ Edge Traffic	6.8 TB	84.7%
■ Midgress Traffic	799.5 GB	10%
■ Origin Traffic	431.9 GB	5.4%





AN EXAMPLE (VIDEO STREAMING)

NHL Playoff Game (Apr 11, 2012)





WHO USES AKAMAI (IN CANADA)

Major Media Organizations, such as Bell Media:





WHO USES AKAMAI (IN CANADA)

Major Media Organizations, such as Rogers Television:



Citytv

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Omni

[Learn More](#)



The Biography
Channel

[Learn More](#)



Sportsnet

[Learn More](#)



G4techTV

[Learn More](#)



The Shopping
Channel

[Learn More](#)



Rogers TV

[Learn More](#)



OLN

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IT'S ALL ABOUT PEERING

How you can optimize delivery to your users

- Be sure to peer with CDNs
- CBC delivers most of its traffic via CDNs, not our own pipe.
- Peering is beneficial for "corporate" traffic.





CBC AT TORIX

Our Peering Setup at the Toronto Internet Exchange

- CBC Peers with the Route Server
- This includes all users who also peer with the RS, including Akamai.





THE NUMBER 1 FAQ

Help! I peered with you, but most of your traffic is not going via the peering link.

- Did you peer with a CDN?
- Since all traffic to end users is delivered via a CDN, you need to peer with them and not the origin ASN.





RECENT CHANGES TO STREAMING PROTOCOLS

Majority of streams are no longer served via "old school" protocols such as RTMP, RTSP, and MMS.

- Streams (video and audio) are delivered via HTTP now.
- Some go as far as delivering the stream via HTTPS.
- Most video streams are 3-5Mbit/s
- May pose problems with traffic shaping and firewalling





WHAT CONTENT PRODUCERS CAN DO

To offer a better experience to your end users:

- Optimize your HTML and Images
- "minify" javascript
- Use gzip compression
- Use proper caching headers (E-Tag, Last Modified, etc..)
- Don't allow "fast pipes" to make you lazy.





WHAT NETWORK ADMINS CAN DO

To offer a better experience to your end users:

- Ensure that your pipe is big enough to handle large events.
- If you use a proxy cache, don't cache bust! Make sure it supports HTTP 203 Partial Content requests.
- Peer with CDNs.
- Better yet, ask Akamai to host their equipment in your own network.





SUMMER OLYMPIC GAMES

Things to keep in mind:

- Lots of video!
- Peer with Google (You Tube)
- Peer with Akamai (for video and Web content)
- Ensure your pipe is fat enough to support "high definition" (>5mbit/s) streams.





THANK YOU

Questions?

